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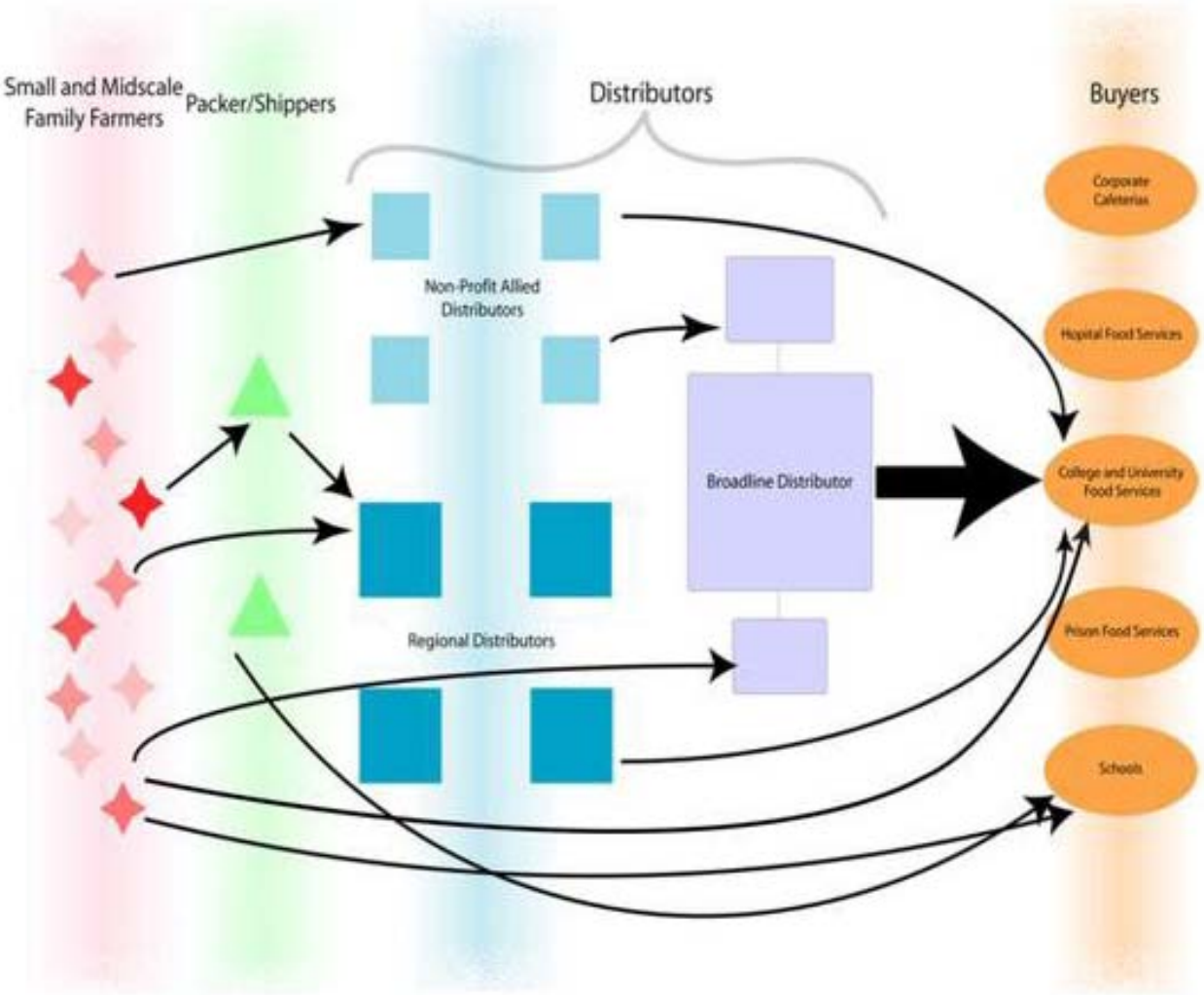
Volume 1, Issue 4
Spring-Summer 2011

Special Topic:
Small and Midscale Food Value Chains



JAFSCD

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Volume 1, Issue 4 / Spring/Summer 2011

Cover: An illustration of a supply chain for farm-to-institution programs. This figure captures the key partners in produce distribution chains serving institutional buyers in California. It does not include all possible partners (e.g., brokers, processors); it does highlight the players who were part of our values-based supply chain research study (see the paper *Using a Supply Chain Analysis To Assess the Sustainability of Farm-to-Institution Programs*).
Credits: UC SAREP (content: Feenstra, Ohmart, Perkins; designer: Santos)

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Contents / Volume 1, Issue 4 / Spring-Summer 2011

Open Call

Book Reviews

Journal of Agriculture, Food Systems, and Community Development
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IN THIS ISSUE

DUNCAN HILCHEY

Small and midscale food value chains: A state of the art

Published online 10 September 2011

Citation: Hilchey, D. L. (2011). Exploring and furthering food value chains [Editorial]. *Journal of Agriculture, Food Systems, and Community Development, 1*(4), 1–2. http://dx.doi.org/10.5304/jafscd.2011.014.019

In this issue of JAFSCD we present the state of the art in small and medium-sized food value chains — primarily from a North American perspective, but also with perspectives from Europe and South America. Values-based food supply chains (value chains) are strategic alliances between farms, ranches, and other supply chain partners who deal in sufficient volumes of high-quality, differentiated food products and distribute rewards equitably across the supply chain. As Stevenson and colleagues remind us, in FVCs, farmers and ranchers are treated as strategic partners, not as interchangeable — and exploitable — input suppliers. Ideally, all partners in these business alliances recognize that creating maximum value for the product depends on significant interdependence, collaboration, and mutual support.

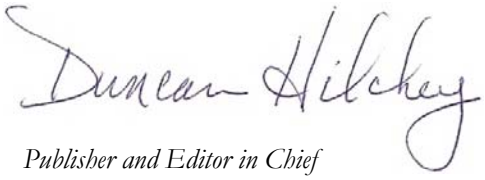
There have been a number of influential initiatives working to develop and extend the concept of value chains in the last 10 years; especially notable are the Center for Integrated Agricultural Systems (at the University of Wisconsin) and the Agriculture in the Middle research group. The latter is led by a thoughtful group of land grant faculty and staff as well as consultants, all of whom have pioneered many of the principles and practical strategies highlighted and built upon in this issue. We hope it will stimulate further applied research and programming — and we encourage further manuscript submissions that build on this critical body of work.

This issue begins with a reflective essay by University of Kentucky's **Bob Perry** describing his experiences in trying to develop a local food service program for Kentucky State Parks. This is followed by JAFSCD's regular columnists **John Ikerd, Joseph McIntyre,** and **Ken Meter,** who offer creative and provocative insights on principles of food value chains and emerging regional food systems business opportunities. We accepted a wide range of papers that cover the range of emerging food value chains, from a cutting-edge multifarm CSA focused on food insecure neighborhoods in New York City, to the revolution of Bolivian potato markets made possible by expanding cell phone technology.

Our special topic call papers lead off with **Steve Stevenson, Larry Lev,** and their colleagues, along with **Adam Diamond** and **James Barham,** and with **Áine Macken-Walsh,** who set the stage for the expansion of midscale food value chains in North America and Europe. **Michele Schmidt** and fellow researchers and **Becca Jablonski** and her colleagues provide case studies of small-scale food value chains in the Northeast U.S., while **Dara Bloom** and **Clare Hinricks,** and **Nevin Cohen** and **Dennis Derryck,** explore hybrid versions of the concept. Institutional food value chains are the focus of research by teams led by **Gail Feenstra** and by **David Conner. Nadezda Amaya** and **Jeffrey Alwang** round out the food value chain paper with a focus on emerging parity in Bolivian supply chains due to use of cell phones.

Our two open call papers for this issue include a study of consumer awareness of county-of-origin labeling by **Katie Allen** with her co-authors, and a study of agriculture economic development at the rural-urban fringe by **Jeff Sharp** and colleagues at Ohio State and Utah State. Finally, **Fred Kirshenmann** of the Leopold Center for Sustainable Agriculture reviews the latest book from the always thought-provoking and challenging John Ikerd, *Revolution of the Middle...and The Pursuit of Happiness.*

With this issue we complete our first full volume of JAFSCD. (We are catching up with reality by calling this our "spring-summer 2011" issue; our first issue took longer to complete than we expected, and thus while have published four issues this year, they will now align better with the seasons.) We are pleased with the progress of the Journal over the last year and look forward to many issues and volumes to come! Our greatest admiration and appreciation goes out to the over 150 members of JAFSCD Editorial Committee, which includes our advisors, reviewers, and columnists. Please visit the JAFSCD About page at www.AgDevJournal.com/about.html to peruse the lists of these generous volunteers who are contributing not only to the Journal but to the literature and the profession as well.



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Agricultural development is economic development: Kentucky State Parks local food purchasing case study

Robert R. Perry, University of Kentucky

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http://dx.doi.org/10.5304/jafscd.2011.014.010

Introduction

In April 2004 I was appointed director of food service for the Kentucky (KY) State Park system and charged with improving its 21 restaurant operations — qualitatively, physically, and financially. Kentucky's state park system is one of the largest in the nation, especially in its number of food service operations. The operations included 17 full-service resort park restaurants scattered widely across the state in primarily rural areas, as well as three state employee cafeterias located in Frankfort and the café at the KY Artisan Center in Berea.

Having been a chef for over 25 years and been brought up in a gardening family, it was the quality of the food that was most important to me. Sourcing locally produced foods was just beginning to become prominent and is now the most significant trend in the restaurant industry. I knew that procuring locally grown foods would result in not only better quality food and thus more sales at the park restaurants, but also help to improve the farm economy of Kentucky that was and still is in turmoil following the elimination of the tobacco program. With the KY State Park system's annual food purchases averaging around US$5,000,000, buying directly from farmers within the state would be a huge boost to the state's economy in general and the farm economy in particular.

This is a personal account of my experience trying to localize a large and widely dispersed institutional food service operation. It began as does this paper with produce, especially tomatoes, and herein I explain how I was able to break through decades of bureaucracy to buy directly from Kentucky farmers. The sections on proteins include the benefits to the farmers of selling to the parks, as well as an examination of the volume of beef and pork used by the parks and the impact it could have had on Kentucky's economy. While there have been several new diary operations come into existence

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since, the trials and tribulations I went through in buying local dairy and eggs are still applicable today. The section on value-added foods highlights the prohibitive cost of local production and packaging for the restaurant industry. Local foods and on-farm dinners were a novelty in 2004, but our experiments with them extended the potential use of local foods, and especially value-added items.

I only held this position for two years, and in a very politically charged environment.[1] The conclusion looks at the action taken when my tenure in this position ended and looks at the potential impact these programs could still have on farms and the economy in Kentucky and beyond. The lessons I learned are not limited to parks, but are applicable to all types of restaurants and food service operations, both public and private and including schools, hospitals, colleges and universities.

The Kentucky Department of Agriculture had been trying to gain access to the park system for KY farmers for years without success, and I was quickly told by the outgoing park's long-time purchasing director that this would be impossible for a wide variety of reasons.

Produce Purchasing

The first project I undertook was to implement the purchase of locally grown produce for all 21 operations directly from the farmers at the back doors of all the operations. The Kentucky Department of Agriculture (KDA) had been trying to gain access to the park system for KY farmers for years without success, and I was quickly told by the outgoing park's long-time purchasing director that this would be impossible for a wide variety of reasons. Undaunted, I called the KDA and set up a meeting to discuss the possibilities.

I also contacted the two most prominent nongovernment advocacy groups in the state, Partners for Family Farms (PFF) and Community Farm Alliance (CFA). PFF administered the "Restaurant Rewards" program that provided rebates directly to restaurants that purchased certified Kentucky Proud agricultural products.[2] CFA is a well organized advocacy group that lobbies on behalf of farmers and seeks to expand markets and programs associated with sustainable and local farming. CFA is supported primarily by members' dues and foundation grants and has a wide network across the state. These two groups provided a wealth of connections, information, support, advice, and later, publicity for this project.

There were two major obstacles to overcome in the purchasing process: what price to offer and how to actually pay the farmers. Since food purchases for these operations are made with taxpayer dollars, certain statutes and regulations apply, primarily concerned with getting the best value for the taxpayers, i.e., price. Fortunately produce and seafood were exempt from any bid requirement or contract because of price and supply volatility.

Pricing for produce was established by constructing a weekly price for all seasonal produce based on an average price from several existing approved commercial vendors. In this way, the cost of the local produce would not exceed the price already being paid, and would fluctuate with the seasonality of the items. We made the price list available to the farmers near every KY State Parks operation. We expected these prices to be slightly below farmer's market prices, and substantially above wholesale or

[1] In 2006 Kentucky elected the first Republican governor in 36 years, which resulted in the first significant turnover of appointed and senior managemant positions in decades. To say that the existing systems, policies, and employees were mired in bureaucracy and dated would be a massive understatement.

[2] Each restaurant could receive up to US$1,000 per month based on a 20% rebate.

auction prices. Comparing the prices we calculated this way with both the reported auction and farmers' market prices by the New Crops Opportunity Center at the University of Kentucky bore this theory out.[3]

Payment to local farmers can be notoriously slow throughout the restaurant industry, and there was a concern that trying to get an invoice paid through the state's system would mirror this problem, or be worse. Paying in cash at the back door was not an option as none of the operations was allowed to keep a petty cash fund. This problem was solved with by developing a direct payment option. Farmers were required to register with the KDA's Kentucky Proud program and fill out a simple information sheet at the location they desired to sell to that included their business information and a bank account number where funds could be transferred. Payment was allowed to be authorized at each park, rather than requiring approval from the park's central office in Frankfort, as the average dollar transaction fell well below the small purchase authority of each operation. Produce was delivered directly to each operation, weighed, entered on that week's price sheet, and signed by both the farmer and the chef. The price sheet was then sent to the operation's business office for approval and submitted for payment. This was really little extra burden on existing purchasing procedures, especially for the large parks that employ a dedicated purchaser and stock clerk.

This produce program began in August 2004 and met with moderate success even though it began near the end of the growing season and none of the farmers had anticipated this additional market. Total purchases for the first year still exceeded US$6,000 even in this short time frame.

[3] The New Crops Opportunity Center is now the Crop Diversification & Biofuel Research & Education Center and can be accessed at http://www.uky.edu/Ag/CDBREC/

An enormous amount of press coverage also resulted from the initial effort to purchase local produce. Many of the state's newspapers featured articles, including a lead editorial in the Lexington *Herald Leader*. The agricultural press coverage was extensive, including an interview for a statewide radio program. Regional and national magazines also picked up the story in both the popular and trade press. The two largest audiences came from an article in *Organic Gardening* and an interview on the NPR program "The Splendid Table."

Following the successful launch of this program, I began to participate in a series of meetings during the winter with farmers across the state and with staff from the KDA and the UK Cooperative Extension service to explain the program and answer questions about it. The response was enthusiastic, and several farmers made comments about the ease of getting into the program during the launch phase. One grower commented that he made as much profit selling bell peppers to a park restaurant as he had selling his entire crop to a co-op. Some farmers even brought seed catalogs to the meetings wanting to know specifically what varieties of produce the chefs would like.

As all local purchasing must be based necessarily on establishing relationships, many of these meetings were held at state park facilities and included the chef of the operation whenever possible. The chefs were also enthusiastic about the program and most reported great success starting it and the high quality produce they received. Total purchases for 2005 were approximately US$21,500. While this was less than we had hoped for, this was the first full growing season for the program and Kentucky also experienced a major drought throughout most of the state that year.

Beef

With the initial success of the produce program and its promotion through the meetings held around the state, meat and dairy farmers began

asking about selling directly to the park system as well. This brought on an entirely new set of hurdles to overcome, first and foremost the existing regulation that these items be bid on an "all state agencies" contract to try and get the lowest price for all state government-run operations, including schools, hospitals, justice facilities, and parks. The park's small purchase authority only allowed purchases from a single vendor of up to US$5,000 outside of the contract for any commodity, an amount that would be quickly reached with meat and dairy purchases. The answer was to seek a regulatory change to exempt the park's meat and dairy purchases from this contract and treat them like produce and seafood.

Several meetings were held in spring and summer 2005 with representatives from the departments of Parks, Commerce, Agriculture, and Finance. It was determined that it was within the secretary of finance's authority to change the regulation governing meat and dairy purchases to include them in the exemption for produce and seafood. I was told by attorneys for the Finance Cabinet that we could not specify "Kentucky Grown" products, as that would be a violation of parts of the Interstate Commerce Act, but could specify "locally grown" in the regulation.[4] Therefore, one of the questions asked was how to define "local purchasing" of meat and dairy. My answer was that products would be purchased directly from and delivered by the farmers themselves, and since many of the parks were located along the state's borders, this would not preclude purchases from nearby farms in neighboring states or any farmer willing to make direct deliveries. Having successfully satisfied the legalities of changing the regulation, the next step was to put it before the legislative committee that approves regulatory changes in this area. This regulation change was approved unanimously after the second reading by that committee and went into effect in October 2005. An unanticipated aspect of this regulation was that it allowed the park system's operations to seek the best price for fresh meat and dairy products from all vendors, in the same manner that private-sector operations do rather than adhering to the all-state agencies contract with a single large nationwide food service company.

Around this time another meeting was held with several of the state's meat and dairy farmers who were interested in selling directly to the park operations. All these farmers were already retailing their own products in some manner and wanted to expand their operations. Most of the beef farmers faced the same problem: they could sell all the steaks they could cut at a premium, but had trouble selling the roasts and ground beef. It was then that I realized that the parks' usage of beef cuts would match perfectly with the cuts the farmers were having trouble selling, but in a slightly different and more beneficial form to the farmers.

The parks' restaurants had always featured a popular Sunday lunch buffet that included a roast beef carving. Originally this was a "Steamship" beef roast, which is an entire hindquarter of beef, roasted and carved bone-in. In recent years this cut had been changed to a boneless top round or inside round. While easier to handle, cook, and carve, it does not have the flavor of a joint of meat cooked on the bone and was definitely not as attractive at the end of a buffet line.

The benefits of using steamships for the parks were the magnificence of the presentation, the improved flavor of meat cooked on the bone, and the panache of using a locally raised product. For the farmers, this was a way to sell approximately one-third of the carcass weight of the animal without significant further processing and its associated costs, leaving only the steaks and ground beef. In additiona, parks could take most of the ground beef in the form of hamburger patties due to their volume of sales, which left the producer with only the most profitable steaks to sell. I was able to create a spreadsheet for each park that showed the poundage of each cut of beef used every month for

[4] The state of KY was acting as a "market participant" and therefore not in violation of the dormant Commerce Clause doctrine, as discussed at http://www.agdevjournal.com/attachments/115_JAFSCD_Laws_on_Locally_Grown_Food_Corrected_10-10.pdf

an entire year. Using this spreadsheet, cattle farmers could have theoretically worked out a feed and slaughtering schedule almost to the day needed by the park restaurants. With a guaranteed market to dispose of two-thirds of a carcass, local cattlemen could have safely increased their throughput and built their businesses selling the most desired and profitable cuts directly. My hope was that as they began to create economies of scale, their finer cuts of beef would then become affordable for parks to serve as well, further promoting their products. Coincidentally, some of the parks are located in close geographic clusters and there were cattle farmers near each cluster who were interested in selling directly to their nearby parks, without any competition between them.

Table 1. KY State Parks Beef Usage, 2005 (All prices in US$)

	Cuts		
	Burgers	**Steamships**	**Total Cuts**
Total Poundage	23,245	93,801[5]	117,046
Commodity Cost/Lb.	$2.32	$2.01	
Total	$53,928	$188,540	$242,468
Local Cost/Lb.	$2.75	$3.00	
Total	$63,924	$281,403	**$345,327**
Cost Difference	$9,995	$92,863	$102,858
Annual Sales	$12,000,000		
Annual Customer Count	1,800,000		
Overall Food Cost increase	< 1%		
Per Person	$0.06		

There were short-term and long-term economic benefits for doing this — besides offering an excellent product to the parks' guests. The short-term benefit was in helping to build the local farmer's "brand" or name by serving their products to large numbers of guests who patronized the parks' restaurants and by using table tents and signage to make it known where the meat came from. A significant method of product promotion is to seek "marketing impressions" by getting the product or the name in front of the consumer. One of the best examples of this is in NASCAR racing sponsorship. The cars are so emblazoned with product names it is impossible not to see one no matter what camera shot is shown on television. You also see product placement in movies and television shows, and the companies pay enormous fees for this service. Placing the farms' names in front of the state parks' 1,800,000 customers per year provided a lot of free marketing impressions to promote their products. It was hoped this would encourage customers to seek out the farms' products for their own use at home. Still, there is no better way to convince someone of the superior quality of locally produced, sustainable food than to put it in their mouth, and the volume of sales at the state park restaurants could have done just that.

The long-term goal was to build a brand for "KY Beef" in general that would help all cattle farmers by increasing the demand for their products locally, and hopefully foster further development in on-farm, pasture finishing and local processing of cattle and the job creation and economic benefits this would have fostered. As table 1 shows, it would have taken 782 head cattle just to provide the needed steamship roasts in 2005, more than all the cattle being finished and USDA-processed locally combined at that time.

For all this to work though, the ugly business of price had to be dealt with, especially since it was the public taxpayers' money. The parks' restaurants, however, operated on a retail business model, unlike the remainder of government food service operations, which operated on an institutional model where money was budgeted per person/per meal. The two beef farmers I worked with from the beginning were able to price their

[5] At an average of 60 pounds each, this equates to 782 cattle needed for just this cut.

Table 2. KY State Parks Pork Usage, 2005 (all prices in US$)

	Cut				
	5 oz Chops	Cutlets	Country Ribs	Boneless Loins	Boston Butts
Lbs./year	9,866	4,706	15,031	23,282	19,945
Price	$2.09	$2.03	$1.82	$1.72	$0.92
Totals	$20,619	$9,553	$27,356	$40,045	$18,349
	Spareribs	Pit Ham	Sausage	Bacon	
Lbs./year	22,176	34,586	30,665	68,998	
Price	$1.54	$2.10	$1.38	$2.11	
Totals	$34,151	$72,630	$42,318	$145,586	
Total $	$410,606				

hamburger patties at a very nominal US$0.15 increase per patty above the commodity patty that was on contract. The price difference was easily offset simply by increasing the menu price by the same amount or slightly more as any private-sector restaurant would do. The price difference to switch back to using steamships from local farmers was approximately US$1.00 per pound and the difference could have been addressed in the same way, to slightly raise the price of the Sunday buffet, perhaps even as nominally as US$0.30 per person since one steamship of beef can service 200 customers on a buffet with multiple proteins.[6]

As the figures in table 1 show, if this program were fully implemented, it would have returned US$345,327 annually (shaded cell) to local beef farmers and therefore the local economy, not including the increased business for small local meat processors. The increase in overall food cost would have been less than 1% (US$12M ÷ US$102,858) which could have been more than offset by a modest increase in menu prices as discussed above. Systemwide, this would have represented an increased cost of US$0.06 per customer, a small price to pay for real agricultural and economic development in a park system that required a US$30,000,000 annual taxpayer subsidy.

What the above figures and discussion does not account for is the actual difference in quality with regard to price; it is not comparing apples to apples. The locally produced beef in this program was pasture finished, free of added antibiotics, steroids and hormones (ASH), and was "dry aged," all attributes that usually command much higher prices than commodity beef of any grade. High-end steak houses dry age individual cuts of beef to improve flavor and then charge accordingly. Local farmers and restaurants generally do not have this ability and can only dry age the entire carcass at the processor for a similar result. This means that even the hamburger patties are dry aged, something few other commercial or private operations offer.

Pork

While there were several sustainable cattle farmers across the state, sustainable pork farmers were nonexistent at the time. However, the quantity of pork purchased by the park system could have provided a large, stable market and served as a catalyst encouraging more farmers to go back into pork production, especially pastured and woodland production systems for heirloom breeds that command higher prices.

As table 2 indicates, the park restaurants went through an incredible amount of fresh pork in 2005, totaling US$410,606 at commodity prices, potentially an even larger economic impact than beef. When direct marketing pork it is usually the shoulders (Boston butts) that are the hardest to sell, much like roasts when direct marketing beef. This market would have easily overcome that problem as the park restaurants served a large quantity of barbecue made from the shoulders as well as the hams. In beef, where the grind is also hard to sell, ground pork seasoned as sausage was also high-volume item. Not represented in this ta-

[6] A steamship weighing 60 lbs X US$1.00 per pound price increase ÷ 200 customers = US$0.30 per customer increase

ble are the value-added products like country hams and city (deli) hams, of which the park restaurants also used a large quantity. These products could have provided income not only for the farmers raising the pigs, but also for the small local processors, especially those with the facilities and expertise to make the value-added products.

On a positive note, the market for pastured pork has exploded in Kentucky in the last couple of years, and there are numerous farms now producing several heirloom breeds on pasture. The state parks could still help these farmers immensely by instituting a program for purchasing local pork, although developing the model would be much more difficult than that for beef, as the commodity prices for pork are artificially low and the price differential would be much greater than that with local beef.

Western Kentucky University would have been an excellent market for milk and ice cream producers, with considerable volume during the school year. The nearby state parks could have completed their market year, with their peak season during the summer months.

Poultry

The use of local, sustainably raised poultry was not explored during this time frame as there were no poultry processors in the state the working with small-scale farms. Kentucky now has three poultry processors working exclusively with small farms, the newest of which is capable of processing 2,500 birds per day, including air chilling and retail packaging. It is doubtful that state park restaurants could use locally raised poultry due to the higher cost of raising poultry sustainably on small-scale farms together with the higher processing cost.

Dairy

There were only two opportunities to add local dairy products to the park system — ice cream and cheese — and both were considered. One dairy farm in south central Kentucky had found success building a replica barn as a sandwich shop and ice cream parlor and making gourmet ice creams flavored with local fruits. They marketed the operation as an agritourism venue by offering farm tours for school kids and regular folks. While they made ice cream on the premises, they had to sell their milk to a commercial processor and buy mixed commodity milk back to make the ice creams that might or might not have contained any of their own milk. We discussed their desire to install pasteurization equipment to cut out this middle step that would have made their ice creams more affordable and to process fluid milk.

They would only have been able to supply a few nearby parks with ice cream or milk because they did not have any type of distribution system in place, which would have increased the price further, and the major distributors were not interested in working with them. However, Western Kentucky University (WKU) in Bowling Green was also interested in purchasing fluid milk at that time, as they were trying to foster a Farm to College program. WKU would have been an excellent market for them, as they were only a few miles up the road with a large student population and several large dining venues with considerable volume during the school year. The nearby state parks could have completed their market year; the parks peak season is during the summer months when the dining operations at WKU are abridged.

Another dairy producer had begun to produce an incredible variety of high quality cow's milk cheeses in a plant built on their farm. Distribution was not a problem for them as they shipped regularly with FedEx and built the cost into their product. Also, they only sold the cheeses in blocks and did not have slicing equipment. The prices for their cheeses were also out of reach for day-to-day operations in the park restaurants, but we were able to bring in some diary products to the state park

operations for special events as described in the section on KY Proud Dinners.

The diary making ice creams has since partnered with another nearby dairy that built an on-farm fluid milk processing plant. The ice-cream-making dairy delivers its raw milk to the other for processing and gets it back in bulk for ice cream processing and in retail fluid milk packaging, which they have in a regional grocery chain's dairy cases. The cow's milk cheese maker is still going strong and continues to develop new cheeses. Since that time there are now also several other cow cheese makers using milk from sustainable dairies, two goat cheese producers, and soon a sheep's milk cheese processor will start production.

Eggs

There were a number of farms offering pastured eggs across the state that easily could have sold their eggs to the state park operations, but price was the factor. When the word really started to get out that park restaurants were seeking local products, I had this email exchange with an egg producer (edited for privacy) that illustrates the situation.

```
-----Original Message-----
From: The Chicken Lady

Bob,
The county (cooperative extension) agent
gave me your email address and said you
could get me a price list for eggs. I've
emailed the chef at the local park and
told him about my farm fresh free range
eggs. Most of my customers are in
Louisville and I'm looking for more. I can
supply several dozen eggs each week if
need be. I need to have an idea of how
much I can get for them.
Thank you,
The Chicken Lady
----------------------------------------
From: Bob Perry
Subject: RE: Price List for eggs

Below are recent prices we paid for fresh
eggs, a food service case is 12 dozen. The
chef can tell you how many they use in a
week.
1/27/05 -- 7.50 per case----0.052 each
2/01/05 -- 10.50 per case----0.072 each
2/15/05 -- 10.80 per case----0.075 each
----------------------------------------
From: The Chicken Lady
Subject: RE: Price List for eggs

Bob, no offense but, save your time. We
were hoping that quality had more value
than that. As much as we would like to see
Kentucky institutions support Kentucky
raised produce, these prices would put all
of us out of work. We can get a tax
deduction for giving them to non-profits
that give us more value than these prices.
----------------------------------------
From: Bob Perry
That is one of the biggest problems I face
in trying to bring KY products into the
parks. I know you can sell at much greater
prices to white tablecloth restaurants
that can then upcharge their customers to
cover the costs. Our customers in parks
are not that sophisticated...yet, and are
primarily families on vacation looking for
value in dining, especially w/ several
kids in tow. I know you can also sell to
individuals who know and appreciate your
product...and can afford it.

I hope that as we grow local agriculture
the farmers can get big enough and have
enough volume production to sell to all
restaurants at wholesale prices that are
acceptable, but not so big that they lose
the localness of production. It is the
middle ground that is the real challenge
and key to all of this. Reaching the
average restaurant that serves the average
customer at a price everyone can be happy
with.
```

> Don't give up hope, I have only started on this project for parks and we have a long way to go...Bob

In addition to my naïveté at the beginning of this initiative, this email exchange shows that trying to match the price between locally produced farm goods and commercially produced items is nearly impossible. The quality and wholesomeness of the products must be considered when determining the difference in price between commercially produced products and sustainably produced local products. Recent work in food value chains and case studies about ag of the middle[7] show great promise in scaling up sustainable farm products without losing these qualities.

Value-Added Products

On-the-farm and community-kitchen production of value-added products such as jams, jellies, BBQ sauces, and salsa were more difficult but not impossible to bring into the parks food service operations. There was a US$5,000 small purchase authority that allowed operations to buy food up to that amount from individual sellers without violating the model purchasing code. This came into play with most value-added products, as categories of these fell under the grocery contract awarded by a competitive bid process. These products are part of the "market basket" purveyors bid on, not separate commodities. It would have taken a regulatory change or exemption to facilitate large-scale usage of these type items in the park system, similar to the way local meat and dairy was exempted.

Cost again is a major factor with value-added products; it is hard for local producers to reach an economy of scale to come anywhere close to prices for commercial products. One problem for many products is package size, as it is cost prohibitive for the small farmers to put their products into the portion-control packaging many operations prefer to use. This could have been overcome by buying the product in bulk and then spooning it into portion-control food service containers in the operations as they did with ketchup and other condiments. Locally made BBQ sauce is a good product to illustrate this point.

I received a sample of a BBQ sauce made with locally produced honey that I thought was very good. The producers had won several contests with their sauce and they sought to have their local park restaurant purchase and use it. I asked that first they contact the KDA to certify their sauce as a "KY Proud" product to assure that it was indeed made with locally produced agricultural products. When this was done they called the park's chef and offered to sell their product in a gallon size, at US$24.00 each. The chef called me and asked what to do; he had tested their sauce and liked it, but could not see where he could afford to use it in the quantity he needed. Commercial BBQ sauce was US$4.00 a gallon and there was no way to increase the price of the BBQ menu items to cover that much of an increase in sauce price.

I did not get to resolve this situation before leaving the parks department, but feel certain I could have worked out a compromise. Inasmuch as value-added products would benefit from the marketing impressions on the menus as described above in the discussion of beef, the state parks also operate many gift shops. If the producer were willing to work with a price that would allow for use in the restaurant, they would also be able to sell at a better price for retail resale in the gift shops. Shelf stable value-added agricultural products are big sellers in gift shops, and the parks have millions of shoppers every year who would represent a large market for these products. The ability of shoppers to taste before purchasing and the panache of a local product on the menu would be a big plus for both the producers and the restaurants.

KY Proud Dinners

While all-local-food and on-farm dinners are common now, in 2004 they certainly were not. These dinners grew initially out of a request for a catered function utilizing as many KY Proud food products as possible. Who sent the original request escapes me now as there were so many that followed. Whether it was a reception featuring an array of finger foods, a buffet meal for a large

[7] http://www.agofthemiddle.org/

number, or a sit-down multicourse meal, the idea was to incorporate as many local products as possible to showcase Kentucky agriculture's diversification since the demise of tobacco as the state's number-one crop.

While it was difficult to incorporate more expensive food items into existing menus of ongoing restaurants, it is much easier to control food costs with catered functions. We knew in advance the exact number of people to prepare for, and the cost per person could be calculated based on the total cost of the food. This allowed the bill to reflect the normal profit margin as it would have been with commercial food products. I found that the cost to the customer was only slightly higher, but the quality of the food more than made up for the additional cost, besides the prestige for the host by offering a local menu.

Like Dorothy in her ruby slippers, economic development folks at the federal, state, and local levels need to realize that the power to significantly affect the economy is right under their feet in the form of their farmers' boots.

These dinners were very successful but required some creativity for produce during the off season. This was accomplished through the creative use of value-added products to add a flavor of KY Proud to commercial foodstuffs when locally grown or raised items could not be found. These functions also allowed the use of specialty cheeses and ice creams as mentioned above, since price was not as much of a factor and the extra effort required for delivery could be worked out in advance. Sometimes delivery was taken care of by personnel traveling around the state in their normal duties at no additional cost.

What was a growing trend at the time is now *de rigueur* for top chefs and restaurants. Chefs Collaborative, Slow Food and other organizations have really pushed the issue in recent years, and as demand has grown from restaurants and the general public, farmers have responded by further diversifying their operations to provide more of both quality and quantity.

Conclusion: Agricultural Development Is Economic Development

Upon my untimely departure from this position in early 2006, Community Farm Alliance was able to shepherd the passage of a bill to establish a preference for locally grown products that would require all state agencies (including the park restaurants) to continue to pursue the projects I had started.[8] It was a valiant effort but the language in the bill fell short, and since it was enacted little has been done to promote local purchasing. In fact, succeeding management reversed every single initiative started during my tenure and put the restaurants back on a cookie-cutter, low-end chain restaurant format where every park cooks the exact same menu from an approved purchasing list.

Kentucky's Economic Development Cabinet states that its purpose is "to support and promote economic development within the state, primarily by attracting new industries to the state, assisting in the development of existing industries, and assisting communities in preparing for economic development opportunities."[9] Like Dorothy in her ruby slippers, economic development folks at the federal, state, and local level need to realize that the power to significantly affect the economy is right under their feet in the form of their farmers' boots. The monthly Department of Labor report on the number of jobs is always defined as "nonfarm" jobs, as if self-employed farmers and their hired help do not contribute anything worth calculating in the overall national economy. However these

[8] http://www.lrc.ky.gov/Statrev/ACTS2006/0244.pdf
[9] http://www.thinkkentucky.com/KYEDC/WhoWeAre.aspx

on-farm jobs could greatly affect the economy, especially in rural areas where jobs are the scarcest. For every farmer or farm employee who can return to a farm full-time or even part-time, it opens up their previous nonfarm job to someone else. Indirect effects of these onfarm jobs would be even more rural jobs in the support businesses and the economic multiplier effect of the direct farm income and wages that are spent locally. This job re-creation does not take require tax breaks and credits or massive inputs of taxpayer money for infrastructure improvements to support a new factory. It only takes a stable market for the food that the farms can produce.

If the KY State Park restaurant operations only purchased beef, pork and produce as outlined here, the initial annual economic impact directly to KY farmers would be well over US$1,000,000 without any additional tax dollars being spent. If other city, county, and state facilities followed suit, it would create a multimillion dollar, stable market for locally grown products that would truly foster the diversification and sustainability of Kentucky's family farms.

Kentucky is fortunate to still have thousands of small family farms as a result of over a century of dependence on tobacco and its price supports. With properly scaled processing facilities and access to markets, most of these farms could successfully diversify and stay small family farms. Perhaps the most important task of all who support sustainable agriculture is to educate the public about the issues involved and encourage them to demand local food wherever they shop and eat.

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THE ECONOMIC PAMPHLETEER
JOHN IKERD

Essential principles of sustainable food value chains

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Values-based food chains include alliances of various types among farmers, processors, distributors, and other participants in food production and distribution. "Food value chains" are distinguished from conventional "food supply chains" in that relationships among participants are not solely, or even primarily, economic. Ironically, the formation of value chains is typically motivated by a quest for greater economic efficiency in the production and distribution of sustainably produced foods. However, economic efficiency cannot be allowed to take priority over the essential ecological, social, and economic principles of sustainability.

The essential ecological principles of sustainability include *holism, diversity,* and *interdependence.* Interde-

Why did I name my column ***"The Economic Pamphleteer"?*** *Pamphlets historically were short, thoughtfully written opinion pieces and were at the center of every revolution in western history. Current ways of economic thinking aren't working and aren't going to work in the future. Nowhere are the negative consequences more apparent than in foods, farms, and communities. I know where today's economists are coming from; I have been there. I spent the first half of my 30-year academic career as a very conventional free-market, bottom-line agricultural economist. I eventually became convinced that the economics I had been taught and was teaching wasn't good for farmers, wasn't good for rural communities, and didn't even produce food that was good for people. I have spent the 25 years since learning and teaching the principles of a new economics of sustainability. Hopefully my "pamphlets" will help spark a revolution in economic thinking.*

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pendent relationships among the diverse elements of healthy natural ecosystems make the ecological wholes something more than the sum of their parts. The essential social principles of sustainability include *trust, kindness,* and *courage*. Relationships defined by contracts, regulations, or economic interests are not sustainable. People in sustainable relationships must have the courage to trust and to care about others in a world where such things are often considered idealistic and naïve. The essential economic principles of sustainability include *value, efficiency,* and *sovereignty*. Sustainable economic enterprises must produce things of economic value, efficiently. They must make their own decisions and accept responsibility for their actions if they are to maintain economic viability.

The economy is a part of society and society is a part of nature. The three are also interdependent, in that each affects and is affected by the others. Thus, the same basic principles apply to all human relationships with nature and within society, which include economic relationships. Sustainable economic relationships must also reflect the principles of societies and natural ecosystems. Sustainable social relationships must also reflect the principles of economies and ecosystems. Sustainable relationships with nature must reflect the principles of societies and economies. Sustainable food value chains must have ecological, social, and economic integrity.

Rather than focusing on the economic bottom line, food value chains must focus on the triple bottom line: the ecological, social, and economic bottom lines. All economic value ultimately is derived from nature and society. However, economic value is inherently individualistic. It makes no economic sense to invest in anything solely for the good of society as a whole or for the benefit of future generations. So, sustainable food value chains must renew and regenerate the productivity of natural and human resources, even when there is no economic incentive to do so.

Triple-bottom-line management has become a popular buzz word in the business world. However, a triple bottom line that gives priority to the economic bottom line will not have the capacities for *renewal* and *regeneration* necessary for economic sustainability. Furthermore, nature and society, as living systems, are always changing and evolving. Ever-changing government policies, market opportunities, production technologies, and public expectations are all consequences of such changes. Meeting the challenges of sustainability ultimately will require a radical rethinking and redesign of the entire food system. Sustainable food value chains must be *responsive* as well as *renewing* and *regenerating*.

Sustainable food value chains must have ecological, social, and economic integrity. Food value chains must focus on the triple bottom line: the ecological, social, and economic bottom lines.

Obviously, sustainable food value chains must be able to survive the short run if they are to thrive in the long run. Food production is a risky business. For example, the food system is affected at all levels by biological organisms that are inherently self-making, dynamic, evolving, and thus never precisely predictable. Therefore sustainable food chains must be able to withstand unexpected shocks; they must be *resistant*. When their resistance breaks down, as after natural disasters and major economic setbacks, they must be able to bounce back; they must be *resilient*. In the most severe cases, they must have a fall-back strategy or "plan B"; they must have built-in *redundancy*. Sustainable food value chains must be resistant, resilient, and redundant.

The essential characteristics of sustainable food value chains include renewal, regeneration, responsiveness, resistance, resilience, and redundancy — the six Rs of sustainable systems.

Food value chains that embody the principles of ecological, social, and economic integrity will have all these essential characteristics of sustainable systems. However, maximum economic efficiency conflicts with each of these essential characteristics of sustainability.

The Panarchy theory of ecological systems dynamics was developed in the 1970s to describe the natural behavior of ecological systems.[1] It purports to explain the natural evolution of natural ecosystems. This ecological theory applies to social and economic systems as well, as economies and societies are subsets of nature. As ecosystems naturally evolve toward greater efficiency, they also evolve toward increasing "complexity," meaning an increasing number of more highly specialized functions. As systems become more complex, the internal dependencies among the specialized functions increase, which is referred to as increasing "connectivity." Increasing complexity and connectivity increase the efficiency of systems by synchronizing activities and removing redundancies both within and among the various systems functions.

The six Rs of sustainable systems are renewal, regeneration, responsiveness, resistance, resilience, and redundancy.

However, as the dependencies are increased and redundancies are removed, ecosystems lose their resistance and resilience and their ability to respond to change. Internal dependencies allow the consequences of outside shocks to spread through the entire system more quickly than for less "connected" systems. Lacking redundancy, efficient systems lose their ability to repel or bounce back from unexpected shocks or to respond to fundamental changes in their environment. Consequently, highly efficient systems are also highly vulnerable to collapse.

As food value chains move toward greater economic efficiency, they face the increasing risks associated with greater complexity and connectivity. Increased economic efficiency will reduce the *resistance, resilience,* and *redundancy* needed for sustainability. As investments become more narrowly focused on economic returns, such systems also will lose their capacities for *renewal* and *regeneration,* as well as the *responsiveness* needed for radical redesign of the food system. The need for greater economic efficiency is real, but efficiency must be balanced with the need for ecological, social, and economic integrity. Food value chains that give priority to economic efficiency may be profitable for a time, but they will not be sustainable over time. Sustainable food value chains must function in harmony and with balance among the essential ecological, social, and economic principles of sustainability.

[1] Homer-Dixon, T. (2009, March/April). Our Panarchic future. *World Watch Magazine, 22*(2). (Excerpted from *The upside of down: Catastrophe, creativity, and the renewal of civilization,* by T. Homer-Dixon, 2006, Washington, DC: Island Press.) Excerpt retrieved from http://www.worldwatch.org/node/6008

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VIEWS FROM THE FOOD SYSTEM FRONTIER

Emerging trends, dilemmas, and opportunities in the changing global food system

JOSEPH MCINTYRE

The signs of a new mainstream

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A few weeks ago, I got an invitation that made me stop and take note. Our local Chamber of Commerce — long an advocate for traditional economic development — was wondering if their efforts to develop new entrepreneurs and businesses should consider focusing on small agriculture and value-added food products. They asked a number of people, including representatives from the Farm Bureau, the Wine Commission, and the local chapter of the Business Alliance for Local Living Economies,[1] to talk about trends in agriculture into the future.

Over the course of several meetings, the stories and perspectives presented by participants began to merge into a description of a "New Mainstream" food system, a term popularized by the California NGO Roots of Change in their Vivid Picture project[2] and that has been developing largely under the radar over the past 20 years.

The "New Mainstream" food system is a system based first on a thriving demand for local produc-

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Disclosures: *Mr. McIntyre has served as a paid facilitator for the Making Good Food Work Conference and received honoraria for moderating at both the Take Acton Impact Investing and Social Capital Markets conferences.*

This is part of an ***ongoing series*** *of columns by Mr. McIntyre on emerging trends, dilemmas, and opportunities in the changing global food system. He can be reached at joseph@aginnovations.org.*

[1] http://www.livingeconomies.org/

[2] http://rootsofchange.org/content/activities-2/vivid-picture-project

tion (or regional production, depending on your definition of local). As an example of this interest, a soon-to-be-released feasibility study conducted by Community Alliance with Family Farmers[3] for a regional aggregation and marketing center demonstrated that in one northern California county, fully 49% of grocers were already purchasing some local fruits, vegetables, meats, and value-added goods — and 95% were interested in doing so. The LOHAS (Lifestyles of Health and Sustainability) consumer market segment (estimated by the Natural Marketing Institute to be US$300 billion annually and growing at 16% annually, French & Rogers, 2010) is driving demand for local and healthy foods toward a critical tipping point where every retail outlet will feel it must have at least some products aimed at these buyers.

This increase in demand is being mirrored by an increase in supply from both long-time producers, who are flexing to meet new market demands, and new entrepreneurial producers, who see an opportunity to marry their values with new products and approaches to food and farming. Both trends were discussed at the Chamber meetings. Our local dairy industry, long a mainstay of both agriculture and agriculture leadership, has, like most of the American dairy industry, been under tremendous price pressure. One of the most successful responses has been to convert to organic production and to artisan cheese production aimed at the regional market. Meanwhile, the number of community supported agriculture (CSA) farms, ranches producing locally raised meat, and specialty foods operations has been growing steadily.

I walked away from the last meeting at the Chamber realizing that we are close to turning an important corner in our thinking about food systems. The idea that building robust local food economies is a way to satisfy consumer demand, preserve culture, land, and environmental values, and generate sustainable economic development is getting traction in places where we might least expect it. Driven both by increased awareness of food issues as described by chefs (Bittman, Oliver, Waters, and others), commentators (Berry, Pollan, Roberts), and health leaders (Nestle, Michelle Obama), and the undeniable growth of local/regional food economies, it is clear that what was just a niche is becoming something else.

This shift is being accelerated by an evolving approach to creating regional food systems. Where in the past we have had philosophical discussions of how such a system might look and how to accomplish it, increasingly the focus is on operationalizing new business models and new efforts. The recent Making Good Food Work Conference[4] in Detroit is a great data point on this shift. The conference brought together, by application, on-the-ground alternative food system project teams who wanted to participate in a three-day intensive planning and collaboration effort designed to refine their business models, create effective marketing plans, identify funding sources, and give them new business management skills. This was strictly a work session where the projects were competing for cash prizes awarded based on merit and intended to be capital to fuel implementation. This action focus is new and drew significantly from the work of Start-Up Weekend,[5] a model for launching new start-up businesses through a balance of competition and cooperation in a highly focused three-day event.

Connecting the good food community with the entrepreneurial start-up world is an important

We are close to turning an important corner in our thinking about food systems.... What was just a niche is becoming something else.

[3] http://caff.org

[4] http://www.makinggoodfoodwork.com/

[5] http://startupweekend.org/

signal. This marriage promises to bring new tools and efficiencies into food systems based on integration of Internet-based information sharing. We are seeing this on two fronts. On the supply side, one of the most interesting projects that was developed at the Making Good Food Work Conference was the "Coordinated Production Planning Tools for Wholesale & Institutional Buyer," an extensible database-driven tool with a web interface to better match local production with the needs of buyers. This is just one of many efforts to make it easier for buyers and sellers to reconnect in local markets using both simple tools like Google Maps overlays or more complex software services. On the demand side, the development of the boutique mobile restaurant is just one example of a New Mainstream business model. Across the United States we are seeing mobile noodle businesses, mini-cupcake purveyors, and specialty ethnic food providers, who are combining the restless creativity of a new generation of entrepreneurs, savvy marketing using social media, and strong demand for unique hand-crafted foods.

The drumbeat of real change in the way we grow, distribute, and consume food has gone from being a distant beat to a persistent and compelling rhythm that reaches even the distant corners of food system discourse.

Investor interest in these new food and farming businesses is strong; indeed, it may be a case of too much money chasing too few good ideas. At the 2010 Social Capital Markets[6] conference, an entire track was devoted to food system investment opportunities. Both the Take Action Impact Investing[7] and the Agriculture 2.0 conferences[8] are focused on connecting investors with new food system opportunities.

So perhaps after all it was not so surprising to get a call from the Chamber of Commerce. The drumbeat of real change in the way we grow, distribute, and consume food is all around us. In fact it has gone from being a distant beat, easy to ignore, to a persistent and compelling rhythm that reaches even the distant corners of food system discourse. A New Mainstream is coming and the signs are all around us.

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[7] http://impactinvestingconference.com/
[8] http://www.iirusa.com/agriculture20/agriculture20.xml

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METRICS FROM THE FIELD
Blending insights from research with insights from practice
KEN METER

Breaking our chains

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With all due respect to my professional colleagues who expertly address supply chains on other pages of this issue, I want to step back to consider whether we might break the "chains" that inhibit our conversation about food.

I am concerned that our laudable goals of providing accurate measurements and establishing new business practices may interfere with our chance to take advantage of this historic opportunity to get the food systems we deserve. The way we frame the discussion may only lead us to replicate the problems we seek to address. This is not an issue of political correctness; it is a matter of obtaining the proper results.

Community groups who are free build networks, not chains, and this often means that residents find "supply chain" or "value chain" constructs limiting. ***Ken Meter*** *suggests we frame food systems work in terms of "value networks." He asks, "should we model our food systems after our economic models, or build economic models that help us construct the food systems we deserve?"*

Privately, I have discussed this with respected colleagues. I've pointed out that the "chain" metaphor is problematic for many of the communities where I work. First of all, it is a linear concept, and linear constructs tend to be less flexible, and less inclusive, than those that describe circles. Second, some people associate chains with captivity, rather than freedom and democracy; chains are usually

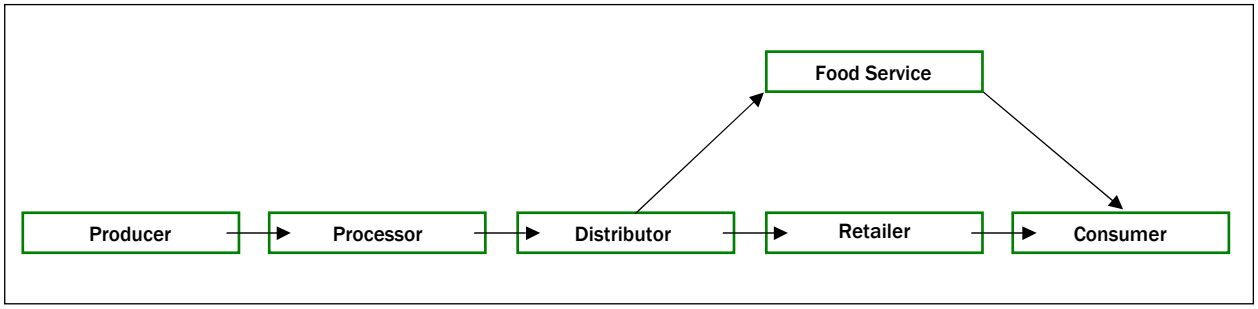
Ken Meter *is president of Crossroads Resource Center in Minneapolis, Minnesota. He has performed 63 local food-system assessments in 27 states and one Canadian province; this information has promoted effective action in partner communities. He served as coordinator of the review process for USDA Community Food Project grants, and has taught economics at the Harvard Kennedy School and the University of Minnesota. He is co-convener of the Community Economic Development working group of the Community Food Security Coalition. A member of the American Evaluation Association's Systems Technical Interest Group, Meter also serves as an Associate of the Human Systems Dynamics Institute. He serves as a contributing advisor to* JAFSCD.

yanked by the powerful at the expense of those less powerful. Third, free communities don't build chains; they build networks, and draw inclusive circles.

Recognizing that the fundamental purpose we have in refashioning food systems is to build strong, democratic communities that know how to feed themselves — no community (or nation) can be self-determined if it imports most of the food it eats — the concept of "supply chain" is problematic. Some have refined this to "value chain," or even "values chain." I prefer a fourth construct: "value network." Residents are already building networks; people are pleased to find a model that encompasses the progress they have already made.

Privately, my colleagues agree with me, but then in a low voice, often add, "Still, we have to use the term 'supply chain,' because that is the industry standard." Perhaps it is time to put this industry standard into the compost pile of history that includes terms such as "The Negro," "The Spanish-American War in the Philippines," and "trickle-down economics." Each was once standard; each has been superseded.

Let's take a look at a typical "supply chain":



I know this chain is a useful construct; I use this in most every speech I make. I have drawn more complicated diagrams, using this as a backbone, in my own work (Meter, 2009, p. 48). Its value as a linear paradigm, it seems to me, is considerable: an economist can parse out different steps in the food supply process and carefully calculate the value added at each step of the process. Its heuristic value as a simplification cannot be denied. This can be a useful framework for conceiving of greater efficiencies.

The chain model also helps us look more deeply at the economics. Although we like to believe that supply and demand always "balance," this diagram shows rather eloquently that supply and demand are not even in conversation with each other. Rather, growers respond to market signals from buyers and brokers, while consumers respond to advertising from retailers and institutions. Without direct negotiations between farmers and eaters, there can be no balance.

Moreover, if you look at the USDA "food bill" data[1] (ERS, annual series) you will find that, despite the one-way arrows pointing to the right on this diagram, the value produced along this chain is sucked into the middle, at the expense of both producers and consumers. Food processors and buyers earned a cumulative revenue of US$13 trillion during the years 1950–2006 — more than three times the revenue farmers earned by selling commodities. Although farm sales doubled during that period and farm productivity more than doubled, farmers earned 19% of the ultimate retail value of food (US$900 billion) in 2006, compared with 41% in 1950, when retail food sales totaled US$44 billion.

So while the chain diagram is useful, it also omits several critical aspects of the food systems we actually live within. While no model is complete,

[1] The USDA Economic Research Service has replaced the "Marketing Bill" series with the "Food Dollar" series; see http://www.ers.usda.gov/Data/FoodDollar/whyreplace.htm

of course, these seem to be important oversights. For one thing, the chain diagram above would suggest that having clean air or water, and fertile soil, has nothing to do with delivering the foods we eat. In particular, the idea that "waste" from the production, processing, or consumption process might be recycled into new fertility for the soil is overlooked. Were these aspects encompassed in the diagram, we would be drawing circles.

Secondarily, the chain construct may make it harder to address other concerns. This diagram does not suggest that large food distributors might make loyalty payments, or kickbacks, to their customers, yet this is standard industry practice. This model tracks cash flows, but not asset-building or ownership. It would be easy, examining this design, to overlook the fact that many primary commodity producers (i.e., farmers) are chronically selling their products for less than the cost of production. It is difficult to point out, using this model, the fact that many of the spendy gourmet foods we can now enjoy at urban markets are produced by migrant labor working at minimum wage. Externalized costs of pollution are, well, externalized. Failing to include many of these costs may indeed show up as "efficiencies" on the supply chain.

The very abstract nature of the chain model also may interfere. It is easy to forget, while pondering this diagram, that "going to scale" is a strategy, not a purpose. If tax policies favor business expansion, measurements of "value added" at each step are altered, but may not be visible on a diagram that does not include public entities. Moreover, narrow definitions of "efficiency" at the firm level often create inefficiencies for the community, but this is difficult to show. Also missing is the role of nonprofits, which may convene diverse players in the system, or frame lasting visions, adding value to the entire system. Since food system practitioners report that building lasting relationships of trust is essential to creating both value and competitive advantage (Meter, 2009), it is striking that these do not appear on the chain.

While the chain diagram is useful, it also omits several critical aspects of the food systems we actually live within.... For one thing, the chain diagram would suggest that having clean air or water, and fertile soil, has nothing to do with delivering the foods we eat.

As a substitute to the chain, I find myself diagramming the food systems work that is already underway in a given community. In each case, the diagram reflects a network, one that is unique to the assets of that specific time and place. Calculating the economics of these networks is complex, but a number of good systems thinkers are devising techniques to do so. In any case, at the community level, I ask for an early conversation about how to measure what matters the most in achieving the community's vision. If we find ourselves describing a linear connection, someone often suggests a way to show how that is part of a circle.

Ultimately, it becomes a matter of hubris. Do we model our food systems after our economic models, or do we build economic models that help us construct the food systems we deserve?

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Midscale food value chains: An introduction

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Abstract
This introductory discussion positions midscale food value chains as business models for a "third tier" in the U. S. food system, distinct from direct marketing to local consumers and global marketing of agricultural commodities. Responding to a growing demand for food that is differentiated from conventional products, midscale food value chains are developing strategic business alliances among small and medium sized farms or ranches and other agri-food enterprises. These supply chain alliances: (a) handle significant volumes of high-quality, differentiated food products; (b) operate effectively at regional, multistate levels; and (c) distribute profits equitably among the strategic partners. Value chain business models place emphasis on *both* the values associated with the food *and* the values associated with the business relationships within the food supply chain. Farmers and ranchers are treated as strategic partners, not as interchangeable input suppliers. Midscale food value chains employ two distinct, multifarm marketing strategies: direct-to-wholesale and direct-to-consumer. Both marketing strategies are based on organizational structures that achieve the necessary volumes of high-quality, differentiated food by aggregating product from multiple farms or ranches. The introduction concludes with a discussion of the challenges associated with developing successful midscale food value chains and of needed research and public policies to support the growth of this third tier.

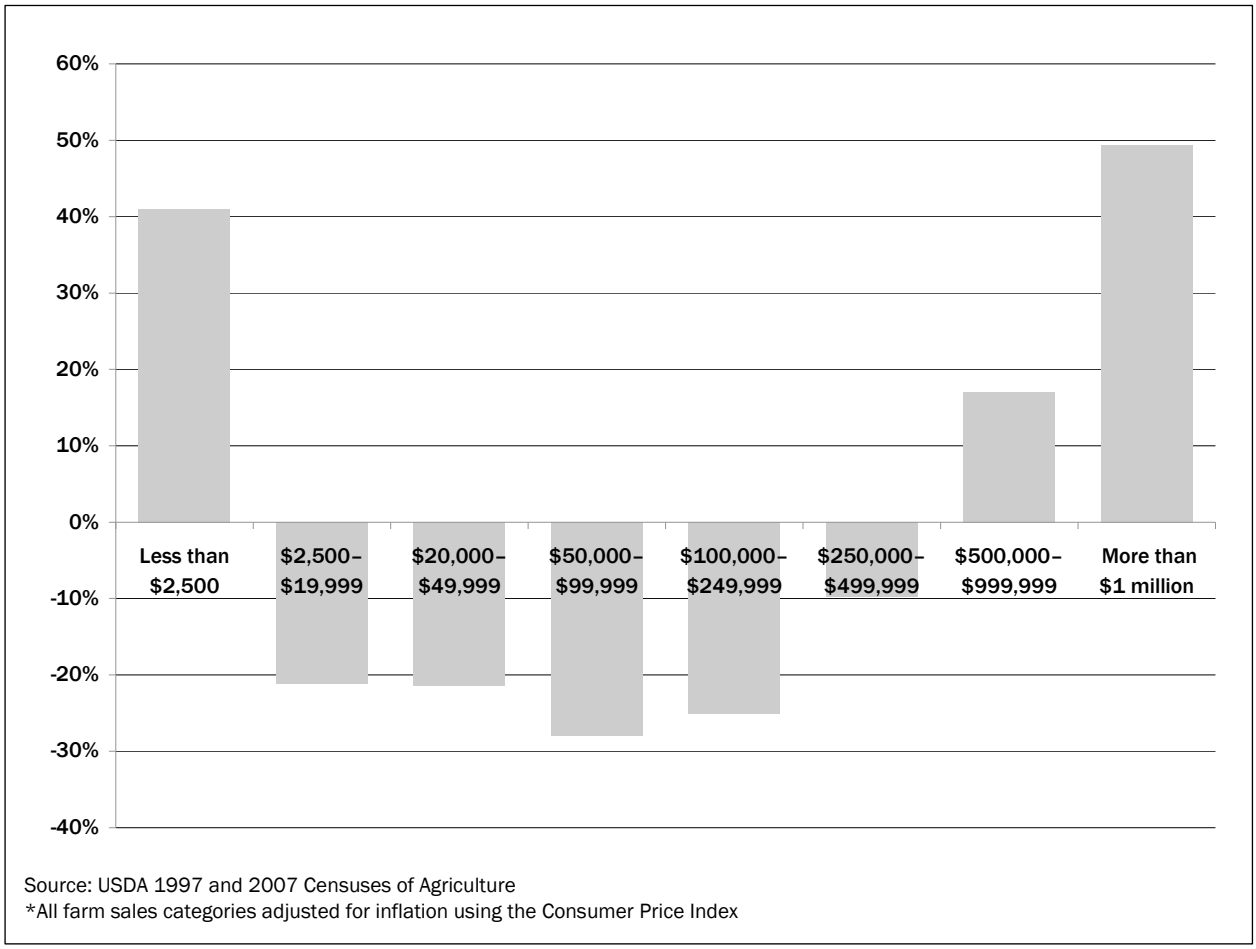
Keywords
agriculture of the middle, differentiated products, equitable distributions, midscale, multifarm aggregation, strategic partnerships, third tier, value chains

Current Dynamics in the U. S. Food System: Rebuilding the Middle

The U.S. food system increasingly is following two marketing paths. On the one hand, some farm and food enterprises thrive by selling food products directly to local consumers. On the other hand, large firms establish supply chains that move food

The authors are members of a research working group associated with the National Agriculture-of-the-Middle Initiative (www.agofthemiddle.org).

Figure 1. The Disappearing Middle: Change in Farm Numbers by Sales Category, 1997–2007*



Source: USDA 1997 and 2007 Censuses of Agriculture
*All farm sales categories adjusted for inflation using the Consumer Price Index

commodities around the world (Kirschenmann, Stevenson, Buttel, Lyson, & Duffy, 2008).

Many small and medium-sized farms and ranches[1] are ill-served by these two marketing options. These farms are often too small to successfully compete *individually* in international agriculture commodity markets, while being too large and/or poorly positioned to directly market food to local consumers. While very small and very large farms have increased in numbers, farms of the middle have been disappearing for decades (Buttel & LaRamee, 1991; Duffy, 2008). Figure 1 shows the national disappearance profile from 1997 to 2007. Despite the loss, farms of the middle still constitute nearly 20% of all farms and nearly 25% of all farm sales (USDA 2009). In addition to their poor fit with available markets, other causes posited for the decline of farms of the middle include lower rates of return on equity compared to very large farms, inability to take full advantage of larger equipment and economies of scale, improvements in information technology that enable commodity-scale farmers to manage large and complex enterprises, and the impacts of federal farm programs (Hoppe, MacDonald, & Korb, 2010).

Historically farms of the middle have been the backbone of the agricultural sector of many rural

[1] Most of these farms and ranches fall into either the "farming occupation farms" or "large family farms" categories of the USDA Farm Typology (USDA 2000). In statistical terms, most generate gross annual sales of between US$50,000 and US$700,000. The term "farms of the middle" will be used in the following discussion to identify these small and medium-sized farms and ranches.

and peri-urban areas of the country. These farms remain important for a number of reasons. Through their ownership, farms of the middle have stewardship responsibilities for nearly one-half of all agricultural lands in the U.S. (Duffy, 2008). A lineage of research indicates that these farms are a key element for increasing socioeconomic vitality in agriculturally dependent communities (Goldschmidt, 1978; Lyson, 2004; Strange, 1989). The renewed vitality of these farms is critical for a diverse, decentralized, and resilient structure of agriculture that is important for national food security (Walker & Salt, 2006).

Recognizing the importance of rebuilding a vital agriculture of the middle in the U.S., a national task force was assembled in 2003 that was composed of farmers, academics, business persons, leaders of nonprofit organizations, and USDA employees. The 22-member task force formulated a threefold approach to rebuilding this important middle sector: (1) new business and marketing strategies, (2) public policy changes; and (3) research and education support.[2] With the goal of developing these three components, the National Agriculture of the Middle Initiative replaced the task force in 2004. The initiative is led by a seven-person coordinating committee.[3]

As part of the initiative's first approach, several on-the-ground supply chain initiatives are pursuing and testing new business and marketing strategies. A public policy reform agenda has been developed, primarily centered on the federal farm bill. The research component of the initiative is organized through a USDA-sponsored, multistate project composed of approximately 20 researchers from land-grant universities as well as other institutions and research organizations.[4]

In the initiative's beginning, several researchers focused their attention on "value chain" business models. These researchers drew from the business literature of other sectors such as automobile and consumer electronics where value chains are defined as "long-term networks of partnering business enterprises working together to maximize value for the partners and end customers of a particular product or service" (Dyer, 2000; Handfield & Nichols, 2002). In the business literature, these long-term interorganizational relationships are also called "extended enterprises," "strategic alliances," "integrated value systems," and "value-added partnerships" (Dyer, 2000; Handfield & Nichols, 2002).

The research also identified significant market openings for these threatened farms of the middle. The research group's primary hypothesis is that shifts are occurring in the country's food system that can provide significant opportunities to prosper for a re-formed agriculture of the middle. Surveys indicate that a growing number of consumers are committed to purchasing food that is unique and differentiated from conventional products. Products may be differentiated by attributes such as organic, grass fed, or regionally sourced (Brady & O'Brady, 2008) or, following Europe's lead in the concept of fair trade, by emphasizing issues of social justice and environmental responsibility (Jaffee, Kloppenburg, & Monroy, 2004).

Progressive leaders in some medium to large food corporations recognize the confluence of their interests with the rebuilding of an agriculture of the middle that can supply these unique products. For example, the former CEO of a large food-service company describes customers as wanting memorable, high-quality food, produced with a farming story they can support, and brought to them through supply chains they can trust (Schnieders, 2004). Restaurants and cafeterias of public and private institutions, e.g., health care facilities, schools, universities, and corporations, are particularly receptive to these types of food products, as are regional supermarkets that seek to

[2] For a detailed discussion of the national task force's threefold approach, see the Key Documents section of the agriculture of the middle website at http://www.agofthemiddle.org
[3] The composition of the coordinating committee is available at http://www.agofthemiddle.org
[4] A full description of the current multistate project is available at http://lgu.umd.edu/lgu_v2/pages/showInfo.cfm?trackID=12816&CFID=102634166&CFTOKEN=10145002

differentiate themselves from their larger national competitors.

Farms of the middle have a potential comparative advantage in these emerging markets. As mentioned earlier, individual direct-marketing farms cannot produce the necessary volumes required for these new markets, and commodity farms are not designed to produce the necessary quality and differentiation. Farms of the middle, on the other hand, have both the capacity and flexibility to collaborate with each other and with other supply chain partners to respond to these expanding markets.

Business models and public policies are needed to effectively connect and support agricultural producers of the middle as they engage these growing markets for differentiated, higher-value food products. Midscale food value chains are one promising business model.

Midscale Food Value Chains: Business Models for a Third Tier in the U. S. Food System

Midscale food value chains are positioned as an alternative to local direct marketing and global commodity marketing: a "third tier." Ideal midscale value chains are strategic business alliances among farms of the middle and other agrifood enterprises that: (a) handle significant volumes of high-quality, differentiated food products, (b) operate effectively at multistate, regional levels,[5] and (c) distribute profits equitably among the strategic partners. Value chain business models place emphasis on *both* the values associated with the food *and* on the values associated with the business relationships within the food supply chain. The overall business model of value chains features close cooperation among strategic partners within the chain and competition between chains doing business in a given product or service sector (Stevenson & Pirog, 2008).[6]

In many conventional supply chains, business relationships are framed in win-lose terms. Relationships are constructed as competitive, even adversarial, whereby each company seeks to buy as cheaply and sell as expensively as possible. While this model may be appropriate for undifferentiated commodity supply chains, it does not perform well for value chains where differentiation is based primarily on product and relationship qualities.[7] Framed in win-win terms, value chains are based on commitments to the welfare of all partners in the supply chain, including fair profits, fair wages, and business agreements of appropriate extended duration.[8] Given the interdependence in food value chains, participants have a strategic self-interest in the performance and well-being of the other partners. In *food value chains farmers and ranchers are treated as strategic partners*, not as interchangeable (and exploitable) input suppliers.

Midscale food value chains distinguish themselves from both direct and commodity marketing supply chains in combining quality and volume, in key business relationships, and in energy savings. For example, farmers and ranchers in these food value chains are positioned as "price negotiators,"[9] as distinct from "price setters" in direct marketing, and as "price takers" in commodity marketing systems. Their good fit with multistate levels of operation makes these midscale food value chains potentially effective contributors to regional economic development (Marsden, Banks, &

[5] For purposes of this discussion, "regional" is defined as multistate. For a more in-depth exploration of regional food systems, see Clancy & Ruhf, 2010.

[6] Employing an Internet search methodology, in 2007 researchers identified 75 food supply chains in three regions of the country that possessed some characteristics of midscale food value chains (Hoshide, 2007).

[7] For a discussion regarding the functions of cooperation in value chains, see Dyer, 2000, or Handfield & Nichols, 2002.

[8] For a more detailed discussion comparing win-win with win-lose business relationships, see appendix A of the four value chain case studies available at http://www.agofthemiddle.org

[9] Farmers and ranchers in successful value chains have reasonable calculations of their production costs and are able to negotiate prices based on acceptable profit margins above those costs. See the Lev and Stevenson article in this issue for examples and more details.

Bristow, 2000). Furthermore, statewide or regional food distribution systems can offer valuable energy savings compared to local and global systems (Pirog, Van Pelt, Enshayan, & Cook, 2001). Finally, midscale food value chains can contribute to a diverse, decentralized, and resilient structure of agriculture that is important for national food security (Walker & Salt, 2006).

While midscale food value chains distinguish themselves from the two other marketing strategies, they also share key characteristics with each. As with direct marketing, value chains share an emphasis on high-quality food products and identification of producers. In common with commodity marketing, value chains recognize the importance of efficient supply-chain management and logistics.[10]

The midscale food value chain model plays out in two distinct versions based on marketing strategies: (1) Direct-to-wholesale[11] marketing to regional supermarkets and food service companies, and (2) Direct-to-consumer food marketing to customers who are the eaters of the products. Both marketing strategies are based on business models and organizational structures that achieve the necessary volumes of high-quality, differentiated food by aggregating product from multiple farms or ranches. *Scale is achieved through collective action rather than through increasing the size of individual farms.*

These versions of midscale food value chains differ in marketing strategy and in types of farms involved. The direct-to-wholesale strategy enables small and medium-sized commodity producers to differentiate, aggregate, and collectively market through direct wholesaling networks. For examples of successful direct-to-wholesale food value chains, see the four case studies on the website indicated in footnote 8 and the Lev and Stevenson article in this volume.

The second midscale food value chain strategy enables smaller producers of differentiated products to aggregate and collectively market through multifarm, scaled-up, direct-to-consumer networks.. Examples include multifarm community supported agriculture farms (CSAs) and multifarm Internet sales enterprises.[12] As a market diversification strategy, individual direct-marketing farms may choose to participate in both direct-to-consumer and direct-to-wholesale value chains.

Challenges in Developing Midscale Food Value Chains

There are significant challenges associated with developing successful midscale food value chains.[13] A great deal depends on the favorable confluence of a number of factors. Research indicates that sustainable midscale food value chains successfully address the following kinds of challenges[14]:

- Finding appropriate value chain partners and developing mechanisms for value chain decision-making, transparency and trust;
- Determining effective strategies for product differentiation, branding, and regional identity;
- Determining appropriate strategies for product pricing based on understanding true cost structures;

[10] The concept of "regional food hubs" is a newly revitalized idea that could significantly facilitate the logistical performance of some midscale food value chains (Barham, 2010).

[11] Direct-to-wholesale moves products through supermarket and food service distribution systems as well as distribution systems that use direct store delivery to multiple stores. Particularly important in direct-to-wholesale food value chains is retention of the product's original identity and/or brand throughout the supply chain.

[12] Good examples include Full Circle Farm and Good Earth Farms. Full Circle Farm is a multifarm CSA that aggregates product from nine Washington organic farmers and delivers food boxes weekly to over 5,000 eaters located from Seattle to Alaska (www.fullcirclefarm.com). Good Earth Farms is a multifarm Internet sales enterprise that aggregates organic, pasture-raised meat products from six Wisconsin farms and delivers frozen meat to customers throughout the country via overnight delivery (www.goodearthfarms.com).

[13] For a similar conclusion based on an analysis of European value chains, see Marsden, Banks, & Bristow, 2000.

[14] See the Lev and Stevenson article in this issue for a discussion of how four successful value chain businesses address these challenges.

- Acquiring adequate capitalization and competent management;
- Developing effective quality control and logistical systems; and
- Developing economic power for value chain negotiations.

Policy and Research Support

In the 2008 farm bill changes were made that benefit midsized enterprises, including a 10% set-aside in the USDA's Value Added Producer Grant program for the development of midtier food value chains, and also a revision of the Business and Industry Loan Program to make local and regional food businesses explicitly eligible for B&I loans and loan guarantees. Needed now is a move by other USDA lending programs to broaden their outreach and lending portfolios to include more midsized farms that are developing new markets. The USDA also should develop crop insurance and disaster-relief programs that compensate farmers who are producing organic or other differentiated crops at their documented market price. At press time, other policy items are under consideration for inclusion in the 2012 farm bill discussion. Given the current political atmosphere associated with the federal budget, significant restraints exist related to new or expanded policies or programs that involve increased funding.

Since the concept of midscale food value chains has been highlighted by the National Agriculture of the Middle Initiative only in the last 7 to 8 years, there is a small but growing base of research for supply chain actors to utilize.[15] Much of this research is evidenced through articles in this issue. Within the USDA's new National Institute of Food and Agriculture (NIFA), the SARE program and the competitive grants program on the Prosperity of Small and Medium-Sized Farms have funded much of this research, but these programs themselves are funded at levels far below demand. A recent report offers an important but still short list of needed research projects that will contribute important information to value chain actors and other interested parties (Clancy & Lehrer, 2010). These include research on:

- The development of new farming and ranching systems that produce high-quality and differentiated food, reduce dependence on petroleum, and are resilient to climate shocks;
- Key economic components of midscale food value chains, including profit margins for food processors, distributors, and retailers, as well as long-term producer income comparisons with income from commodity prices;
- How partners come together to explore and develop midscale food value chains;
- How the dynamics inside food value chains are different when the driver of the chain is different, e.g., producer-driven versus distributor- or retail-firm-driven value chains;
- How to increase the participation of food consumers in value chain decision-making;
- How midscale food value chains contribute to regional economic development;

[15] In addition to the case studies available at http://www.agofthemiddle.org, see the following case studies:

- *From competition to cooperation: Value chains as a tool for agricultural development,* by Adam Diamond and James Barham, at http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELPRDC5087761&acct=wdmgeninfo;
- *SYSCO's journey from supply chain to value chain: 2008–2009 final report,* at http://www.wallacecenter.org/our-work/Resource-Library/Innovative-Models/Sysco%20Case%20Study %202009.pdf; and
- *Regional value chains in the Northeast: Findings from a survey,* by Kate Clancy and Kathy Ruhf, at http://api.ning.com/files/WAFzvztbJNjQVIglsHHegv*VwDfNbVjqOfGweByGwziZ7kR1j-naG721B9E0rHkx88*OpwwE87k0VuMFSWdQoucWVWFSowT/NESAWGValueChainsReport12710updated.pdf

- How midscale food value chains can interface with emerging regional "food hubs"; and

- How existing public policies can be combined to support the development of midscale food value chains.

Conclusions

The research and experiences reported in the rest of this issue suggest that successful mid-scale food value chains are built on three foundations. The first is appropriate volumes of high-quality, differentiated, market-engaging food products; coupled with value-adding stories of people, land, and practices. The second foundation involves strategic business partnerships based on trusting, transparent, and win-win relationships. Finally, successful food value chains exhibit effective supply chain management and logistics, including product marketing, aggregation, processing, distribution and accounting. Future research is expected to deepen our understandings of these promising new food business models and supply chains.

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Access to information and farmer's market choice: The case of potato in highland Bolivia

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Abstract

Potato incomes are critical determinants of Andean farmers' household well-being. Efforts to improve incomes of producers should recognize the role of access to market information. In highland Bolivia, market information has entered the digital age. Cell phones are ubiquitous, and networks lubricated by cellular technologies are affecting traditional means of gathering information. Andean markets are characterized by the heavy involvement of women. Lower information costs could change market choices and roles of men and women. This study explores the effects of information access on market choice near Cochabamba. It diagnoses the roles of men and women and investigates decision-making and changes in it.

The research confirms the importance of gender and cell phones to market access. Market decisions are made jointly by men and women, but women take a leading role in marketing. Women dominate marketing by negotiating favorable prices with buyers who are also women. Marketing networks have not changed substantially since the introduction of new information technologies. While cellular technology has broadened access to information and quickened its flow, it has not fundamentally changed network structures.

The study provides recommendations about improving competitiveness of small-scale potato producers: (1) increasing access to information by expanding the information content of existing networks; (2) expanding cell phones access; (3) consideration of the important roles intermediaries play; and (4) more technical support for market and information access.

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Keywords
Bolivia, cell phones, gender roles, information, potato market, social networks

Introduction

Markets are transmission mechanisms between growth in the wider economy and the lives of the poor. They help determine the speed and extent of poverty reduction and create linkages between local, national, and global economies. However, markets can fail, and they often fail for the poor (Department for International Development (DFID), 2000). Markets may fail when some are unable to access them or can only access them on unfavorable terms. In rural areas of developing countries, markets may be too thin — leading to market power by agents — or the risks and costs of participating may be high (Hussain, 2003). Imperfections in information markets make costs of obtaining reliable information prohibitively high, creating welfare losses for participants and barriers to entry for others (DFID, 2005).

In the Andean region of South America, most communication is still oral, and people obtain their information from informal social networks. These networks have become expressions of individual and group social capital that support members in production and marketing. Although social networks continue to be important for acquiring information, they are being transformed by forces such as increased market integration (Escobal, 2001). As producers in remote areas become more integrated into regional markets, the value of information to them increases and new information sources emerge. To increase incomes and reduce vulnerability, disadvantaged populations need better access to information and markets (Alwang, Siegel, & Jorgensen, 2001).

Market failure is more likely to be severe and distorting when there is asymmetric or missing information (Tracey-White, 2003). Improved telecommunications can lower the cost of acquiring information, lower risks, and improve market efficiency. These services can offer previously unconnected farmers access to up-to-date price information and broaden market participation (Ferrand, Gibson, & Scott, 2004).

Time and money can be saved by substituting travel to markets with telecommunications, and these savings can be especially important for small-scale sellers. Information and communication technologies (ICT) allow potential participants to gather and communicate information through means such as radio, cell phones and computer networks. ICT reduce costs of connecting buyers and sellers. These cost savings, combined with quick access to information and instant communication with trade partners, open new market possibilities (Lyon, 2004).

Gender may also affect market access; networks linking farmers to markets may be dominated by men or women. Gender biases can affect the quality of information received as well as bargaining power. Knowledge and information embodied in different stages of a value chain may be gender-specific. As a result, market access can be affected by the channels by which men and women receive information. In fact, some evidence points to significant gender disparities in access to ICT (World Bank, 2008).

Bolivia's rural reality is framed in traditional agriculture characterized by small production units, traditional technologies, and low productivity (Alemán, 2002). Throughout the Andes, men and woman jointly participate in agricultural activities, and women's contribution to food production is significant (Grynspan, 1999; Duryea, Jaramillo & Pagés, 2002). In rural highland Bolivia, agriculture is the main economic activity of women, and about 84% of the female working population is engaged in agricultural-related activities (Instituto Nacional de Estadistica (INE), 2000; Alemán, 2002). Women dominate Andean potato markets as buyers and sellers, but female potato producers tend to confine themselves to local markets, where access and networks are easier for them to negotiate. Reliance on traditional networks in familiar markets, however, may limit the ability to receive higher prices. Furthermore, discriminatory cultural attitudes may prevent women farmers from entering higher-valued market chains (World Bank, 2007).

This study's three objectives were to explore the role of social networks and gender in market information in potato markets in the Jatun Mayu watershed, located in Tiraque Province, near Cochabamba, Bolivia. The objectives are to (1) analyze and describe the roles of men and women in potato production and marketing; (2) understand how marketing decisions are made and how gender roles and access to information affect these decisions; and (3) explore the effects of new information technologies on gender relations, access to information, and marketing decisions.

Literature Review

The topic of market access has received little attention in literature on Bolivian agriculture. Reports include descriptions of crop supply chains with information about prices, infrastructure, and market locations (Guidi & Mamani, 2000). Little is known about why producers choose specific markets and how access to information affects market choices. There is evidence from Bolivia of gender biases in market access, but the specific relationship between gender and marketing strategies has received little attention (Figueroa, 2008).

Women deserve special attention when addressing agricultural market access because they make up a disproportionate share of the poor in developing countries (Cox, Farrington & Gilling, 1998), and they make up a large proportion of poor farmers (Doss, 2001). In addition, women are at a disadvantage compared to their male counterparts because of lower levels of asset ownership; higher stress on their time; less secure property rights, including formal titles to their land; and less access to markets, extension, and new technology (Quisumbing & Pandolfelli, 2010).

There are high hopes that ICT can play an important role in reducing gender inequalities (Balakrishnan, 2002). ICT services have proven effective in bringing market information to both men and women. There are two main themes in the literature on gender and marketing decisions related to ICT: (1) access by women to new communications technology, and (2) the "gendered" nature of market knowledge.

Compared to men, rural women are less likely to own communication assets such as a radio or cell phone (World Bank, 2008). Reports indicate the presence of gender differences in access to technologies, but these reports are hampered by lack of reliable statistics on women's use of ICT in developing countries (International Telecommunication Union (ITU), 2000, 2001). ICT clearly lower the cost of accessing information and, thus, should be relatively egalitarian in their impacts on market access, but if asset or cultural barriers reduce women's access, this cost reduction may not benefit women (Balakrishnan, 2002).

A key determinant of the impact of information-enhancing technologies is the degree to which market knowledge is "gendered" or situated (Gururani, 2002; Sachs, 1996). For example, enhanced information may have different values to men and women because the latter value different attributes in the marketing process, such as long-lasting ties to traditional marketing agents or risk-reducing social ties (Rubin, Manfre, & Barrett, 2009). Under such circumstances, more freely flowing information to women is likely to have a different impact on market outcomes compared with information flowing to men.

Intermediaries play an important role in Bolivian potato markets by pooling risk, providing financial and technical services, storing goods, and transporting and organizing sales (Jones, 1985; Medeiros, Crespo, & Sapiencia, 2007). Some evidence indicates that intermediaries abuse poor potato producers by exploiting asymmetric information and market power (Guidi & Mamani, 2000). Competition might increase and intermediaries' market power might diminish if information were more readily available to the farmers themselves (Eggleston, Jensen, & Zeckhauser, 2002). Alternatively, information might contribute to declining importance of social networks, depending on the degree to which the knowledge and the networks are gendered. ICT can improve the competitiveness of potato markets by reducing price dispersion across spatially separated markets, lowering transactions costs, and reducing gender

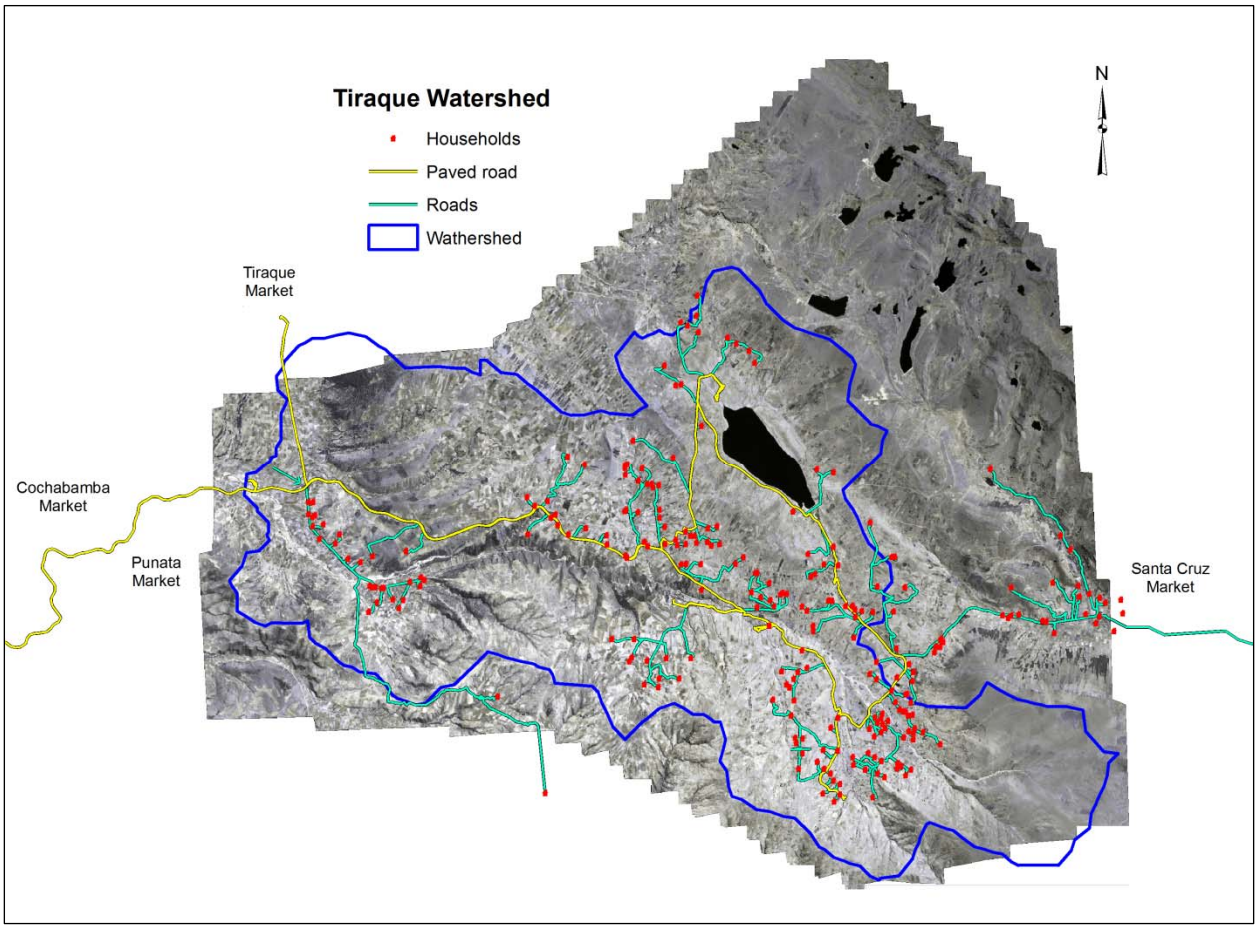
differentials in information access (Hafkin & Taggert, 2002; Jensen, 2007; Lyon, 2004).

Information and communication technologies have helped remove information asymmetries that often prevent the poor in remote areas from accessing markets (Von Braun, 2009). Studies have shown a wide range of positive impacts of ICT, including increased market integration and improved livelihoods (Leff, 1984; Tschang, 2002; Tye & Chau, 1995). Since information costs are not proportional to distance to markets and the marginal cost of providing information to new players is near zero, ICT can become a crucial stimulant to market participation.

Worldwide, ICT services have proven effective in bringing market information to men and women (World Bank, 2008). Women can benefit more from these services because they have less mobility and literacy, and may be excluded from traditional information networks. In some countries, however, women face barriers of unequal access to ICT as cultural attitudes discourage their use of technology (World Bank, 2008).

Aker (2008) studied the impact of the introduction of cell phones on grain market performance in Niger between 2001 and 2006 and found that the primary effect of cell phones was a reduction in search costs. Internet kiosks providing price information to soybean farmers in India were found to be associated with an increase in price received of 1% to 5% (Goyal, 2008). In Bangladesh, Bayes (2001) reported that agricultural output prices are higher when villages are equipped with pay phones.

Figure 1. Map of Study Region: Tiraque, Bolivia



In Ghana, access to mobile phones was found to make traders more efficient by reducing transaction costs (Overa, 2006). Jensen (2007) found that cell phones stimulated sales across markets by fishermen in India; mobile phones helped fishermen choose markets to maximize their price received, reduce waste from spoiled fish, and increase profits. Cell phones increased the probability of banana sales in Uganda by 20% (Muto & Yamano, 2009). In Bolivia, access to cell phones is widespread, yet little is known about how such access affects market decisions and household well-being.

Applied Research Methods

The study area is located in Tiraque Province, about 70 km (43 miles) from Cochabamba, Bolivia. The watershed covers 117 km² (45 square miles), ranges 3,000-4,200 meters (9,843–13,780 feet) above sea level, and comprises 14 communities with a population of approximately 3,000 (see figure 1). Economic activities include small-scale agricultural production and livestock. Large volumes of crop output are sold, and household income depends critically on these sales. Marketing problems include high transactions costs, low prices, lack of market information, and weak bargaining power (Sustainable Agricultural Natural Resource Management (SANREM), 2007).

The main crop in the area is potato, which is sold in the rural markets of Tiraque and Punata, and in the urban markets of Cochabamba and Santa Cruz. In general, urban markets offer higher prices but are located far away, implying high transportations costs and more risk. As a result, few farmers sell there, and most farmers consider Tiraque to be their main sales point (SANREM, 2007). Verbal communication remains the most important form of information acquisition, but radio programs transmitting market information in Quechua (the most common language in use in the area) and cell phones are gaining prominence.

Potato production and marketing are important for farmers in the area, but they face market-level constraints, especially lack of information. Anecdotal information shows that cell phone technologies are affecting market dynamics. The area offers an ideal setting for exploring the effects of access to information through cell phones and gender relations on market performance.

Methods

Our analysis is based on qualitative information supplemented with a household survey. Rapid market appraisal (RMA) tools and individual household case studies are used to gather information at different stages of the potato market chain. For the case studies and household survey, we chose households with access to cell phone signals and others without access to cell phone signals. This stratification allows us to compare differences based on access.

Qualitative methods help us observe decision-making through participants' eyes and provide insights into and explanations behind marketing decisions. The quantitative and qualitative methods complement each other. RMA provides an effective way of analyzing the potato marketing system. Our RMA was based on methods developed by Holtzman (2003) and relied on semistructured interviews conducted between February and July 2008 with key informants at different links of the value chain. Four types of interviews, differentiated by actor, were used. In total, we interviewed 25 key informants, including farmers, wholesalers, retailers, and indirect actors (staff of nongovernmental organizations (NGOs), local governments and extension offices). The RMA identifies functions at each point in the chain, prices, market constraints and opportunities, and investigates roles that cell phones and gender play within the chain.

We also conducted case studies (CS) of six potato-producing households, three with access to a strong cell-phone signal and three without. This method provides deep understanding of the subject by addressing questions of how and why, and contextualizes findings from other methods (Yin, 2003). The case studies were conducted in April through July 2008 and included semistructured interviews, secondary data, direct observation, and participatory tools. Interviews focused on the dynamics of marketing decision processes, the

influence of access to information on marketing decisions, and gender roles.

The qualitative analysis was complemented by analysis of a random household survey. The survey contained nine modules covering household demographics, education, participation in the labor force, agricultural practices, assets, marketing activities, and measures of income and household consumption. It was administered at the start of the 2008 growing season by four bilingual enumeration teams composed of men and women. The total number of households for which complete data were obtained was 303, including 164 with access to cell-phone signals and 139 without such access. We estimated a multinomial logit model that treats market choice as a function of a set of independent variables including access to a cell phone.

Table 1. Summary Statistics from Household Survey in Tiraque, 2007 (*N*=303)

Variable Description	Mean (SD)	*Cell phone ownership*	
		Yes	No
		Mean (SD)	Mean (SD)
Age of household head	47 (15)	45 (13)	49 (16)
Members per family older than 15	6 (3)	6 (3)	5 (3)
% female headed households	14% (35)	12% (32)	17% (37)
% household heads literate	82% (39)	86% (35)	77% (42)
% households receiving a loan	18% (39)	25% (44)	11% (32)
% households owning cell phones	50% (5)		
% households owning radio	83% (37)	92% (27)	74% (44)
% households with access to cell-phone signal	46% (50)	90% (30)	0% (0)
Farm size (hectares | acres)	2.36 | 5.83 (3.14 | 7.76)	2.87 | 7.09 (3.63 | 8.97)	1.83 | 4.52 (2.44 | 6.03)
Number of plots	5 (2)	6 (3)	5 (2)
% households with access to irrigation	73% (45)	77% (42)	69% (47)
Total quantity of potato produced (kg | lb.)	6,897 | 15,205 (7017 | 15,470)	8,590 | 18,938 (8350 | 18,409)	5,169 | 11,396 (4765 | 10,505)
% households attending Tiraque market	75% (43)	73% (45)	77% (42)
% households attending Punata market	43% (50)	42% (50)	44% (50)
% households attending Cochabamba market	23% (42)	26% (44)	19% (40)
% households attending Santa Cruz market	7% (26)	12% (33)	2% (14)
% households selling at farm gate	1% (6)	1%(8)	0% (0)
Distance to Tiraque (hours)	0.67 (0.19)	0.60 (0.17)	0.73 (0.18)
Distance to Punata (hours)	1.31 (0.18)	1.26 (0.17)	1.37 (0.16)
Distance to Cochabamba (hours)	2.45 (0.25)	2.37 (0.21)	2.54 (0.25)
Distance to Santa Cruz (hours)	12.35 (0.27)	12.43 (0.22)	12.27 (0.28)
Distance to nearest paved road (hours)	0.05 (0.09)	0.05 (0.08)	0.05 (0.09)
Gross income from potato sales (Bolivianos)[a]	6,715 (9018)	8,650 (11037)	4,740(5725)

Note: variables reported here were used in the market access model whose results are shown in table 4, appendix. The percentages reported here were derived from categorical (0/1) variables and those variables are used as dummy variables in the table 4 analysis.
[a] US$1.00 = 7 Bs (bolivianos)

Results

The average household in the watershed has six members, about three of whom are working age (table 1). All respondents speak Quechua; most men also speak Spanish. Literacy is relatively high (82%) and in our RMA and CS all interviewees were literate. The primary economic activity is small-scale agriculture, with an average holding size of 2.4 hectares (5.9 acres), but production is spread across many plots. Potato is the main source of food and income; fava beans, cereals, and vegetables are also common. Approximately 14% of households are headed by women. These households have on average 1.5 hectares (3.7 acres) less land than men, and the limited resources do affect potato production and sales. The survey showed that women-headed households produce 46% less than those headed by men.

About 70% of gross income depends on potatoes. Some farmers borrow to cover potato production costs, but only 18% of surveyed farmers borrowed from formal sources (table 1). Some receive loans from wholesalers, but most self-finance their input purchases. The survey also showed the importance of secondary economic activities, such as agricultural and construction labor, and transportation.

The CS interviews uncovered commonly encountered problems, such as limited access to land and labor, poorly maintained roads, and deficient market services and infrastructure. These interviews also showed that migration has reduced the male labor pool in Tiraque, which in turn has increased wages and female participation in activities that were previously exclusively male. Female participation in potato production activities has broadened into pest-control and other activities that had formerly been the exclusive purview of men. Migration also generates remittances and motivates the use of cell phones as a means of maintaining contact between families. Five of six CS families reported purchasing cell phones initially to maintain contact with migrating relatives. (Table 2 contains CS descriptive statistics.)

The case study and RMA interviews asked about potato marketing decisions. The quantity of potato produced clearly influences market decisions. The survey showed that households sell about 70% of their production, using the rest for self consumption and seed. Tiraque is by far the most common sales

Table 2. Summary Statistics of Case Study Families

Variable Description	CS-1	CS-2	CS-3	CS-4	CS-5	CS-6
Families*	I.Z.	L. O.	O.D.	S.C.	J.V.	P.A.
	A.M	B.F.	S.M.	C.M.	R.A.	M.R.
Community	Toralapa Baja	Damy Rancho	Cebada Jich'ana	Sankayani Alto	Kayarani	Koari Alto
Market(s) where potatoes are sold	Tiraque	Tiraque, Punata	Santa Cruz, Cochabamba	Tiraque	Tiraque, Punata, farm gate	Tiraque, Punata, Santa Cruz
Total quantity produced (kg | lb.)	1,950 | 4,299	2,312 | 5,097	7,000 | 15,432	8,700 | 19,180	1,500 | 3,307	5,232 | 11,535
# of family members	6	5	6	7	5	11
# of plots owned	3	2	3	3	3	8
Farm size (has | acres)	0.25 | 0.62	0.22 | 0.54	1.50 | 3.71	1.05 | 2.59	0.30 | 0.74	4.41 | 10.90
Age	28	26	28	43	65	51
Literate	Yes	Yes	Yes	Yes	No	Yes
Access to loan	Yes	No	Yes	No	No	No
Cell phone ownership	Yes	Yes	No	Yes	Yes	No

* Initials of family members are used to maintain confidentiality.

point, followed by Punata (table 1). Distance and travel time are related to market choice; Santa Cruz is the most distant market, and relatively few farmers sell there. RMA interviewees stated that they only go to Santa Cruz when they are certain that the price is substantially higher than in Tiraque and when they have large quantities to sell. The CS households and RMA respondents stated that marketing in Santa Cruz is gradually increasing with more access to information. Farmers view increased marketing to Santa Cruz as a positive trend.

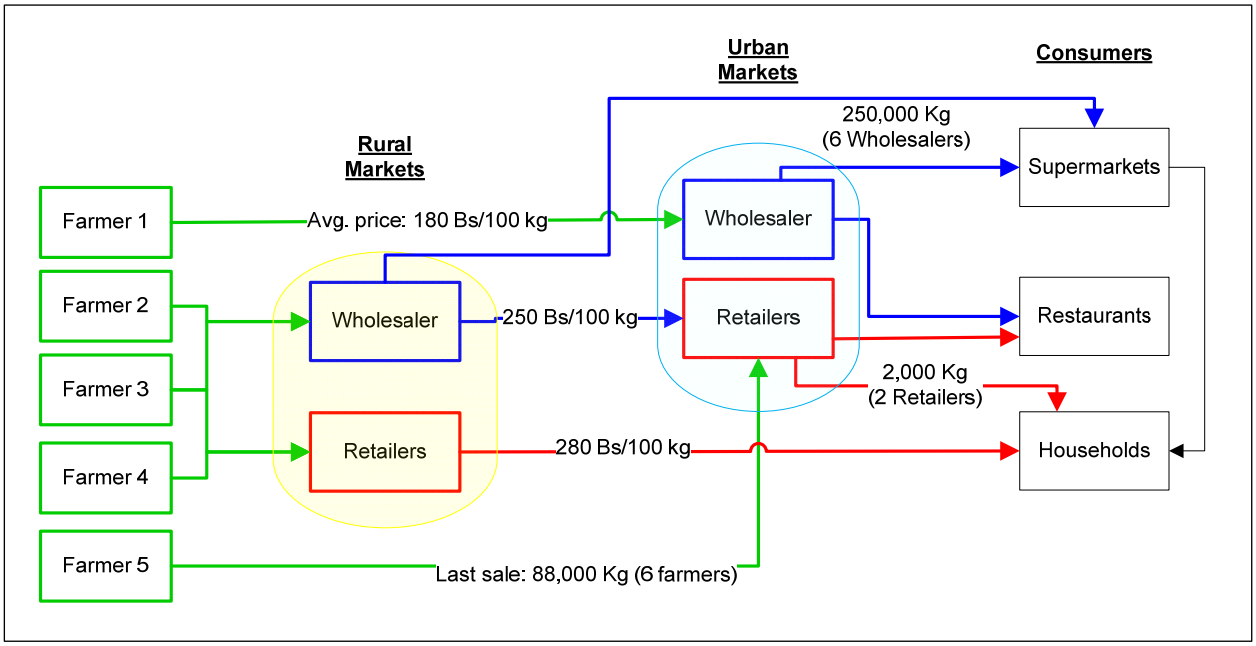
Farmers have different degrees of access to information about prices and markets. The CS interviewees reported that the principal means of gathering market information is through cell phones and radio. They revealed a subtle gender-related attribute of cell-phone ownership: household members consider the cell phone to be a joint household asset. In none of the cases did we hear that the man or woman "owns" the cell phone. Despite this finding, as we see below, men control access to cell phones for certain uses. The survey found that 50% of households own at least one cell phone, and many who do not state they have access to cell phones through their social networks. More than 80% of households own a radio, also an important source of market information (table 1).

Potato Markets

We identified two potato marketing channels through the RMA (see figure 2). The first begins with purchases at the farm gate, in which the producer waits for the wholesaler to collect the product, and producers are paid in cash. This situation limits the ability of the seller to negotiate with the wholesaler. In the last 10 years, as transportation has become more accessible and information about conditions in markets more widespread, this practice has been abandoned, and less than 1% of surveyed households and one out of six families interviewed during the CS sell at the farm gate.

The second channel the RMA identified is composed of farmers delivering their potatoes to market. Producers transport their own crop using public transportation (buses, rented trucks or taxis), their own transportation, or by joining with other farmers. At the market, they sell directly to wholesalers or retailers. Wholesalers can be classified into two types: (1) those collecting potatoes

Figure 2. Potato Market Chain in the Tiraque Region



Source: RMA and case study analysis.

Table 3. Characteristics of Tiraque-Area Potato Markets

	Rural Market		Urban markets	
Characteristics	**Tiraque**	**Punata**	**Cochabamba**	**Santa Cruz**
Schedule	Thurs.–Fri.	Mon.–Tues.	Mon.–Sat.	Every day
Highest price	300 Bs/100 kg (June–Aug)		400 Bs/100 kg (July–Oct)	
Lowest price	60 Bs/100 kg (April–May)		100 Bs/100 kg (April–May)	
Average time to market	30 min.–1 hr.	1–2 hrs.	2–3 hrs.	10–12 hrs.
Transportation cost[a]	2.5–4 Bs/100 kg	4–8 Bs/100 kg	8–10 Bs/100 kg	10–20 Bs/100 kg
Market sales fee[a]	2 Bs/100 kg	3 Bs/100 kg	0	2 Bs/100 kg

Source: RMA. [a] US$1.00 = 7 Bs (bolivianos)

from rural markets; and (2) those who have shops in urban markets and wait for farmers to come to them. Both types resell potatoes to retailers and consumers. The RMA found that 80% of buyers in the rural and Cochabamba urban markets are women. In Santa Cruz, female and male participation is more balanced, but women still predominate as buyers.

The Tiraque market is among the largest potato markets in rural Cochabamba. More than 2,000 producers from more than 110 communities attend this market (see table 3). The Tiraque market has about 20 large wholesalers, only five of whom are men. An important feature of the Santa Cruz market is that it is the only market where the municipality obligates both buyers and sellers to weigh the potatoes. This provision allows for exact pricing, but reduces room for negotiation. In the other markets, weight is estimated according to the size of the bag, and sales-price negotiations often include discussions about the size of the bag.

Although few potato farmers own their vehicle, transportation is widely available. Transportation costs depend on the distance and quantity of goods transported. According to the household survey, the average cost of leasing transport over all markets was 7 bolivianos[1]/100 kg. Since the fixed costs of obtaining market information can be spread over higher volumes when the quantity transported grows, larger-scale farmers are more likely than small-scale farmers to travel to more distant markets. Because roads are in various states of despair and poorly maintained, time to markets can vary greatly. We found from the CS and the RMA interviews that farmers reduce their market-related risk and transaction costs by using cell phones to coordinate transport and market trips.

Farmer Market Choice

Interviews with selling households in the CS and RMA indicate that market choice is determined by the quantity produced, distance to markets, degree of paved roads, transportation costs, expected prices, quality requirements, access to information, and market management conditions. These determinants of market choice were validated using a multinomial logit model (MNL) applied to the survey data. This model predicts the probability that a household chooses one of five market choices (each of the four markets or multiple markets) as a function of the independent variables.

The market choice model shows that access to cell phones, availability of a cell-phone signal, distance to the Tiraque and Santa Cruz markets, access to a paved road, and farmer age all influence market choices[2], but have different impacts depending on

[1] US$1.00 = 7 Bs (bolivianos)

[2] These results are shown in table 3. This table shows the marginal effect estimates, interpreted as the change in

the market. The results are all logical and were confirmed with CS interviews. For instance, older farmers are more likely to attend closer markets. However, when older farmers own cell phones, they are less likely to go to Tiraque and more likely to go to farther markets.

Farmers with larger quantities to sell and better access to information are more likely to sell in the more distant Santa Cruz market. The total quantity of potato produced is a statistically significant determinant (at a 10% confidence level) of the probability of sales to Santa Cruz. Better access to cell-phone technology and transportation were also statistically significant determinants of probability of sales in distant urban markets. Cell-phone ownership is associated with an increased probability of going to urban markets — by 2.5% in the case of Cochabamba, and by 7.2% for Santa Cruz, all else constant. This result is confirmed by the qualitative analysis, which found that cell phones have become important marketing tools for farmers. CS and RMA respondents highlighted the role of cellular technologies in reducing marketing risks.

Access to cell-phone signal does not have a large effect on the ability to use cell phones to obtain market information. Even in areas without cellular signals, farmers still use cell phones. The CS showed that they employ several strategies for obtaining access to signals, including climbing to nearby hilltops and traveling short distances.

Wholesalers

The RMA shows that wholesalers have good knowledge of markets, long-term experience in the potato business, comprehensive market information, strong social networks, and limited economic power. They are aware of prices paid by other market actors and use this information during negotiations with sellers. The wholesaler network is dominated by women. Although some male buyers are found, they are usually employed by women, and women make the purchasing decisions. Through their contacts with other women in the market, intermediaries assume and pool risk, reducing individual seller (farmer) risk and allowing the markets to be more efficient.

The CS and the RMA responses showed linkages between buyers and sellers to be long-term; selling households and market intermediaries report relationships spanning multiple generations. Nevertheless, trust is conditional; sellers claim that wholesalers do not provide accurate market information, and wholesalers claim, in turn, that farmers hide lower quality potatoes within potato sacks.[3] Both factors increase bonds between buyers and sellers since the parties have incentives to deal with familiar counterparts. Linked contracts, such as buyer-provided credit, further solidify bonds between buyers and sellers. Even though only 3% of the surveyed farmers reported access to loans through wholesalers, the RMA indicated that many farmers received money and inputs (e.g., seeds, fertilizers, and transportation) on a regular basis from wholesalers. These links imply conditions; for instance, farmers who receive services from intermediaries claim to have less ability to influence the prices they receive.

Although most farmers have long-lasting bonds with their wholesalers, they state that they are frequently exploited. One CS respondent voiced the following: "Wholesalers do not work as hard as we do, they just buy potatoes at lower prices and sell them at higher prices, and without much work they earn high profits." CS and RMA farmers state that even though there is substantial negotiation and they do their best to obtain high prices, wholesalers are able to keep prices low. Sellers perceive a power imbalance; this imbalance is most pronounced in Santa Cruz, where long travel distances preclude sellers from withdrawing their potatoes from the market.

Indirect Actors

The RMA interviews revealed several indirect actors who focus on helping farmers with production activities by providing inputs and training

probability associated with participating in each market given a one-unit change in the independent variable.

[3] Potatoes are sold in 50 kg sacks and in all markets except Santa Cruz the sack, not its weight, is the unit.

(such as the Foundation for Promotion and Research of Andean Products, or PROINPA), but few institutions in the area assist with marketing activities. An Agricultural Product Market Information System (SIMA) was created in 2004 by a private foundation, the Foundation for the Development of Agricultural Technology of the Valleys, or FDTA-Valles. SIMA collects and disseminates market information through the radio. This information is intended to support farmers in marketing. All the farmers we interviewed listen to this show.

Market Negotiations

Even though market information flows freely, negotiations between farmer/sellers and intermediaries are not easy. The RMA interviews showed that farmers sense that they are at a disadvantage, and find it difficult to follow through on the ultimate threat — returning from the market with their potatoes. Thus, before they go to the market, they determine an initial reference price that they use during negotiations. This price is based on production costs, information on prices received from SIMA, discussions with neighbors, family and friends, and cell-phone calls to friends, relatives, and others.

The main innovation provided by the cell phone in this process is to enable sellers to acquire more up-to-date information on prices, and to obtain, on a real-time basis, information on volumes and conditions in multiple markets. CS interviews and discussions with RMA participants found that sources of information, however, are almost always the same as were used prior to the introduction of cell-phone services.

Independent of the relationship between farmers and intermediaries, the time taken to negotiate a final price in rural markets can vary from half an hour to 2 hours. In urban markets, the RMA participants report less give and take compared to rural markets and prices are arrived at in less time. Almost all negotiations are heated, and this is one reason why males say they avoid it. Male and female interviewees state that women are better negotiators and many men feel that strong arguments with women buyers are not consistent with culturally defined male roles. This can be clearly observed in the following quotations from a CS interviewee:

> Since I can remember in the markets, there has always been greater participation of women (farmers and intermediaries). That is one reason why I prefer that my wife sells potatoes in the markets. She expresses herself better than I do, knows how to talk to intermediaries, and thus sells faster and at higher prices. Besides, it is not viewed favorably for men to discuss or argue with women. —*L.O. & B. F.*

> In markets there have been always more women than men, because they sell better than us and have more ability to talk and discuss with the rankeras [intermediaries — note the use of the female noun implies that rankeras are women]. We just help them transport potatoes. Also since most rankeras are women, I prefer that my wife is in charge of the sales because, between women there is better understanding. The rankeras are always trying to bother and intimidate us [men] by calling us names so they can pay us lower prices. —*I. Z. & A.M.*

Through the RMA, we found that factors affecting negotiations are the origin and quality of the potato, the age and gender of the seller, the type of relationship between buyer and seller, and access to information. When farmers and intermediaries have long-term relationships, it is rare that they do not reach agreement. Wholesalers reportedly take advantage of the old, the young, and men. Respondents all claim that men are not good negotiators in potato markets.

Gender Roles and Decision-Making

Even though the entire family participates in potato production and marketing, responsibilities are differentiated by gender. The CS interviews show that men take a leading role in potato production and women in marketing. Marketing is culturally a woman's purview, and the tradition is reinforced by the ability to negotiate favorable prices. Relationships with wholesalers, most of

whom are women, build on this advantage. Most men we interviewed in the CS and RMA stated that they are verbally abused by female wholesalers if they engage in negotiations. Wholesalers, in turn, state that they prefer to negotiate with men since they are easier to convince and more easily intimidated. A representative comment from the RMA is illuminating:

> The Tiraque market opens every Friday, and typically entire families come to visit it, since it is a social event. Overall, more women are present. When I sell potatoes, I always come to the market with my wife to help her with transport and security. She is in charge of sales. I prefer not being involved in sales, because most wholesalers are women and they are always trying to make us, men, feel bad. They call us names, say that our wives are our bosses, and ridicule us for getting involved in a woman's activity. Therefore, I let my wife talk to them because she is not easily intimidated and a man should not argue with a woman. Also my wife is in charge of handling the money from the sales.

A high proportion of women is a well-known feature of Andean markets. According to all the RMA interviewees, potato markets are controlled by women. Basically the nature of potato marketing networks can be summarized by the saying: "Among women, there is a better understanding." Gender differentiation is most pronounced in rural markets where negotiation skills are needed most. The RMA found that males prefer to attend urban markets, where there is less bargaining. Since having cell phones increases the likelihood of participating in urban markets, male roles in marketing may increase over time in this area.

Social Networks

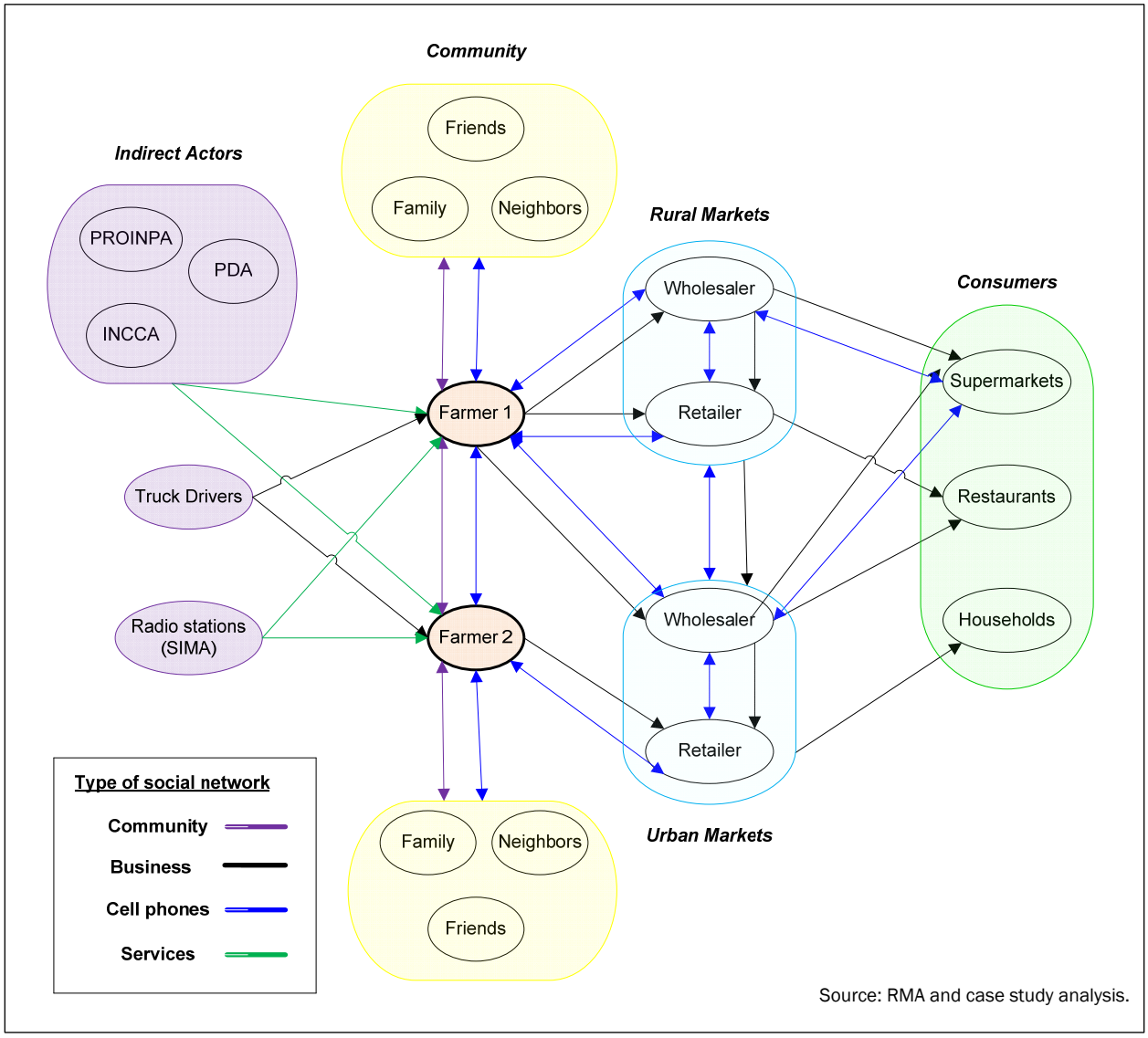
Better transportation and access to cell phones have clearly improved the bargaining position of small-scale sellers. During the RMA, wholesalers stated that it is now harder to convince farmers to accept the price they offer, and sellers are more likely to refuse to sell. Our qualitative analysis shows that even though information networks have not changed substantially since the introduction of cell phones, the relative strength of bargaining positions has changed — and sellers have benefited most from the change. Furthermore, this analysis shows that cell phones have become an important information-gathering tool used mainly by men to collect information from their regular networks.

We found from the CS that before the spread of cell phones most households had established business networks, but generally in only one market, and frequently in the areas closest to their communities. Incomplete information confined sales to local markets. Access to radio and cell phones has made the task of gathering market-price data cheaper and faster. Cell phones reduce search costs and open market opportunities. Access to information affects marketing choices and is particularly important for sales in more distant markets. Having this information before heading to market allows farmers to evaluate costs and prices in multiple markets before embarking on a sales trip.

Based on the qualitative analysis, we constructed representations of social networks (see figure 3, next page). Dimensions of the networks include business, community, cell phones and services received from institutions. Business and community networks overlap with information networks connected by cell phone. In particular, the CS interviews showed that cell-phone connections create stronger links between already-existing nodes (e.g., family, friends, and neighbors), and new nodes (e.g., intermediaries, indirect actors, and truck drivers). This technology allows farmers to expand their links to new nodes (business networks) and to more distant markets.

ICT and Potato Marketing Decisions

The CS interviews uncovered subtle dimensions of potato marketing. Prior to departing for the market, marketing decisions are made by men and women together. Men conduct a preliminary search for market information by using cell phones to access their traditional information networks. Cell-phone access has not affected their sources of information, just the ease and speed of obtaining it. The men then communicate this information to



their wives, and together they devise a marketing strategy. It was surprising to find that the network by which market information is gathered has not changed since the introduction of improved ICT.

Women still lack direct access to information, and, despite women having a better overall sense of conditions within markets, they have not assumed a greater role in gathering information. Men state that they continue to be the gateway to market information because they are the heads of households and providers for their families. Men have historically been in charge of gathering market information, and this has not changed. Males maintain influence over the marketing process through their continued control of information.

The CS interviews confirm the quantitative findings that market information clearly affects decisions about which markets to attend. The success of cell phones as a market data–gathering tool relies on the strength of pre-existing individual farmer social networks. Larger social networks imply more representative and trustworthy sources of information, allowing farmers to take better decisions. Cellular technology has not greatly

expanded these networks, but has allowed information to flow more quickly and at less cost. This information flow has helped expand their market choices.

More than 50% of the farmers interviewed in the RMA claimed to use cell phones in their potato marketing activities. The RMA also found that other actors along the chain also rely on cell phones. When we compare total revenues generated from potato sales, our analysis of the household survey data showed that farmers with cell phones receive twice as much as farmers who do not have them. Clearly, one cannot presume causality; cell phones may increase revenues, but it also may be that higher-volume farmers are more likely to own cell phones. Qualitative evidence indicates that cell phones are indeed causing some of these changes. All farmers stated that their marketing process and indeed their lives have improved since the appearance of cell phones.

Cell phones expand opportunities, reduce search costs, strengthen farmer bargaining power, improve market efficiency, and lower risks. All these factors make farmers better off. They are now more competitive in the potato market chain; they use different markets more frequently and base these decisions on information they receive via information networks. Market information networks exist side by side with social networks and the two interact and reinforce one another, but men have used these technologies to reinforce their positions as information brokers.

Conclusions

This multi-method study explored relationships between access to information and gender relations in the potato market chain in highland Bolivia. Objectives were to analyze the roles of men and women in potato production and marketing; understand how marketing decisions are made and how access to information affect these decisions; and explore the effects of new information technologies on marketing decisions. We find that cell phone technologies allow farmers to market their potatoes at more distant and lucrative markets, and have subtle impacts on information and social networks.

Potato production activities are shared among men and women, but marketing roles are gender-differentiated. Men use cellular phones to receive market information. They share this information with their wives and jointly make decisions about where to sell their potatoes. The products are transported to markets jointly, but once in the market, the women take over.

Farmers with cell phones have better access to market information, affecting decisions about where to sell. Increasingly, distant urban markets are being viewed as a viable sales outlet. Furthermore, cell phones reduce risk and improve marketing efficiency. Farmers who wish to exploit distant market opportunities need substantial production volume and time to travel to distant markets, but lowered information costs are improving access to these markets. Farmers who use cell phones are better off than those who do not.

The advent of the cell phone has not fundamentally altered the sources of market information, but has widened the information network and speeded up the flow of information through it. Farmers do not generally trust intermediaries, and the speed of information flow through the cellular networks provides a counterbalance to perceived intermediary market power. Even though intermediaries fill important roles, according to farmers they take advantage of them, mainly through control of information. The ability to do so has been reduced. Even though women conduct most of the potato marketing, men are still primarily responsible for gathering market information.

Farmers stated that their lives have improved with cell phones, but they still rely heavily on their social networks. If the impact of new information technologies on marketing decisions is mediated through existing social networks, the former reinforces the latter. These structures have not changed significantly; women continue to dominate within the potato markets, and men continue to gather market information.

Impacts of cellular technologies are nuanced and could not be uncovered using a wholly quantitative approach. Mixed-method research tools allowed us to uncover subtleties associated with how cell phones are used, how networks are reinforced by enhanced access to information, and how decision-making is affected by new technologies. The qualitative methods substantially deepened our understanding of these processes. The tools used for this research complemented each other. This complementarity makes findings more understandable and builds our confidence in them.

Recommendations

The Tiraque watershed could develop its potential as a high quality potato producer by reducing market-related constraints. Production volumes are relatively high, and Tiraque potatoes are recognized as high quality in the Cochabamba and Santa Cruz market. To make farmers more competitive in the potato market, access to information still needs to be improved. One method of achieving this goal could be through expansion of cell phone access. This could be achieved by promoting markets for used phones and identifying or establishing cellular "hot spots" in isolated areas. Furthermore, farmer groups could be organized to collect market information from their various markets and spread information through text messaging or automatic dialing.

Any effort to improve the efficiency of the potato chain should consider the important roles that intermediaries play. Intermediaries fill several marketing roles, which assistance efforts need to recognize. For instance, institutions should include intermediaries in market support projects and work closely with them since they support the market network in many ways.

More support is needed in the area to improve access to markets and information, particularly for women. None of the institutions in the study area provide market-related services. Instead, they focus on technical assistance to help farmers produce more efficiently and diversify production. Women are least likely to participate in such assistance, and given their important role in the potato value chain, technical and marketing assistance should be focused on women. NGOs should reorient their assistance towards more comprehensive objectives, including marketing and organization-building. For instance, they could facilitate access to transportation, information, and markets. They could work through existing producer organizations to coordinate marketing activities; increased marketed volumes will lower costs of marketing in distant markets and might increase seller bargaining power.

Further research might investigate how information technology can be used to group farmers into marketing units or encourage farmer groups to sell at higher-return markets, how improved market information affects price dispersion across spatially separated markets, the effects of information on relative returns to sellers and buyers (market power), and the dynamics of gender roles in decision-making and marketing. Research in all these areas would assist development practitioners in designing programs to improve conditions in potato markets. While this research has shed some light on each of these areas, further analysis is needed to understand completely how market performance can be improved in the presence of current information and communication technologies.

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Appendix

Table 4. Marginal Effects on Market Channel Choice: Multinomial Logit Results

Variable	*Dependent variable: Market channel choice*				
	Tiraque	**Punata**	**Cochabamba**	**Santa Cruz**	**More than one market**
Household characteristics					
Age of the head of the household	2.31E-05	-0.00012	-7.40E-05	-0.00016	0.000339
		-0.016	*-0.034*	*(0.119***)*	*-0.014*
Age-squared	-8.80E-05	2.77E-05	-1.30E-05	-1.10E-06	7.46E-05
		-0.001	*(0.002*)*	*-0.002*	*-0.001*
# of members per family older than 15	-0.01238	-0.0127	-9.80E-05	4.82E-05	0.025131
		-0.137	*-0.185*	*-0.301*	*-0.1*
Access to loans	-0.02262	-0.07389	-0.00127	0.000143	0.097633
		-0.722	*-0.809*	*-0.705*	*-0.401*
Access to irrigation	-0.14416	0.047286	0.005578	0.000358	0.090938
		-0.651	*-1.182*	*-1.408*	*-0.526*
Quantity produced	-3.80E-05	-7.00E-07	6.00E-07	1.00E-07	3.77E-05
		0	*0*	*(0.000**)*	*(0.000**)*
Assets					
# of plots	-0.04428	-0.00064	0.000283	3.64E-05	0.044604
		-0.127	*-0.155*	*-0.152*	*(0.088**)*
Cell phone ownership	0.0124	0.002479	0.02401	0.071456	-0.11036
		-0.476	*-0.606*	*(2.147***)*	*-0.335*
Access to cell-phone signal	-0.3522	0.169269	0.014291	-0.00045	0.169041
		*(0.813***)*	*(1.221***)*	*-1.521*	*(0.631*)*
Distance to markets					
Tiraque	1.2856	-0.63038	-0.12842	-0.00239	-0.52446
		*(3.345**)*	*(11.621**)*	*-6.209*	*-2.719*
Punata	-0.0438	0.356759	-0.01369	-0.00093	-0.29829
		-3.078	*-4.757*	*-4.814*	*-2.677*
Cochabamba	6.0891	-5.17879	-0.35261	-0.00343	-0.55425
		*(25.342**)*	*(41.152**)*	*-44.088*	*-19.013*
Santa Cruz	9.1030	-6.77561	-0.56017	-0.00644	-1.76079
		*(29.784**)*	*(51.302***)*	*-51.376*	*-22.102*
Distance from the farm to the nearest paved road	-17.843	13.00537	0.924608	0.007268	3.905792
		*(54.440***)*	*(91.232**)*	*-98.489*	*-41.569*

Interaction terms

Distance to the paved road — # of plots	0.3838	-0.16058	-0.01791	0.000641	-0.2059
		(1.406)*	*-4.187*	*-3.588*	*(0.765*)*
Age — cell-phone ownership	-0.0029	0.002026	2.36E-05	0.000131	0.000701
		-0.029	*-0.048*	*(0.097***)*	*-0.02*
Irrigation — quantity produced	3.76E-05	-9.80E-06	-9.00E-07	-1.00E-07	-2.70E-05
		0	*0*	*(0.000**)*	*0*

*** Denotes significance at 1% significance level. ** significant at 5%, * significant at 10%

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Value chains for sustainable procurement in large school districts: Fostering partnerships

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Abstract

Values-based value chains and farm to school programs are two aspects of the alternative agri-food system that have received a great deal of attention recently from scholars and practitioners. This paper chronicles two separate pilot efforts to create value chains for mid-scale farms to supply large school districts' food-service operations with more healthful, local, and sustainably produced foods, using a modified farm to school model. Early farm to school efforts were mostly farm-direct, a model that poses difficulty for large districts, which often require some kind of intermediary to procure the volume and form of products required for the scale of their food-service operations. Value chains have the potential to address this issue, as part of a more broad-based sustainable school food procurement model that can met the needs of large districts. The lessons learned about the various roles scholars and

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Disclosures

David Conner is a consultant to School Food FOCUS.

Gail Feenstra and Julia Van Soelen Kim are evaluators for School Food FOCUS.

Toni Liquori is executive director and co-principal investigator for School Food FOCUS.

Michael Hamm is co-principal investigator for School Food FOCUS.

community partners might play in creating, sustaining, and monitoring performance of these value chains are highlighted.

Keywords
farm to school, large school districts, participatory research, partnerships, practitioners, school meals, urban school districts, values-based value chains

Introduction

Partnerships among diverse stakeholders are effective means of identifying and acting upon opportunities for food system–based community economic development (Conner, Cocciarelli, Mutch, & Hamm, 2008; Conner, Knudson, Hamm, & Peterson, 2008; Wright, Score, & Conner, 2008). This paper chronicles efforts to create values-based value chains (VCs) for mid-scale farms to supply large school districts' food-service operations using a sustainable school food procurement model. First, we discuss previous research on institutional food procurement, particularly farm to school (FTS), and VCs, which suggests that VCs may be well suited to address many of the well known barriers of FTS. Then we present two cases that illustrate the efforts of two large school districts[1] — one in Saint Paul, Minnesota, and one in Denver, Colorado — to procure more healthful, local, and sustainably grown foods. The two cases provide a look at on-the-ground VC developments, as well as the key lessons learned about the various roles scholars and community partners might play in creating, sustaining, and monitoring performance of these VCs. Finally we conclude with a statement of how our research might inform partnerships among other school food-service professionals, scholars, and community partners to create VCs that bring broad benefits to schoolchildren, farmers, local economies, and communities.

[1] The typical designation of a "large" school district is one that enrolls at least 40,000 students. According to this criterion, there are 137 large school districts in the United States (Common Core Data (CCD) public school district data (2008–2009), U.S. Department of Education's National Center for Education Statistics (NCES), at http://nces.ed.gov/ccd/)

Background

Institutional food procurement, particularly farm to school (FTS), has received a great deal of attention recently from agri-food scholars and practitioners. The strategy has been cited as among the most important aspects of alternative agri-food movement (Izumi, Wright, & Hamm, 2009; Kloppenburg, Wubben, & Grunes, 2008), although some scholars believe it does not sufficiently challenge fundamental injustices in the present day food system (Allen & Guthman, 2006). FTS typically combines the procurement of locally grown foods with experiential education to instill good nutrition habits in students and to enhance the viability of small and mid-scale farms (Allen & Guthman). The experiential education component often teaches students how, where, and by whom food is grown, fostering closer relationships between consumers and farmers. For example, one recent study suggests the potential when food comes from farmers known to students: this food is seen as "cool," resulting in increased student consumption of healthful foods (Izumi, Alaimo, & Hamm, 2010).

FTS's potential to sustain demand for alternative agri-food products is significant, both because of the magnitude of expenditures in the National School Lunch Program (US$9.8 billion annually and 31 million meals daily in 2009) and its purported ability to create lasting demand for healthful sustainably and locally grown foods (USDA Food and Nutrition Service, 2009; Vallianatos, Gottlieb, & Hasse, 2004). FTS also is receiving national attention as it plays a central role in the United States Department of Agriculture (USDA)'s "Know Your Farmer, Know Your Food" and first lady Michelle Obama's "Let's Move" campaign to combat childhood obesity and promote wellness (Bottemiller, 2010; USDA, 2010).

To date, most FTS efforts have consisted of the farm-direct model, in which local farmers deliver food directly to schools for use in their school meal programs. This FTS model poses many potential obstacles to large school districts due to the large quantities demanded by the scale of their operations (Berkenkamp, 2006). A national collaborative,

School Food FOCUS,[2] has recently emerged to leverage the knowledge and procurement power of large school districts to make school meals more healthful, regionally sourced, and sustainably produced. School Food FOCUS aims to address food procurement practices at the intersection between large school districts and their supply chains, which ultimately include mid-scale farms and ranches. While resolving procurement challenges related to scale in large school districts is a complex and long-term process requiring political and institutional change, School Food FOCUS aims to catalyze change from within school food-service operations, especially in regard to sustainable food procurement. In general, school food procurement practices include activities such as bidding and specifications, as well as attention to regulations that affect food purchases. While a robust and detailed national discussion on sustainable procurement practices in school food is needed, for the purposes of this paper, food procurement practices are considered sustainable if their use leads to the acquisition of safe, affordable, and nutritious products in ways that (1) prioritize whole and minimally processed foods; (2) promote more locally and regionally focused food production, processing and distribution systems; and (3) enhance and sustain the economic, environmental, and social systems of the communities in which these food systems are embedded (One Tray Coalition, 2009).

In addition to farm to school research, agri-food scholars and practitioners have focused their attention on the loss of mid-scale farms in the United States. Mid-sized farms, it is argued, lack sufficient volume to survive on the slim margins of commodity markets; yet they also are not well suited to sell differentiated products in direct-to-consumer markets (Pirog, 2004; Stevenson & Pirog, 2008). One study outlined the nearly ubiquitous loss of mid-scale farms and the associated loss of consumer choice, rural economic prosperity, environmental stewardship, and social capital (Kirschenmann, Stevenson, Buttel, Lyson, & Duffy, 2008). Nevertheless, mid-sized farms play an important role in regional economies, and the importance of mid-scale family farms to overall community well-being has been well documented (Goldschmidt, 1947; Lyson, Torres, & Welsh, 2001; Welsh & Lyson, 1997).

One promising market mechanism to create appropriate markets for mid-scale farming is the VC. VCs differ from traditional supply chains in several keys ways (Bloom & Hinrichs, 2011; Stevenson & Pirog, 2008), including adding value to products through differentiation, and creating strategic partnerships that contribute to the welfare of all participants. VCs potentially can meet growing demand for differentiated products with attributes such as how, where, and by whom the food was produced, or the "story" of the food (Conner, Campbell-Arvai, & Hamm, 2008a; Kirschenmann et al., 2008). VCs are well suited to deliver a high volume of product to regional markets through strategic partnerships, creating viable outlets for mid-scale farms and creating value for customers and other supply chain actors (Stevenson & Pirog, 2008). To date, many VCs discussed in the literature (e.g., Stevenson, 2009) can be characterized as a supply-push approach, as they are initiated by farmers and ranchers with the intent of benefitting the producers by creating markets for differentiated products. In contrast, this study examines the potential of VCs from a demand-pull approach, as they were initiated by school food-service operations to procure food with desired attributes.

Recent research (Berkenkamp, 2006; Izumi et al., 2009; Lawless, Stevenson, Hendrickson, & Cropp, 1999; Strohbehn & Gregoire, 2008; Vogt & Kaiser, 2008) suggests a set of barriers commonly found in FTS efforts, including:

[2] School Food FOCUS (Food Options for Children in Urban Schools) is a national collaborative of large school districts, community partners, university-based scholars, and nonprofit organizations. FOCUS leverages the knowledge and procurement power of large school districts to make school meals nationwide more healthful, regionally sourced, and sustainably produced. Funded by the W.K. Kellogg Foundation and launched in late 2008, FOCUS aims to transform food systems to support students' academic achievement and lifelong health, while directly benefiting farmers, regional economies, and the environment. For more information, see http://www.schoolfoodfocus.org.

- lack of reliable supply of consistently high quality product;
- logistical difficulties and high transaction costs;
- reliance on processed rather than whole and/or raw products (for example, pre-cut produce and pre-cooked meats); and
- difficulties in creating seasonal menus using regional products.

In addition, FTS efforts have typically focused on farm-direct purchases with a limited variety of fresh fruits and vegetables, and they have rarely touched the "center of the plate" protein-based entrée (Bagdonis, Hinrichs, & Schafft, 2009; Berkenkamp, 2006). Some studies argue that school markets are predominantly supplied by large farms and only make up a small percentage of sales for smaller and mid-sized farms (Allen & Guthman, 2006; Izumi, Wright, & Hamm, 2010). VCs have the potential to increase procurement from and create greater income for small and mid-sized producers.

Additionally, FTS can pose barriers for school districts with highly routinized, mechanized preparation systems or underequipped kitchen infrastructure (Berkenkamp, 2006; Kloppenburg et al., 2008). Many schools therefore choose to work through broadline distributors, offering reliable, one-stop shopping for a wide variety of products in easy-to-use form (Izumi, Wright, & Hamm, 2009). The information about how, by whom, and where food is produced is typically lost in these long and obscure supply chains, yet relationships with the farmers are instrumental to the experiential education component featured in many FTS programs. FTS program practitioners and evaluators conclude that one of the keys to success for FTS is complementary partnerships in which supply chain and community stakeholders communicate with each other and work together for common solutions (Joshi, Azuma, & Feenstra, 2008).

In theory, VCs can address many of the aforementioned barriers of FTS by supplying high quality food, in the proper form and quantity for use by school food service, along with the "story" intact for education and marketing efforts. VCs can operate on a regional level to better manage seasonal and local shortages while maintaining high production and quality standards. Strategic partnerships with processors and distributors can help manage transaction costs and aid with logistics and processing farm commodities into the needed form for use in school food. Price is, however, a lingering barrier; most currently existing VCs sell to relatively high-end retailers or restaurants that do not have the strict price constraints that schools' food-service programs operate within (Stevenson, 2009). Strategies for making VCs' products affordable to schools will be an important task and critical test of their compatibility with FTS efforts and goals.

The remainder of this paper discusses efforts to apply the concept of VCs to supply chain development to help meet school food-service procurement goals toward sourcing more healthful, sustainable, and locally produced foods. This analysis is highly exploratory in nature. We begin by introducing the two cases, and then discuss outcomes and future prospects with particular emphasis on lessons learned, institutional changes, and implications for replication.

Fostering Partnerships in Practice: Approach, Actions, and Outcomes

The cases. This section reports on efforts in two large school district meal programs, Saint Paul Public Schools (SPPS) in Minnesota and Denver Public Schools (DPS) in Colorado, to procure and serve more healthful, sustainable, and locally grown foods. These two cases are used because they were the first pilot districts in the School Food Learning Lab, a program of School Food FOCUS[3] in which

[3] The Learning Lab engages selected school districts in a collaborative research process conducted over an 18-month period to discover methods for transforming food options within their operations. Each lab brings school food-service professionals and district partners together with research and technical assistance to study and work on specific procurement goals. The labs also create valuable learning experiences and

the authors are all involved in some way. Both districts identified several food priorities they wished to address through the Learning Lab; we will concentrate on two of the priorities' supply chains that best demonstrate VC principles: fresh, local produce at SPPS and pasture-raised, local beef at DPS. Greater detail of other priority items, supply chain actors, background on the schools, and the overall methodological approach of the School Food FOCUS project are available elsewhere (Abate, Conner, Brayley, & Modzelewski, 2009a, 2009b; Conner, Abate, Liquori, Hamm, & Peterson, 2010; Feenstra, Ohmart, & Van Soelen, 2009).

Methods. For each school district, the Learning Lab team began by holding discussions with the school team to better understand its current and desired procurement practices. Then, the Learning Lab and school teams collaboratively developed a series of research questions to help guide sound procurement decisions and lead to desired changes. The school team also assisted in purposive identification and sampling of interviewees among current and prospective product vendors and stakeholders in local, state, and federal government. During the course of the project, members of the Learning Lab visited each research site three times and conducted a total of 43 interviews: 17 interviews in Minnesota (in December 2008, February 2009, and November 2009) and 26 in Colorado (in June 2009, October 2009, and April 2010). Interviews were held with government officials, members of industry groups, and with current and potential vendors. This paper focuses on the results of interviews of the two aforementioned VCs: fresh local produce (two distributors and two farmers) at SPPS and pasture-raised local beef at DPS (one rancher-meat processor and one quick-chill processor). At each interview, Learning Lab members took extensive notes, which were compiled into a single document and shared with the school districts for validation. In addition to the shared notes, initial impressions and observations were shared at debriefing meetings at the end of each visit. We also discussed opportunities for procurement changes, planned action steps, and monitored progress. The notes from the interviews were then analyzed by the lead author of this paper, identifying supply chain actors' attitudes and behaviors, particularly in terms of the presence or absence of VC principles and behaviors and their role in addressing sustainable school food procurement needs in large school districts.

In addition, the lead author interviewed a district partner[4] at each location to gain his or her insights on the Learning Lab processes and outcomes. Questions were vetted with the evaluation team and focused on needs and assets of each supply chain partner; lessons learned and knowledge gained about forming and sustaining the value chains; institutional changes; benefits of participation; next steps; lingering barriers; keys to success, and lessons for practitioners. Evaluation team members had also conducted four to five interviews with school district personnel and school district partners, in each case focusing on the VC processes, opportunities, and barriers to success. Interviews were transcribed, summarized into reports, and shared with the author for this paper. Finally, a draft of this paper was sent to members of each school district team for final verification of results.

From the beginning of the project, the Learning Lab utilized participatory action research approaches and principles: broad participation; equitable partnerships; recognition of multiple determinants of problems; co-learning; cyclical, iterative processes; local capacity-building; utilization of community strengths and assets; empowerment; and problem solving (Pavlovich, 2004). We also used steps common to participatory research, including collective analysis and determination of issues to be addressed, followed by research, sharing critical understanding with

transmit emerging practices to the school districts participating in School Food FOCUS.

[4] The district partner for Saint Paul Public Schools is the program director for local foods at the Institute for Agriculture and Trade Policy, Minneapolis, MN. The district partner for Denver Public Schools is the project director at the Seed To Table School Food Program, Slow Food Denver (CO).

partners, and creating action steps to address the problem (Minkler, 2000; Pavlovich, 2004). Our intent was to "put the school food professionals in the driver's seat," in the words of the SPPS director of nutrition services and commercial services.

Given the complexity of the operations and regulations within the businesses in our study — school food operations and their supply chains actors — we also adopted an orientation of co-learning, sharing, and discussing findings among school district partners, school food-service professionals, and supply chain actors within the Learning Labs and the wider project. This orientation helped us to develop action steps that fit within the business practices of the VC partners. In addition, district partners were critical in these efforts. The school districts selected these individuals or organizations because they brought a unique perspective to the team, provided logistical and content-area support, and provided expert knowledge on a host of local relationships that advanced the school district work, particularly knowledge of the local food system.

Results

The SPPS Case: Starting Point, Actions, and Outcomes

School meals at SPPS are served by Nutrition and Commercial Services, a self-operated division of the school district. SPPS has an enrollment of about 38,000 students, 70% of whom are eligible for free and reduced-price meals. In 2009–2010, they served, on average, about 16,000 breakfasts and 29,000 lunches per day. Food preparation is done in a central commissary and meals are delivered to each of 56 locations. Prior to their engagement with School Food FOCUS, their local procurement efforts were limited largely to local apples from a Minnesota-based aggregator. SPPS chose to be part of the Learning Lab because they felt they needed to increase their momentum toward sustainability goals and get away from "feeling stuck" on issues and they were eager for fresh eyes and a different perspective on their current systems (Feenstra et al., 2009). Additionally, they realized they needed to be able to allot more time, resources, and focused attention to make substantial change, and they thought the FOCUS initiative would help make that happen (Feenstra et al.).

SPPS wanted to serve more locally grown fresh produce in their school meals, as a means of enhancing their nutrition education goals as well as benefitting local farmers by providing more transparency in the process and to ensure the farmers got a fair price for the produce. When the Learning Lab began, SPPS was sourcing 34 pre-cut produce items, from two Twin Cities-based processor-distributors, and they were generally happy with the quality of product, logistics, and price. The Learning Lab interviewed sales agents from the two vendors, as well as mid-scale farmers and representatives of a statewide fruit and vegetable growers' organization. The processor-distributors reported willingness to source more locally grown produce, especially if they had adequate time to contact local growers. The growers were primarily interested in creating reliable markets for their products and receiving a fair price.

The team worked together to develop a request for proposals (RFP) for local produce, which invited bids for 14 pre-cut local produce items grown within 200 miles of the Twin Cities. The RFP also requested information on the farms' names and locations and the final prices paid to farmers. Before finalizing the RFP, the district partner convened a meeting of the school food-service professionals, the two processor-distributors, and a group of farmers to vet the document. The purpose was to clarify the goals for the schools in sourcing local produce and to understand the constraints for other members of the VC. This enabled produce distributors to know that they were in competition with one another and provided the farmers a chance to share their perspectives and to see how different types of supply chain relationships would affect them. As a result, the RFP was vetted by the school district, vendors, and farmers, and then was revised to meet the needs of all parties.

Both processor-distributors submitted bids for the RFP and one received the contract. During the four months that the RFP was active (September through December 2009), SPPS purchased 173,000 pounds (78,471 kg) of local produce at a cost of about US$130,000. This represents about 40% of total produce purchases during this time period and includes 14 items sourced from six farmers within a 100-mile radius. Subsequent interviews with two of the farms supplying the vendor found general satisfaction with the pricing and other arrangements. No locally grown fresh vegetables for the 2009–2010 school year were sourced after this date, however, reflecting the challenge of seasonality. The processor-distributor who did not win the contract continued to supply many other nonlocally grown fresh produce items to SPPS throughout the year.

The RFP process was expanded for the 2010–2011 school year. SPPS purchased about 225,000 pounds (102,058 kg) of local produce, spending about US$130,000. This represents a smaller percentage of the overall fresh produce purchased by SPPS due to a significant expansion of school breakfast programs and concomitant increase in nonlocal fruits like bananas, kiwi, mangos, oranges, and pineapple. The processor-distributor who won the 2009–2010 contract supplied all local items under the RFP except for potatoes, which were supplied by other processor-distributors.

The DPS Case: Starting Point, Actions, and Outcomes

School meals at DPS are served through DPS's Nutrition Services, a self-operated division of the school district. DPS has an enrollment of about 73,000, 66% of whom are eligible for free and reduced price meals. DPS serves about 14,000 breakfasts and 39,000 lunches per day. Food is prepared at various kitchens throughout the district and delivered to 156 schools. Prior to working with the Learning Lab, DPS was mainly sourcing locally grown produce for Colorado Proud Day and was interested in increasing procurement of locally grown foods across all food groups.

As part of their involvement with FOCUS, DPS wanted to source locally produced beef in their school meals. In October 2009, the Learning Lab met with a rancher who also operated a meat processing plant with a retail outlet. This person (heretofore called the "meat processor") operates the processing plant in part to give smaller-scale farmers and ranchers the opportunity to get their meat to market. The meat processor was able to sell steaks and roasts at good prices, but was left with a surplus of ground beef. He was selling ground beef to another Colorado school district on a very limited basis. DPS was interested in this beef but had just started to train personnel to handle raw meat, so they were concerned about the consistency of finished product and believed a quick-chill processor could help address this. This processor was willing to work with DPS in a capacity similar to the one they envisioned. As a result, from September 2010 to May 2011, DPS bought 137,010 pounds (62,147 kg) of local beef from the meat processor at a cost of about US$349,000. This beef was served in three forms: 6,480 pounds (2,939 kg) processed by the quick-chill processor into crumbles for beef stew, chili, and Sloppy Joes; 84,000 pounds (38,102 kg) of raw ground beef used in items such as in tacos and various pasta dishes; and 46,530 pounds (21,106 kg) formed into patties for hamburgers and cheeseburgers. Dishes using this local ground beef were served about once a week at all schools. Local patties were served daily at high schools and about once a month in middle and elementary schools.

Assets and Needs of Each VC Partner

In both cases, each of the VC partners had both unique assets and needs that had to be addressed in order for the VC to function. In the case of SPPS, the Minnesota farmers could provide fresh, seasonal produce along with the educational and marketing value of their farms' names and stories attached to the food; in return, farmers needed a reliable market for their products at a fair price. The Twin Cities–based processor-distributors had aggregating, storage, processing, delivery, and invoicing capacity, which addresses many of the barriers and limitations of farm- direct deliveries to schools; in return, they needed to understand how

to fill their clients' demand, including what local produce items, in what form, on what dates, and how much of the food's story to communicate. SPPS provided reliable demand for relatively large quantities of produce and a desire to support its own nutritional goals and local farms with their purchases. They also brought a desire to provide more transparency in the process, to develop relationships with the farmers, and to ensure the farmers got a fair price for the produce. However, they lacked the time and capacity to step away from routine procurement in order to investigate and implement options to meet their goals.

In the case of DPS, the Colorado meat processor had a surplus of ground beef needing an appropriate market and a desire to help educate schoolchildren about the value of locally grown healthy foods. The quick-chill processor had the capacity to receive, cook, chill, and deliver the product, as well as the expertise to work with DPS's recipes and nutritional standards. DPS provided relatively large demand for the product but needed outside assistance to bring consistency to the preparation of the product while the kitchen staff was being trained to handle raw meat safely.

Lessons Learned About Forming and Sustaining the Value Chains

In each of the cases, VC actors learned lessons and gained knowledge that helped them form the VCs and (hopefully) to sustain them over time. Specifically, the Minnesota farmers learned about the school food market, particularly that it can be a viable market for #2 grade products (appropriate for pre-cut produce, but not cosmetically perfect enough for retail) and an outlet for unexpected surplus items. The distributors learned that the school was serious about local produce and about the district's desire for transparency and fairness for all partners. SPPS learned about the capacities of their two distributors to source locally: one responded to and fulfilled the RFP with relative ease; the other submitted much higher bids and lacked needed connections with local farmers.

In Colorado, the meat and quick-chill processors and DPS learned of each other's existence and their mutual determination to serve high quality food. The quick-chill processor was disappointed in the quality of commodity beef he had handled for another Colorado school district and was pleased at the high quality beef from the meat processor. DPS was impressed by the professionalism and dedication to high quality food shown by the quick-chill processor, including his willingness to devote a chef to develop and test DPS's recipes for Sloppy Joes, beef stew, and chili.

Institutional Changes

Prior to their involvement in the Learning Lab, SPPS had no specific program for procuring local produce; they did not do advanced menu-planning based on seasonality of produce, they did not use an RFP process, and local produce was featured infrequently on the menu. Institutional changes also took place for the produce vendor. For example, while the vendor stated he could have tracked produce shipments to the farm for food safety reasons, tracking produce by farm origin in order for SPPS to feature it as a locally grown product was new and an extra step he would not have ordinarily made.

For DPS, this VC partnership was a rare circumstance where DPS had a third party prepare finished product to their specifications and where they worked with the quick-chill processor's chefs. However, part of this relationship was viewed as temporary, because in some of the DPS kitchens, staff members are being trained to prepare raw beef. The quick-chill processor made very few institutional changes in order to be able to work with DPS, since he already had a system in place where his chefs worked with another school district to adapt its recipes to large batch proportions. The meat processor regular delivered to Denver, so delivering to the quick-chill processor was not a large change.

Benefits of Participation

These cases show benefits of VCs for all parties, which can justify the effort needed to participate in them. SPPS was able to get the local produce it wanted, in the proper form and amounts. It also got the story of the farmers, which it used in

educational and marketing efforts, and which — according to SPPS — was well received by students and parents. The produce vendor reported connections with new farmers which increased their ability to source local produce for other clients. The farmers reported getting a fair price, being treated fairly in general, and gaining a market for #2 grade and surplus produce they otherwise have trouble selling.

DPS was able to get the local product they desired, along with the ability to market local beef in their menus, which they believe has contributed to an increase in students eating school meals. According to conversations between the district partner and kitchen staff, using fresh beef increased the pride of the kitchen workers as they see themselves now "cooking" in the kitchens. For the quick-chill processor, the VC helped to expand his school product line and may open up other school districts to his products.

For the meat processor, the VC provided an additional market for its beef as well as potentially expanding its programs in schools. The meat processor is happy because it has a contract with a large restaurant chain to provide high-end roasts and steaks, which also are sold through the retail store on the processor's premises and directly to restaurants, while DPS gets the ground beef. This relationship now allows the meat processor to confidently process more steers and sell more high-end cuts of meat to restaurants since the school districts will buy the ground beef.

Next Steps

The next step for SPPS is the mainstreaming of local foods by continuing the progress that has been achieved, generating ongoing excitement for local menu items among staff, students, and parents, and by developing new menu ideas for locally available products. For DPS, next steps are a matter of expanding and improving what is currently a pilot program. Key steps include adding local beef items into all the schools' menus and training staff to handle raw meats. Until then, a third-party processor is necessary. From the supply end, the meat processor reported that the business with DPS uses about 10% of his capacity. The meat processor has asked the district partner for help connecting his operation with other school districts in Colorado that may be interested in similar products.

Future efforts for School Food FOCUS will be to continue creating, testing, refining, and sharing best practices to enable other school districts to benefit from the knowledge gained in the Learning Labs about procurement changes. On-the-ground efforts to get district partners and school districts to collaborate with VC actors in finding common solutions will continue to be of paramount importance.

Lingering Barriers

Two main barriers remain for SPPS: first, given their northern locale, seasonality will always be a constraint. Second, although working through a distributor solved many of the aggregation and logistical barriers posed by sourcing direct from farmers, maintaining the relationship with farmers — ensuring transparency and fairness as well as communicating the story — requires extra work for someone, be it the distributor, the district partner, or a school district employee.

As DPS develops capacity to handle fresh, local beef, the meat processor will have to grow his school business to other districts so that the price point remains competitive. DPS sources the remainder of its beef needs through pre-cooked USDA commodity beef, although for next year DPS is looking to buy raw commodity beef to be processed by the quick-chill processor. DPS also wishes to market this program even better so that the entire school community knows that local beef is being served to increase participation in school lunch and increase revenue as well.

Keys to Success in the Cases

A key to success in creating the VC was the partnerships among scholars, school food-service professionals, and district partners. SPPS's dedication and vision in setting the goals, their willingness to engage for a sustained period with the Learning Lab project, and their flexibility in taking

the action steps were critical. Another key to success was SPPS setting its own priorities for change. Finally, at SPPS, systems were put in place to institutionalize the new procedures for gathering information (Abate et al., 2009a), which increases the likelihood of continuing similar processes in the future. The trust SPPS had in the district partner was also critical. The district partner brought a broad perspective on local food issues, particularly the need to address issues of transparency in the process and fair pricing for farmers, which led to these issues being included in the RFP process.

One key to DPS's success was finding a meat supplier willing to work with this system. The meat processor is a strong supporter of small and mid-scale ranchers and very dedicated to bringing change to the meat industry. His passion for better foods in the community helped to drive this program and was key to other elements aligning. In the absence of the capacity to handle raw meat across all DPS kitchens, the quick-chill processor was an important component to this program moving forward. The quick-chill processor has now become a partner with DPS on other menu items like sauces, beans, and tortillas, which can continue if and when the meat handling service is no longer needed.

In both cases, the district partners played critical roles. In Saint Paul, the district partner brought a breadth of knowledge of agriculture and the distribution chain, and pushed the Learning Lab to consider the need for price transparency and other issues impacting farmers. She also led efforts to vet the RFP. The district partner had been engaged in assisting SPPS before the Learning Lab project began and had greatly increased SPPS's understanding of the farming and supply side issues. In Denver, the district partner played several roles. First, the district partner helped to identify some of the pieces of the VC and made the initial introductions; for example, the district partner knew of the meat processor through his relationship with the American Grassfed Association. The district partner also acted as a "translator" in conversations between the school district and the VC actors. The kind of language that the school food-service professionals use about food procurement and menu planning is a bit different than the kind of language used by commercial operations. Since the district partner was involved in all conversations with all the companies, he served as a translator when discussions got bogged down on differences in terminology, and he helped to keep the conversations going so that the VCs could be formed. The district partner also devoted lots of time to the project, which served DPS well in that they did not have the staff time to devote.

Comparing and Contrasting the Cases

The two cases have many similarities. Both are relatively large public school districts eager to change their food procurement practices toward more local and sustainable purchases and they are willing to investigate and experiment with new options. Because of their mutual involvement in the Learning Lab, their basic objectives were similar: to serve more locally and sustainably grown healthful foods. Both districts chose to work with vendors who had prior experience in the school food market, who could bring in capacities and skills the school districts lacked: aggregation and processing services from the Minnesota produce vendor, and meat processing and handling in Colorado. Both VCs involved face-to-face meetings among a range of partners to discuss capacities, needs, and constraints, which fostered communication and trust, processes similar to those found in prior VC studies (Stevenson, 2009).

Other similarities reflect the tight budgets school food-service operations face. Both district partners discussed the importance of external resources from School Food FOCUS, which facilitated the efforts to research and experiment with new options. Time devoted by the school districts, district partners, and research teams was crucial for the sustained attention to these efforts. Further up the VC, it was the purchase of surplus products for which producers lacked good markets — ground beef, #2 and surplus produce — which created price points acceptable for districts while providing secondary income for farmers (with primary income coming from higher quality products like

steaks and chops and retail-grade produce). Finally, lack of capacity, seasonality of produce, and lower price points continue to limit the quantity of product available to the schools moving forward. However, while each district started with specific priority items, the experience of working through barriers to reach success has encouraged them to continue to think about the possibilities for change and take steps in new directions.

The cases have a few differences as well. Obviously, they have very different geographic and climactic differences: one school is in the cold and rainy Upper Great Lakes area, the other in the warmer and very dry Mountain West. Finally, while the Minnesota case involved an RFP and a contractual process, the Colorado case was built on more informal agreements.

Conclusions

Roles for Community Partners and Scholars in Values-Based Value Chains

This paper discusses efforts to bring VC principles to help large school districts improve the quality of their school meals. The paper takes into account the perspectives of community partners who worked with school food-service professionals and scholars to serve more healthful, sustainably and locally grown foods to school meals. Below, we highlight key roles for community partners and scholars in forming partnerships that support sustainable school food procurement.

- *Respect the schools' knowledge of their businesses and their desire to serve quality food.* School food-service professionals have a deep understanding of their capabilities and constraints and in most cases, a profound desire to serve fresh, healthy food which supports their communities to the maximum extent possible. It is important for all parties to respect and make use of the expertise brought by the other. For the district partner, that includes working to understand the operating environment, constraints, and culture of the participating district.

- *Use contacts and knowledge of local food supply chains to investigate, propose, arrange, and monitor.* District partners who are well connected and familiar with the local food system can bring many resources to the schools, creating new options and addressing long-standing problems.

- *Serve as a liaison between and translator for schools and vendors.* A district partner who is familiar with the business practices and language used by both school food service and vendors can facilitate mutually beneficial partnerships and transactions.

- *Find strategies to institutionalize efforts with the school district.* Written agreements or RFPs may be one way to do this. Others might include new school or district policies, vendor agreements, memoranda of understanding, or the like. As yet, DPS has no formal commitment device with the meat or quick-chill processor, relying on the strength of the relationship among VC actors to govern the transactions; formal agreements may be needed as the program grows in scale.

- *Recognize that outside funding and effort may be needed to bring wholesale changes.* Nonprofits and schools both face funding and staffing limits in today's economic climate. However, given current interest around FTS and its ability to generate revenue from increased participation as well as increased public support from the community good will it generates, incremental positive changes are possible. These changes may be accelerated with the infusion of outside funding.

Despite the significant changes in procurement achieved by these school districts, the direct impact on the national scale food system certainly is limited. First, these cases discuss only two food items in two school districts, yet FTS proponents argue that greater financial support is needed if FTS benefits are to be realized at a national level

(Izumi et al., 2009). Second, others (Allen & Guthman, 2006) cite the danger of FTS reproducing exploitative economic relationships (such as traditional supply chain practices in which farmers are treated as interchangeable parts rather than strategic partners, as outlined by Pirog (2004)) rather than challenging the underlying systems and institutions (consumer-driven, market-based change) which create the problems FTS purports to address.[5]

While these cases may not tackle systems change at the national level, they contribute to our understanding of how the community development benefits of sustainable school food procurement can be scaled up to work within the context of large districts. By using VC approaches, the benefits can extend to supply chain actors as well. While wholesale transformation of school food requires extensive changes in the globalized food system in which school food is embedded, we believe this study demonstrates the very real possibilities and tangible positive outcomes of partnerships between large schools and VC partners. Smaller schools will benefit to the extent that they purchase from the same vendors as large schools.

The strengths of this study are both the combination of applying the VC model within two large urban public school district settings and the emphasis on the perspectives and roles of and lessons learned by district partners. Findings are limited to one food item in each of two schools and the perspectives of those participating in the project; therefore, generalization of results to another specific setting is inadvisable. Nonetheless, we believe this research can inform partnerships among other school food-service professionals, scholars, and community partners to create VCs that bring broad benefits to school children, local economies, and communities.

Future efforts of School Food FOCUS will be devoted to creating, testing, and sharing processes and mechanisms that can enable schools' procurement changes in the absence of the input of money and resources from the FOCUS project, and in ways that work for districts of many sizes working alone or cooperating with other districts. Efforts to work with districts and to coordinate efforts between schools in order to acquire and manage information, as well as finding and working with supply chain actors to find common solutions, will be paramount to fostering the sustainability of the procurement changes and their concomitant benefits.

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[5] At the very least, these changes are unlikely to cause direct harm; in the tight budget environment faced by school food service, all changes must be cost neutral. The procurement changes studied here did not result in increased school lunch price or other barriers to participation.

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Using a supply chain analysis to assess the sustainability of farm-to-institution programs

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Abstract

Interest in local and sustainable food among colleges and universities has risen considerably in the last decade. This study focuses on how to foster farm-to-institution programs by exploring barriers, opportunities, and potential solutions from different perspectives in the supply chain. We use a values-based supply chain approach to see what unique insights can be offered to people developing and maintaining these programs. Three research methods — a national survey of college students, a survey of institutional food service buyers in California, and in-depth interviews of people in the California distribution system, including farmers, distributors, and food service buyers — are used to collect data and perspectives from throughout the supply chain. Using the concepts from supply chain literature of product flows, financial flows, and information flows, we highlight key insights for various participants in the supply chain. Strengthening information flows and building relationships that allow all parties to build trust over time emerged as one of the most important elements in the success of these values-based supply chains. Educational institutions and the media can support these chains by becoming the vehicles for ongoing exchange of information among supply chain partners and the public.

Keywords

farm-to-institution, local food, supply chain, sustainability, values-based supply chain

Introduction

Interest in local and sustainable food among colleges and universities has risen considerably in

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the last five to 10 years. While there used to be very few, there are now 164 farm-to-college programs listed on the Community Food Security Coalition's Farm to College website (http://www.farmtocollege.org). This growth means a larger market share for local farm products. Purchasing local, sustainable foods produced by small and midscale producers is a value that institutional food service buyers are now seeking to embrace. Many of these buyers view changing their procurement strategies as an opportunity to support local suppliers and to educate students about the food system and health.

However, significant economic and infrastructural barriers stand in the way of rapidly and easily expanding these local food programs. The problems of locating suppliers, delivery and distribution mechanisms, and reliability have been identified as key barriers to accessing, purchasing, and serving local foods in institutional cafeterias (Murray, 2005; Vogt & Kaiser, 2008). In addition, food service directors also cite problems such as lack of year-round availability, adequate quantity and quality of local products, and local and state regulations (Gregoire & Strohbehn, 2002; Gregoire, Strohbehn, Huss, Huber, Karp, & Klein, 2000). Colleges with buying programs for locally grown produce incur significant transaction costs, as well as pay premium prices (Hardesty, 2008). From the growers' perspective, obstacles include lack of product availability, lack of a dependable market, and the inability to change prices they receive (Gregoire, Arendt, & Strohbehn, 2005).

Although these barriers have been explored, few researchers have looked across the supply chain to better understand the dynamics and linkages in order to create effective farm-to-institution projects. Researchers who have surveyed institutional buyers as well as farmers (Starr et al., 2003) and distributors (Bloom & Hinrichs, 2010; Izumi, Alaimo, & Hamm, 2010; Izumi, Wright, & Hamm, 2009) found that prices high enough to satisfy producers while also affordable for buyers, seasonality, and availability of regional produce when buyers wanted it were challenges across the supply chain. Suggestions for improving supply chain linkages included encouraging farmers to show buyers the quality of products and services they can provide, and utilizing more mid-tier regional distributors in farm-to-institution transactions. Research on colleges and universities that explores barriers, opportunities, and potential solutions to enhance producer-institutional arrangements from multiple perspectives across the supply chain has been limited to date, but is gaining increased interest.

Our research on this topic starts from the premise that exploring the attitudes and behaviors of a variety of participants throughout the supply chain, from "farm to fork," will provide insights on how to create and sustain farm-to-institution programs. The consumption-oriented value-chain approach described by Hawkes (2009) provides an undergirding *systems* orientation for our study. Hawkes writes, "The underlying concept is that it is only by mapping the whole chain, and understanding the interactions within that chain as a *system,* that the most effective leverage points can be identified" (p. 338). Accordingly, our paper approaches the system as an interconnected whole rather than as a collection of independent sectors, such as consumers, distributors, and buyers. Through quantitative surveys and qualitative in-depth interviews, we identify gaps and leverage points throughout the supply chain for expanding and improving farm-to-institutions programs.

Previous Supply/Value Chain Research

The traditional supply chain for obtaining produce in institutions is fairly linear. After produce leaves the farm, it often goes through packer/shippers and sometimes processors before it ends up with wholesale distributors. Wholesale distributors for produce vary in size from small or medium-sized regional produce distributors to much larger broadline distributors[1] who often carry a wide variety of products in addition to produce. In a conventional distribution system, attaining efficiencies and economies of scale are key strategies to minimizing

[1] A food-service broadline distributor carries a full line of products, including dry grocery, frozen, tabletop, equipment, and supplies. Many broadliners also carry perishable items such as meat, dairy, and produce.

prices paid by the end consumer. Many distributors offer rebates to institutions that meet specified purchasing volumes; these incentives serve to discourage institutions from purchasing from multiple sources. It is also logistically convenient for buyers to aggregate purchases. Therefore, traditional supply chain research has focused on increasing efficiencies and decreasing price points.

Value Chains and Values-Based Supply Chain Research

As the demand for producing, distributing, and purchasing more foods identified with values of "local" or "regional," "sustainable," "family farmed," and "organic" has increased, the concept of "values-based supply chains" has emerged. These chains are different from traditional supply chains in that they attempt to enhance small and midscale farmers' financial viability by capturing price premiums in the marketplace for the environmental and social benefits (values) embedded in the products. They require that all partners in the chain work together to optimize value for everyone, including fair profit margins for producers and fair wages for their workers. Finally, in this system, partners maintain transparency throughout the supply chain by sharing information at each stage of the chain (Stevenson & Pirog, 2008).

Applied research (Vogt & Kaiser, 2008) has begun exploring the nature of emerging supply chains that can deliver products with these values and with their source information conveyed transparently to the end buyers (institutions, consumers). Various models help describe the structures and processes involved in what is ultimately available for consumers. By studying how particular chains function in the U.S. by doing case studies of poultry and tomatoes, Gereffi, Lee, and Christian (2009) note several important characteristics of the current food system. The one most relevant for us is that efficiency concerns have resulted in significant industrial consolidation in the food system, and smaller firms have been especially affected. Consolidation in the produce industry is an important background reality that influences how produce supply chains function.

Hawkes (2009) has explored a food supply chain system to understand how foods valued as healthier and more sustainable can be made available to consumers. Her "consumption-oriented food supply chain analysis" helps us identify what changes are needed in the entire supply chain to create healthier food environments. Since organizational, financial, technological, and policy incentives and disincentives affect food supply chain participants and offer leverage points for change, understanding more about these would allow us to identify bottlenecks and provide insights on how to increase healthful foods. Although our study uses a different methodological approach, focusing more on an "actor-based" food supply chain vs. a "process-based" food supply chain, we identify incentives and disincentives similar to those used by Hawkes..

The research approaches that provide the underlying framework for this paper are those outlined by Boehlje (1999) and King & Venturini (2005). As agricultural economists, these researchers use the term "value chain" somewhat differently than a "values-based" supply chain. Boehlje defines a value chain as the "value-creating activities in the production-distribution process and the explicit structure of the linkages among these activities or processes" (p. 1032). "Value" for Boehlje refers to economic value, as opposed to social or environmental values. We suggest that additional social and environmental values are now emerging as important additions in farm-to-institution programs.

Both Boehlje and King and Venturini outline three types of "flows" that are important features of a value chain: product flow, financial flow, and information flow. In general, product flow refers to the physical movement of products and issues having to do with the supply of product — is it adequate, reliable, how is it aggregated, and where does it come from? Financial flow refers to payments for products, including issues such as prices, fees, and affordability. Information flow refers to the ways in which various participants in the chain communicate about values such as local, sustain-

able, organic or any product attribute. It includes how transparent the process is all along the chain to the end consumer. It also refers to the negotiations and discussions that need to occur between the buyers, distributors, and farmers to set up a system that can work for everyone (sometimes referred to as transaction costs).

In our analysis, we will use the three types of flows (product, financial, and information) as organizing principles for describing our research results. By examining these flows across the supply chain, we can identify key insights that emerge throughout the system as opposed to within a single sector.

Methodology

Our study collected data from California supply chain participants with some national data included in the student survey. We used three research methods:

1. A national survey of college students' demand for environmentally sustainable food;

2. A survey of food service buyers in California colleges, universities, and teaching hospitals; and

3. In-depth interviews with actors in current farm-to-institution distribution networks in California.

The next section provides a brief overview of each of these methods.

The Survey of College Students

A self-administered mail survey was sent to 2,000 randomly selected college students (1,000 from a U.S. population and 1,000 from a California population) in 2007. A slightly modified Dillman method was used to distribute the surveys (Dillman, 2000). We sent the students a letter announcing that the survey was coming, the survey with its cover letter and a US$1 bill, a follow-up postcard, and a final reminder with a replacement survey. We used a tracking number to ensure we did not contact participants again once they completed the survey. Of the 2,000 surveys sent, 371 bounced back with bad addresses and 419 were returned. Only 54% of these, however, were college students; it appears the sample of names and addresses purchased from a marketing firm, U.S. Data Corporation, was inaccurate. Given the large non-college student sample, we estimated the response rate to be between 22% and 28%.[2] Given this response rate, it is difficult to be completely confident the results extend to the entire population. The survey data was hand-entered into a Microsoft Access database and analyzed in SPSS. The surveys identified interest in and willingness to pay for food produced in an environmentally sustainable manner from small and midscale farms. It also compared the level of student interest in different values, as well as desired products.

The Survey of Institutional Food Service Buyers

All public and private four-year universities and teaching hospitals in the United States were included in the survey, as well as public two-year community colleges with enrollments of at least 10,000 students. Names of California university food service directors came from the National Association of College and University Food Services (NACUFS) membership list. This 2007 telephone survey of 99 food service buyers identified current purchasing practices, sourcing criteria, procurement practices, distribution infrastructure, administrative costs and requirements, packaging and other product preferences, as well as willingness to pay for food produced in an environmentally sustainable manner from small and midscale farms. The response rate was 100% for the universities and teaching hospitals, and 45% for the community colleges. Respondents included 14 managers in the University of California system, 23 in the California State University system, 23 private four-year institutions, 25 public community col-

[2] This estimated response rate assumes that 54% of the sample was actually college students (based on the actual response numbers). Thus, we assume that the number of college students sent the survey was 1,100, that 54% of the bad addresses were college students (200) and that ultimately only 880 college students actually received the survey, resulting in a 25% response rate. If we take the 95% confidence interval around the breakdown of college students, the actual response rate is likely to be between 22% and 28%.

leges, and 14 teaching hospitals. In a few cases, managers for both residential and retail dining services at the same university were interviewed. Some findings are reported in Hardesty (2008).[3]

The In-depth Interviews

The overall objectives of the in-depth interviews were to (a) characterize the salient features of the distribution models in existing California farm-to-institution programs, and (b) identify the key factors conducive to successful farm-to-institution programs. We selected interviewees in active farm-to-institution programs based on our own contacts, the farm-to-college website, and snowball sampling. Face-to-face and phone interviews conducted in 2007 focused on how transactions were working, and the challenges and opportunities found in existing farm-to-institution programs. Data were collected from small and midscale California producers who sell to institutions, distributors who buy from such producers and sell to colleges and universities, and food service buyers who purchase local and sustainable produce. Usable data were collected from 17 farmers, 15 distributors and 16 food service buyers. These interviews elicited both quantitative data related to sales and qualitative data that generated nuanced understandings of terms, issues and procedures. Responses to qualitative interview questions were recorded as narrative. In response to these questions, emerging themes or key words were identified, coded and then quantified. Data were reviewed by each research team member in order to ensure consistency in the coding system. Additionally, the nature of concepts associated with the key words was analyzed and "key word" responses were combined into larger categories and analyzed in relation to overall benefits and challenges. Finally, similarities, differences, and patterns were analyzed across the three groups.

The research team worked together to design these three separate studies. Each study was conducted and the data analyzed by a subset of the overall team. Findings from each study were discussed and interpreted both in small groups and with the research group as a whole.

Results

We report our findings below, organized by the three types of flows: product flow, financial flow, and information flow. We apply these concepts to the emerging farm-to-institution markets and describe the implications for farmers, distributors, buyers, and consumers. Our studies provided new insights on how these flows function in farm-to-institution values-based supply chains.

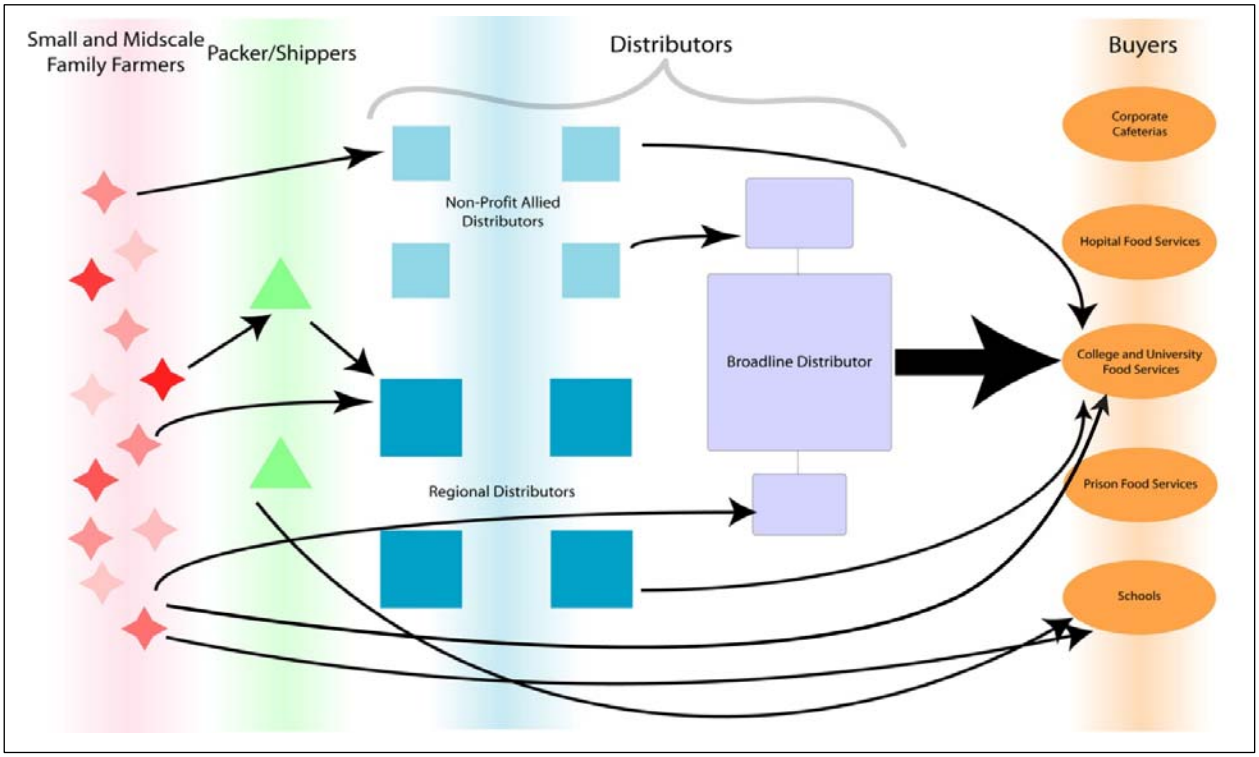
Product Flows

We began by creating a visual map of farm-to-institution products flows — identifying all the players involved, including both conventional and values-based players. Figure 1 below depicts the flows of fresh produce from farm to fork. This simplified diagram does not include every type of participant one might see in a comprehensive distribution model. We focused on the entities that appeared in our values-based supply chains.

Fresh produce flows from farms (left) to institutional buyers and their consumers (right), through various distributing entities. As the arrows show, sometimes purchases are direct from farmers; most often they go through packer/shippers (green triangles) and/or some type of distributor (blue squares). The large black arrow indicates that most of the fresh produce purchased by college and university food service buyers comes from broadline distributors (the largest square) or their subsidiaries. The smallest distributors we encountered (turquoise squares) are emerging entities, often associated with nonprofit organizations that service mainly local food markets, schools, and other institutions interested in buying locally. We also noted one new entity — a farmers' market broker — who facilitates sales from farmers who come to

[3] Hardesty (2008) discusses the prospects for marketing locally grown produce to colleges and universities based on only the institutional food service perspective. Results are described for an agricultural economics audience using a transaction costs framework and logit analysis. This paper, in contrast, describes results along with the other surveys and interviews in this study and interprets them for practitioners in farm-to-institution programs.

Figure 1. Supply Chain for Farm-to-Institution Programs

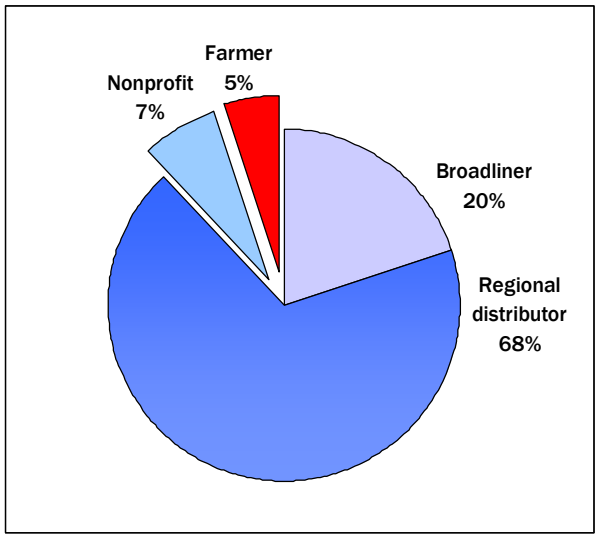


a farmers' market to institutional food service buyers for schools and other institutions. Our investigation of product flow in the distribution system shows us that while broadline distributors tend to dominate the market, alternative distribution networks are emerging in response to consumers' desire to confirm that they are buying from local producers.

What We Know About Product Flows from Multiple Perspectives

Here we explore the nature of product flows among the firms (e.g. farms, distributors, food service operations) in the system. More specifically, we identify where firms get their food, what factors are important for participating in a farm-to-institution value chain, and what barriers exist to participation. Each stakeholder group is described in turn.

Figure 2. Percentage of Produce Purchased by Food Service Buyers From Different Sources
(colors follow from figure 1)



Food service buyers

Data from the food service buyer surveys and in-depth interviews found that food service buyers in colleges with locally grown produce programs routinely purchased their produce from multiple suppliers. Broadline distributors and regional produce distributors were the primary sources (see figure 2), while direct purchases and nonprofit

allied distributors[4] represented only 12% of the overall distribution infrastructure.

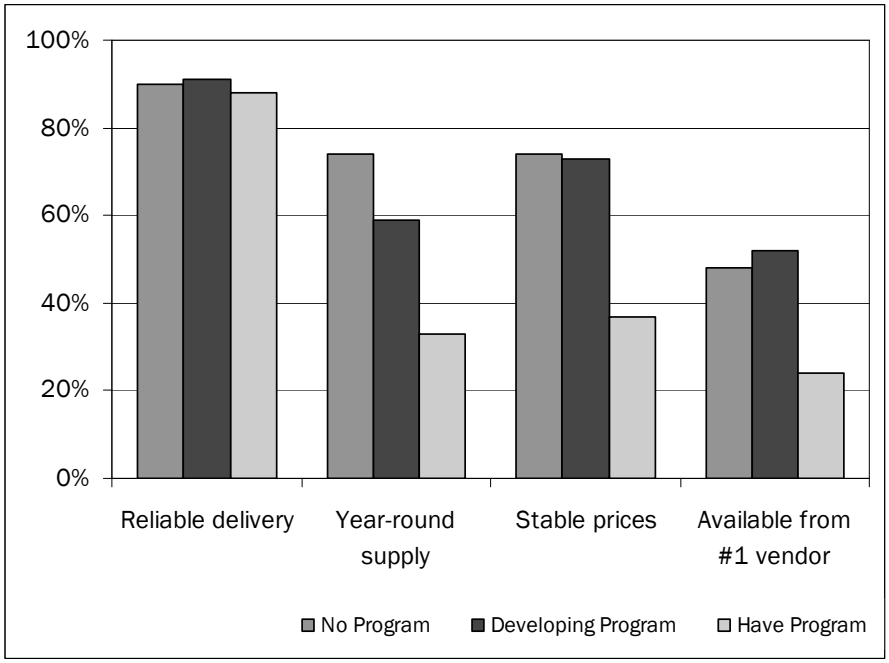
When comparing buyers with and without local programs, data confirmed that, in general, buyers with local buying programs diversified their sources more than those without such programs. For example, a third of those *with* a local buying program sourced from three or more distributors, as compared with 12% of those without. On the other hand, 51% of those *without* a local buying program sourced from only one distributor as compared with 11% of those with such a program. See table 1.

Table 1. Number of Produce Distributors by Local Buying Program Status

	Number of Produce Distributors Buyers Use		
	1	2	3 or more
No Local Buying Program	25 (51%)	18 (37%)	6 (12%)
With Local Buying Program	3 (11%)	15 (54%)	10 (36%)

Buyers considered several criteria when selecting produce suppliers (see figure 3). Top criteria were reliable delivery, a ready year-round supply, and availability of local produce from their primary vendor. Stable prices were also important, particularly for buyers without a local program. The main point here is that buyers already participating in farm-to-institution programs were just as concerned about reliability of delivery, but were much less concerned with the other three criteria. This suggests either that barriers diminished in importance once the relationships and basic arrangements were established, or that those most interested in implementing value-based supply chains were more flexible to begin with.

Figure 3. Food Service Buyers' Rating of Various Criteria for Local Produce Suppliers: % Rating Each Criterion as Very or Extremely Important



Distributors

For distributors, the form in which they received food was an important criterion for working with smaller, local farmers. Processing requirements showed up as the second most important factor after bidding (to be discussed in Financial Flows, below). Here, distributors were responding to their customers' needs, that is, to food service buyers' expectation that products be at least minimally processed.

Payment arrangements and insurance were considered less of a barrier for distributors than we expected. Distributors did not see small farmers' lack of liability insurance as a barrier, since distributors already had the insurance coverage required by

[4] Those distributors associated with nonprofit organizations that run a distribution business.

their institutional customers. When asked more broadly about the challenges of providing locally grown produce to institutions, distributors more prominently identified the delivery system. They mentioned "getting the product to [the institution] in a timely fashion" and "reliability in transporting produce" as definite challenges. Other challenges they reported included general administrative requirements — paperwork and the ordering system — and matching supply with demand, both in volume and quality.

Farmers

For farmers, as for food service buyers, having a dependable market is important. However, the most significant barrier to efficient product flow was the delivery system. Challenges related to the delivery system include consistency and reliability of orders and the means of getting the products to the end user. Farmers were also concerned about their ability to provide a consistent supply in the quantities needed by the institutions. Climatic conditions often prohibit farmers from being year-round suppliers. Because of the likelihood of unexpected events, such as sudden or extreme weather patterns, farmers were not always sure they could meet the demand. Aggregation with other growers was a solution for some small and midscale growers. Some of the nonprofit allied distributors, in their efforts to support small farms and to promote local procurement, helped to aggregate products from small and midscale growers. When these negotiations worked well, trust and positive relationships were reinforced, and the values attached to "local produce" were similarly reinforced.

Financial Flows

Financial flows, such as cost and price considerations and payments to suppliers, are ongoing issues for all parties, although surprisingly cost is not as important as other factors. This is supported by the data showing that local buying programs are growing in number and popularity, despite higher costs.

Food service buyers

The survey of food service managers at colleges in California found that 50% of those interviewed either had a program for locally grown produce or were developing one. The average food service budget among colleges *with* such a program was $3.5 million (range $200,000 to $12 million). Their produce purchases averaged $527,000 (range $50,000 to $1.5 million). On average, 28% of their produce purchases were locally grown (range 3% to 70%). The premiums they paid for local produce ranged from 0% to 35%, and averaged 13%.

During the in-depth interviews, food service buyers estimated that they could increase their purchases from local growers from an average of 21% to an average of 38% of their overall produce budget. In fact, the average increase could be higher, because these figures assume that the buyers who did not provide data would not increase their purchases at all. Sixty-three percent of all food-service buyers reported price premiums for local produce. Of those reporting, the average was 63% higher for local produce and 25% higher for organic. Although these premiums seem sizable, all of the food service buyers said that the higher prices were not a problem because, so far, the amount they were buying was a relatively small proportion of their overall purchasing. Therefore, in most cases, they were absorbing the increase within their overall budgets. In some cases (such as hospital cafeterias and casinos), they were passing it on to customers.

Distributors

Distributors were more mixed in their opinions about the cost of local produce: 40% thought that there was no price difference, while 33% thought that locally grown produce was more expensive. Only 7% thought that local produce was less expensive.

Variation in responses may have depended on which products a distributor was comparing during which seasons. Produce prices fluctuate a fair amount, and certain products are more expensive at certain times of the year. On a related note, distributors did mark up their local produce, but the mark-up did not differ much from mark-ups for their conventional produce. The average mark-

up was 25% and fluctuated depending on the negotiated terms with the customer.

Farmers

From the farmers' perspective, a very limited proportion of their revenues in 2006 — approximately 2.5% on average — was attributable to farm-to-institution accounts. However, the range was large (from less than 1% to 55%), with the smallest farmers tending to have the largest percentage of sales going to institutional markets. The larger farmers already have well-established, profitable outlets for their products and may be less interested in selling more to institutions.

Student Consumers

We asked students whether they would pay more for food with sustainability values. Student willingness to pay higher prices is of concern to dining hall managers, who might have to raise prices to cover the costs of sustainably produced food. Over 40% of students surveyed said they are willing to pay more for food that is organic, local, produced in accordance with living wage guidelines, or sustainably produced (at least US$.50 more for a salad originally costing US$3.50). Interest in small farms was lower compared to the other qualities; however — over 40% of the students said they would not pay a premium for produce grown on small farms.

Since responses to questions about "willingness to pay" are often overinflated, the student survey attempted to assess what people might *actually* purchase. To get at an approximation of what their actual behavior might be, we asked the students about the frequency with which they have purchased organic, local, and fair trade foods. Student responses on their purchasing patterns indicated that a sizable proportion of students may support organic and local foods on campus. As table 2 shows, a fairly large percentage of students buy organic and local food somewhat regularly (at least monthly), and an additional 11–12% purchase those foods at least weekly.

Information Flows

Information flows may be the most important component of emerging values-based supply chains. While price information is easily conveyed throughout traditional supply chains, information regarding values such as sustainability, fair labor, or use of local products is not readily available to buyers at different points in a supply chain. In this section, we explore the values in which people are most interested. We also explore the advantages of "local" as a way of identifying useful communication strategies. Efficiency, clarity, and transparency of communication are important elements of the information flow.

Table 2. Frequency of Student Purchases of Fair Trade, Local or Organic Foods

	Fair Trade (*n*=218)	Organic (*n*=216)	Local (*n*=219)
At least weekly	8%	11%	12%
At least monthly	11%	32%	34%
At least once a year	7%	23%	19%
Never/Don't know	41%	31%	31%
I've never heard of this term	33%	3%	4%

Table 3. Importance of Various Attributes to Food Service Managers and Customers

Attribute	Importance to Food-service Manager	
	Average Rating	% Rating 6 or 7
Inexpensively priced	5.6	58.1%
Locally grown	4.9	47.3%
Sustainably produced	4.6	39.7%
Grown by small or midscale producer	3.8	29.1%
Organic	3.5	18.9%

Food service buyers

Food service buyers indicated that they had relatively strong interest in environmental and social values (see table 3). Although they rated price (on a 1 to 7 Likert scale) as the most important attribute to them for the

produce they purchase for their dining operations, "locally grown" and "sustainably produced" were also very important, with average attribute ratings of 4.9 and 4.6, respectively. Organic was the lowest rated among the five attributes.

Distributors

In the in-depth interviews, distributors identified values beyond the quality of the produce in working with local growers. Developing personal relationships was highly valued. According to one distributor, "You are talking to a person, not a corporation. You know who they are, can walk into the farm and say hello. I have many farmers that grow specifically for us. They are more agile. You can brainstorm together on marketing and do something different more easily." New and different kinds of conversations are taking place in the business transactions that involve local farmers.

As a group, distributors identified bidding requirements as the most challenging factor they face in working with local farmers. These negotiations include several factors in addition to prices; they are based on minimum acceptable standards as defined by the buyer's operational requirements. In this context, they are typically based on price, volume, availability, and food safety. Negotiation requires that both parties understand and support the product attributes and accompanying values they wish to be conveyed through the system. This requires information exchange. Values such as "sustainably grown" and "local" have not typically been included in negotiations. Despite this, distributors have managed to work within the constraints of the system by coming up with creative solutions, sometimes in collaboration with growers.

Farmers

Even though the farmers we interviewed were eager to establish new business partnerships, most were also concerned about paperwork and institutional requirements such as permits and insurance. They felt that having to go out to bid can prohibit institutional purchasers from buying local if this attribute is not specified as a criterion in the bid. Other concerns were that requirements for permits can be cost-prohibitive, and that requirements relating to liability and insurance, health inspections, and audits may be difficult to comply with. Farmers we interviewed believed that the regulators need to take measures to streamline the bureaucracy and reduce costs for growers.

With challenges such as these, we wanted to know the value that each sector placed on local and sustainable production and procurement. Several advantages of working with small to midscale local farmers rose to the top in the interviews with different sets of actors. While there was broad agreement on the values themselves, each group assigned different priorities to them. Quality of the produce and supporting the local economy were particularly important for food service buyers and distributors; creating community connections was more important for distributors and farmers; decreasing the carbon footprint was least important to all, especially for distributors and farmers. However, taken together, these advantages form the rationale for specific changes in order to increase farm-to-institution procurement.

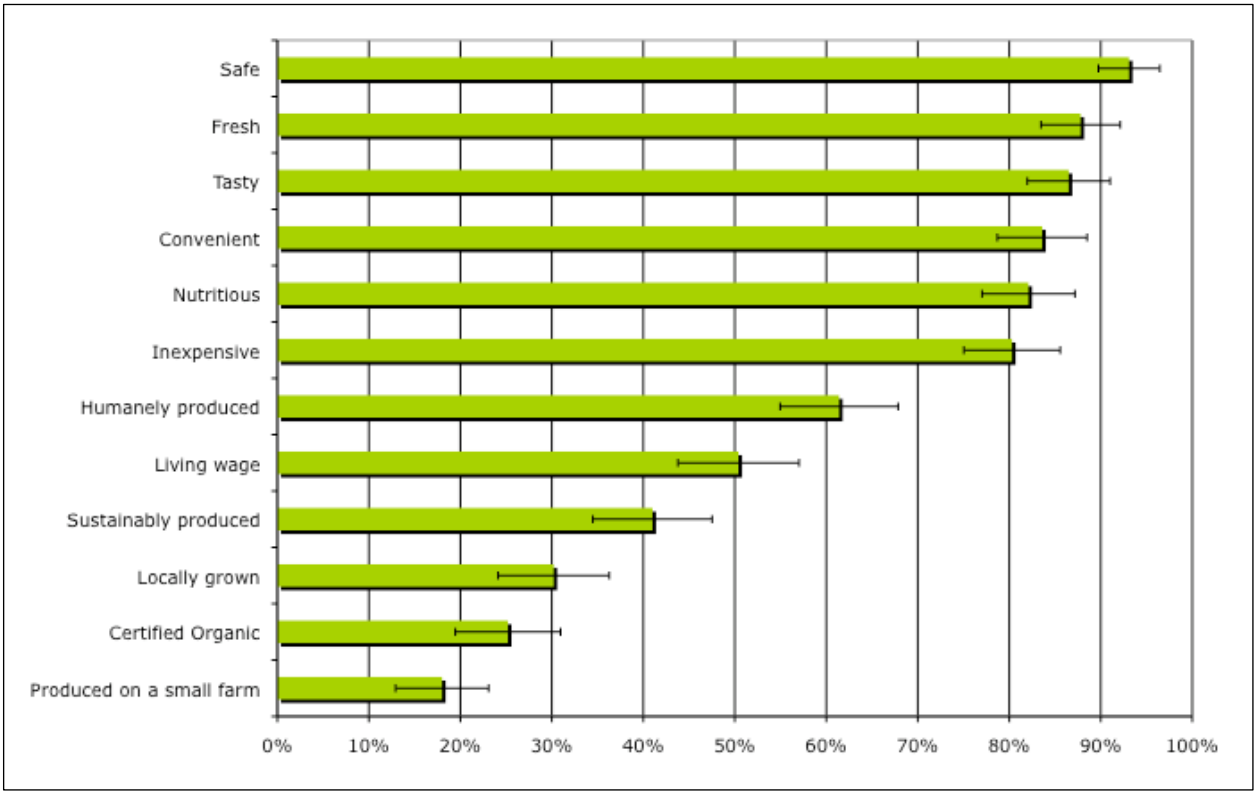
Student Consumers

Communicating about demand is part of information flow. Changing procurement practices on college campuses *can be prompted or encouraged* by knowing if there is support for these changes. In order to determine potential demand for food with sustainability qualities, we asked students what kinds of food they wanted to have their colleges provide, and to rate these qualities on a 7 point scale, with 7 being very important and 1 being very unimportant.

In this question, we asked about food qualities that research shows to be important to consumers generally, such as convenience, safety, and price, as well as about qualities related to sustainability. We also hoped that the comparison would keep people from rating the sustainability criteria in an arbitrary way.

As figure 4 shows, students are equally interested in the food qualities that conventionally are valued as most important in other consumer research: safety,

Figure 4. Percentage of Students Who Rated Certain Qualities as Important (top 2 out of 7 on the rating scale) (*N*=219)



freshness, taste, convenience, nutrition, and price. These qualities have an impact on the person consuming the food. Also, as expected, the sustainability-related criteria — criteria that are more socially oriented and have a less immediate impact on the person — are less frequently cited as being important for their dining service to provide. Next highly ranked are values that have to do with the welfare of others — food that is humanely produced and where a living wage is paid to workers. Interestingly, the three lowest ratings are for "locally grown," "certified organic," and "produced on a small farm," which are the criteria most often promoted in farm-to-institution programs.

Understanding what people want to know about their food and how they want to learn about it is important for developing education on sustainable food issues. To this end, students were asked to rate how they would most like to get information on food issues. They were directed to select up to four items (table 4). The two most preferred methods, product labels (62%) and

Table 4. Outreach Strategies Students Prefer To Get More Information About Their Food (*N*=224)

How would you like to obtain more information about your food?	Percentage choosing among top 4 items
Product labels	62.2%
Brochure, table tent, or display located where you purchase or eat your food	50.9%
Newspapers or magazine articles/books	48.5%
Web pages/the internet	46.4%
Television program/videotape/DVD	27.0%
Tours of farms and/or processing plants	20.5%
Talking to seller/farmer	11.9%
Radio	10.2%
Classroom lecture and/or guest speaker	10.0%
Campus event or presentation	9.4%
Study group	3.5%

brochures (51%), are information sources provided where people choose their food. This implies that education efforts in dining halls and cafeterias are an excellent option. The next most frequently chosen methods — print (49%) and the Internet (46%) — are also viable as education outlets on food system issues for college students. Many institutional dining services have active websites where information about sustainable food systems could be posted. Twenty-seven percent of the students were interested in audiovisual methods, and 20% were interested in farm tours.

Discussion

Integrating perspectives from several types of stakeholders in values-based supply chains enriches our picture of how these chains function and what is needed to improve upon them or expand them further. There are no simple answers. Based on our study's results, we offer insights and lessons for practitioners on product flows, financial flows, and information flows.

Insights on Product Flows

Creating and continuing farm-to-institution efforts require getting the products with the desired values through the food chain. This product flow involves all stakeholders, and particularly the food service buyers, distributors, and producers, since they are most involved in providing products with specific values for the customers at the end of the chain.

One notable finding is that all stakeholders had to balance the "sustainability values" (local, sustainable, organic, fair trade) with the more conventional market values (inexpensive, convenient, efficient). There is no clear "line in the sand" about when and how buyers, distributors, or farmers will support values-based supply chains and when they do not. For example, buyers were often willing to experiment with purchasing more local or sustainable products, especially if their administration or company supported these decisions. Overall costs always have to be taken into consideration, however. Other factors that we did not measure (e.g., college budget cuts) may change the balance. The students' balancing act was apparent in their responses regarding all the qualities in food that they want their college to provide, which included those of being both inexpensive and sustainable.

Another aspect of creating a successful product flow is having flexibility and creativity in pivotal locations in the food chain. Buyers, in particular, can help "pull" values-based products through the system. In the in-depth interviews, we found that these buyers and the distributors they worked with were willing to make accommodations and try new products and procedures, even if it was not a smooth process in the beginning. They were not afraid of using multiple distribution channels simultaneously to get products they wanted. Even though finding new suppliers and distributors might be messier, they were willing to find a way to make it happen. They were less concerned with efficient logistics and more concerned with a broader vision of a more "sustainable, regional" food system.

Diversity, in many aspects, was another theme associated with successful products flows. For the farmers, having a diverse crop mix and using season extension methods to lengthen their marketing season allows growers to meet buyers' needs for more of the year. It can also apply to having a diversity of farm sizes as part of an aggregated consortium of farmers who supply the chain. For the nonprofit allied and small produce distributors in particular, the farmer collaborative worked much better when it was anchored by several midscale to large farms who could provide larger volumes to buyers when needed. In other words, having a diversity of scale incorporated into distribution entities was critical to their success.

Small and midscale growers could improve their participation in such values-based supply chains when they have opportunities for planning ahead with food service managers, perhaps creating forward contracts (in which buyer and seller agree today on a price for future purchases of a particular product). The bidding process, although a barrier in some instances, could also be seen as an opportunity for opening new markets, if the request for proposals or bidding language names the values for which these chains are known.

Insights on Financial Flows

Although prices and costs were clearly on the minds of all stakeholders in the supply chain and everyone wanted a good deal, food service buyers, distributors, and farmers were all willing to adapt. For example, fully 50% of food service buyers were either part of a local buying program or initiating one, despite the fact that they admitted it would probably be more expensive. Those who were already participating in programs promoting values-based supply chains seemed more willing to experiment. They often found other ways within their budgets to cut costs so they could absorb additional costs of the local and/or sustainable buying programs. Those who were part of these values-based supply chains were generally more willing to optimize costs throughout the chain rather than maximize their own economic benefits. The focus is on "optimality" vs. "efficiency" to achieve welfare for all parties. Those who were not part of such programs generally felt that price was a barrier.

For student consumers, current purchases of value-based food products, whether on campus or off, were relatively low. However, about a third of students surveyed purchased organic or local products at least monthly, suggesting there may be room for growth. At least 50% of students surveyed claimed they would pay US$.25 more for a US$3.50 salad (a 7% premium) with values of organic, local or sustainable attached.

Among the food service buyers, those who were either developing or had a buying program for local produce had a greater willingness to pay for each of the production attributes. Expanding the market for sustainable food therefore depends on increasing the interest of institutions without local buying programs regarding the benefits of sustainability attributes.

When we look at the whole supply chain together, it appears that many participants throughout the supply chain are willing to experiment with purchasing foods with sustainability values even if it costs more in the beginning. Given that the context is a university or college campus setting where these values are discussed in classes and in professional food service settings, this may be one amenable market to start in when thinking about how to ramp up these values-based supply chains.

Insights on Information Flows

Although the values of "local," "sustainable," "organic," and "small farms," which are often associated with local buying programs in colleges and universities, are apparently growing in importance, they are still ranked below "the BIG 6" of safe, fresh, tasty, nutritious, inexpensive, and convenient, at least for college students. Some of the demand for pulling these value-laden products through the system comes from students. Institutional food service buyers generate most of the demand. Food service buyers explained that entering freshman students need to be educated every year about these values. At the beginning of the year, many are just learning about the concepts. By the end of the year, they are beginning to select more foods associated with local buying programs. Our survey responses from students seem to echo this point (although freshmen were a very small segment of the sample).

Another similar education opportunity is to ensure that each segment of the value chain understands the priority food-related values of those in the other parts of the value chain. As our data shows, the sellers' perceptions of their customers' interests did not always match what the research found about their customers' interests. Food service buyers (directors, chefs) hear about these values from their professional organizations, the leadership of their food service management companies, or top administrators of their colleges and universities. Many had been encouraged by management to try out more local, sustainable products and programs. In a few universities, students were in the vanguard, voicing their support for these values and asking for them to be embedded in food choices. This provided an additional supportive context in which buyers made procurement decisions. Student voices were much more effective when organized by student groups and leaders and

when requests were made in a highly visible manner. As educational institutions, colleges, universities, and even teaching hospitals have a mandate to educate. In some cases, students and faculty used this as an opportunity to share information on multiple levels — among students, food service buyers, distributors, and farmers. In these instances, students were interested in changing campus policies to embed these values in future food service procurement practices.

Information exchange among buyers, distributors, and farmers most often was included in "transaction costs," including all the time and effort needed to negotiate new logistics and information systems associated with obtaining sustainable, local, or organic products from new suppliers or systems. For some, this additional information exchange became a barrier. For others, it became a challenge to be overcome and to learn from. The majority of interviewees from the case studies (who were already part of values-based supply chains) said that they welcomed this opportunity to learn more about other participants in the supply chain. In fact, several food service buyers had gone on farm tours with those growers who supplied their food. Not only did they learn about how the food was grown and delivered, they also gained knowledge about the larger economic, environmental, or structural issues such as consolidation in the food system, the disappearance of land, and the struggle to compete against very large-scale producers in the United States and abroad. Producers learned about the struggles that food service buyers have in getting a reliable flow of supplies of these products and marketing them to their customers.

As a result of meetings, workshops, tours, phone calls, and ongoing conversations over time, all parties could come to agreements about how to handle logistical challenges. Moreover, they began to form relationships with each other. This trust-building is essential to forging new business connections and new values-based procurement practices. Rarely were things perfect the first few times sales and deliveries were made. It took time to work out the details. Ongoing and open communication was essential to build trust and come up with creative solutions that met all parties' needs.

Education Is the Key

For future values-based supply chains to grow and thrive, our results point to education as the key ingredient. Education is needed at each level among the participants in that particular sector. Most students need — and many want — more education about the food system and what is entailed in getting food from field to table. Food service personnel need information about finding new sources of regional, sustainable food, and about initiating new types of bidding proposals or forward contracts that embed these values as part of the expectations or criteria in addition to price. Growers and distributors need education about new mechanisms for aggregating and processing regional products and finding ways to tell the farmers' story so buyers and consumers will know what they are paying for — especially if they agree to pay more. Producers need education about strategies for preprocessing product and reaching out to new institutional buyers.

Educational entities — colleges, universities, community colleges, culinary programs, cooperative extension services, and the media — also have roles to play. They can be the vehicles that provide as much information as possible to the public about the functioning of the food system. They can also share the possibilities for environmental, economic, and social sustainability that could occur with new values-based supply chains. The risks and challenges need to be aired as well. If practitioners, researchers, and others want to see these new values-based supply chains succeed, mistakes and problems as well as successes need to be shared.

Limitations of Research

Although this study provides valuable information, there are several limitations that need to be recognized. The student survey had a fairly low response rate due largely to a faulty sample provided by the mailing list firm used in this study. Given the smaller sample, the results may not be generalizable to the whole population. The number of in-depth interviews of farm-to-institution program partici-

pants (farmers, distributors, and food service buyers) was also small, so results also may not be entirely generalizable. We did choose survey questions that were similar to those in the food service survey so that we could compare responses. We found that responses generally agreed with each other, supporting results of both.

Also, this study was conducted mostly in California, although some student responses were from outside California. The year-round growing season and existence of more farm-to-institution programs than in other regions of the country may have suggested more options than can actually work in other places. However, we expect that many of the results here can also be adapted by other regions to take into account their unique circumstances.

Our study focused on the values-based supply chains for produce, as opposed to meat, grains, or dairy. We found that, at least in California, fruits and vegetables were the type of food most food service buyers started with when they considered buying regionally. There was more activity in the produce sector, so this area seemed most appropriate to study first.

Future research involving the entire supply chain should include larger and more representative samples of students, farmers, and distributors. In addition, it may make sense to select cases from diverse places with different climates, so that comparisons on the importance of various constraints and opportunities might be made across regions.

Conclusion

Farm-to-institution programs provide a rich environment in which to explore emerging values-based supply chains. Results from interviews and surveys throughout the supply chain, from farm to fork, provide a nuanced and comprehensive picture of challenges and opportunities required to strengthen and ramp up these systems. Using the theoretical constructs from the supply chain literature of product flows, financial flows, and information flows, we highlighted key issues of various participants in the supply chain. Information flows are perhaps the most important area for future attention. Interviewees and respondents were most excited about strengthening information flows and building relationships that would allow all parties to build trust over time. Educational institutions and the media can support these values-based supply chains by becoming the vehicles for ongoing exchange of information among supply chain partners and the public.

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Corbin Hill Road Farm Share: A hybrid food value chain in practice

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Abstract

Food value chains consist of food producers, processors, third-party certifiers, distributors, and retailers working together to maximize the social and financial return on investment for all participants in the supply chain, including consumers. This paper presents a case study of Corbin Hill Road Farm Share, a newly created hybrid food value chain that engages nonprofit strategic partners to provide locally grown and affordable produce to low-income residents of New York City's South Bronx while also enabling Farm Share members to become equity owners of the farm over time. The case study shows that the involvement of community-based nonprofits is key to creating a food production and distribution system that engages a wide range of stakeholders, fosters shared governance and transparency, empowers consumers, and benefits regional farmers.

Keywords

civic agriculture, community supported agriculture, Farm Share, food sovereignty, governance, value chain

Introduction and Literature Review

The value chain model, popularized by Porter in the 1980s (Porter, 1985; Porter & Kramer, 2006) and subsequently elaborated on by scores of management theorists, has been adopted by food systems scholars and practitioners as a framework to help expand what has been variously described as alternative food networks (Renting, Marsden, & Banks, 2003), rural and regional agri-food webs (Marsden, 2010), foodsheds (Kloppenburg, Henrickson, & Stevenson, 1996), and civic agriculture systems (Lyson, 2004). Food value chains consist of food producers, processors, third-party certifiers, distributors and retailers working together, often in a web rather than a linear chain, to maximize the social and financial return on investment for all participants in the supply chain,

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including consumers (Bloom & Hinrichs, 2010; Stevenson, 2009; Stevenson & Pirog, 2008, p. 120).

This article presents a variation on the value chain model, described in the social entrepreneurship literature as a *hybrid* value chain (Drayton & Budinich, 2010), as a framework for investigating the roles that community-based nongovernmental organizations (NGOs) play in the food value chain to create food systems that simultaneously address the needs of farmers and low-income consumers. Through a single case study of the Corbin Hill Farm Share, it demonstrates how the hybrid features of the value chain model are key to engaging low-income individuals who typically have the least amount of agency within the conventional food system.

Food Value Chains

Food value chains are often *values*-based because they involve higher levels of trust, transparency, cooperation, and a commitment to the welfare of humans and nonhumans (e.g., livestock, the land) involved in the chain of production, compared to conventional supply chains. The term value also refers to the fact that such chains seek to maximize the intrinsic value of products and the ability of producers to extract financial value from intermediate and final consumers down the line, by highlighting distinctive characteristics such as local provenance, using sustainable production techniques, maintaining high ethical standards, and incorporating into the production process other elements that consumers increasingly associate with quality.

The idea of a food value chain, in which small and medium-scale farmers and low-income consumers are able to gain power and extract more value from the food system, is consistent with Lyson's (2004) concept of civic agriculture and various efforts to support alternatives to the conventional food system. Civic agriculture systems comprise a network of smaller-scale, local, flexibly organized farms and food producers who reject conventional production-oriented, mechanistic models of food and farming (Feagan, 2007; Lyson, 2004). They include community supported agriculture programs, farmers markets, cooperative production facilities and cooperative retailing businesses, all of which decrease the physical distance between producer and seller and reduce the intermediaries that capture profits from farmers and increase costs to consumers, with resulting economic, social, and environmental benefits (Renting et al., 2003). These businesses tend to be rooted in particular places, aim to be economically viable for farmers and consumers, use ecologically sound production and distribution practices, rely on the knowledge of individuals who live in a particular place, and attempt to enhance social equity for all members of the community (DeLind & Bingen, 2008; Feenstra, 1997).

While the food value chain model may serve as a guide to increasing the market share and profitability of small and medium-scale farms by capturing the value of small-scale sustainable food production that is otherwise lost in the conventional food system, the model may be less relevant for addressing the needs of very-low-income, minority consumers. The kinds of businesses typically associated with a food value chain, and a civic agriculture network, have tended to be oriented towards middle- and upper-income consumers who can afford the added value of locally sourced, humanely raised, organic, fairly produced food (Guthman, 2008; Hinrichs and Kremer, 2002). In addition, these alternative food projects often are designed and located to ensure financial profitability for farmers rather than to address the needs of *both* farmers and consumers, particularly those consumers who lack the resources and infrastructure to procure fresh vegetables at all, let alone food with specific quality, environmental, or ethical characteristics (Allen, 2004). Guthman (2008) adds that farmers' markets and community supported agriculture (CSA) programs tend to locate or distribute to areas of relative wealth and are also often culturally coded as "white spaces." Consumer-based local food efforts, including food value chains, "are difficult to extricate from the dominant political economy," work against historical forces of injustice, and may "inadvertently reproduce extant social privileges" (Allen, 2010, p. 305).

The Hybrid Food Value Chain

Elements that distinguish hybrid food value chains from other food value chains and conventional food supply chains include strategic partnerships, including with NGOs that contribute social capital, the co-creation of value by all the links in the chain, and transparency and shared governance throughout the chain that includes sovereignty for each link. But the notion of hybridity in the value chain is not new. Prahalad (2004) and others have argued that cross-sector partnerships can enable corporations to provide needed products and services to low-income consumers by developing innovative products and services as well as appropriate delivery models (although the so-called "base of the pyramid" literature has been criticized for its focus on consumption rather than on strategies to boost the income and agency of the poor). In recent years the literature on the importance of mutually beneficial relationships among NGOs and businesses has grown (Kourula & Laasonen, 2009), as has the number of cross-sector partnerships in which NGOs join with businesses to address a wide range of social issues (Selsky & Parker, 2005).

Strategic partnerships

Nonprofit organizations are one important element of hybrid value chains, particularly those value chains aimed at meeting the needs of low-income consumers. Nonprofits bring to the value chain social capital that comes from the networks, mutual goals, trust, and beliefs that nonprofit organizations share with their members and stakeholders (Bryce, 2006). This social capital, the ability to engage community members, raise funds, disseminate information, and reduce transaction costs, has significant financial value.

Nonprofits can help companies to aggregate and channel demand, lowering transaction costs (Weiser, Kahane, Rochlin, & Landis, 2006, p. 23). Their staff members often have organizing skills that enable them to reach out to and attract customers. Nonprofit partners may provide critical insights into the needs and constraints of low-income consumers that they have relationships with as clients, employees, or community stakeholders, and through this knowledge can help in the maintenance of a customer base. Nonprofits also tend to be located within the communities they serve and so have a first-hand understanding of the logistical issues associated with local business development.

Co-creation of value

A hybrid food value chain model stresses the collaborative role of value creation by consumers, farmers, for-profit ventures, nonprofit community-based organizations, patient investors interested in social as well as financial returns on their investments, and consumers, all working closely together for mutual benefit. Simanis and Hart (2009) describe this as "business intimacy," the process by which the private sector co-creates value with nontraditional actors, building connections as companies and communities view each other interdependently, developing mutual commitment to each other's long-term growth. And because the needs of the community are part of their mission, businesses and nonprofits are particularly knowledgeable about those needs and can help customize products and services.

These partnerships can also provide concrete value-adding services: identifying consumers; developing customer trust; communicating effectively with community members about their needs; and identifying innovative ways to address the limited purchasing power of individual consumers (Budinich, Reott, & Schmidt, 2007; Reficco & Marquez, 2009). Hybrid value chains also help to create business models that span various customer bases (Reficco & Marquez, 2009). If a business can develop a value chain to provide products and services to lower-income customers, it can often provide those products and services to higher-income customers as well, making the model replicable and scalable.

Transparency and shared governance

Unlike the conventional food system, the food value chain model treats producers and food processors as partners with consumers (Stevenson & Pirog, 2008). But doing so successfully requires procedures to ensure that all parts of the value chain have trust in the fairness and predictability of

the partnership through greater transparency than many businesses are willing to provide. Because of the engagement of community-based organizations committed to structural changes that empower the community members they serve, hybrid food value chains are often focused on transforming the food system rather than merely improving its efficiency or increasing access to healthy food. In many cases the idea of transformation involves creating new enterprises that are inclusionary, participatory, or even co-owned by members. This is the kind of "builder work" that Stevenson, Ruhf, Lezberg, and Clancy (2007) argue is a promising arena for changing the agri-food system.

Community Supported Agriculture

As noted above, community supported agriculture programs are one type of food value chain. The idea of community supported agriculture, in which a group of individuals buys shares from a farmer for an expected harvest, originated in the 1960s in Japan and Switzerland, and spread to the United States following the creation of CSAs by Jan Vander Tuin and Robin Van En (Farnsworth, Thompson, Drury, & Warner, 1996; Lang, 2010). The number of CSAs in the U.S. has grown from two in 1986 to more than 2,000 today; they are concentrated in the Northeast, areas surrounding the Great Lakes, and coastal regions of the West (Adam, 2006; Local Harvest, 2010).

One of the goals of the CSA model is for consumers to support farmers by paying them in advance, sharing the risk of large or small harvests. But CSAs have been established to advance political aims as well. CSAs promote the formation of direct ties between people and farmers in part to disengage from the global food system and support local economies (Guthman, 2004; Henderson, 1999; Schnell, 2007). Many individuals helping to organize direct marketing food initiatives such as farmers' markets and CSAs are also working to solve social justice problems in their localities (Allen, 2010). Research in California found that many farmers' market and CSA managers prioritized food security for low-income people and used strategies to try to meet the needs of low-income consumers (Guthman, Morris, & Allen, 2006).

CSAs vary in their structures and business models, including size, cost of membership, growing methods, member involvement and the food that they provide (Feagan & Henderson, 2008; Lang, 2010; Martinez et al., 2010; Schnell, 2007). Since CSAs are highly local creations, they attempt to forge relationships between consumers and farmers that reflect unique conditions and needs (Groh & McFadden, 1997). For example, although CSAs traditionally required a one-time payment at the beginning of the season for a weekly share of produce, many now offer a range of payment plans and other logistical arrangements, including various selection and pickup methods (Woods, Ernst, Ernst, & Wright, 2009). Some accept SNAP benefits and/or Women, Infants, and Children (WIC) payments, offer free shares to needy families, and offer half shares to keep the cost to the members manageable (Lang, 2010).

Many types of collaborations occur between CSAs and other farms and community organizations. For example, Hassanein (2008) describes a farm run by the University of Montana that collaborates closely with a nonprofit community group that manages the farm's operations and the distribution of fresh produce to area food pantries, and also markets its produce through a CSA. Along with increasing varieties of payment plans and business arrangements, CSAs are offering a larger range of products, including eggs, meat, and flowers, often partnering with producers of other local products to offer a wider range of value-added items (Schnell, 2007; Woods et al., 2009).

Methods

This paper is a single case study of Corbin Hill Road Farm Share (CHRF), an example of a hybrid food value chain designed to supply fresh, regionally grown produce to extremely low-income consumers in New York City. A single case study design was deemed an appropriate method of analysis for this paper because our interest is in understanding the case at hand with the goal of generalizing within, rather than from, the case. Through a detailed description of CHRF, the paper outlines how it functions as a hybrid food value chain. Case study is an ideal methodology when a

holistic, in-depth investigation is needed (Feagin, Orum, & Sjoberg, 1991). Single cases are also appropriate methods to confirm or challenge theories, and to represent a unique phenomenon where an observer may have access to information that is otherwise inaccessible (Yin, 2009).

The data for the case study were from two principal sources. First, semistructured interviews (using two interview protocols) were conducted in June and July 2010 with three Farm Share members and three farmers supplying produce to CHRF to obtain feedback on their participation in the venture. Interviewees were asked to describe their roles with respect to CHRF, their experiences participating in the Farm Share, and their thoughts on the impacts of the Farm Share on their own lives. These interviews were recorded, the responses were transcribed, and the transcripts were categorized and then organized by theme for inclusion in the case study. A second source of data was the business plans, project descriptions, and other CHRF business documents, including a list of partnerships.

There is a potential researcher bias from the selection of a single case and the use of a small number of key informants. Furthermore, one of the article's co-authors, Dennis Derryck, was the founder of CHRF and has been involved in developing the business since its genesis. The co-authorship by Dr. Derryck introduces the possibility of researcher bias, though we have used other key informants and documentation to avoid bias to the extent possible.

Results

Project Background

Corbin Hill Road Farm (CHRF) was started in 2009 as a 96-acre for-profit farm in Schoharie County, New York. Its core business is supplying fresh, locally grown produce to low-income residents living in communities that have limited availability of healthy food. To do so, CHRF aggregates produce from seven nearby farms (though the number of produce suppliers is expected to increase in the coming seasons), and sells it directly to individuals and organizations in New York City.

The mission of the company is much broader than selling food, however.[1] CHRF aims to bring food security, justice, improved health, as well as eventual economic equity ownership of the farm to the target market communities, increasing value to all participants in the food supply chain. CHRF's business model grew out of a sense that, as successful as conventional CSAs are at distributing food directly from farm to consumer, the structure of a CSA is not typically geared toward the financial and logistical needs of very-low-income individuals.

While the basic structure of CHRF operates like a community supported agriculture program, with customers paying in advance for weekly shares of produce delivered to a pick-up location, the business differs from a conventional CSA in several respects in order to address the needs of low-income individuals. One fundamental difference is that CHRF is designed to make Farm Share members, also called Shareholders,[2] farm *owners* over time, solidifying their relationship to the farm, providing them with greater control over the production of their food, and fostering stewardship of the farmland. CHRF's business plan provides that Shareholders or target market subscribers will be able to own shares in CHRF, though the mechanism for this transfer is being developed (as discussed below).

Business Structure and Financing

CHRF is organized as a limited liability company (LLC) incorporated in the state of New York. The decision to seek private financing and operate as a for-profit venture reflected the challenges of an environment in which few foundations were interested in providing start-up funding for new business entities. CHRF's partners also considered but rejected the creation of a nonprofit with a for-

[1] See http://www.corbinhillfarm.com/about/vision.html

[2] Corbin Hill Road Farm capitalizes "Shareholder" as a stylistic choice to distinguish its members from conventional equity shareholders.

profit subsidiary, given the mixed experience of these hybrids.

CHRF's business plan sought US$1.2 million to capitalize the social venture. The initial equity for CHRF came from 11 investors who provided a total of US$565,000 (with 72% of the equity coming from African American and Latino individuals and 50% from women). Capital and operating loans of US$350,000 came from Farm Credit East[3] with additional low-interest loans from the New York State Energy Research and Development Authority (NYSERDA). The second round of financing has amounted to US$450,000 in a combination of equity and loans.

Short-term financial data for a start-up can be misleading and therefore is typically best viewed in the context of the investor pro forma that illustrates the expected financial performance over a longer period. CHRF's revenues after its first full year of operation were approximately US$79,000. Revenues are projected to rise in its second year of operation to US$580,000 as a result of the growth in the number of Farm Share members to 1,500 and a modest increase in the cost of partial and full shares. CHRF projects revenues to grow to US$1.3 million two years hence, and to reach US$3.8 million by year eight. A positive net income is projected in two years (with a return of 8%, rising to 25% to 30% in years seven and eight). For each year of operation, CHRF projects that its cash flow will remain positive, with a low of US$330,000 three years from now, growing to US$1.5 million in year 10. This cash flow will enable CHRF to start paying dividends to the social investors in two years and to finance its own internal growth. The internal rate of return over 10 years, discounted at 10%, is projected to be 23%.

The issue of scaling for social impact is not typically a primary goal of CSAs, but it is a major goal of the Farm Share model. CHRF exceeded its first year goal of 175 Farm Shares by 16 members. Throughout the 2010 growing season, enrollment continued to increase, eventually reaching 281 Shareholders, and additional partner sites were added throughout the summer. CHRF is projected to grow to 1,500 Farm Shares for the 2011 season. CHRF's goal is to have 3,000 Shareholders within three years and 5,000 within the next 10 years.

Strategic partnerships

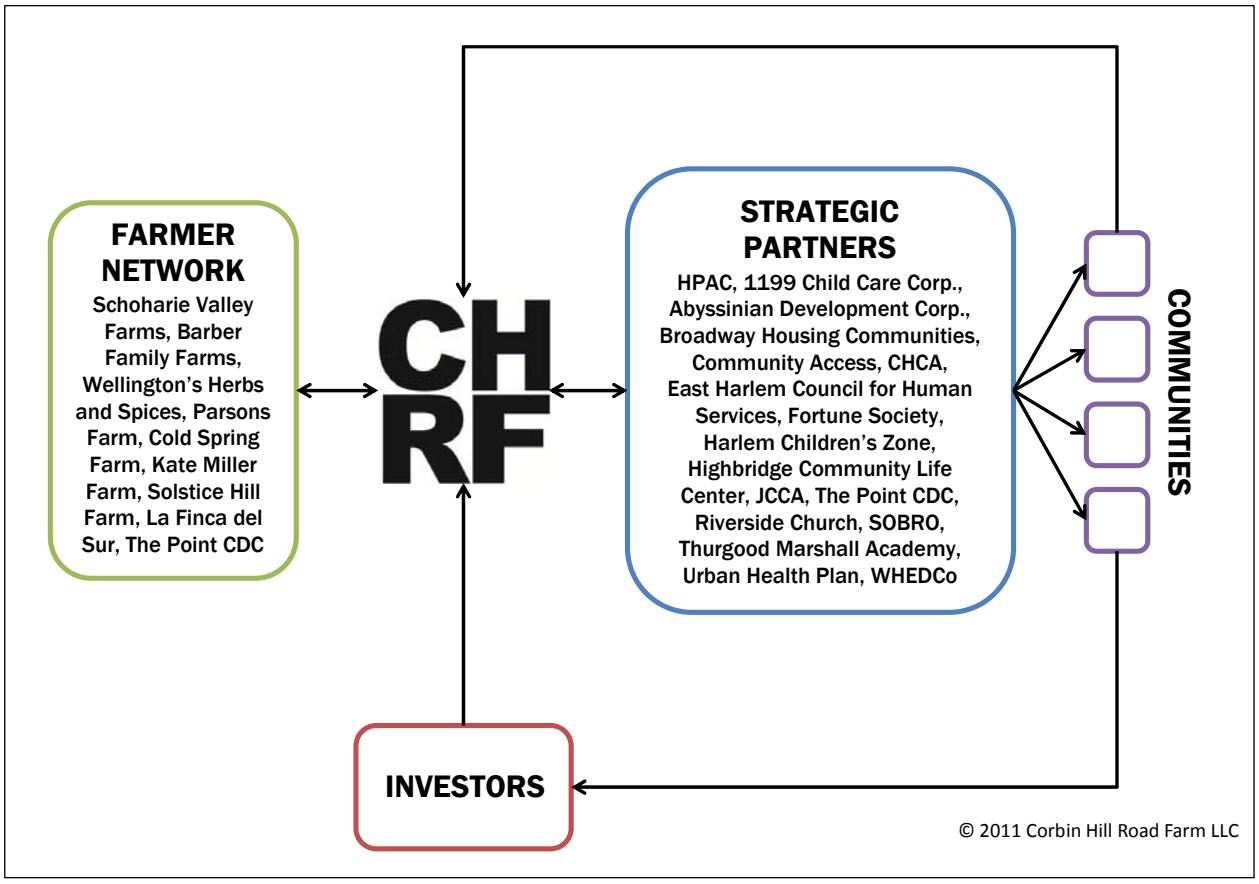
Strategic partnerships enable CHRF to offer a range of produce from various farms and to access its target communities of Shareholders. CHRF unites two clusters of strategic partners: groups of farmers in rural Schoharie County, and community partners within New York City and the Shareholders they represent. CHRF acts as the hub for each cluster and coordinates them so that the two clusters can function simultaneously. See figure 1.

Farmers

CHRF is connected to a network of farms and farmers in Schoharie County who supply produce for the distribution services. Based on CHRF's growth projections from 281 Farm Shares in its first year to 1,500 Farm Shares for the 2011 season, Cornell University Cooperative Extension convened a meeting of 12 farmers in February 2011 to help them develop a harvest plan to meet the Farm Share needs for CHRF. Ultimately, nine farmers agreed to participate. A manual was prepared based on data from the first year, defining the conditions for participation and identifying the types of produce, quantities, and specific weeks they had to deliver produce for each of the 23-week growing season. An agreement was reached about the growing capacity of each farmer and the quantities that could be grown and delivered on specific dates. The latter was important given the different soil conditions and altitudes that exist in Schoharie County that could result in early and late crops of the same produce. The mix of participating farmers included two large growers (with more than 100 acres), several smaller growers (under 20 acres), and smaller specialty farms who chose to concentrate on new produce not currently grown by the other farmers that would meet the cultural needs of the communities served by CHRF, such as okra and tomatillos. A full-time produce manager has been hired to coordinate this harvest plan.

[3] https://www.farmcrediteast.com/

Figure 1. Corbin Hill Road Farm Share Hybrid Food Value Chain



Target Shareholders

CHRF has focused on the South Bronx neighborhood of Hunts Point, whose residents are extremely poor and lack healthy food options. The Bronx as a whole has been ranked the unhealthiest county in New York state (Robert Wood Johnson Foundation, 2010), but South Bronx residents face particular challenges. For example, a national food hunger survey of U.S. congressional districts found that nearly 37% of residents in the 16th congressional district, which encompasses the South Bronx, said they lacked money to buy food at some point in the previous 12 months, a higher percentage than in any other congressional district in the country and twice the national average (Food Research and Action Center, 2010). In addition, per capita fruit and vegetable consumption in this community is significantly below the level in the city as a whole and far below the USDA-recommended five daily servings (see table 1), and residents are more likely to be overweight or obese (see table 2). Hunts Point has been designated by the Department of City Planning as a community

Table 1. Fruit and Vegetable Consumption (Age Adjusted), 2009 South Bronx and New York City (in percentage reporting fruit and vegetable consumption in the previous day)

Responses to "How many total servings of fruit and/or vegetables did you eat yesterday? A serving would equal one medium apple, a handful of broccoli, or a cup of carrots."

	None	1–4	5 or more
South Bronx	24.5%	69%	6.5%
New York City	12.4%	76.5%	11.1%

Source: NYC Department of Health and Mental Hygiene, Bureau of Epidemiology Services. NYC Community Health Survey 2009. Accessed at https://a816-healthpsi.nyc.gov/epiquery/EpiQuery/CHS/index2009.html

Table 2. Body Weight (Age Adjusted), 2009, South Bronx and New York City (in percentage normal or underweight, overweight, and obese)

	Underweight or normal weight	Overweight but not obese	Obese
South Bronx	29.7%	38.2%	32.1%
New York City	45.2%	32.8%	22.0%

Source: NYC Department of Health and Mental Hygiene, Bureau of Epidemiology Services. NYC Community Health Survey 2009. Retrieved from https://a816-healthpsi.nyc.gov/epiquery/EpiQuery/CHS/index2009.htm

with a lower-than-average ratio of supermarkets to people, with poor access to large grocers even via transit routes (New York City Department of City Planning, 2008).

Community partners

CHRF's Farm Share defines community not just by geography but also by the different populations served by its nonprofit partners. CHRF's business model relies heavily on the strategic community partners in the Bronx who serve the population CHRF is targeting, in order to access and organize community residents and to form the foundation of a distribution network. Shareholders enroll in the Farm Share program through one of CHRF's strategic partners. Table 3 in the appendix describes the strategic partners and the different populations they serve, from mothers at the Harlem Children's Zone Baby College and early childhood and Head Start programs, to ex-offenders and formerly homeless individuals affiliated with the Fortune Society and Broadway Housing Communities, to Bronx-based healthcare workers at Urban Health Plan.

CHRF's marketing strategies include four basic approaches: (1) It directly organizes residents within a specific neighborhood; (2) CHRF works directly with a strategic partner's employees and clients (for example, Broadway Housing staff helped to enroll the formerly homeless residents in one setting and the mothers of children in the Head Start program that is also operated by Broadway Housing in another facility); (3) CHRF works to sign up workers and the staff of an organization; and (4) CHRF recruits staff members in some organizations, such as WHEDCo, to introduce CHRF to the organization, build credibility, and demonstrate that it can deliver quality produce on a regular basis as a precondition to accessing program participants.

Distribution Logistics

CHRF coordinates the logistics of ordering, packing, and distributing the Farm Share produce. At least three days in advance of a distribution day, the produce manager submits orders for produce to the farmers, enabling them to plan for the quantities of produce to be harvested for the coming week. These "pick orders," which compose the combined orders of the Shareholders, consist of 10–12 produce items and always include a fruit.

All items are harvested on Monday, are washed, cooled, boxed, and refrigerated in a cold storage facility located on one of the farms. On Wednesday morning, they are packed into a refrigerated truck that travels to New York City for a mid-afternoon arrival in Hunts Point. The produce is then sorted at The Fulton Fish Market (a night market that is empty all day) by CHRF's founder, the driver, a helper, the Farm Share coordinator, and two or three volunteers, according to produce type and share, and is packed onto labeled pallets for each distribution site. The pallets are stored overnight on CHRF's refrigerated truck. (One of the community partners installed electrical outlets that enable CHRF's refrigerated truck to park in an enclosed and locked parking lot each Wednesday evening.) CHRF's driver and helper deliver the produce beginning at 8 a.m. on Thursday, and site coordinators (volunteers from the staff of the strategic partners) provide the set-up (in a farmers' market style) and distribute the produce during hours that each determines to be convenient for their Shareholders. These coordinators collect funds, sign up new Shareholders, and record any changes in the Shareholder status.

Staffing at CHRF was lean during its first year and remains so as the business implements its plans for scaling up its operation in the coming year. Operational responsibility is divided between its

founder, who manages the upstate relationships among the farmers in addition to overall management responsibilities, and CHRF's general manager, who is responsible for the New York City operation and relations with the strategic partners. A farm manager has been replaced with a produce manager. Unique to CHRF is the hiring of a community organizer to engage new Farm Share members. Seasonal positions include a Farm Share coordinator with support staff members who work directly with the strategic partners.

Co-creation of Value

To create a business that is both able to make a profit and address the economic constraints of its target market, CHRF began conversations very early on with community members in Hunts Point about the amount Shareholders would pay and the manner in which they would do so. Typical CSAs charge from US$450 to US$700 per share, with payments due by early April (and at times as early as January) with the first produce to be delivered in June. For residents living in Hunts Point, paying one to two or more months in advance for a share of produce was not a viable economic option, as the payment required to reserve a CSA share far exceeded their average monthly food stamp benefits of US$300. Even if they wished to exercise this option, food stamps could not be used to pay for fresh produce delivered at some future date. When pushed to decide on an acceptable payment scheme for the fresh produce being provided, Shareholders agreed that paying two weeks in advance was fair and feasible.

Even this commitment proved to be a barrier for many, and during the summer 2010 season, the deposit was reduced to an amount equal to one week's share.. For the 2011 season the deposit has been eliminated; Shareholders now pay only one week in advance. In response to Shareholder recommendations, CHRF also allows share members to give only a week's notice to put their shares on hold while away, to change from a partial to a full share or from full to partial share, and to rejoin after leaving. Shareholders who do not use their funds are given a refund. Some shareholders are able to pay through after-tax paycheck deductions managed by their employer.

Shareholders have a set number of produce items delivered each week for the 23-week growing season. The amount and variety of produce each shareholder receives weekly depends on what is being harvested at any point in the growing season. Partial shares have included 7 to 9 types of fruits and vegetables in a quantity sufficient for a household of 3 to 4 people. Based on feedback from Shareholders who participated in the 2010 season, the per-week prices for the 2011 season were set at US$20 for a large share, US$12 for a medium share, and US$5 for a sampler share that consists of 3 to 5 items. All forms of payments, including electronic benefits transfers (EBT or "food stamps"), are accepted. A limited number of shares subsidized by 50% are available for all strategic partner sites who wish to offer them. Deliveries are made at the premises of the strategic partners, staffed by CHRF.

Potential shareholders had doubts about joining the Farm Share and sought answers to a series of questions and concerns about how to manage their own risks of participating. Questions included: "What is this Farm Share?" "What produce am I really going to get?" "How good will the quality be?" "Would it be sufficient to feed my family?" "Would I really be refunded if I dropped out, or would I be penalized?" For low-income residents who must manage a great deal of uncertainty and risk in their lives, part of facilitating the management of their risks entailed engaging them in the design process in which they would co-develop the rules of the Farm Share, and in effect co-create value.

Doing so required transparency and shared governance. All information, including written and online material, is produced in Spanish and English. Bilingual surveys are conducted on culturally specific food preferences, individuals are queried weekly about their satisfaction, and weekly meetings of coordinators offer another chance to assess customer satisfaction. CHRF shares how costs of goods and expectations for profits are

calculated with coordinators and Shareholders. The online Farm Share newsletter, "You Spoke, We Listened,"[4] responds to questions.

CHRF also approaches the goal of shared governance by focusing on equity ownership. While the members of a traditional CSA model are in effect co-owners of the summer produce, for CHRF, co-ownership of the business contributes to sovereignty. One goal of CHRF is for Shareholders to become equity holders in CHRF who participate fully in decision-making about what produce is grown and how it is grown and distributed. However, the exact mechanism for shared ownership has not yet been determined. Two possibilities include creating a cooperative structure, or using program-related investment (PRI) through which the nonprofit strategic partners or even CHRF finance the purchase of shares for the community residents. The current Shareholders have indicated that they are willing to wait several years to develop a creative solution to the question of shared ownership that will address the nature of community benefits, and how profits could be used in a collective manner to meet the community's needs for health and well-being that goes beyond the availability of fresh produce and the long-term preservation of farmland.

Impacts on Shareholders

Because the CHRF has been in operation for only one year, it is too early to measure impacts on Shareholders' eating practices or nutritional status. However, anecdotal information from individual members suggests a high degree of satisfaction with the program and the produce. In the words of one member, "Whereas in the supermarket it will cost you more and your vegetables wouldn't last as long, what's good about the farm share is you get fresh vegetables constantly every week." Members also mention trying new types of vegetables: "What's special about the Farm Share is that you get to try every different vegetable that grows all through the season." Anecdotal information from members interviewed suggests that they may be increasing their consumption of fruits and vegetables. In the words of one member, "I actually lost eight pounds since I've been eating more vegetables and using the farm share vegetables….Within 2 months of eating with vegetables and eating healthy I've really knocked out my diabetes, I'm off the medication right now. We have more vegetables in our diets during the week than we've ever had before."

Like the participants in micro-financing programs, there has been peer pressure among the Shareholders to remain involved in the Farm Share. To date fewer than 10% of those who signed up and paid for one week in advance ceased participation before the end of the 23-week season. Preliminary data indicate that the average participation rate was 18 weeks, including those who joined in mid-season. To the members, governance is an important aspect of the Farm Share, as well as the prospect of co-ownership. One member noted: "The real connection that we have to the farm right now is that we will own part of the share."

The farmers interviewed indicated that they were pleased with the ability to increase their market and help low-income customers eat healthy, fresh produce. The relationship appears to be mutual and value-adding for both the producers and the consumers. In the words of one farmer,

> Working with Corbin Hill Road Farm is a wonderful thing because it allows us to broaden our customer base. When Corbin Hill doesn't have enough of a particular vegetable, we may have that overflow, and here on the farm we grow over 90 different varieties of vegetables so we have quite an array, but the fact that we could send good nutritious food down to the Bronx, what an unbelievable opportunity for us.

The relationship between the farmers and consumers has grown beyond a mere financial connection. One farmer noted:

[4] See the online newsletter at http://www.corbinhillfarm.com/yswl.html

> It's more of a relationship opportunity for us….Here I was born and raised in this valley and I have all this wonderful produce available to me every day of the season and I think sometimes, my neighbors and myself included happen to take that for granted. Being able to send produce to an area where some people, maybe even my same age, have never seen something as fresh and wonderful as we can raise here…and to hear the feedback that we get from those people when they receive their shares, that's the biggest reward for me.

Being part of the Farm Share project has also encouraged the farmers in Schoharie County to explore new, value-added crops. According to one farmer,

> [CHRF] offers a unique opportunity for us to explore new crops to grow. When we learn more about communities that we're helping to feed it will allow us to grow new and exciting crops which also may be well received in areas closer to home for us here, expanding our local markets as well.

The farmers recognize the importance of the NGO partners in the Bronx as well. One farmer noted: "This model…is really dependent on the people that are spending so much time down in the Bronx, on the ground, getting people interested."

The farmers in Schoharie communicate weekly with CHRF's produce manager to discuss what produce is abundant that week and what the Shareholders may like. As one farmer described the interaction:

> She may ask "what's new or what's interesting?," "what do you maybe need help with moving?" And I will give her a rundown of suggestions and she will see what fits into their budget and what she feels their shareholders may be…excited about.

Discussion and Conclusions

This paper discussed the concept of a hybrid food value chain and used this framework to examine the role of nonprofit partners in adding value and fostering transparency within a food supply chain. The Corbin Hill Farm Share functions as a hybrid food value chain and in so doing has the potential to open up new markets for a cluster of small to medium-size farms within the New York City metropolitan area, while simultaneously supplying very-low-income residents of the South Bronx with fresh, locally grown produce, ultimately fostering food sovereignty.

As the case study illustrates, the robust network of nonprofit partners that transformed a simple supply chain into a hybrid value chain was essential to getting CHRF up and running by engaging shareholders and providing critical support services, which ranged from facilitating the payments of certain shareholders to providing a physical storefront to distribute produce. One factor that enables the hybrid value chain to work is that the nonprofit partners selected for this project all have missions that include improving the community's health and nutritional status, and educational programs to engage members of the community in discussions about health. CHRF carefully chose partners that were working in these areas so that the organizations would not only take a strong interest in the project but also would be able to link their educational efforts to Farm Share so that learning about and practicing healthy eating were mutually reinforcing.

Relatively little time had to be spent formalizing the network of NGO strategic partners. Each organization was familiar with the other groups and had opportunities to meet, they shared a common understanding of the problems facing the South Bronx communities, and there was little debate about CHRF's goals and objectives. CHRF has treated each NGO as an equal, allowing each organization to individually design programs as it sees fit. This policy has also been applied to the individual Shareholders, who helped to shape Farm Share to meet their unique needs and constraints. And without a strong hybrid network of NGOs, there would be little financial incentive for the farmers in Schoharie County to seek out an

individual organization within the South Bronx and attempt the time-consuming and difficult process of building trust and forging a business relationship that might be insufficiently large to yield an economic return.

The leadership among the farmers in Schoharie County, a closely interconnected community characterized by third- to sixth-generation farmers who are often linked through family ties, provides significant social capital that extends from the township to county and state level. Their choice to work together on this project was the result of the initiative of a couple of the farmers within the county who were successful at encouraging others to work with CHRF. The Farm Share model may in the future offer the participating farmers the ability to expand their production to serve even larger markets. There are more than 1,000,000 residents living in neighborhoods poorly served by food retail establishments in the South Bronx and Harlem, a very large potential market. And there are many nonprofit organizations in these neighborhoods who could serve as strategic partners.[5]

Because CHRF is a recent startup, it faces numerous financial and logistical challenges. As it strives to break even, it must maintain a delicate balance between keeping prices affordable to the community it is serving and, to be financially sustainable, reaching a scale of 3,000 Shareholders within a reasonably short period. CHRF also faces the risk of being among the first social ventures in a newly defined space. The business model assumes that CHRF will attract social investors who understand the nature of the "slow money" challenge (c.f. Tasch, 2010) and will risk investing in this venture over a longer period of time. CHRF has thus far received round 2 loans and equity to launch its expansion. Those who have participated have taken a long-term perspective that is associated with such food ventures, and have been willing to accept a low return on their investment. Personal guarantees have had to be provided for all loans. The strategy of seeking patient investors represents for CHRF a more stable approach over the long run than seeking to build a venture dependent on grants from foundations or the government, but it remains a challenge nonetheless.

Another major financial issue will be managing CHRF's costs. Produce purchases make up some 65% of the cost of goods and can be controlled through efficiencies in packing and using reusable packaging. The same cannot be said for transportation costs, which now make up 19% of the cost of goods of each share and will rise if fuel prices continue to escalate. Controlling transportation costs, along with the added expenses of establishing and maintaining refrigeration, represent formidable challenges that CHRF will need to address in the coming year.

CHRF also faces complexities that require the design of systems that will accommodate the flexibility it seeks in responding to Shareholder needs. To remain nimble while scaling up to 1,500 Shareholders in the second year and then to 3,000 in the third year, CHRF expects to maximize its use of technology for its internal management and has outsourced its registration of Shareholders to Farmigo, an organization that serves CSAs. It is also in the process of outsourcing its trucking operation to a firm that can respond to and accommodate CHRF's projected growth. CHRF's staffing has been able to remain lean since it provides a toolkit to its strategic partners who do the organizing and recruitment of Shareholders.

CHRF's long-term profitability depends on the ongoing coordination of hybrid networks of producers, nonprofit intermediaries, and Shareholders, a constant challenge for a business that aims to provide high-quality food at a low cost while attempting to ensure fairness to everyone in the value chain. If CHRF succeeds, the hybrid food value chain may be an important strategy for increasing the participation of low-income citizens in the food system, expanding economic empowerment, fostering stewardship, and providing new markets for the small and mid-size farm sector.

[5] See http://www.nycnonprofits.org/exec_summary/h1.html

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Appendix

Table 3. Corbin Hill Road Farm Share Strategic Partners, 2010–11 (partial list)

Strategic Partner	Mission	Community
Hunts Point Alliance for Children	Builds collaborative relationships that sustain and nurture neighborhood families and children	Parents of the children belonging to the HPAC community and community residents in general.
Broadway Housing Communities (BHC)	Broadway Housing's supportive housing is distinctive for its integration of the healthy and disabled, the young and elderly, the employed and dependent.	Parents of children in the Head Start Program operated by BHC along with tenants include those with mental disabilities, HIV/AIDS and other chronic health conditions, and many who are in recovery from addiction.
Fortune Society	To support successful reentry from prison and promote alternatives to incarceration, thus strengthening the fabric of our communities.	Residents of The Fortune Academy (a.k.a. "the Castle") and Castle Gardens in West Harlem. Castle Gardens is a 118-unit residence with 63 supportive-housing units for Fortune Society clients, all of whom used to be incarcerated and homeless.
Community Access	Assists people with psychiatric disabilities in making the transition from shelters and institutions to independent living.	Homeless individuals, HIV/AIDS patients, veterans. Individuals struggling with substance abuse. Formerly incarcerated individuals, and youth aging out of foster care
Women's Housing and Economic Development Corporation (WHEDCo)	Seeks to make the Bronx a more beautiful, equitable, and economically vibrant place to live and raise a family.	Residents living in supportive housing; parents of children in WHEDCo's Head Start program and WHEDCo's certified day-care providers.
Jewish Child Care Association (JCCA)	Meet the child welfare and mental health needs of all children and their families in the New York metropolitan area.	JCCA's goal is to serve foster care parents.
South Bronx Overall Economic Development Organization (SOBRO)	Enhance the quality of life in the South Bronx by strengthening businesses and creating innovative economic, housing, educational, and career development programs for youth and adults.	Residents of the South Bronx and economic, workforce, and community development professionals working in the area.
Cooperative Home Care Associates (CHCA)	South Bronx-based owner home care agency anchoring a national cooperative network generating over US$60 million annually in revenue and creating over 1,600 quality jobs.	Health care workers and administrators.
Riverside Church	An interdenominational, interracial, and international congregation with 2,400 members and affiliates. Its members come from more than 40 different denominational, national, ethnic, and cultural backgrounds.	Members (many from upper Manhattan) who are interested in food justice and living a healthy lifestyle.

Harlem Children's Zone (HCZ) *(New partner for 2011)*	Breaking the cycle of generational poverty for the thousands of children and families it serves.	The Baby College, for parents of children ages 0–3 and all-day pre-kindergarten
Urban Health Plan *(New partner for 2011)*	Continuously improve the health status of underserved communities by providing affordable, comprehensive, and high-quality primary and specialty medical care and by assuring the performance and advancement of innovative best practices.	Health care workers and administrators.

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Money and mission: Moving food with value and values

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Abstract
In response to low margins in traditional commodity markets and consumer demand for decommodified food, food value chains have emerged in the last decade as strategies for differentiating farm products and opening new, more financially viable market channels for smaller farmers. These business networks incorporate strategic coordination between food producers, distributors, and sellers in pursuit of common financial and social goals. Our analysis of the aggregation, distribution and marketing functions of eight food value chains of diverse character across the United States reveals four summary findings that encapsulate the challenges and opportunities facing these business organizations: (1) private infrastructure investment should match the organizational stage of development and market capacities; (2) identity preservation is a critical market differentiation strategy; (3) informal networks can be highly effective tools for coordinating the marketing efforts of diverse agricultural producers; and (4) nonprofits and cooperatives both can play key roles in value chain development, but should recognize their organizational competencies and limitations.

Keywords
agriculture of the middle, farmer networks, food distribution, organizational development, regional food systems, value chains

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The Changing Agricultural Landscape

Agriculture in the United States is at a crossroads. It has made tremendous strides in improving labor productivity through mechanization, and land productivity through advances in plant and animal genetics, fertilizers, and pest control technologies (Cochrane, 1993). With these technologies, the overall number of farms in the United States plummeted from over 6 million in 1935 to around

2 million in 2007, even as the population increased 140%, from 127 million to 308 million, in this time period. Compounding this dramatic reduction in overall farm numbers, we have seen intense concentration of farm ownership to the point where 2.5% of all farms — 55,509 farms — accounted for 59% of total farm income in 2007 (USDA, 2009). Never have so many been fed by so few.

While this dramatic increase in agricultural productivity has been a triumph of technology and has released millions of people from backbreaking work, it also has transformed the agricultural landscape; millions of farmsteads have disappeared, and the marketing environment for remaining small and mid-sized farms has become quite onerous as they must compete against much larger farms with economies of scale in production and distribution. Smaller producers often have higher production costs and thus have difficulty competing in traditional commodity markets where margins are quite thin.

One approach by many smaller farmers has been to capitalize on growing consumer interest in food provenance and sell through direct-to-consumer food markets such as farmers' markets, community supported agriculture operations (CSAs), and farm stands. According to the National Agricultural Statistics Service, direct marketing of all types accounted for US$1.2 billion in 2007, and it grew 105% in value between 1997 and 2007, compared to 48% for total farm sales in the same period (Diamond & Soto, 2009).

Direct marketing outlets can increase returns to farmers by allowing them to capture additional income streams from traditionally off-farm food system activities, such as aggregation, processing and marketing (Martinez et al., 2010). Nevertheless, direct marketing channels alone cannot accommodate the bulk of mid-sized agricultural producers, classified as those earning between US$50,000 and US$250,000 in gross farm income (Stevenson & Pirog, 2008), that are declining in number even as 2007 Census of Agriculture figures indicate growing numbers of small and larger farms. More than 270,000 farmers with gross farm income of US$33 billion as of 2007 belong to this so-called "agriculture of the middle" category (USDA, 2009). Generally, they are too big to rely primarily on direct marketing channels to dispose of their output. Farms in this size range are more likely to specialize in one or two crops and be located far enough from population centers to make direct marketing impractical. On the other side of the coin, these "agriculture of the middle" producers are often too small to compete on price with large commodity producers (Stevenson & Pirog, 2008). Their larger competitors are often more able to take advantage of economies of scale related to farm machinery, overall farm management, as well as their ability to get better terms of trade in the marketplace due to their large sales volume. Agriculture of the middle farmers are thus caught short, having difficulty capitalizing on two simultaneous, if contradictory developments in contemporary American agriculture: the growth of small-scale, niche, local production alongside the continued industrialization of agriculture into ever larger production units.

In response to this conundrum, many mid-sized farmers are turning to a burgeoning array of alternative strategies for wholesale food aggregation and distribution, ones that can broadly be characterized as less intermediated and more direct sales from farm to institutions or retailers (Day-Farnsworth, McCown, Miller, & Pfeiffer, 2009; King et al., 2010). Such marketing strategies usually involve some degree of product differentiation based on attributes such as production process, provenance, and product quality, combined with product aggregation to improve producers' bargaining position relative to buyers. These efforts to bypass both mainstream wholesale channels and direct-to-consumer market channels are predicated on the notion that addressing the needs of agriculture of the middle requires the pairing of different kinds of supply chains with different kinds of products. How the product is transmitted from farm to consumer has to change, and what is actually produced has to change as well if mid-sized producers are going to increase the financial viability of their operations.

Key to these new, intermediated food marketing strategies (King et al., 2010) is the establishment of strong relationships between the different actors involved in growing and raising crops, processing crops, and marketing food to retailers, institutions, restaurants, and other food buyers. The phrases *values-based value chains* or *food value chains* are used interchangeably in this paper to refer to emergent supply chains emphasizing vertical coordination rather than integration throughout the supply chain in order to reach mutually beneficial aims. Values-based value chains encapsulate the dual goals of creating economic value through product differentiation, *and* advancing a particular set of social, economic or environmental values through collaborative supply chains that exemplify the broader trend of social entrepreneurship, or doing good works through good business (Barnes, 2006; Porter & Kramer, 2011; Stevenson & Pirog, 2008).

Value chain analysis has been used for decades in the international context as a tool for analyzing how the various activities and actors involved in producing and marketing a product or service are related to each other. Initially used to describe how mineral-dependent economies developed (Kaplinsky, 2004), value chain analysis has since been widely used to explore how better coordination among producers, a stronger orientation toward meeting market demands, and strategic alliances between producers, processors, and retailers can improve rural livelihoods in developing nations (cf Slingerland, Ruben, Nijhoff and Zuurbier, 2006; Stoian & Donovan, 2010; Van Der Meer, 2006). More generally, value chain analysis has been used to describe how value is added at different stages, including primary production, processing, marketing, and sales (Hallam & Rapsomanikis, 2006; Porter, 2008) and to evaluate opportunities for efficiency gains across a system as opposed to particular nodes of economic activity (Kaplinsky, 2004; Taylor, 2005). In these various iterations of value chain analysis, the "value" of value chain analysis refers to economic value, with scholars concerned with how value is distributed among chain actors, or how to increase overall value through changes in governance structures. Stevenson and Pirog (2008) adapt value chain analysis to the U.S. agri-food context by emphasizing the dual connotation of value, referencing both economic value and ethical or social value.

Stevenson (2009), as part of the Ag of the Middle Project, has laid out in a series of case studies how farmers, distributors, retailers, and food processors coordinate their activity for mutual economic benefit while also advancing social and ethical values, such as agricultural sustainability and farm viability. An analysis prepared under the auspices of the Ag of the Middle Project inventories 75 value chains across the United States according to product, region, and sales (Hoshide, 2007). Others have built on this framework to assess the effectiveness of conventional food distributors in building up local food systems (Bloom & Hinrichs, 2011) and the capacity of pasture-raised livestock production to strengthen farm viability and rural communities (Conner, Campbell-Arvai, & Hamm, 2008). These studies have examined how the attitudes and behaviors of food value chain actors facilitate the creation of more regionally based, sustainable food systems. Building on this body of work but also offering a new perspective, this paper focuses on distribution mechanics and operations within the food value chain context.

This focus on distribution is meant to address the oft-cited challenge to regional food marketing, wherein farmers may be willing to grow and sell their produce for local markets, and food buyers want local food, but these two ends of the food supply chain have difficulty connecting with each other (Day-Farnsworth, et al, 2009; Zajfen, 2008). In focusing on the operational details of food value chains this report seeks to explain how mission oriented food distributors can facilitate connections between regional food suppliers and buyers through appropriately scaled and designed business operations.

Research Inquiry and Methods

The following analysis focuses on the myriad ways that value chain distributors:

- Recruit producers and develop producer networks,
- Identify, brand, and market differentiated farm products,
- Manage infrastructure to transform, pack and transport farm products, and
- Negotiate with buyers to secure a fair return for the producers.

By analyzing what has and has not worked in regional food distribution enterprises, existing and future organizations interested in building local food systems will have lessons to build on, blunders to avoid, and inspiration from which to draw. Primary areas of inquiry include the organizational and legal structure of the distribution entity, financing, distribution logistics, buyer-grower relationships, price negotiation, marketing and branding, and more generally, the presence of unique or replicable factors explaining success, either pertaining to internal value chain dynamics or external environmental conditions.

In order to capture the level of detail and richness of various distribution models, a qualitative case study approach was chosen as the primary research method. Our work was informed by grounded theory; we did not begin our investigation with a preconception of what drives value chain development or how they are categorized. Rather, the themes described in this paper emerged out of our analysis of interview transcripts and notes, other primary sources such as organizational newsletters, websites, and journalistic accounts of the entities being studied (Strauss & Corbin, 1998). Furthermore, given the dynamic nature of these alternative models of local food distribution, the study took a longitudinal approach in order to more fully examine how these organizations have faced challenges and seized opportunities to best advance their business goals and social missions.

We first conducted a baseline review of value chain distribution models to ensure a diverse representation of cases. An initial list of about 25 cases was gathered via key informants involved with the regional food distribution sector to create a broad set of cases from which to choose a diverse sample. While this initial list was not exhaustive, we felt it was sufficiently diverse to form our sampling frame. Eight case studies were chosen, considering the following criteria:

- Types of participating farmers (e.g., minority, transitional, refugee/immigrants, new/beginning);
- Geographic location;
- Agricultural products;
- Markets (e.g., institutional buyers, chain and independent retail grocery stores, restaurants, etc.);
- Types of collective producer structures (e.g., cooperatives, farmer networks, associations, etc.); and
- Kinds of partnerships and collaborations

The initial data-gathering occurred through visits to each case study location, beginning in August 2007 and concluding in June 2008. Each site visit lasted an average of two days and included semi-structured interviews with distribution entity staff, including general managers, sales staff, and farmer relations personnel. In most cases, interviews were also conducted with a select number of buyers and suppliers who work with the distribution entity. Periodic follow-up interviews were conducted either in person or by phone with distribution entity staff through February 2011 to chart their progress. In total, this study captures a rich, evolving narrative of over three years in the life of each case study.

Value Chain Distribution Models

The final selection of case studies is shown in table 1 (next page), which indicates the type of distribution model and stage of development for each case study. In this study, value chain distribution models are classified by the type of organiza-

Table 1: Value Chain Distribution Models and Stages of Development

Distribution Model	Stage of Development		
	Startup/Nascent	Developing/Emerging	Mature/Developed
Retail-Driven		La Montanita Co-op, NM	The Wedge/Coop Partners, MN
Nonprofit-Driven	MFA/Big River Farm, MN	CAFF/Growers Collaborative, CA	Red Tomato, MA ASD/Appalachian Harvest, VA
Producer-Driven			New North Florida Cooperative, FL
Consumer-Driven		Oklahoma Food Cooperative, OK	

tion driving the process, in terms of both establishing and growing the distribution enterprise.

In some cases an individual producer, or a group of producers, want to claim greater ownership over the supply chain by carrying out certain aggregation and distribution functions instead of contracting this out to a third party. This would be classified as a producer-driven distribution model.

Likewise, many nonprofit organizations are assisting small-scale producers by providing distribution and marketing services in an effort to create new wholesale market opportunities for producers. To the extent that the nonprofit is largely responsible for carrying out these supply chain functions, they would be classified as a nonprofit-driven model. In the retail-driven model section, we look at how two food cooperatives have taken on distribution functions to maintain competitive advantage and ensure that they can meet their customers' demand for locally grown food. The consumer-driven model refers to new generation buying clubs that utilize online networking and transaction platforms to link consumers with producers. In this model, consumers are actively engaged in the aggregation and distribution of farm products to buying club members.

Along with distribution model type, table 1 also shows the stage of development, which takes into consideration how long the distribution enterprise has been operating, the level of professionalization regarding staffing and division of labor, and the overall scope and scale of the operation.

To show the range of case studies analyzed in this paper, we have included brief summaries of each case study below. They are categorized by model type, with the retail-, consumer- and producer-driven distribution models all representing different types of cooperatives, as compared to the four nonprofit-driven models.

Retail-Driven Models

La Montanita Co-op is a retail-driven distribution model based in Albuquerque, New Mexico, that provides business development, distribution, and marketing services for producers located within a regional foodshed encompassing the Rio Grande River Valley (in about a 300 mile radius around Albuquerque). La Montanita's Regional Foodshed Initiative was established in 2007 to expand purchasing of sustainably grown regional products from small and mid-scale producers by the co-op's four stores, and to assist regional producers in accessing other wholesale market channels for their products. The co-op's distribution business has been operated and funded largely from co-op revenues. It currently stocks and sells more than 1,500 products purchased from nearly 900 growers and producers within the regional foodshed.

Coop Partners Warehouse, located in St. Paul, Minnesota, is a retail-driven distribution model started in 1999 by the Wedge Cooperative, which

has 14,000 member households. Using its own fleet of trucks as well as contract trucking companies, it primarily sells organic produce supplied by a network of 30 or so farmers in Minnesota and Wisconsin during the growing season and from West Coast sources the rest of the year. It distributes to 200 consumer cooperatives, health food stores, buying clubs, and restaurants in the Upper Midwest. Annual sales for Coop Partners are US$16.8 million, with about one quarter of its sales accounted for by the Wedge. This organization is unique in its focus on selling primarily to retail cooperatives and in its commitment to being a full-service organic produce distributor with a regional focus.

Nonprofit-Driven Models

Appalachian Sustainable Development's *Appalachian Harvest* is a nonprofit-driven distribution model located in Abingdon, Virginia, that has been selling organic produce to regional supermarket chains and specialty grocery chains in the Southeast and Mid-Atlantic regions for 10 years. This organization works with more than 50 farmers, ranging from market gardeners with less than an acre to commercial farmers with 200 or more acres, providing technical assistance, farmer mentoring, and aggregation services. Appalachian Harvest distinguishes itself from California organic produce with its local origin and short field-to-shelf time, promising "48 hours fresh."

Minnesota Food Association's *Big River Farms* is a nonprofit distribution model based near Stillwater, Minnesota, that provides production and marketing services to aspiring immigrant and refugee farmers. Big River Farms (formerly Big River Foods) was established in 2007 as a "training distribution company" that combines brokering functions and transportation logistics with on-farm production and postharvest handling training. In any given year, Big River Farms works with eight to 10 farm enterprises in its training program to broker and distribute certified organic fruits and vegetables to supermarkets, food co-ops, and restaurants.

Growers Collaborative is a limited liability corporation (LLC) established in 2005 to offer aggregation, distribution, market promotion, and education services to California family farms. As a nonprofit-driven distribution model, Growers Collaborative is wholly owned by the nonprofit organization California Alliance with Family Farms, whose mission is to promote small and medium-sized family farmers throughout California with sustainable education, public advocacy, and market development. Growers Collaborative works with a network of over 70 fruit and vegetable producers to increase their access to institutional markets in both Southern and Northern California. In 2009, Growers Collaborative transitioned from being a full-service distribution company to playing more of a matchmaker role by connecting farmers, aggregators, distributors, and institutional food service operators, and focusing its efforts on providing marketing and education support services to local supply chain actors through market promotion and education.

Red Tomato, founded in 1996, is a nonprofit distribution model based in Canton, Massachusetts. It arranges for the aggregation, transportation, and sale of a wide variety of produce supplied by 35–40 farmers to grocery stores and distributors, primarily in the Northeast. Relying on farmers and contract trucking firms to provide aggregation and transportation services, it never physically handles the product sold under its name. Its signature Eco Apple™ line of apples is grown using advanced Integrated Pest Management (IPM) methods subject to third-party verification, and accounts for more than half of Red Tomato's sales volume. During the growing season, each tote of Eco Apples contains fruit grown by one farm, which is named and described on every package.

Producer-Driven Models

New North Florida Cooperative is a producer-driven distribution model based in the Florida Panhandle that has been aggregating, processing, and selling produce in the Southeast since 1999. It sells primarily chopped fresh collard greens, sweet potatoes, and green beans mostly from small-scale minority farmers to 60 independent grocery stores

and more than 30 Southeastern school districts serving more than 200,000 students. The cooperative is one of the oldest farm-to-school programs in the country and has achieved considerable success by focusing on supplying a handful of food items that are culturally appropriate, easily accommodated into school menus, competitively priced, and require minimal preparation.

Consumer-Driven Models

The Oklahoma Food Cooperative is a consumer-driven distribution model based in Oklahoma City, Oklahoma, that has been running an Internet-based buying club since 2003. It is a producer- and consumer-owned cooperative in which 200 producer members sell more than 4,000 individual items, including meat, produce, milk, and value-added items to the 3,800 coop members. It uses an Internet ordering portal and 48 member-operated distribution routes that reach cities, towns, and hamlets across Oklahoma each month. Members always know which farmer produced their food, and even have the opportunity to meet their farmer on delivery day. Farmers bring their merchandise to a central drop-off location, where they are assembled into member orders and then routed by a crew of volunteers, who are compensated for their time with work credits redeemable for goods sold through the cooperative. All products sold through the cooperative must be made in Oklahoma.

While there are many differences in both structure and function between retail- and producer-driven models, and between nonprofit- and consumer-driven models, all the case studies selected for this study have several features in common: they seek to improve the economic welfare of small-scale farmers and ranchers within specific geographic areas, they combine traditional business strategies with social missions, and while they move beyond direct-to-consumer marketing activities, they continue to incorporate the basic principle of building more direct connections between producers and consumers.

The next section explains how these four themes cut across the eight case studies and provide valuable insights for value chain practitioners, namely:

1. The level of investment in infrastructure should match the organization's stage of development and marketing capacities.

2. Value-chain managers must ensure identity preservation from farm to market as a way to establish both marketing claims and a negotiating position with buyers.

3. Distribution entities utilizing informal producer networks are well suited to meet the constantly shifting demands of diversified, niche food markets.

4. Nonprofits and cooperatives are well positioned to play key roles in value chain development but should recognize their organizational competencies and play to their strengths.

The following analysis constitutes the summary findings of a much longer forthcoming report to be published by the United States Department of Agriculture. This larger report will include detailed analyses of each case study, as well as a general comparison and contrast of the different case studies similar to that presented herein. Detail on the individual case studies in this paper is necessarily limited; our aim is to present our understanding of some of the major issues confronting values-based food value chains as derived from our analysis of eight case studies. Our focus is on patterns and tendencies across case studies, including how institutional drivers influence how value chains operate, how they make decisions, and how successful they are at achieving their stated goals.

1. Infrastructure

Having an appropriate level of infrastructural investment, commensurate with organizational capacities and business needs, is critical to the financial sustainability of food value chains.

The level of infrastructural investment by the pri-

mary value chain manager changes both across models and within models over time. How much and when a particular distribution entity invests in infrastructure can have a critical impact on the success and even survival of the enterprise. Distribution entities need to think very carefully about how much capital investment they should make, particularly in terms of storage and transportation infrastructure. The appropriate level of investment is influenced by many factors pertaining to the organization and its relationship to its operating environment. The position of the distribution entity's manager within a given food supply chain influences the determination of what is an optimal level of investment, given the organization's asset base, internal capabilities, and opportunities for return on investment.

As a retail-driven distribution model, for example, La Montanita's Foodshed Initiative benefits tremendously from maintaining its own transportation and storage infrastructure, which allows it to better serve its stores with a diverse mix of products in a timely and cost-effective manner. Furthermore, it would be very difficult for La Montanita to carry out the Foodshed Initiative without having its own warehouse and trucks to store product, pick up product from farmers, and deliver product to its own stores as well as other customers. To provide all these services on a contract basis would be infinitely more complicated, as their routes include pickups from farmers, deliveries to the coop's four stores and other customers, and dropping off product at the warehouse for later distribution. In essence, the Foodshed Initiative would not be feasible if La Montanita, as the manager of the value chain, did not have direct control over its distribution infrastructure.

Another benefit for La Montanita investing in "wheels and mortar" is the significant increase in storefront sales since the start of the Foodshed Initiative. This can largely be attributed to the greater local food offerings in the stores made possible by La Montanita's new distribution network. Even though its distribution operation is still running at a loss, these increases in storefront sales more than compensate for the losses incurred, or to put it another way, coop investments in the distribution operation have produced excellent returns for the stores.

However, actually owning warehouse space or trucks is less critical than having control over dedicated trucks and warehouse space. La Montanita decided to lease both trucks and a warehouse to reduce upfront capital outlays. In the case of the trucks, leasing guarantees that a working vehicle will always be available, as the truck leasing company will provide a same-day replacement vehicle if a truck breaks down.

Likewise, Coop Partners Warehouse (CPW), essentially a much bigger version of La Montanita, benefits greatly from controlling its own transportation and storage infrastructure. Its 45,000 square foot (4,181 square meter) warehouse has enabled CPW to expand its business substantially — to its current level of US$16.8 million — while still leaving significantly more room for growth without having to move. What began as an effort to secure better produce for the Wedge from regional producers, giving it a competitive edge, has turned into a medium-sized regional organic produce distributor, with only 23% of its sales accounted for by the Wedge in 2010, down from 80% in 2003. Prior to leasing its own warehouse in 1999, CPW's predecessor organization relied on other distributors to store and transport product from local farmers to the Wedge. This arrangement did not provide enough flexibility, and so the Wedge signed a long-term lease and established CPW, which has now grown into a sizable regional organic produce distributor for the Upper Midwest.

Beyond just facilitating overall business expansion, having its own warehouse space has allowed CPW to operate multiple, complementary market channels. These include its primary wholesale distribution business to cooperatives, stores, restaurants, and buying clubs, and its drop-ship program, in which farmers and small food processors drop off product at the warehouse for CPW to shipment to their customers. CPW charges $20 per delivery to transport these orders while the producers invoice the customers. Additionally, CPW subleases freezer

space to two chicken farmers. In this last instance, the chicken farmers handle all the orders and transportation, and CPW only provides a storage function.

Complementing its warehouse space, owning or leasing a fleet of eight trucks allows CPW to efficiently serve its 200 customers spread throughout the Upper Midwest. The organization generates enough sales volume to pay for the fixed costs of maintaining this infrastructure. However, for certain far-flung customers that do not buy in large volumes and are not close to other CPW customers, it uses three contract trucking companies with broader service coverage. Rather than dedicating one of its own trucks to inefficiently ship a couple of pallets of product to stores in northern Minnesota or South Dakota, CPW calls up Edina Couriers, a medium-sized regional trucking firm serving small communities throughout the Upper Midwest, and arranges for the firm to take the order for a minimal fee, as it already has a truck going in that direction and is happy to accommodate the extra cargo. Careful consideration of when to use dedicated infrastructure versus contracting out is critical to running a food distribution business successfully; margins are tight and miscalculations on such issues as delivery routes can easily drive an organization into the red.

Unlike these two retail-driven models, Red Tomato, as a nonprofit-driven model, has evolved toward a very lean brokering organization with no trucks or warehouse space of its own. It reached this position after operating an infrastructure-heavy produce distribution business in the Northeast, replete with trucks and a warehouse, and learning after three years that it made much more sense to manage the supply chain rather than operate it. Given the abundant trucking and cold storage capacity available on its suppliers' farms and near its office outside Boston, the organization's management team ultimately decided that it did not make sense to invest directly in wheels and mortar. As an "honest" broker, developing profitable market channels for mid-sized growers through creative marketing and development of advanced IPM standards with third-party certification for apple growers, Red Tomato did not need to directly own or operate the infrastructure to perform its mission. It added value through its marketing and branding efforts, and did not have the operational scale to justify running the distribution part of the chain.

In contrast, Appalachian Harvest, another nonprofit model, has felt the need to maintain a fleet of tractor-trailers and a warehouse due to its remote location in southwest Virginia. Being far from metropolitan centers makes it expensive to arrange regular pickups by trucking companies to haul its produce to customers. Furthermore, its farmers are not equipped to aggregate and ship product on their own to the widely dispersed customer base, given the small size of their production and long distances to most of their market outlets.

These locational factors have led Appalachian Harvest to invest heavily in infrastructure to aggregate, grade, pack, and ship organic produce grown by former tobacco growers to regional grocery chains, aiming to meld environmental sustainability with economic development. However, it is not yet clear how financially sustainable its business model is. Appalachian Harvest benefited from tobacco transition money to start its operations but has yet to find a clear path to running a financially self-sustaining food distribution operation from its remote location, and thus still relies heavily on outside funding to maintain its existing operation. One of the major challenges it faces is the lack of backhaul — shipment sent on a returning vehicle — on many of its distribution routes. Significant progress has been made in the last year in addressing this problem by hauling conventional produce for produce brokers and wholesalers in Virginia on the return leg of deliveries to Richmond, as well as creating cross-docking arrangements with a North Carolina distributor to shorten its truck routes and hence the length of empty backhauls. However, it needs to do a great deal more to reduce its transportation costs in order to reduce the group's reliance on external funding to support trading operations.

In contradistinction to Red Tomato and Appalachian Harvest, Growers Collaborative represents a third path for nonprofit distributors. Community Alliance of Family Farmers (CAFF) established Growers Collaborative (GC) as a full service distributor for small farmers in Northern and Southern California, selling fruits and vegetables to schools, colleges, and hospitals. Growers Collaborative demonstrated the feasibility of marketing source-identified, family farm produce to large institutional buyers, but was unable to secure the high volume of orders necessary to maintain the costs of running an aggregation and distribution operation. CAFF has now removed itself from the aggregation, distribution, and sales components of the value chain, instead licensing small distributors to run independent "dba (doing business as) Growers Collaborative" food aggregation hubs in different regions of California. Each GC food aggregation hub markets its produce to mainline distributors such as SYSCO or ARAMARK for sale as Buy Fresh, Buy Local produce to institutions in their service areas. Under this nonprofit-driven model, CAFF provides support services to farmers and does soft marketing with buyers to build demand for Growers Collaborative product (e.g., table tents for use at hospital cafeterias to promote the benefits of local food), but no longer moves or sells produce. This transition is still underway as new GC hubs are being formed. Other nonprofit distributors located in areas with dense populations and abundant food distribution resources would be well served to observe and learn from this shift from operating the value chain to facilitating it.

Combining some elements from the retail- and nonprofit-driven models, the consumer-driven model[1] exemplified by the Oklahoma Food Cooperative (OFC) has shifted from having no infrastructure (renting a building one day a month and trailers for delivery day) to buying trailers and establishing a long-term lease on a 12,000 square foot (1,115 square meter) warehouse. From its start, OFC established a very conservative business model in which it invested in infrastructure only as it became affordable, that is, any infrastructure was financed primarily from operating funds. Rather than consistently writing and getting large grants to subsidize continuing operations, OFC has lived within its means from the start, only seeking outside funding as it grew substantially and could benefit from owning more infrastructure. Shifting to a permanent warehouse and purchased trailers has been very helpful in reducing logistical hassles and improving the flow of operations, thus facilitating more growth. However, the move was not absolutely necessary; if the funds were not available the coop still would have carried on successfully, just at a lower level of activity.

Whether it makes sense for value chain managers to invest heavily in infrastructure depends on the scale of their operations, proximity to customers and availability of existing distribution assets, their overall financial capacity, and their ability to capture value added throughout the supply chain. The four nonprofit distribution models we examined have tended to overinvest in infrastructure. They often identified distribution gaps and sought to fill them through infrastructure investments financed by donations and grants, whether or not business volume justified such new investments. On the other hand, the four cooperative distribution models we examined were much more conservative, as they only invested in infrastructure in tandem with business growth and needs.

2. Identity Preservation

All value chain managers must ensure identity preservation from farm to market as a way to establish marketing claims and establish a negotiating position with buyers.

Food value chains require some type of product differentiation, such as showcasing of product origin, unique varietals, and/or production practices such as organic or IPM. To ensure the integrity of product differentiation, food value chains must have a robust identity preservation system in place. Identity preservation refers to the segregation of a

[1] It is referred to as consumer-driven because it was started by consumers, with producers coming to play a greater role in the cooperatives management through the years. See http://www.communityfoodenterprise.org/case-studies/u.s.-based/oklahoma-food-cooperative/casestudy_history

particular lot of a particular crop or processed food item from an individual farm or group of farms to the consumer. Preserving the identity of farm products through the distribution process has been critical to driving buyer and consumer demand and allowing the more successful food value chains to flourish. The different food value chain models examined in this report use varying degrees of identity preservation to differentiate their products, which are largely dependent on their level of interaction with farmers, retailers, and individual consumers.

In the consumer-driven model we studied, the Oklahoma Food Cooperative, identity preservation is maintained at a very high level, as consumers are able to buy products with the individual farmer's name on the label, read about the farm and the farmer, and even the farm animals, on the farmer's website prior to placing their order, and perhaps even meet the farmer at delivery day. The high degree of identity preservation attached to individual farmers is a very effective tool for binding farmers and consumers together economically and socially as both groups work together to operate the coop and advance its mission of a more just, environmentally sustainable, and financially viable regional food system.

Red Tomato also maintains a high level of identity preservation; its Eco Apple brand of apples is packaged in personalized bags, with each bag containing apples from the farm that is prominently mentioned and described on the package. Other product packaging used by Red Tomato also identifies the supplying farmer — through a sticker, stamp, or twist tie — though the packaging design is less elaborate because the lower volumes sold make it cost prohibitive to create customized packages for these products. In the case of Eco Apple, the strong focus on the farm complements the unique product differentiation embodied in the brand. Red Tomato wanted to promote regional marketing of sustainably grown produce, but growing conditions in the Northeast militate against organic fruit production. Creating and promoting the Eco Apple brand allowed Red Tomato to differentiate itself in a competitive produce marketplace and create a brand based on regional identity and IPM standards.

With the retail-driven distribution models, lower levels of identity preservation are sufficient because there is a high level of preexisting trust manifest in the value chain. La Montanita uses in-store signage and product labeling to designate regionally grown products supplied by the Foodshed Initiative, and uses its newsletter and other media to profile the farms and producers in its Foodshed network. La Montanita also carries out periodic farm visits to ensure that Foodshed Initiative products are produced using sustainable farming practices. There is little need for a third party to verify locally grown product attributes since the coop as an institution carries forward a high level of legitimacy to its member-consumers. When consumers see a particular Foodshed Initiative–labeled product, they can be assured that the stated values of the Foodshed Initiative — such as agricultural sustainability, promoting healthful food, supporting local economies, and enhancing small farm viability — are being upheld.

Coop Partners Warehouse, on the other hand, does not attach its own brand to products it distributes. Some of its local products have in-store displays with the farmer's name, and it sells a considerable amount of produce with a brand label corresponding to the grower/shipper that sold it to Coop Partners, e.g., Cal Organics or Taylor Farms. With CPW, identity preservation is largely a function of its being an organic produce distributor. The standards governing organic produce require a very high degree of segregation of organic produce from nonorganic produce throughout the supply chain. Trust in the USDA organic label exists apart from CPW, and thus mitigates the need for a distinct CPW brand.

Similarly, a producer-driven distribution model may not need high levels of identity preservation because the company is more closely associated with the actual producers. The producer-driven model we examined, New North Florida Coopera-

tive (NNFC), makes no explicit reference to the specific farmers in its cooperative. Rather, it educates buyers, such as school food service directors, about product quality, how it represents a healthy part of the school menu, and how small farmers supply the product. The emphasis on small farmers invokes concern for a socially marginalized group and thus provides justification for buying NNFC's produce. This message is conveyed in several ways: through slogans on NNFC apparel, the product packages containing the phrase "small farmer cooperative," and through verbal exchanges between food service directors and NNFC representatives about the nature of the enterprise and those involved in it. One food service director in Dothan, Alabama, pointed to NNFC's support for small farmers as the primary reason she decided to purchase its collard greens. All things being equal, food service directors may be more sympathetic to a cooperative of small farmers than a produce company that has a more arms-length relationship with its supplying farmers.

Identity preservation is ultimately a bond between the producer and the consumer. The distribution entities in our study are using packaging, communication strategies, and farm inspections to establish this bond. The level of trust and connection between value chain partners (from farmer to consumer) influences the need for verification of production practices and specification of product origin (e.g., locale/farm/farmer). When there is a great deal of preexisting trust between consumers and the selling entity, such as in the case of La Montanita and Coop Partners Warehouse, there is less of a need to either specify which farmer produced the item in question or create a unique third-party certification scheme. However, when there is less trust or social connection between consumers and selling entities, as is the case with retailers carrying Red Tomato Eco Apple products, creating a unique third-party certification system can help establish credible marketing claims and better position products in a competitive selling environment.

3. Farmer Coordination

Value chains involve a high level of coordination between producers and distributors. Our findings suggest distribution entities utilizing informal producer networks are well suited to meet the constantly shifting demands of diversified, niche food markets.

At the core of any successful distribution model serving smaller-scale producers is the ability to effectively coordinate production and aggregate products in a way that can satisfy a buyer's volume requirements, quality standards, and need for consistent and timely deliveries. Historically, agricultural cooperatives as formalized membership structures have played a major role in coordinating the production, aggregation, and marketing of their members' products (Gray, 2009). While many agricultural cooperatives continue to function successfully in this capacity, new models of producer coordination are emerging that offer alternatives to the more formalized and restrictive structure of cooperatives (Hogeland, 2006). Several of the distribution models in our study have shown how establishing informal farmer networks can be an effective strategy for meeting the rapidly changing demands of the local food market. Unlike many cooperatives that require a major share, if not all, of a member's products to be sold through the cooperative, farmer networks have the benefit of allowing greater flexibility in deciding what to sell into the network. Farmers benefit from a more diverse market channel mix by balancing risk and not "putting all their eggs in one basket." In turn, the distribution entities are not obligated to take all of their members' production.

In the case of Red Tomato, suppliers are encouraged to not sell more than 40% of their production through Red Tomato as a hedge against a major downturn in Red Tomato's business. Suppliers benefit from selling directly through Red Tomato while retaining other accounts, or indirectly benefitting from their Red Tomato connection by selling Eco Apple branded apples on their own to grocery store buyers.

Alternatively, with Appalachian Harvest a conscious decision was made by the founders to not

form a cooperative because of a high level of distrust in the area of cooperatives, due in part to a libertarian streak in the region's farm culture, but also due to the well-publicized failure of a produce cooperative several years prior to Appalachian Harvest's start in a nearby town. It made more sense to create an informal network that in many ways functions as a cooperative, with its members closely coordinating production while maintaining the option to sell to other wholesale channels or direct marketing outlets such as farmers' markets.

Furthermore, the network model is highly suitable for situations in which most of the growers are too small to adequately serve wholesale markets on their own, and the buyer/distributor plays a major role in providing production training and business development services to its new suppliers, as is the case with Appalachian Harvest. In a formal cooperative, such an arrangement might prove to be more difficult, as new entrants to farming are unlikely to receive the same level of production and marketing assistance as they would from a nonprofit entity whose express mission is to develop new farmers. An agricultural producer cooperative is a business model that is set up to serve its farmer members, and not necessarily to create new farmers. Additionally, the very ability to support such outreach and educational activities is more challenging given that cooperatives generally have less opportunity than nonprofits to access private grants and donations.

Our research also shows that informal farmer networks seem to be particularly appropriate for marketing a range of diverse products, like fruits and vegetables, and that the more formal cooperative structures may be more appropriate when dealing with single uniform products (Hogeland, 2006). When a diverse range of commodities is marketed through a cooperative, each with different costs of production, processing requirements, and prices, it is difficult to fairly allocate costs across commodities, and hence across producers (Sexton, 1986).

4. Organizational Forms: Creating Opportunities, Presenting Challenges

Our study of four nonprofit and four cooperative distribution models indicates there is a significant relationship between legal structure and value chain development. Recognizing how particular organizational forms tend to foster certain competencies can inform the development of mutually beneficial strategic partnerships with complementary organizations. Each organizational form and structure has unique strengths and weaknesses.

Organizational form has a tremendous impact on how food value chains operate, including funding mechanisms, investment in infrastructure, and propensity to run financially self-sufficient operations. Cooperatives are organized as business entities with the purpose of serving their members' needs (Gray, 2009), whether that be more orderly marketing of their farmer-members' produce or improving their consumer-members' access to healthy food. The members own the cooperative, and any profits earned by the cooperative are either reinvested in coop operations or returned as dividends to the members.

In contrast, nonprofits are established to pursue a public purpose, are accountable to independent boards of directors, and generally receive significant amounts of funds on an ongoing basis from private foundations, government grants, and individual donors. Their tax status makes them eligible for a much wider variety of grants and donations than cooperatives. There are no "owners" or shareholders in a nonprofit to hold employees and directors of nonprofits accountable in the same way that members can hold accountable the managers and directors of cooperatives (Brown & Slivinski, 2006).

The ability of nonprofits to raise significant outside funds in turn affects how they approach risk. Compared to the retail-, producer-, or consumer-driven cooperative distribution models, the nonprofits in this study relied much more heavily on outside grants and donations to fund start-up and ongoing operations, thus reducing how much risk they took on as a business entity. Nonprofits do

not have to pay back grants nor distribute dividends, while cooperatives are much more likely to rely on member equity and bank loans, increasing their exposure to risk. Given this dynamic, the nonprofits are able to absorb more of the downside risk faced by farmers and/or retailers than the cooperatives we examined. This can be highly advantageous, allowing nonprofits to experiment with new models without the restrictions of traditional short-term profit and loss business parameters.

However, this propensity of nonprofits to experiment in ways that cooperatives or investor-owned firms would be unlikely to do can lead them to run their distribution operations at a loss so farmers and buyers can get "good" prices. An essential role for a food value chain is to redistribute economic value among supply chain actors (Bloom & Hinrichs, 2011). While some nonprofit-driven value chains do this, several described in this study use external subsidies to absorb distribution costs, allowing them to offer higher prices to farmers without passing on these costs to retailers. Ultimately, the grantors of such operations may end up creating market distortions, such that retailers develop unrealistic expectations about price, which puts other growers who are not part of the subsidized food value chain at a disadvantage.

The long-term viability and replicability of these nonprofit distribution models is in doubt when substantial ongoing subsidies are required to maintain trading operations. These high subsidy levels are justified in part by the grower training, standards development, and public education activities these organizations engage in, going beyond the scope of what traditional distributors would do. This caveat aside, the nonprofits we studied seemed to be on more precarious ground because of their dependence on grants and donations to run trading operations. The nonprofits studied, with the exception of Big River Foods, have had to obtain outside grants and donations on an ongoing basis to run their trading operations, while the cooperatives uniformly have not. In contrast, three of the four cooperatives studied have received minimal outside funding, choosing to take a more gradualist approach to expanding operational expenses in concert with trading income. Even the New North Florida Cooperative — the one cooperative studied that has received fairly significant grant funding over the last 15 years, totaling approximately US$500,000 — has received 90% of its income over the last ten years from trading activity.

The basic structure of a cooperative facilitates a more bottom-line orientation, which is more likely to align social mission with business objectives from the start. With Red Tomato, Appalachian Harvest, and Growers Collaborative, a social mission was developed, funds were raised to advance the mission, and a trading operation was developed to manifest the mission. In order to serve their mission, both Red Tomato and Growers Collaborative created infrastructure-laden trading operations that were impossible to sustain, ultimately leading to complete reversals in how they operate; Appalachian Harvest is still working on reconfiguring its operations to be more financially viable. In contrast, La Montanita and Coop Partners Warehouse developed their distribution enterprises to simultaneously facilitate regional food system development *and* to further the business success of their retail arms. The mission and the business goals had to be in balance from the start, and the leadership was acutely aware of this fact. Both retail-driven models relied on internal, member capital to develop their distribution operations. With the Oklahoma Food Cooperative, the mission of helping farmers secure better markets for their products and helping consumers gain access to regionally produced, sustainably grown food was manifested in a very frugal, self-sufficient trading operation from the start. And while the New North Florida Cooperative did use its social capital to mobilize outside financial support in its early days, it only did so to get its trading operation up and running. Since then it has been largely self-sufficient.

Nonprofits interested in developing local or regional food distribution entities can learn from the experience of cooperative distributors and take more of an asset-based approach (Stoian & Donovan, 2010). If nonprofits want to foster the

creation of new food distributors that promote local purchasing and sustainably grown foods, it is critical they inventory the existing assets of potential value chain partners that could be used for distribution purposes. For example, if farmers have trucking capacity, storage space, or family labor that could be used for product grading, aggregation, and distribution, this should be considered first before seeking funding to purchase or lease trucks, lease warehouse space, or hire new employees. Not only does such an approach reduce upfront capital requirements, it also may lead to more economic benefits accruing to those ostensibly intended to benefit from the enterprise in the first place.

In addition to taking an assets-based approach, nonprofits would be well served to appreciate their unique capacity to play key roles in the development of value chain enterprises, such as:

- **Matchmaker:** Connect key stakeholders through short-term or one-off engagements. As public interest brokers, nonprofits can bring unlikely partners together to create value chain collaborations.

- **Facilitator:** Be actively involved in building longer-term relationships among food value chain actors by helping to establish effective communication channels, ensuring values are articulated and shared, and fostering a trusting environment.

- **Third-party certification:** Establish a program whereby producers receive independent verification of their adherence to a certain set of standards. Such programs help to differentiate products and build demand in the marketplace.

- **Educator:** Provide marketing and educational support, such as branding that reinforces the values and "tells the story." Education can raise consumer awareness and ultimately drive sales for food value chain products.

- **Catalyst/Innovator:** Test out innovative business models. Through grants and donations, nonprofits can take financial risks that would be more challenging for a for-profit business.

- **Resource prospector:** Identify and pursue resources — such as grants, loans, and service providers — to support value chain collaborators as they develop their enterprise(s).

As nonprofits and cooperatives engage in value chain activities, they should consider what roles are most appropriate given their organizational capacities and recognize how their limitations can be mitigated by building strategic partnerships with other value chain actors. Cooperatives may benefit from partnering with nonprofits for training, education, and resource prospecting purposes, while nonprofits may find it worthwhile to partner with cooperatives or investment firms to provide infrastructure support or supply chain management services. Simply put, find out what you are good at, find out what you are *not* so good at, and then get the right people to help you.

Concluding Remarks

While our findings do not necessarily apply to the full range of extant cooperative and nonprofit food value chains given the case study approach employed, they do provide valuable insights for organizations currently engaged with or intending to be involved in food value chain practice. All food value chains must contend with the issues raised in this paper, whether their particular concern might be the appropriate level of infrastructural investment, the most suitable structure to coordinate farmer production, techniques for identity preservation, or how best to manage supply chain logistics — all in a way that will bring the greatest return to producers, meet the rapidly changing demands of consumers, and build financially sustainable organizations. The full distribution report upon which this paper is based will provide detailed descriptions and more in-depth analysis of each case study, with the target audience

being practitioners (e.g., nonprofit organizations, producer groups, agricultural extension, and for-profit enterprises) that are involved in value chain development for small to mid-scale producers. While no study of this nature can provide the specific answers on how exactly to run a food value chain, an analysis of what seems to be working and what does not can shorten the learning curve for new value chain entrants and help existing food value chains grow and prosper.

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Acting collectively to develop midscale food value chains

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Abstract

This paper uses case studies of four innovative U.S. midscale food value chains to provide models of how midsized farms and ranches and associated processing, distribution, and retail businesses can prosper by acting collectively to construct a "third tier" in the U.S. agri-food system. Specifically we consider the importance of acting collectively at three distinct levels: horizontally among producers, vertically within food value chains, and horizontally across food value chains. These midscale food value chains represent strategic alliances among midsized farms and other agri-food enterprises that operate at regional levels, handle significant volumes of high-quality, differentiated food products, and distribute profit margins equitably among the strategic partners. From a market perspective, the key advantage of these food value chains is their ability to provide these high-quality, differentiated products that are not available through the mainstream commodity market.

Keywords

community of practice, differentiated products, midsized farms, regional, strategic partnerships, supply chains, sustainability, value chains

Introduction and Background

Historically, midsized, "farming occupation" farms have been the backbone of the U.S. agricultural sector. In recent decades, however, farms in this size range have been severely challenged because they are often too small individually to compete successfully in global agricultural commodity markets, while also being too large and/or poorly positioned to directly market their products to local consumers. Yet many observers believe these midsized farms remain important for their environmental stewardship, their contributions to community vitality, and the role they play in maintaining a diverse, resilient, and more sustainable structure of agriculture (Stevenson & Pirog, 2008).

Figure 1 depicts the relationship between farm size and production and marketing opportunities. As

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indicated by X in the upper left cell, small farms have their greatest chances for success by producing and selling differentiated products in local markets through direct markets and short supply chains.[1] In contrast, large farms have a competitive advantage in the low margin/high volume global markets for farm commodities (the X in the lower right cell). These products move through efficiency-based supply chains. Many midsized farms have traditionally supplied these commodity markets. This paper focuses on midsized farms that are trying to make the transition from the "Troubled Zone" of competing largely unsuccessfully with large farms, to the "Opportunity Zone" of producing and marketing differentiated products. These farm products travel from producers to consumers via values-based supply chains, or what we refer to as "value chains" in this paper. We draw on four detailed case studies to examine how mutually supporting social relations, what we term here "acting collectively," must functions at three distinct levels — horizontally among producers, vertically within food value chains, and horizontally across food value chains — in order for this transition to succeed.

Figure 1. Farm Size Shapes Market Opportunities

Market and Product Characteristics	Small Farms	Midsized Farms	Large Farms
LOCAL Differentiated; direct and short supply chains	X		
REGIONAL Differentiated; values-based supply chains		Opportunity Zone	
GLOBAL Commodities; efficiency-based supply chains		Troubled Zone	X

The research team prepared in-depth case studies based on a sequence of interviews of key actors, a review of essential documents, a formalized feedback process to revise the written draft cases, and then a set of interactions during two multiday workshops with the case study principals. This last step of the case study process, what is termed "learning across value chains," follows a community of practice approach that is discussed and documented in section 3 of this paper. During the workshops, the case principals and the research team exchanged ideas and insights and brainstormed alternatives.

The four midscale food value chains we studied vary in their organizational structure, location in the country, types of products handled, and volume of sales. They all can be characterized as strategic alliances among primarily midsized farms[2] and other agri-food enterprises that operate at regional levels, handle significant volumes of high-quality, differentiated food products, and distribute profit margins equitably among the strategic partners. In addition, the products possess unique stories that identify where the food comes from and how it is produced, and they reach the marketplace via transparent supply chains built on equitable business relationships that seek to gain consumer trust and support. Within the alliances, the farmers function as strategic partners, rather than

[1] Some farms of all sizes sell through each market type. This figure focuses on the farm size/market type pairings that are most successful.

[2] Most, but not all, the farms have gross sales below the US$500,000 level, which is commonly used as the upper limit of midsized farms. See the discussion in Stevenson et al. in this volume.

as interchangeable input suppliers. They receive prices based on reasonable calculations of their production and transaction costs, longer term contracts than standard for their products, and are able to control their own brand identities as far up the value chain as they choose.

The cases vary significantly in the number of member farms in each strategic alliance (under 50 to over 1,500), value of sales (less than US$1,000,000 to over US$500,000,000), and style of organization (two are cooperatives and two are not). But they also share much in common and provide significant insights to others. The strategies that they follow and that we analyzed and evaluated are grounded in solid business theories for developing competitive enterprises that produce and market products that have "unique and superior value" (Dyer, 2000; Kumar, 1996; Peterson, 2002; Porter, 1998; Porter & Kramer, 2011). Yet they dynamically employ both the power of collective action and collaborative business partnerships (Handfield & Nichols, 2002) to create "fair trade" business models that distribute value equitably among business partners in both international and domestic markets (Jaffee, Kloppenburg, & Monroy, 2004).

The four cases are[3]:

- **Country Natural Beef:** A 120-member beef rancher cooperative in the northwestern United States;
- **CROPP/Organic Valley:** A 1,650-member, multiregional farmer cooperative marketing organic dairy, eggs, vegetables, and other products;
- **Shepherd's Grain:** A 35-farmer limited liability corporation marketing sustainably grown and functionally specified wheat flour in the northwestern United States;
- **Red Tomato:** A nonprofit, domestic fair-trade business that provides marketing services to 35 fruit and vegetable farmers in the northeastern United States.[4]

Selected cross-case findings highlight the importance of:

- Developing pricing systems based on two principles: (1) supply management and stable prices, and (2) cost of production-based pricing;
- Communicating the deeper, more complex values that differentiate these value chains from mainstream supply chains, including land stewardship, fair returns to all value chain participants, and maintenance of diverse farm and ranch structures;
- Screening of potential new producer-members by existing members in terms of both production capabilities and integrity;
- Employing farmers and ranchers as business representatives, storytellers, and listeners.

The common elements across these findings are the need for accurate information, the importance of open communication, and the need for shared values. In the next three sections, we examine how this happens at three levels.

1. Acting Collectively at the Farm Level

Each of the value chains developed in response to the challenge posed in figure 1 is working collectively to earn sustainable price premiums in the marketplace. This sometimes requires passing up the highest possible prices in the short term in order to protect long-term relationships and income.

Country Natural Beef members are very explicit in describing this collective action as a means to an end: they act collectively so that the individual

[3] Links to the complete case studies and the individual websites are provided following the reference section.

[4] Although Red Tomato is a dual-purpose organization that also consults on regional food system development, in this paper only the marketing portion of the business will be considered.

member ranches are able to maintain "every possible bit of independence." In contrast to most cooperative organizations, Country Natural Beef member ranches do not invest equity in the organization, so there is nothing about the organization that can be bought or sold. While many competing natural beef brands have changed ownership in the last decade, this cannot happen for Country Natural Beef. The money earned from the sale of cattle flows directly to individual ranching families, and the cooperative prides itself on maintaining extremely low overhead and administrative costs (just over 4%). Country Natural Beef hires no staff, instead employing members who act as independent consultants and "internal partners" to handle key functions that include production planning, sales, and accounting.

Working collectively requires significant investments in building relationships among members and an acceptance of group decisions. Country Natural Beef requires member ranches to participate in semiannual business meetings. At these meetings, all major decisions are discussed until a consensus is reached. As is true for the other producer groups, all Country Natural Beef ranches must follow strict standards on *how* to produce and agree to group decisions on when and *how much* to produce. Each ranch also commits to spending two weekends a year in the retail marketplace interacting with both value chain partners and end consumers. One remarkable outcome of these procedures is that all members display an impressive command of the business philosophy and practices. Acting collectively means seeking active participation from within the farm or ranch households. Each of these case study organizations is strongly committed to the full participation of women and men across all aspects of the organization.

Shepherd's Grain very explicitly modeled itself after Country Natural Beef and adopted many of its practices, including a commitment to very low overhead, dependence on internal partners rather than hired staff, and use of facilitated annual meeting practices to examine strategic decisions. But for tax and flexibility purposes, Shepherd's Grain was organized as a limited liability corporation rather than a cooperative so the individual farmers who grow the wheat do not have the same direct decision-making authority that the Country Natural Beef ranches do. At this point, Shepherd's Grain member farms sell less than 25% of their production through the collective and sell the rest on the generic commodity market.

Organic Valley, a much larger organization, contrasts in several ways with Country Natural Beef and Shepherd's Grain. The member farms are required to make an equity investment equal to 5.5% of the farm's annual sales, and the cooperative employs a full staff to administer the business. No annual meetings are held for the general membership. Nevertheless, Organic Valley operates so that member net revenues are maximized, rather than cooperative net revenues.

Deciding to reduce member incomes is often the most difficult collective decision. In 2008 as the organic milk market weakened, Organic Valley moved aggressively by both cutting producer prices and instituting supply control measures (that is, decreasing deliveries from all member dairies). These two efforts succeeded in minimizing the overall impact on all member farms and demonstrated the power of collective action (Barham, 2010). The other organizations share both the focus on the long run and the philosophy of distributing the rewards and pain equitably among all members.

Organic Valley places a priority on preparing for the future by providing both an exit strategy for current farmers and a means of entry for the next generation of farmers. As Chief Financial Officer Mike Bedessem puts it, "We know what our job is: It's to get to the point where our farmers have a choice — they can farm, they can retire, they can sell to the kids. That's the exit strategy for our current farmers — it's a future for their kids." Similarly, Country Natural Beef founder Connie Hatfield notes, "My definition of sustainability is when more than 25 kids below the age of five require daycare at our semiannual meetings."

The three farmer organizations recognize that recruiting new members represents an important challenge. Since they focus on member returns, they all follow the strategy of adding members only when demand for their products clearly exceeds supply. This is particularly important because, as in the Organic Valley example, they generally choose to treat new members on an equal footing with old members and therefore unexpected reductions in demand reduce everyone's returns, not just those of the new members.[5] The organizations indicate a preference for members who are comfortable with a strategy of "getting rich slow." This means that they prefer members who are patient and will remain loyal to the organization even when market conditions are such that individual producers would benefit from being outside the constraints of long-term value chain agreements. This occurs when mainstream market prices rise quickly and steeply and has caused membership issues for all of the organizations including, in extreme circumstances, producers who choose to quit because they cannot or will not pass up the short-term gains.

As noted earlier, Red Tomato is a nonprofit rather than a farmer-run organization. Still the mission of the organization ensures that it focuses on providing long-term benefits to the farms that market through Red Tomato. In common with the other three organizations, it faces the challenge of selecting the "right" farms. Red Tomato's approach to recruitment is typical. It seeks farms that meet a set of criteria: they produce sufficient volume and variety, have adequate storage, refrigeration, packing, and trucking capacity, provide a geographic fit with the rest of the business, and have leaders whose temperaments fit the culture of Red Tomato. According to Michael Rozyne, this generally means that the farms are neither "so large" that Red Tomato only handles a smart part of their business, nor "so small" that the farm output provides only a small contribution to what is marketed. As is true for the other organizations, Red Tomato relies on existing growers to nominate new growers as a key means of ensuring future product quality and business tranquility. Organic Valley requires that new members and employees successfully complete an extensive education and socialization process. The cooperative credits these requirements with keeping the organization on mission during periods of rapid growth in sales and personnel.

2. Acting Collectively in the Value Chain

In contrast to direct marketers and to large vertically integrated firms, the producers in these value chains depend on cooperation with many other enterprises to get their products to end consumers. The distribution of rewards across the value chain becomes a key element that must be negotiated. Karl Kupers of Shepherd's Grain defines the idealized value chain they all seek to form as a supply chain "where greed does not exist" and within which all the participants "take value."

On a more practical level, however, the development of a pricing philosophy is central to all four businesses. For Shepherd's Grain, the starting point was to unlink the price received by Shepherd's Grain producers from commodity wheat prices so their farmers could receive a more stable and equitable return. Shepherd's Grain decided to set stable, six-month-long prices based on cost of production plus a reasonable rate of return, rather than to charge a premium above commodity wheat prices. Cost of production is calculated as the sum of on-farm production expenses, transportation costs, Shepherd's Grain administrative fees, and milling fees. Red Tomato, with the business mission to be a "food decommodifier" so that the high-quality products it markets for farmers earn suitable rewards, uses a less quantitative approach. The Red Tomato pricing philosophy can be traced back to the fair trade model, setting it apart from other produce distributors in the region.[6] Red Tomato refers to it as a *dignity pricing* model. Prices are based on a combination of growers' perceptions of their own pro-

[5] Three of the four organizations require a trial membership period, but it is intended to make sure the farm or ranch is a good fit, not to allow for a response to poor markets.

[6] See, for example, the description of the model used by Equal Exchange at http://www.equalexchange.coop/story

duction costs, their experiences in the market, and their sense of what is fair. It works like this: Red Tomato traders ascertain from growers the following price points: (a) the average price recently received for a given product; (b) the price they want through the Red Tomato brokerage; and (c) the lowest price they will accept with dignity. Armed with this information, Red Tomato traders seek to get the highest reasonable price from a given buyer.

Organic Valley focused from the start on selling its products through multistage value chains rather than through direct marketing channels. It credits much of its early success to contracting out the key parts of its processing and distribution systems rather than sinking money into bricks and mortar and performing these supply chain functions itself. It owns only a single processing facility and has virtually all the Organic Valley milk processed on contract with dairy manufacturing plants located close to the regionally organized milk pools. In most instances these are independent, family-owned processors. It also contracts for transportation of both its raw milk and finished products, generally by independent trucking companies, many of which are smaller, family-owned firms. In contrast to the decision not to build physical infrastructure, the cooperative has made significant internal investments in supply chain logistics, and its leaders view excellence in this area as critical to its success. In fact, Organic Valley has spun off its logistics arm as a full subsidiary of the main business.

Country Natural Beef develops business partnerships based on the Japanese concept of "Shin Rai," or mutual support and mutual reward. The cooperative works with business partners who provide complementary services and expertise, and share basic values such as humane animal treatment and land stewardship. These partners maintain Country Natural Beef's identity on its products through to the final consumers. Retail partners include Whole Foods, New Seasons Market, Burgerville, and Bon Appétit Management Company. The cooperative faces a significant challenge in balancing its mix of retail partners to ensure sale of the entire animal, rather than just the most sought-after cuts.

Shepherd's Grain uses strategic value chain partners to replace the capital and expertise that otherwise would be required to handle grain milling and distribution. These partners provided early assistance in assessing wheat varieties and flour quality, and in locating customers. Shepherd's Grain flours are milled at the Archer Daniels Midland (ADM) mill in Spokane, Washington, the only significantly sized flour mill in the region and thus the only real processing option in close proximity to the farms. While ADM is a massive multinational firm, Shepherd's Grain has developed a close relationship with this regional mill. The partnership with ADM provides several advantages to Shepherd's Grain, including strict assurances that their products remain separate, excellent flour quality,[7] marketplace credibility, and a safety net, as ADM assumes ownership of the wheat once it is delivered to the mill. Shepherd's Grain works with multiple distributors such as Food Service of America that act as sales agents for their products. Nearly all sales are direct wholesale, which means that Shepherd's Grain depends on its value chain partners and customers to preserve its brand identity in the marketplace. Strategies for maintaining brand identity with the assistance of its customers include, for example, a photo of Shepherd's Grain farmers on the Hot Lips Pizza website and farmer visits at Bon Appétit cafés. More recently, Shepherd's Grain has begun co-branding retail flour products with a small regional flour company. In all of this, Shepherd's Grain seeks out customers and business relationships that value the quality and story behind their products. In 2008, they parted ways with a customer who was only interested in price and not a strategic values-based relationship. Says Karl Kupers, a founder, "Maintaining our story and identity are important to us…if that's not important to the 'big guys,' then they can go somewhere else."

The Red Tomato that exists currently grew out of

[7] The mill is less automated than most American facilities and thus allows for the wheat to be milled to more precise and diverse standards.

unsuccessful attempts the organization made to operate on a broader geographic scale with the entire physical infrastructure needed to create an alternative food distribution system. In 2003 the organization got rid of the trucks and coolers and kept the customers and farmers. In other words, Red Tomato became a value chain coordinator rather than a supply chain operator. The company's ability to coordinate depends on establishing effective, strategic partnerships that provide needed expertise and capacity. From the perspective of the firm's retail business clients, Red Tomato creates value by providing the logistical support necessary for aggregation and distribution, so that these retailers can purchase a broad variety of products from a single source. Farmers choose to delegate marketing responsibilities to Red Tomato so that they (the farmers) can focus on production.

For distribution services, Red Tomato relies on both its farmers and three independent trucking companies. It has formed retail and food service partnerships with a wide range of businesses ranging from large retailers, such as Whole Foods and Trader Joe's, to much smaller, independent companies. Part of Red Tomato's mission is to make its exceptional products accessible to consumers where they shop and eat — supermarkets, natural grocery chains, co-ops, independent grocery stores, institutions, and restaurants with a commitment to regional products. According to Red Tomato's Michael Rozyne, the two key questions that potential partners must answer are "Is Red Tomato important to you?" and "Do your customers want our stuff?" The goal is to work toward long-term business relationships, but there is a recognition that partnerships should begin with a two- or three-year trial period.

While all of the value chains talk about trust and relationships, many also have moved toward establishing formal written contracts with their partners. Over time, this sharing and transparency generate trust. Trust is pointed to as a pivotal component in successful value chains by virtually all observers of these interorganizational alliances. It is important that trust in value chain participants be based on not only personal relationships but on organizational procedures.[8] In other words, trust is based in the fairness and predictability of the procedures and agreements among strategic partners. Policies are consistent and stable over time, and do not change with new management or personnel. Country Natural Beef spent over two years negotiating an agreement with its primary retail partner that rests on interorganizational commitments, and not on interpersonal relationships.

Consumers are the final link in these value chains. The USDA "Know Your Farmer/Know Your Food" initiative and retailers ranging from Whole Foods to Wal-Mart all seek to increase the recognition and visibility of individual producers.[9] This focus on individual producers provides a challenge for these four value chains, since one of the key reasons for their development was that, for reasons of scale and geography, direct sales from producers to consumers were impractical. In the United Kingdom, Marsden and his colleagues (Marsden, Banks, & Bristow, 2000, p. 425) describe three alternative supply chains types that provide opportunities for gaining consumer loyalty and support:

1. *Face-to-face:* Personal interactions such as consumer supported agriculture, farmers' markets and farm stands;

2. *Spatial proximity:* Supermarkets, restaurants, and institutions highlighting local/regional products; and

3. *Spatially extended:* Product and producer characteristics are transmitted to consumers outside the region.[10]

These midscale value chains try to benefit from

[8] For an expanded discussion of interorganizational trust, see Stevenson and Pirog (2008).
[9] See for example: http://walmartstores.com/pressroom/news/8414.aspx, http://www.wholefoodsmarket.com/products/locally-grown/, and http://www.usda.gov/wps/portal/usda/knowyourfarmer?navid=KNOWYOURFARMER
[10] This topic is also discussed in Clancy and Ruhf, 2010.

both the spatial proximity and the spatially extended alternatives. In both alternatives, the organizations in these case studies must wrestle with whether consumers will form a relationship with the overall brand or whether consumers prefer and perhaps even require a bond with individual producers. The results to date have led the four organizations to proceed on both fronts by trying to build a brand identity that means something to consumers and by identifying ways to highlight linkages back to individual growers.

Of the four value chains, it is the non-farmer operated organization, Red Tomato, that provides the most concrete links between producers and consumers through labeling and storytelling efforts. Because the products that Red Tomato handles can be segregated by grower, this proves to be fairly easily managed. Additionally, Red Tomato will soon experiment with Internet-based social networking approaches to connecting consumers with its farmers and its brand (M. Rozyne, personal communication, 10/28/2011).

The other three organizations all handle products that are aggregated for processing. So while all three feature the producers whenever possible, they find it much more difficult to preserve the individual farm identity all the way through to the consumer. Shepherd's Grain's "Find the Farmer" website does allow the supermarket consumer to enter a code from the flour sack and determine the set of farms that had flour milled that day. The Organic Valley website provides information on the farms nearest to the consumer's location. So both organizations have made some progress on filling this gap. Country Natural Beef has also begun to explore the changes it would need to make to provide a more direct consumer/producer link. Still, none of these organizations will ever equal the intimacy of contact achieved in farm-direct channels.

3. Learning Across Value Chains

In the course of conducting the case study research and disseminating the results, the research team began to recognize the learning that took place when the case study principals read the different cases and interacted with each other during project workshops. Despite focusing on different crops and being organized in different ways, they quickly formed a community of practice (CoP) and readily exchanged insights and suggestions. Selected examples include:

- The interest sparked by the "dignity price" concept or model that Red Tomato has introduced as a means of establishing fair compensation for growers and other approaches for establishing prices in value chains;
- Descriptions of what the end consumers in their value chains care about the most;
- Comparisons of strategies for dealing with mainstream food distributors;
- Intense and valuable exchanges among case study principals regarding ideas for responding to the 2008 economic slowdown internally and in relations with value chain partners;
- Discussions of how to best communicate considerations of environmental ethics across value chains; and
- Recognition of the key factors that contribute to the resilience of successful value chains.

As researchers, we now focus much more on the learning across value chains because it represents an important extension of the community of practice concept. The original CoP literature focused on facilitating social learning within individual corporations (Wenger, McDermott, & Snyder, 2002). The second strand of the CoP literature focused on facilitating virtual learning communities and defined a major role for the public sector (Sobrero, 2008; Sobrero & Craycraft, 2008). Our focus is on the unique opportunities and challenges of the detailed information exchanges among groups such as these case study principals who are not in the same firm and have their own learning

agenda rather than one set by the public sector. We are experimenting with different ways of exchanging information and will document through observations and questionnaires the costs and benefits that accrue to the participants. Finally we will assess the long-term sustainability of the CoP and the transferability of this approach — and the lessons learned by the CoP — to other participants.

Final Thoughts

Taken as a whole, the four case studies demonstrate that farms of the middle have both the capacity and the flexibility to work collectively with each other and with their value chain partners to create midscale food value chains that successfully respond to expanding market opportunities. They also value the ability to learn from each other. As they move forward they must further develop these key areas: (1) adapting and protecting value chain pricing principles, especially resilience in times of economic stress; (2) strengthening relationships with strategic business partners; (3) strengthening communication with consumers; (4) deepening product differentiation; (5) achieving greater efficiencies; and (6) addressing organizational positioning, maturation, and succession. Additional work must also address the sorely lacking policy instruments and funding, both public and private that will increase the viability of these small and medium-sized farms and their collectively created value chain partnerships within agriculture's "third tier."

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The four case study reports and related documents are available at the Agriculture of the Middle website: http://www.agofthemiddle.org/

Websites of the four organizations:

- Country Natural Beef: http://www.countrynaturalbeef.com/
- Organic Valley: http://www.organicvalley.coop/
- Red Tomato: http://www.redtomato.org/index.php
- Shepherd's Grain: http://www.shepherdsgrain.com/

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Food value chain development in central New York: CNY Bounty

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Abstract

In the past 10 years, demand for locally grown food has increased dramatically. Concomitantly, small, commercial farms have declined disproportionately to small and large farms. The decline may be due to the lack of appropriately scaled marketing and distribution resulting from changing markets. This article presents a case study of a component of a food value chain started in 2007, Central New York (CNY) Bounty. CNY Bounty markets and distributes products produced by 119 small, commercial farms and processors to individual households, restaurants, natural food stores, and universities. In the past four years, CNY Bounty has experienced mixed success in terms of its economic viability, which can offer some important lessons for practitioners and contributions for food value chain research.

Keywords

agriculture of the middle, distribution, food hub, local food, New York agriculture, rural economic development, value chain

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Introduction

The US food system has changed dramatically since the 1970s, with evidence of negative impacts for independent family farms. These are farms, henceforth referred to as "small, commercial farms," which report annual sales between US$10,000 and US$250,000, and with farming as the primary occupation of the owner (Hoppe, MacDonald, & Korb, 2010). Many small, commer-

cial farms face similar challenges marketing and distributing their products, primarily because of the difficulties in linking to food supply chains.[1] In particular, accessing appropriately scaled markets is increasingly difficult for small, commercial farms as supply chains continue to become more polarized.

Table 1. Sales of Farmers' Markets in Madison County, NY (Summer 2009)

Market Location	Average $ spent per week (US$)	Number of weeks/market	Total amount spent per market/year
Hamilton, NY	$24,754.34	25	$618,858.38
Cazenovia, NY	$12,553.96	25	$313,848.89
Canastota, NY	$3,442.12	15	$51,631.82
Oneida, NY	$3,480.00	20	$69,600.00
Hamilton, NY	$24,754.34	25	$618,858.38
Total Sales			**$1,053,939.09**

Source: Madison County Agricultural Economic Development Program records 2009.

Participation in mainstream food supply chains is difficult for small, commercial farms.[2] This is due in part to the consolidation of large-scale, supermarket retail and wholesale operations. These markets demand large volumes, low prices, and consistent quantities and qualities that meet increasingly strict safety standards. The procurement systems in such markets are often vertically and horizontally integrated, global in scale, and structured to maximize efficiency. In addition, the cost of wholesale marketing farm foods has increased considerably over the past four decades, mainly because of rising costs of labor, transportation, food packaging materials, and other inputs used in marketing (USDA, 2002).

Small, commercial farms can access direct retail markets where barriers to entry are lower (e.g., community supported agriculture, farm stands, and farmers' markets); however, where direct markets are located in proximity to farms, sales are often limited by small, remote populations and the seasonality of the markets. For example, table 1 shows that in 2009, the four farmers' markets in Madison County, NY, generated revenues of approximately US$1,000,000 per season. However, this figure represents sales from over 100 vendors, over half of whom sell nonfarm products. Thus, it is unlikely that a small, commercial farm could earn enough revenue simply through direct market sales if the farm is not located in close proximity to larger markets.[3]

Despite the difficulty of gaining access to appropriately scaled markets, there are growing opportunities for small, commercial farms. Tropp, Regland, and Barham (2008) found that "the value of direct-to-consumer food sales in the United States grew 37 percent between 1997 and 2002 — from US$592 million to US$812 million — reflecting the enormous growth in the number and accessibility of direct-to-consumer marketing outlets" (2008, p. 7). Kirschenmann, Stevenson, Buttel, Lyson, and Duffy (2008) argue that small, commercial farms are best positioned to meet the growing demand for local food because "they have the flexibility to implement innovative production and marketing systems" (p. 17).

Redeveloping appropriately scaled segments of supply chains (e.g., processors, brokers, distributors, wholesalers, and retailers) may support the viability of small, commercial farms. However, mainstream supply chains have consolidated in order to provide food to consumers as efficiently and cost-effectively as possible. Thus, it is unlikely

[1] We follow the definition of food supply chain proposed by Clancy and Ruhf (2010b): "A network of business enterprises through which food products move from production through consumption. Typical links in the supply chain are: inputs; producer; processor; broker; distributor; wholesaler; retailer; consumer" (p. 2).

[2] Mainstream supply chains typically refer to a major grocery store or food service distributor, which "can supply local products…but typically do not focus on establishing meaningful links between consumers and producers" (King et al., 2010, p. 5).

[3] For more information about the Madison County baseline economic assessment study of the farmers' markets in Madison County, New York, contact contact@madisoncountyagriculture.com

that supply chains created to support small, commercial farms will be able to compete on a purely economic basis. According to Kirschenmann, Stevenson, Buttel, Lyson, and Duffy (2008), what is missing in order for small, commercial farms and mid-scale supply chains to profit from growing demand for local food is functional value chains. There are several definitions of value chains; according to Clancy and Ruhf's work on value chains in the Northeast, value chains most commonly "focus on 'adding value' to the product…[by] featur[ing] food products that are converted from raw product through processes that give the resulting product an incremental value — higher price or expanded market — in the market place…[and/or by] describ[ing] food products that obtain incremental value in the marketplace by differentiating based on product attributes such as: geographical source; environmental stewardship (production practices); food safety; or functionality" (2010a, p. 14). Participation in a value chain is thus very different from a traditional food supply chain.

In the last five years, the number of food value chains across the United States has proliferated. A May 2009 study in the Northeast was able to select 35 regional value chains for initial data collection. Many of these value chains have received ample support from governments and private foundations. Yet policy-makers lack rigorous methodologies to evaluate the contribution of local food value chains to the economic vitality and sustainability of communities and small, commercial farms. Developing these methodologies has risen to the top of many research agendas (Clancy, 2010; Committee on Twenty-First Century Systems Agriculture: National Research Council, 2010; King et al., 2010). This case study provides an account of a segment of a food value chain that was started in 2007, CNY Bounty.

Background

Central New York (CNY)[4] presents an interesting case through which to examine the impacts of food value chains, due to the large share of agriculture in the local economy, sizeable direct-to-consumer farm sales, availability of affordable land suitable for agricultural production, proximity to markets (particularly those demanding locally grown products), and predominance of small farms and small, commercial farms. Furthermore, agriculture in CNY is experiencing a significant shift. Dairy farming has long been the agricultural mainstay, and remains the single biggest contributor to gross agricultural sales, but the number of dairy farms has declined in recent years. Table 2 shows that between 2002 and 2007, the number of dairy farms in the five-county CNY region dropped from 920 to 736; likewise, the number of milk cows decreased from 106,600 in 1993, to 93,500 in 1999, to 77,600 in 2007 (USDA NASS, 2007). In contrast, figure 1 shows that small, commercial farms compose over a third of CNY farms. We argue that these farms are important to rural economic activity in the region. Many of these farms are diversifying their operations; for example, the number of fruit and tree nut and orchard operations increased significantly over the past decade, 106% and 18% respectively (USDA, 2009). The statistics for new farms in CNY are even more telling. Of the 744 farms in Madison County, 173 reported being in operation less than 10 years (USDA NASS, 2009).

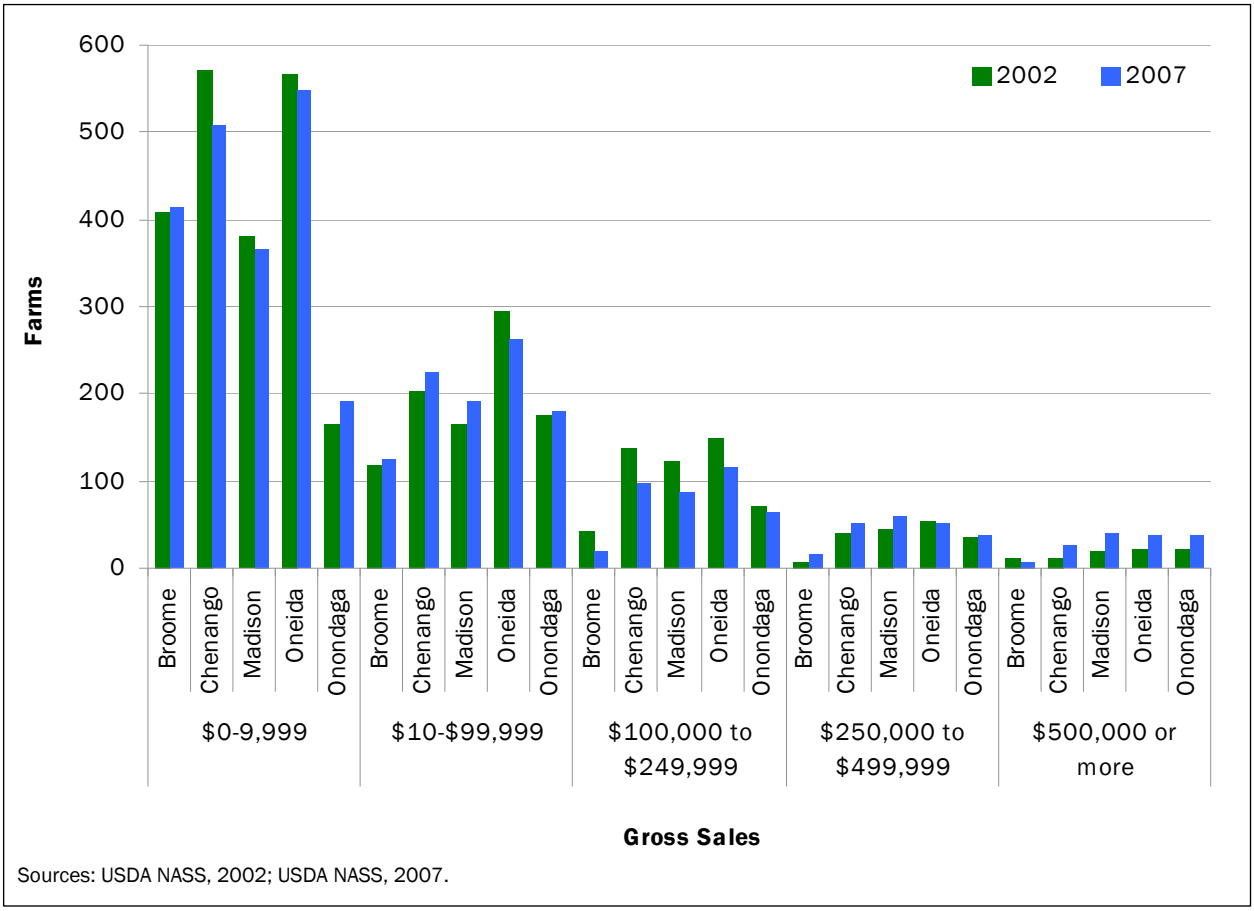
Table 2. Number of Milk Cows in Central New York, 1993, 1999, and 2009, and Number of Dairy Farms in Central New York, 2002 and 2007

County	# milk cows (2009)	# milk cows (1999)	# milk cows (1993)	# dairy farms (2007)	# dairy farms (2002)
Broome	5,700	6,500	8,600	44	61
Chenango	14,000	21,000	24,000	194	247
Madison	19,000	24,500	28,700	189	226
Oneida	17,000	23,000	28,000	204	283
Onondaga	21,900	18,500	17,300	105	103
Total	77,600	93,500	106,600	736	920

Sources: USDA NASS, 1999; USDA NASS, 2002; USDA NASS, 2007; USDA, 2009.

[4] For the purposes of this paper, Central New York is defined as the region made up of the five counties of Broome, Onondaga, Oneida, Madison, and Chenango.

Figure 1. Central New York Farms by Gross Sales, 2002 and 2007



Sources: USDA NASS, 2002; USDA NASS, 2007.

CNY Bounty

In 2007, the Chenango County Agriculture Development Council (CCADC) created CNY Bounty.[5] CNY Bounty is a year-round, local foods[6] distribution company that is a example of a burgeoning segment of a food value chain. We argue that CNY Bounty is part of a food value chain, as opposed to a standard supply chain, for several reasons. First, it provides and distributes value-added, geographically differentiated products. Second, the process through which profits are shared involves farmers setting their own price such that they receive ample reward for their labor, regardless of their scale and/or growing practices, as opposed to products sold through the commodity market and/or mainstream supply chains. Third, CNY Bounty exhibits a high level of transparency in its business strategy, as shown by its continuous information-sharing among all participating farmers, processors, and consumers.

How It Works

Each week CNY Bounty coordinates product availability with its participating farmers and processors. CNY Bounty staff update product listings

[5] CNY Bounty was originally called Chenango Bounty. When Madison County joined the project in July 2008, the project became known as Chenango-Madison Bounty. In January 2010, the project name was officially changed to CNY Bounty as the project expanded into Onondaga County. CNY Bounty is now the legally incorporated name of the LLC.

[6] For the purpose of CNY Bounty, local is defined as: (1) grown and/or processed within the delivery area (currently the five-county region of Onondaga, Madison, Broome, Chenango and Oneida); or (2) grown and/or processed within New York state — used only in cases where specific products in sufficient quantity and quality are not grown within the delivery region.

on its website[7] according to each farmer's price, plus a 30% mark-up to cover CNY Bounty's costs of operation, along with the total quantity available (i.e., the website can be set to reflect that farmer A has 30 butternut squash available in a given week). Currently, CNY Bounty works with 119 farmers and processors. Its customers include individual households, electronic benefits transfer (EBT) and supplemental nutrition assistance program (SNAP) recipients, restaurants, natural food stores, and educational institutions. These customers can place orders online anytime before Monday at noon for Wednesday or Thursday delivery. The website is closed on Monday between noon and 5:00 p.m. so that CNY Bounty staff can provide farmers and processors with order information. Orders placed before Monday at noon are picked up from the farm on Tuesday afternoon and delivered directly to accumulation sites (farms with ample refrigerated space, Cornell Cooperative Extension offices, and storage and processing facilities). CNY Bounty drivers collect all products and bring them to the distribution facility, currently in Evans Farmhouse Creamery, in Greene, NY. Warehouse workers pack most of the orders on Tuesday evening, except for baked goods and other fragile or highly perishable items that need to be harvested or made, packed, and distributed on the same day. Orders placed within the delivery region for over US$35 are delivered directly to customers' homes at no additional charge. Orders that are placed by customers who live outside the delivery area or that total less than US$35 are delivered to one of CNY Bounty's 18 strategically located drop sites, shown in figure 2.

Figure 2. CNY Bounty Drop-off Locations

Source: CNY Bounty records 2011.

CNY Bounty works with a diverse group of farmers and processors, offering a wide assortment of value-added fresh and processed products — dairy (milk, yogurt, cheese, etc.), eggs, produce, all kinds of meats, salsas, jams, juice, maple products, honey, grains, beans, pastries, and soups, among others. In total, CNY Bounty offers customers over 1,500 items, although not all are available year-round. Participating producers employ a wide range of production methods, and vary in size from raising 20 layer hens to farming over 1,000 acres in vegetables and crops.

[7] CNY Bounty website: http://www.cnybounty.com

Some member farmers have worked the same land for many generations, and others use CNY Bounty as a vehicle to launch their new farm and/or processing business. All participating farmers adhere to local, state, and federal regulations, sell their product above standard commodity pricing, and are not discriminated against or shown preferential treatment because of production decisions (e. g., organic, Northeast Organic Farming Association-NOFA pledge, Certified Sustainably Grown).

Organizational Structure

Until January 1, 2011, CNY Bounty operated under the umbrella of Cornell Cooperative Extension of Chenango County and Cornell Cooperative Extension of Madison County. The transition to an independent entity was difficult due to questions about actual business ownership and to problems determining appropriate legal structure. Due to the large number of vendors with whom CNY Bounty works (particularly the large number of beginning and expanding farmers), as well as the fact that CNY Bounty delivers food to all customers regardless of socioeconomic status, CNY Bounty's executive advisory committee decided to form both a 501(c)(3) nonprofit corporation and a for-profit corporation (as a limited liability corporation (LLC). Currently, the 501(c)(3) is the sole member/owner of the LLC, although CNY Bounty is currently considering selling ownership shares in the LLC. The majority of operations take place through the LLC, but in practice, the two structures are closely aligned.

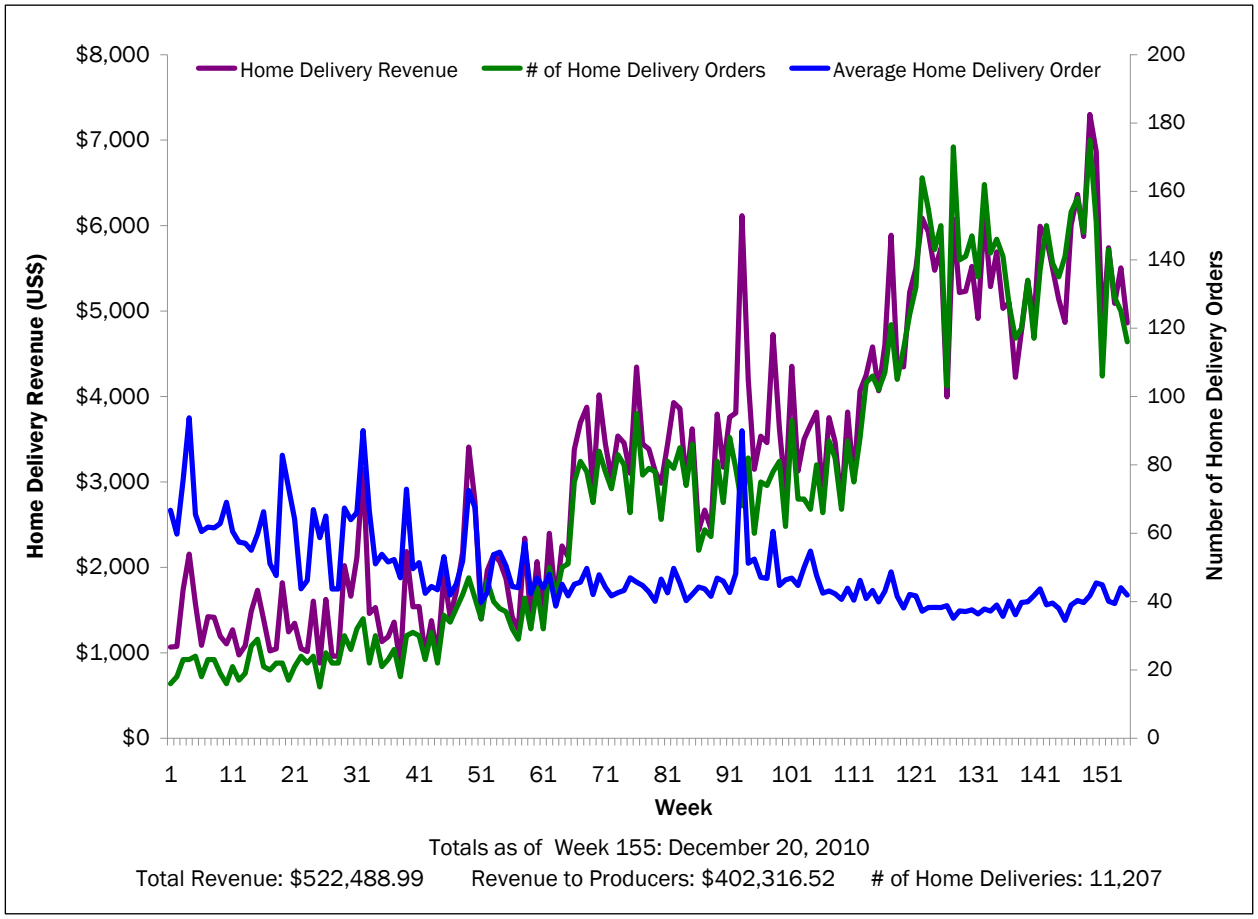
Forming a nonprofit organization has meant continued reliance on grant funding and/or public assistance for certain activities. However, if one considers the economic development assistance provided by all county and state governments to new businesses, the mold for which does not fit small, commercial agriculture, the nonprofit business structure and continued support becomes more palatable. In addition, the fact that customers paying with EBT or SNAP benefits cannot pay online for products means that delivering to these customers more than doubles CNY Bounty's labor costs when compared to other home delivery services. Given society's increasing concerns about diet-related health problems (e.g., obesity and diabetes), there may be additional rationale for continued government and private foundation support of CNY Bounty and similar programs.

Sales

As of December 15, 2010, CNY Bounty had completed over 11,000 deliveries since operations began in November 2007. These deliveries represent sales of over US$500,000, of which over US$400,000 was returned to member farmers and processors. The difference was retained to cover operation costs (figure 3). Table 3 presents selected indicators of CNY Bounty's performance. The average number of weekly orders increased from 26.4 to 126.5 between 2008 and 2010. Likewise, the average sales per week increased from US$1,525 to US$5,530 during the same period, and the average revenue returned to members increased nearly four-fold between 2008 and 2010. These figures are small, but suggest increased future sales. In August 2010, CNY Bounty began developing an institutional sales channel, which resulted in over US$2,000 per week in average sales in the last four months of 2010.

Table 4 demonstrates that most of the 24 farms and processors selling product through CNY Bounty for at least three years saw increases in sales through this market outlet. Average annual sales growth rates for participating farms and processors were over 100%, for 2009 and 2010. Although we cannot provide the exact sales numbers for each of these farms (due to privacy requests from the individual producers), total sales for the 24 producers equaled $29,362.47 (2008), $65,875.03 (2009), and $104,194.42 (2010). The average sales per farm were $1,223.44 (2008), $2,744.79 (2009), and $4,341.43 (2010). Some producers did not experience increases in their sales due to limitations in supply and/or changes in their marketing strategies. For example, Iron Horse Farm, which experienced impressive growth in sales between 2008 and 2009 (+100%), showed a descrease in sales through CNY Bounty in 2010 (–11%). This was due in part to their decision to open a community supported agriculture (CSA) marketing channel in 2010, and thus to not offer as

Figure 3. CNY Bounty Home Delivery Revenues and Orders (Excluding Wholesale), 2010



Source: CNY Bounty records 2011.

Table 3. CNY Bounty Sales, 2008–2010

	2008	2009	2010
Average number of customers ordering per week	26.37	67.52	126.49
Average sales per week	$1,525.34	$3,161.26	$5,530.54
Number of participating farmers and processors (at year's end)	58	89	119
Average CNY Bounty net income per week	$350.83	$727.09	$1,272.03
Average revenue returned to participating farmers and processors per week	$1,174.51	$2,434.17	$4,258.52
Average total dollar amount per home customer order[a] (US$)	$58.44	$46.80	$40.37

Source: CNY Bounty records 2011.
[a] The minimum order for home delivery was changed from US$50.00 to US$35.00 in mid-year 2008.

many products through CNY Bounty.

Benefits: Increased Market Access

CNY Bounty provides a new distribution channel for farmers and processors. Having information about CNY Bounty members but not about non-members makes it difficult to assess CNY Bounty's impacts fully. However, for new farmers and processors

CNY Bounty facilitates market access, particularly given the high barriers to market entry due to existing supply chain structures. It is possible to identify two groups that have experienced a clear net benefit from sales through CNY Bounty: Amish farmers, and beginning farmers and processors.

In the last five years, dozens of Amish families[8] have moved to CNY and are reclaiming abandoned or underutilized farmland, including unsuccessful dairy farms. Many of these Amish farmers produce very high quality direct-marketable agricultural products. However, beyond regional farmers' markets and a few Amish stores that have opened recently, they lack market access. The majority of the Amish farmers within the region do not drive motorized vehicles, and thus experience difficulty distributing their products.

From a distributor's perspective, there are added challenges working with Amish farmers. Particularly when dealing with fresh produce, product availability can change very quickly. The CNY Bounty website needs to be up-to-date at all times. If customers do not receive their entire order, they can become frustrated, an experience which can reflect poorly on all of the participating farmers and processors. Stevenson and Pirog (2008) emphasize that local food distribution systems must combine product reliability and high-quality production in order to establish trust with consumers and generate re-purchase behaviors. It takes CNY Bounty staff additional time to communicate with Amish farmers, as they generally do not use computers or fax machines and many do not have telephones. Product listings are mailed to or dropped off with Amish farmers so that they can check and confirm product availability. Establishing these communication channels may not always be cost effective, but it provides an important resource for the growing numbers of Amish farmers in CNY.

Table 4. CNY Bounty Farms That Have Been Consistently Selling Product Through CNY Bounty for at Least 3 Years, by Percent Change in Sales, 2008–09 and 2009–10

	% Change '08–'09	% Change '09–'10
Amazing Grains	65%	39%
Baker's Maple Products	–80%	100%+
Chenango Coffee Roasters	100%+	90%
Drover Hill Farm	79%	100%+
Evans Farmhouse Creamery	54%	75%
Finger Lakes Farmstead Cheese Co. LLC	–11%	100%+
Foothill Farms	58%	100%+
G&M Farms	–12%	51%
Ingallside Meadows Farm	100%+	100%+
Iron Hoof Farm	100%+	–11%
Jewett's Cheese House	100%+	100%+
Kutik's Honey Farm LLC	–39%	100%+
La Maison Blanche Bakery	56%	47%
Lamb's Quarters Organic Farm Store	–13%	50%
Meadowood Farms	100%+	83%
Mosher Farms	100%+	33%
Organically Hip LLC	100%+	–7%
Painted Goat Farm	100%+	–67%
Poolville Country Store	100%+	9%
Purdy & Sons' Foods, Inc.	100%+	–67%
Quarry Brook Farms	42%	23%
Taylor, Lash	100%+	100%+
Upstate Harvest	90%	99%
Whispering Pines Bakery	100%+	90%
Average per farm	**100%+**	**100%+**

Source: CNY Bounty records 2011.

We argue that new farm businesses are important to the rural economy in CNY because they represent a large and growing proportion of overall farms. For instance, the USDA National Agricultural Statistics Service (2007) finds that 173 of the

[8] This number is an estimate based on the authors' experience living in the community.

744 farms in Madison County, NY, have been in existence for less than 10 years. Many of these new farms are small (under US$10,000 in sales), which tends to boost total farm numbers, but they do not fill the void resulting from failing dairy farm and aging farmers. Gillespie, Hilchey, Hinrichs, and Feenstra (2007) state that one role of farmers' markets in rebuilding localized food systems is "incubating small businesses that then may expand beyond farmers' markets" (p. 75). In this capacity, CNY Bounty staff assist farmers and processors in identifying market opportunities, improving business skills (e.g., writing invoices and packaging), and providing market information. The staff mostly do this through weekly interactions with farmers, when they provide consistent feedback from consumers, the CNY Bounty bookkeeper, and CNY Bounty drivers on a range of issues, including invoices, packaging, and marketing opportunities. Consequently, CNY Bounty began developing an institutional wholesale market channel in fall 2010. Though this aspect of the business is new and sales are relatively low (averaging about US$2,000 per week during the 2010 fall semester), the net benefits of such a market to participating farmers and processors are more straightforward. Without the product aggregation infrastructure and the marketing connections that CNY Bounty facilitates, participants would not be able to participate in this channel.

Challenges: Small/Beginning Farms and Low-Income Customers

CNY Bounty is still not economically sustainable. Grant funding is required in order to employ a marketing manager and a project coordinator. A significant reason outside resources are still required is the large number of small farmers and processors with whom CNY Bounty works, making operations more complex and labor-intensive than segments of more established supply chains and food value chains. Working with Amish producers and beginning farmers and processors takes a substantial amount of staff time. In order to accommodate these new and expanding businesses, while still maintaining high standards of quality, CNY Bounty hired a quality control manager for 20 hours per week in March 2010. The CNY Bounty executive advisory committee decided that this was a good investment, despite the fact that it contributed to continued reliance on grant funds.

From the project's inception, the advisory committee has committed to delivering products to homebound individuals as well as to EBT and SNAP recipients. The number of SNAP recipients receiving home delivery continues to grow. However, working with SNAP recipients is labor intensive. CNY Bounty's EBT machine, acquired through a grant from NYS to Cornell Cooperative Extension of Madison County (which processes EBT/SNAP benefits), is based on its connection with a traditional farmers' market. As CNY Bounty does not administer a traditional farmers' market, all payment must go through Cornell Cooperative Extension of Madison County. When a customer wants to pay using their EBT/SNAP funds, a driver must make sure the customer will be home when the delivery is made, have the customer sign a form, and phone in the order in order to put a hold on the account for the amount required. After the driver finishes his or her delivery route, the transaction must be processed on the physical EBT machine housed at the CCE office. The money from SNAP payments is then placed in CCE Madison County's account, and CNY Bounty invoices them to receive payment. As a result, CNY Bounty's labor expenses more than double on these deliveries.

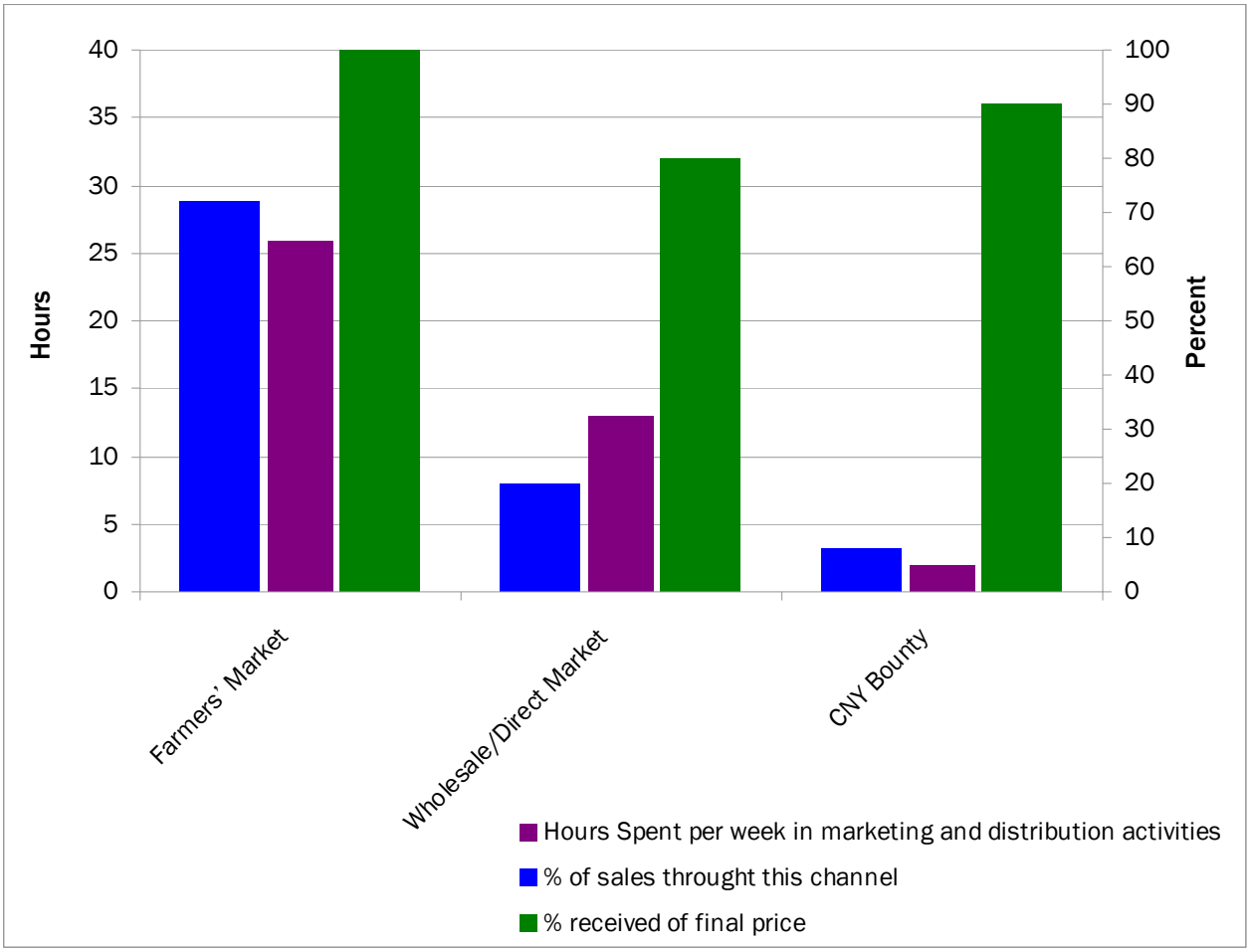
Because CNY Bounty has never been appropriately capitalized, cash flow continues to be a constant struggle. While grant funding has its benefits, a major drawback is that funds are often slow to arrive, which may lead to less-than-optimal business decisions. When CNY Bounty started, Chenango County purchased a ready-made web storefront. In late 2009, with funding from the NY Farm Viability Institute, CNY Bounty transitioned to a new website built by a professor at a local college. The professor and his students certainly had the best of intentions, but the website has been inadequate, especially as Bounty sales doubled in a six-month period. The result has been continued crashes, lost sales, and reliance on a volunteer retired web specialist through countless nights and

weekends. Perhaps most significantly, CNY Bounty has not implemented a credit card payment system on the site due to its tenuous operation. This has exacerbated cash flow issues as customers are often slow to send in checks, and it requires additional staff capacity and resources to follow up with customers who have not paid. For a web-based business, the impacts of an inadequate website are severe.

Recommendations and Suggestions for Further Research

CNY Bounty provides an interesting case study of a segment of a food value chain: an attempt to scale up the capacity of small, commercial farms and to provide product of consistent quantity and quality for a local market. There is growing evidence that CNY Bounty offers farmers and processors the possibility of reducing marketing and distribution costs. Figure 4 uses Drover Hill Farm, a CNY Bounty participating farm, as an example to show that the number of hours spent in marketing and distribution through CNY Bounty is just a fraction of the hours the farm spends in marketing and distributing through farmers' market and direct sales. Even though CNY Bounty represents only 8% of the farm's total sales, there is a potential margin for an increase in its participation since the

Figure 4. Drover Hill Farm as an Example of Hours Spent in Marketing and Distribution Activities Compared with Percent of Sales and Percent of Final Price Received for Each



Source: Jablonski, B.B.R. (2009). Interview with William and Stephanie Lipsey, January 11, 2011. Note: Wholesale/direct market includes restaurants and grocery stores where product is marketed and distributed directly by farmers and processors.

percent of final price received by the farmer is somewhat higher than through wholesale/direct markets. In order to effectively evaluate CNY Bounty, this kind of information needs to be gathered and analyzed for a larger number of participating farms.

A full project evaluation would require the development of congruent measures of the planning and implementation processes for all participants — in this case, the 119 farmers and processors who have sold product through CNY Bounty. Since CNY Bounty is an ongoing operation, we would need to distinguish between the formative and summative parts of the evaluation process. Most of the information in the present paper represents the evolution of CNY Bounty in terms of initial and ongoing activities, rather than an assessment of its impact. Nevertheless, CNY Bounty's institutional sales channel offers the opportunity to evaluate a specific aspect of the program. One natural product of this research would be to evaluate the performance of this program's first year of existence.

Further research would require a comprehensive survey of all the participating farmers and processors in CNY Bounty. The main goal of this evaluation stage would be to collect data on a wide range of topics, including sales, preference for selling through CNY Bounty, and more detailed information about the costs and benefits of being part of the program. This information would allow us to assess the impact of CNY Bounty on its participants and on the region's economic development.

The descriptive information is useful for obtaining a general idea of the project and its immediate impact. However, we need to develop more case studies such as the Drover Hill case that elicit participants' perceptions regarding benefits derived from participation in CNY Bounty — particularly vis-à-vis their other marketing channels. What thoughts do stakeholders knowledgeable about the program have concerning program operations, processes, and outcomes? What are participants' and stakeholders' expectations? What features of the project are most salient to the participants? What changes do participants perceive in their behavior as a result of their involvement in the project? Exploring these issues systematically would provide a richer picture of the economic and social impact of CNY Bounty and shed light on further steps in the study of this and other local food value chains.

Concluding Remarks

The growing consumer demand for local foods has prompted substantial innovations in food value chains. Such innovations pose new market participation challenges and opportunities for small, commercial farms in the United States. In this case study, we examine these issues for CNY Bounty, a segment of a food value chain that gives farmers and processors the opportunity to benefit from participation in local value chains as an alternative to direct market channels such as farmers' markets and community supported agriculture (CSA) arrangements. Our analysis suggests that CNY Bounty is an attractive option among distribution channels for participating farmers. This case study also underscores the importance of an intermediary in facilitating market coordination and value-sharing among chain members. However, the case also highlights the economic sustainability challenges that CNY Bounty faces today. Future research should focus on the identification of appropriate policy interventions necessary to facilitate the emergence of value chains similar to CNY Bounty, and on conducting systematic studies using counterfactual outcomes in order to fully assess the economic, social, and environmental benefits of supporting them.

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Informal and formal mechanisms of coordination in hybrid food value chains

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Abstract

The challenges of meeting growing consumer demand for local food, especially from larger, institutional buyers, has sparked many to look beyond direct marketing to alternative models of produce aggregation and distribution. Value chains that incorporate conventional food system infrastructure are one such model for local food system development, but little research has studied their functioning and outcomes. Arrangements where conventional produce distributors handle local food can be viewed as "hybrid" food value chains, since they include both local and global resources, and combine conventional food system infrastructure with the more alternative goal of building local food systems. This qualitative study examines three hybrid food value chains that revolve around conventional, wholesale produce distributors located in rural, urban, and exurban regions of Pennsylvania. Theories of local and social embeddedness inform the analysis of how participants negotiate and coordinate their interactions through informal mechanisms, such as their social relationships, and formal mechanisms, such as contracts and labels. Case study findings reveal distinctions between the rural and exurban cases on the one hand, where participants combined both personal and market-based mechanisms to coordinate their relationships, and the urban case, where the sale of specialty products to a niche market both fostered and inhibited the use of more formal mechanisms of coordination. In all cases, commercial conventions tended to take precedence over social relationships, despite the role that personal trust may have played. These findings suggest that when value chains incorporate conventionally oriented businesses, they would benefit from more deliberate commitment to non-economic goals in order to establish successful mechanisms of interorganizational coordination.

Keywords

case study, embeddedness, food distributor, food value chain, local food, Pennsylvania

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Introduction

Many efforts to change the food system now sound the mantra of "cutting out the middleman." Direct marketing relationships between producers and consumers are said to counter the faceless anonymity of conventional marketplaces and allow producers to retain higher profits (Hinrichs, 2000; Kirwan, 2006). However, direct marketing approaches may not have the capacity, both in terms of the volume of available produce in a given area, as well as the needed infrastructure, to meet the growing demand for local, sustainable food (Friedmann, 2007). This is especially true in the case of schools and other institutions, which struggle with the additional burdens of constrained budgets and finding consistent volume, supply, and quality, as well as coordinating pick-up, delivery, and processing of fresh produce (Hinrichs & Schafft, 2008).

In cases where direct marketing relationships are challenged by these constraints, local food system development may benefit from short food supply chains that utilize local, but conventional food system infrastructure. However, when the marketing of local produce extends beyond direct relationships, challenges can arise from the need to coordinate production and demand, as well as to regulate quality (Barham, 2002; Wolf, Hueth, & Ligon, 2001). The way that supply chains are coordinated and regulated has implications for the balance of power between producers and marketing intermediaries. In the conventional food system, producers tend to be at a disadvantage in marketing relationships, where they effectively lose ownership over the products they raise and the prices they receive (Hendrickson & Heffernan, 2002; Hinrichs & Welsh, 2003; Stevenson & Pirog, 2008). In contrast, local and alternative food system supporters believe they can resist these trends when markets are more "embedded" in local social and environmental contexts (Murdoch, Marsden, & Banks, 2000). Embeddedness highlights aspects of the local context, such as social relationships, that can modify and sometimes mitigate the workings of a strict, profit-oriented, economic logic, which can disadvantage smaller scale farmers when they enter market relationships. Value chains are one model of short food supply chains that operate regionally and focus on value-added products, including those that are differentiated on the basis of local provenance. By also emphasizing "values-based" relationships between supply chain participants and incorporating an ethical element of commitment to fairness, value chains are believed to address the power imbalances that exist in the conventional food system (Stevenson & Pirog, 2008). In doing so, they ideally improve outcomes for producers, thereby contributing to rural development, while also improving the availability of quality products for consumers.

As local food system development faces the challenges of supplying larger buyers whose needs are not met through direct marketing, more conventional food distribution suppliers have stepped in to source and supply local food (Izumi, Wright, & Hamm, 2010). We refer to arrangements where conventional food distributors handle local food as "hybrid" food value chains, since they include both local and global resources, and combine conventional food system infrastructure with the alternative goal of building local food systems. How do participants in such hybrid food value chains coordinate their interactions and exchanges? To what extent do hybrid food value chains exhibit the qualities that proponents of alternative food networks attribute to local embeddedness, or do these value chains tend instead to reproduce the power dynamics of the conventional food system?

This paper uses three case studies to explore how hybrid food value chains involving small to mid-size produce growers and wholesale produce distributors are coordinated through both informal mechanisms that are related to local embeddedness, such as social relationships, and more formal mechanisms, such as contracts and labels. These case studies, located in rural, urban and exurban regions of Pennsylvania, examine food chains that were not formed with the explicit intent of marketing local produce, and therefore can be considered part of a food system that predates the most recent alternative food movement trends. Because of their hybrid nature, it is important to evaluate whether their embeddedness in a local context

affects how these value chains are coordinated, including what influence their embeddedness has on producers' capacity to negotiate prices in order to ensure adequate returns. Although local food systems are commonly seen as engines for rural development because they invigorate local market opportunities for producers, our case studies suggest the possibility that some reproduction of conventional food system power dynamics in the local context may undermine this benefit (Marsden, Murdoch, & Morgan, 1999; Tregear, Arfini, Belletti, & Marescotti, 2007). While social relationships and personal trust played a role in these case studies, ultimately commercial conventions tended to dominate. At the same time, in hybrid food value chains where producers could secure higher profit margins and negotiating power by marketing a specialized product that was identified as "local," participants faced challenges in finding appropriate mechanisms to coordinate chain relationships. In addition, when marketing a niche product, the question of how to "scale up" local food systems and make local produce more widely available to consumers of all income levels remained unaddressed (Friedmann, 2007).

We begin by describing how hybrid food value chains have been conceptualized, and note a gap in the literature on the role of conventional food system infrastructure in local food system development. Notions of local and social embeddedness help to conceptualize how food chain participants balance their economic and non-economic priorities by coordination through informal and formal mechanisms.

Background and Relevant Literature

The concept of hybridity arose from a critique of the implied dichotomy between "alternative" and "conventional" food systems. Hybridity recognizes that, in their attempts to reassert control over the food system, producers and consumers may draw from some resources and practices stylized as "conventional" and others as "alternative" (Ilbery & Maye, 2005; Maye, Kneafsey, & Holloway, 2007). For example, alternative food networks, such as Fair Trade, tend to utilize conventional food system infrastructure and operating mechanisms, while smaller scale producers of specialty foods will "dip in and out" of conventional and alternative resource streams and markets (Ilbery & Maye, 2005; Whatmore & Thorne, 1997). These producers' operations are referred to as "hybrid" because they utilize both conventional and alternative resources and markets, and balance economic and non-economic values and goals (Ilbery & Maye, 2005; Trabalizi, 2007).

In addition to the notion of hybrid enterprises, another type of interaction between the conventional and alternative food systems is the appropriation of alternative food movement terms and claims by market and government actors. For example, many believe that the organic federal standards and the promotion of organic products by mainstream retailers undermine the organic movement's goals and holistic orientation by introducing industrialized practices and values (Guthman, 2004; Jackson, Russell, & Ward, 2007; Jaffee & Howard, 2009; Sonnino & Marsden, 2006). Some researchers and activists clearly see this type of "hybridization" as a threat to alternative food networks, and measure the "alternativeness" of agri-food initiatives by their ability to resist co-optation (Allen, FitzSimmons, Goodman, & Warner, 2003; Sage, 2003; Sonnino & Marsden, 2006; Watts, Ilbery, & Maye, 2005). Hybridity has thus been seen alternately as a necessary, possibly pragmatic feature of some alternative food networks, or as evidence of co-optation.

Very little research or attention has been paid to the actual operation of local food systems that combine conventional infrastructure with local products, and which were not established with the explicit intention of participating in the current local food trend (Bloom & Hinrichs, 2011; Izumi et al., 2010). These types of hybrid arrangements are influenced by the globalizing trend in the produce industry and therefore source products internationally to ensure year round availability and low prices. At the same time, researchers contend that even while such businesses are intricately tied into global networks, they are never fully disentangled from the influences of their local environment and social context (Gille, 2006; Oosterveer, 2006). For

example, Murdoch et al. (2000) contend that, "We can question how the local sociomaterial resources of a particular place come to be incorporated into networks or chains dominated by industrial and commercial modes of evaluation," (Murdoch et al., p. 122). This interaction between global processes and local context is highlighted in theories of "local embeddedness," where a wide range of social, cultural, and environmental factors is believed to influence local economic relationships. Local embeddedness draws upon theories of social embeddedness, which describe how economic transactions are mediated by social factors (Granovetter, 1985). These social factors can act as informal mechanisms that coordinate food chain relationships, since personal relationships generate trust and discourage opportunism in economic contexts (Granovetter, 1985; Raub & Weesie, 1990). Many local food practitioners and advocates support localizing the food system precisely because they believe that social relationships at the local level can take precedence over purely commercial interests, and thereby improve outcomes for local producers (Lyson, 2005).

However, researchers also warn that these local, socialized relationships should not automatically be assumed to be socially just, simply because they are local (DuPuis & Goodman, 2005). DuPuis and Goodman suggest that it is important to consider the role of local politics and power dynamics: "We have to move away from the idea that food systems become just by virtue of making them local and toward a conversation about how to make local food systems more just" (DuPuis & Goodman, 2005, p. 364). Hinrichs (2003) suggests a more nuanced approach to studying local food systems that takes into account some of the complexities of local context and states, "While these quite positive aspects of social embeddedness can and do flow from local contexts, local social interactions are not absent of intolerance and unequal power relations" (Hinrichs, 2003, p. 35).

If we resist the assumption that positive benefits automatically result from localizing food chains, it is also important to consider how local and social embeddedness, as potential informal modes of value chain coordination, are balanced with more formalized mechanisms of food chain coordination, specifically contracts and labels. In the conventional food system contracts are usually described in the context of increasingly concentrated and vertically integrated supply chains (Hendrickson & Heffernan, 2002). Hinrichs and Welsh (2003) and Hendrickson and James (2005) illustrate how the use of contracts in livestock supply chains limits producers' decision-making abilities with regard to his or her operation; this includes decisions that impact environmental sustainability as well as marketing choices. In other situations, however, contracts may be used by downstream actors, such as brokers and processors, as a way to mitigate producers' risks and share information about expectations and standards (Wolf et al., 2001).

In considering formal coordinating mechanisms such as contracts, it is important to note also the role of informal agreements that rely more upon reputation and the promise of repeated transactions rather than any legal enforceability (Raub & Weesie, 1990; Stevenson & Pirog, 2008; Wolf et al., 2001). In this way, informal agreements represent a blend of formal and informal mechanisms of coordination, relying in part upon social embeddedness and in part upon interorganizational dynamics. Stevenson and Pirog (2008) discuss this delicate balance between social and commercial pressures in their description of value chains when they consider the implications of informal agreements for typically disadvantaged food chain members. They suggest that despite the role of socially embedded personal trust, more formalized procedural mechanisms may be more important in coordinating successful food value chains, since such procedural mechanisms establish process-based trust. Process-based trust can be thought of as, "Trust in the fairness, stability, and predictability of the procedures and agreements among strategic partners; and that policies are consistent and stable over time, and do not change with new management or personnel" (Stevenson & Pirog, 2008, p. 125). By suggesting that trust should be interorganizational, Stevenson and Pirog imply that strong food value chains cannot rely solely on personal relationships,

which are subject to change when key individuals leave organizations. This idea of trust differs from common thinking about many local food initiatives, where personal trust through direct market relations is often seen as both a goal and a central benefit.

Another formal mechanism that helps to coordinate food value chains and regulate quality is the use of labels and brands. Labels communicate quality attributes (such as organic or sustainably produced) and therefore can be important mechanisms, beyond personal interactions, for coordinating and communicating quality. This type of communication is especially important when food supply chains extend beyond direct producer-consumer relationships (Stevenson & Pirog, 2008). However, the use of labels to differentiate products is only feasible when the labels are recognizable and meaningful to consumers. This has to do with consumer awareness of the quality issues that the label represents, indicating the need for both a strong consumer movement as well as clearly identifiable issues. An engaged and informed consumer base can therefore also be an important element of local embeddedness, since issues related to the local food system must resonate with local buyers before they will make an effort to support local producers or businesses.

In the retail environment of the conventional food system, "Private label products enhance control by retailers who can impose stringent standards on (often captive) suppliers" (Busch, 2007, p. 449). In more localized food value chains, however, labels can be used to shift power and ownership away from retailers and back towards producers. With the growing popularity of local and regionally produced food, producers are increasingly using labels or brands that identify their operation by name (Stevenson & Pirog, 2008). Stevenson and Pirog (2008) indicate that, "An important mechanism for farmer or rancher empowerment is their retention of control of the food product throughout the value chain, either through actual ownership or maintenance of a farmer- or rancher-based brand through to the consumer," (Stevenson & Pirog, 2008, p. 130). In this way, labels help to regulate quality and can provide the basis for differentiation of the entire value chain around promotion of the quality of being "local."

Taking these theories and concepts into consideration, we now turn to three case studies of wholesale produce distributors to explore the role of informal and formal mechanisms in coordinating hybrid food value chains.

Research Methods

This research uses qualitative methods to develop three case studies that explore how hybrid food value chains in Pennsylvania draw on formal and informal mechanisms of coordination. The three cases were originally identified during the course of a research project that examined Farm to School (FTS) programs in the state of Pennsylvania, where school food service directors were asked about their purchasing habits in terms of whatever producers and sources they might consider to be "local" (Hinrichs & Schafft, 2008). Although FTS programs are often conceptualized as direct marketing initiatives that link producers with school cafeterias, we identified three school districts that purchased local produce through wholesale produce distributors (Healthy Farms and Healthy Schools Act, 2006). These three distributors sourced produce both directly from local producers and globally through conventional channels, and therefore can be considered hybrid enterprises. Their involvement in meeting their local communities' produce needs draws attention to their potential role in building local food systems. These distributors provided points of entry for exploration of three hybrid food value chains. In examining the contexts of the chains that formed around these three distributors, we classify one as rural, one as urban and one as exurban,[1] based on participants' perceptions and census data.

[1] A generally accepted definition of the term "exurban" is hard to find, since many researchers use different parameters to characterize areas that do not fit neatly into urban/rural categorizations. We find the following definition useful: "Exurbs, it is argued, lie somewhere beyond the suburbs. At the urban-rural periphery, outer suburbs bleed into small-town communities with an agricultural heritage. Not yet full-fledged

The boundaries of each case were determined by asking the distributor for the names of those producers and buyers with whom he had an economic relationship and considered to be "local." Using this designation, participants in each case were located within a ten to sixty mile radius from the distributor anchoring that case. In one case, during the course of the initial interview with the distributor, it emerged that an outside organization played an important role facilitating the relationships between the distributor and producers, and therefore the scope of the study was expanded to include this nonprofit actor. For each value chain, this study included three local producers,[2] one distributor and three local buyers, for a total of 21 study participants overall. Interviews were semi-structured and included a series of both fixed and open-ended questions (see a summary of the survey questions in the appendix), thus allowing for comparison across participants while also providing an opportunity for participants to introduce topics that they may have felt were relevant or overlooked by the researcher (Creswell, 2007). In general, interview questions focused on the practices and motivations of participation in the hybrid food value chain that involved the buying and selling of local produce by the wholesale produce distributor. Interview questions aimed to probe the specific case study contexts and to explore themes identified in prior literature. Initial and follow-up interviews were conducted with each distributor; all other study participants were interviewed once. Attempts were made to conduct all interviews in person, although time constraints for one producer necessitated a phone interview. Length of interviews ranged from 20 minutes to two hours, with the average about 45 minutes. All interviews were digitally recorded and transcribed verbatim. Transcriptions were analyzed using a coding approach that captured relevant theoretical themes, but also allowed unanticipated themes and issues to emerge. In applying qualitative methods, anomalies and inconsistencies are important to consider, since learning from unexpected findings and considering alternate theoretical explanations are important ways that qualitative researchers scrutinize the bases of their analysis and address validity concerns (Creswell, 2007).

In these cases, the three distributors had been involved in the wholesale produce business ranging from 10 to 50 years. These businesses can be considered part of the conventional food system infrastructure in part because they were not established specifically in response to the growing consumer movement around local food and sustainability. In addition, although they purchased some produce directly from local farms and served a purely regional market, they were also very connected to global, conventional supply chains, with the majority of their purchases imported from out of state or internationally and coming through conventional brokers or produce markets. We use the fact that the distributors handled both local and imported produce as selection criteria to classify them as participating in hybrid food value chains. However, the question of how their handling of local produce was incorporated into their conventional operations is a subject of investigation.

In terms of the sample, in 2007 the smallest distributor was in the exurban region and had gross sales between US$1 and US$4 million, followed by the rural distributor with gross sales between US$5 and US$9 million, and finally the urban distributor, who grossed between US$10 and US$14 million. The producers in the exurban region had an average size of 16 acres, compared to 225 acres for the rural producers and one or two hydroponic greenhouses for the two producers in the urban region, respectively. The buyers in all three cases included one school district and two restaurants, except in the rural case, which included one farm stand, one restaurant, and one school district. Buyer characteristics that stand out include the large size and tourist attraction designation of the restaurant in the rural case, and the fact that both

suburbs, but no longer wholly rural in nature, these exurban areas are reportedly undergoing rapid change in population, land use and economic function" (Berube, Singer, Wilson, & Frey, 2006). As a result, exurbs tend to include both blue collar workers and suburbanites seeking a more rural lifestyle (Davis, Nelson & Dueker, 1994).

[2] Although attempts were made to interview three producers for each case, we were ultimately only able to identify and reach two producers in the urban value chain.

restaurants in the urban case are high end. The influence of local embeddedness on how distributors balance informal and formal mechanisms to coordinate these hybrid food value chains is considered in the next section.

Findings

Our case study findings highlight how local embeddedness contributes to the way that hybrid food value chains are coordinated and regulated. The analysis reveals distinctions between the rural and exurban cases on the one hand, where participants combined both personal and market-based mechanisms to coordinate their relationships, and the urban case, where the sale of specialty products to a niche market both fostered and inhibited the use of more formal mechanisms of coordination. In the rural and exurban hybrid food value chains, local produce was treated as an undifferentiated commodity, in part due to local consumer perceptions and priorities about food. The relationships between the producers and distributors in these two chains tended to be both personal and dependent on commodity market standards and prices, but without any formalized agreements or labels. In the urban hybrid food value chain, high consumer demand for local produce created a niche for specialty products that allowed this chain to resist some of the common power dynamics in the conventional food system. This value chain, however, still faced challenges in establishing formal coordination mechanisms and in its ability to bring local produce to a more diversified consumer base.

Personal and Market-Based Relationships

In both the rural and exurban hybrid food value chains, the logic of the conventional food system tended to be reproduced on the local scale. In both these cases, distributors relied on produce industry standards to determine both the price and specifications for local produce. Therefore, trust between producers and the distributors was derived from a combination of personal and market-based mechanisms and not from any interorganizational trust, as suggested by Stevenson and Pirog (2008) in their description of value chains. The personal relationships between producers and distributors in these cases may have fostered a level of trust that helped to maintain their commercial relationships through the development of reputations. However, these personal relationships were ultimately secondary to commercial priorities, and therefore restricted producers' abilities to set prices that reflected their costs, or to negotiate product quality standards with the distributor.

The role of social embeddedness was clear in the rural hybrid food value chain. In this case, the distributor had business relationships with the father of one producer and the grandfather of another; when asked how he began purchasing from this set of local producers, the distributor said, "We all go drinking Friday nights and meet in the bar." He implied that these social relationships engendered trust, which led these producers to drop off their product before they knew the price that they would receive. While this may indicate a level of social embeddedness for this localized hybrid value chain, this practice was also feasible because prices were nearly exclusively determined by the going prices in nearby produce markets. Therefore, the benefits of personal relationships were not coupled with formalized mechanisms that might enhance process-based and interorganizational trust, as described earlier, but rather remained subject to the potential volatilities of commodity markets. Although there were strong social connections between the producers and the distributor in the rural hybrid food value chain, the producers ran full-time commercial farms that tended to sell only around one percent of their entire sales to the distributor. Therefore their relationship with the distributor was contingent on their having a surplus of products beyond what they sold to their primary broker. This was also related to the fact that the distributor said he was only interested in local products when producers' prices were comparable to the same non-local product, which typically only occurred at the height of the season. As a result, neither the producers nor the distributor was interested in labels that would identify the farm by name, or in any kind of formal agreement to regulate their economic relationship.

The exurban distributor also reflected this combination of informal and formal coordinating mech-

anisms in determining pricing, and stated that he was honest when sharing information about market prices with producers. He said, "I think they trust me. I'm going to tell them the truth, I'm not going to say, if peppers are fifteen, I'm not going to say, oh they're at ten, I'm going to tell them the truth. And if they want, I'll show them the sheet, you know?" Although he said that producers trusted him, he was also ready to dispel any doubts that they may have had by offering hard evidence in the form of a produce sheet listing current market prices. Again, in this case commercial conventions therefore took precedence over social relationships, despite the role that personal trust might have played. This could also be seen in how the distributor in the exurban hybrid food value chain described his relationship with producers in terms of quality standards. He said:

> For example, they'd come in with a zucchini that looked like a baseball bat, and they'd tell me that's what people want. And I'd say, no, that's not what people want. I deliver 12 months a year, they want the smaller one. And if they got belligerent about it, I would just say, don't bother me anymore. That's enough. I get what I want to get, you know, for my customers.…I know what they want more than you do! You know how to grow it; I know how to sell it.

Here, the distributor played an important role as the intermediary between producers and the final buyer by coordinating quality between supply and demand. However, from the perspective of the producer, he also did so in a way that exhibited complete control of the relationship between himself and the producer, leaving no room for negotiation. Producers who did not take the information without questioning it, or tried to assert their knowledge of consumer preferences, were denied a business relationship, therefore illustrating the potential instability of these informal marketing relationships.

Another aspect of local embeddedness to consider is consumers' perceptions, which coincide with their willingness to place value on the quality of being "local." Both the rural and exurban distributors were concerned with standardizing their products' prices and quality characteristics in order to diminish the differences between local and non-local produce. In the exurban hybrid food value chain, this was partly due to the lack of demand for local products, which the producers and the distributor believed was due to the high proportion of elderly residents and the low socio-economic status of their area's population. In the rural hybrid food value chain, both the distributor and the buyers indicated that consumers identified their region with their agricultural heritage, which in turn led them to feel that the appropriate sources of local produce were farm stands and produce auctions. As a result, buyers in this hybrid value chain primarily used the distributor during the winter months or to supplement regional specialties, such as sweet corn, around the edges of the local season. Since consumer demand for local produce through the distributor was low in both of these cases, more formalized coordinating mechanisms, such as interorganizational agreements or farm-based labels, had little value for the distributors or other participants.

Specialty Products and Niche Demand

Consumer demand for local products in the urban hybrid food value chain allowed all chain participants to differentiate their businesses around the promotion of local food. Consumers in the urban region appeared to be more connected to a national "buy local" trend than in either the rural or exurban regions. In this chain, specialty products, such as hydroponic lettuce and micro-greens, were destined for a niche market of high-end restaurants. As a result, selling differentiated products allowed producers the freedom and power to set their prices based on their costs. In this food value chain, while there was the potential for contracts to coordinate supply and demand, the implementation of such formal mechanisms faced challenges. In addition, labels served an important function, although a lack of interorganizational trust may have impeded their usefulness. Finally, because of the nature of the specialty products studied in this hybrid value chain, using conven-

tional infrastructure may not have contributed to scaling up the local food system in this region in order to reach a wider consumer base.

To begin, hybrid food value chain participants in the urban area recognized the value that being "local" gave their products. The producers, distributor and restaurants all differentiated their businesses based on the fact that they grew, sold, and served local products. Because of this interest in local produce, the power dynamics in this value chain appear to have been shifted slightly in favor of the producers, who set their own prices and were able to negotiate with the distributor irrespective of the going prices in the conventional produce markets for the products that they sold. For example, one producer described how he received steady prices throughout the season and calculated these prices based on his costs:

> In the last year we've held all of our prices steady — they haven't changed. Now, what I'll do at the end of the summer is go to [the Distributor] and I'll try to get an increase, because my costs have increased, especially because, minimum wage is going up again, and once minimum wage goes up, it just bumps everything else up. So once a year I like to go to those guys and say, I need an increase.

This producer found that he could earn more selling wholesale to the distributor, where he charged by the pound, than he could selling directly to consumers, where he charged per head of lettuce. In this case, such a dynamic challenges the common belief that direct marketing provides higher profit margins, which is interesting to note since this small scale farmer was not benefitting from economies of scale, but rather from participating in a value chain that rewarded him for the quality of being local. The other producer in the urban hybrid food value chain said that his product "isn't really a commodity" because it could be marketed as a local item. By incorporating this non-economic value into his judgment of quality, the producer was able to subvert the more commercial logic of the conventional produce industry. He combined the value of "being local" with a commercial imperative to make a profit in order to stay in business. However, the distributor also made it clear that while he was willing to accept producers' prices for specialty products, he relied on commodity pricing for more generic products, or when he sold to buyers with price constraints, such as the school district.

Despite the incorporation of non-economic values into quality definitions for the urban hybrid food value chain, this chain experienced challenges in coordination and regulation in the area of contracts and labels. Although the distributor maintained consistent relationships with the two producers interviewed for the purposes of this case study, when he reflected on his ability to expand his local sourcing he exhibited obvious frustration. This was because the popularity of local produce in the urban region facilitated producers' ability to sell their products through multiple profitable channels, leaving the distributor to struggle to maintain consistent relationships with producers. As a result, he believed that developing contracts would be the best way to receive steady produce at reasonable prices. He reflected on his need for contracts with local producers, and his hope that an actor from the statewide nonprofit would be able to facilitate them, as follows:

> So that's why I hope that [Nonprofit Actor] will be able to contract and say all right, if you want [Distributor] to guarantee you 60 cases of peppers a week, you've got to be within X amount of dollars of the Produce Yards, whatever the market is bearing at that point. So that was the issue I ran into over the summer, I called some of these farmers up and said this is what I need, and here's the price, and I'm selling it to my customers cheaper than what you want to sell it to me!

The distributor in the urban context described himself as "irritated" by the fact that local producers desired the flexibility to choose their markets depending on where they could get a better price at any given moment, as well as by the high prices

that they demanded. The distributor was unable to develop contracts with local growers, and the nonprofit actor was uninterested in mediating this aspect of the coordination of the hybrid food value chain. She said, "That's between him and the farmer. That's not something that I've worked on; any contract that [the Distributor] has with a farmer is strictly his business. I do not think [the nonprofit] should be involved with that." Here the nonprofit actor drew a line of how involved she believed that she and her organization should be; she suggested that facilitating the relationships between the distributor and producers should be limited to initiating, and not maintaining, these relationships.

Another coordinating mechanism that created a challenge for the urban hybrid food value chain was farm-based labels. Both of the producers in this particular hybrid food value chain used labels, which allowed them to communicate the non-economic value of their spatial proximity to consumers. As described earlier, Stevenson and Pirog (2008) suggest that farm-based labels can help shift power towards producers by allowing them more control over the product and a price premium. However, in the urban hybrid food value chain, producers suggested that their farm-based labels did not provide them the level of control they desired. While these labels helped them secure a price premium, the producers also saw risks if the product was not handled properly by the distributor, since the end consumer's judgment, through the label, reflected on the producers' operations. Therefore, despite the use of a formal coordination mechanism, a lack of interorganizational trust inhibited producers from experiencing the full benefits that using labels might provide. Although the producers in the urban hybrid food value chain benefited economically from being able to promote specialized product attributes, chain participants still struggled to find appropriate mechanisms for coordinating and regulating quality.

Finally, the specialty producers' small scale and the limited nature of the outlets for their products (which included high-end restaurants but excluded larger buyers, such as the school district), may mean that this type of local hybrid food value chain would have a limited contribution toward scaling up the local food system (Friedmann, 2007). This, in turn, would keep it from influencing the local economy in terms of rural development or making local produce more accessible to more types of consumers to address food security concerns.

Conclusion

In this study, the small sample size and focus on one particular state (Pennsylvania) restricts our ability to generalize the results to other instances of hybrid food value chains. However, the examination of informal and formal coordinating mechanisms linked to aspects of local embeddedness reveals suggestive patterns and themes that could offer insights and guidance for considering how hybrid food value chains might operate in other places. This study found that local food systems that combine conventional infrastructure with local production and consumption tended to prioritize market-based considerations despite their local embeddedness. This finding challenges some of the assumptions about the role of embeddedness in local food systems, namely that the social and cultural context will strongly modify or mitigate some of the economic logic in market relationships that tends to disadvantage small to mid-size producers. This study found that the participants in the urban hybrid food value chain were better able to resist a purely market-based logic, as producers had greater negotiating and price-setting power. However, as a result, this value chain ran the risk of being restricted to niche production, which then inhibited its contribution to improving food security. In contrast, in the rural and exurban cases, local food was treated more as a commodity with little to no differentiation, and as a result the distributors had little motivation to actively source or promote local produce. In these two cases, the type of mid-size family farms that researchers suggest should be particularly well positioned to participate in value chains seemed locked into the mentality and operating mechanisms of the mainstream food system. This was true even where social considerations mediated economic relationships, suggesting that social and local embeddedness may not be sufficient factors to foster successful hybrid food value chains.

These findings raise questions about how the design and organization of value chains should incorporate and balance informal and formal mechanisms of coordination in order to generate benefits for producers, consumers and intermediaries. In the urban hybrid food value chain, the use of a formal mechanism, labels, did not achieve the desired benefit of a redistribution of power, perhaps because such labels were not coupled with some of the more informal aspects of interorganizational trust. In this case, contextual market factors also impeded the development of contracts as another potential formal coordinating mechanism. On the other hand, in the rural and exurban hybrid food value chains, informal mechanisms, in the form of personal relationships, did not contribute to securing arrangements that were economically viable. In none of the cases did we find the type of interorganizational agreements that would generate process-based trust, which has been suggested to be critical for successful value chain development (Stevenson & Pirog, 2008). As a way of combining both formal and informal mechanisms, interorganizational agreements could be a useful focus for developing hybrid food value chains.

As policy and practitioner interest shifts to examine new models for the aggregation and distribution of produce, the role of conventional distributors in regional food system development has arisen in other contexts, particularly in terms of food hubs. A food hub is loosely defined as, "a centrally located facility with a business management structure facilitating the aggregation, storage, processing, distribution, and/or marketing of locally/regionally produced food products" (Barham, 2010). In much the same way that we identified distributors who inadvertently coordinated value chains, other researchers suggest that many traditional wholesalers have become "de facto" food hubs (Morley, Morgan, & Morgan, 2008). In both the value chain and food hub example, since wholesale produce distributors already perform the functions of aggregation and distribution, harnessing their expertise and facilities provides a natural extension for local food system development (Barham, 2010). Indeed, these local food system models may benefit from the involvement of individuals with this type of commercial experience and business savvy (Morley et al., 2008).

At the same time, however, both our findings and other research suggest that the commercial motivations of conventional distributors may not be compatible with other sustainability goals of local food systems (Morley et al., 2008). Many of the tensions we identified in this study were specific to actors who are accustomed to working within the conventional expectations of the produce industry. This was true for both producers and distributors, who may be able to perceive how traditionally structured supply chains disadvantage them, but who nonetheless find it challenging to embrace new business models and work outside the logic of the conventional food system. In the cases studied here, even formal mechanisms of value chain coordination were often unsuccessful, in part because hybrid food value chain participants had expectations for others' actions that were based on the power dynamics of the conventional system. Subverting these power dynamics does not automatically arise from the quality of being local, and therefore implementing hybrid food value chains requires a concerted and committed effort on the part of participants. Part of this effort must be the explicit incorporation of non-economic goals. For example, while food hubs in essence serve as value chains that move produce between growers and consumers, many of these organizations form as nonprofits, or attempt to create a space that fosters other types of interaction, such as community kitchens or farmer education and training sessions (Barham, 2010). Similarly, the Agriculture of the Middle working group has identified several value chains that "piggyback" on conventional food system infrastructure, yet maintain a commitment to the ethical component of the value chain framework (Stevenson & Pirog, 2008). Hybrid food value chains, or other models of produce aggregation and distribution that rely on conventional infrastructure to build local food systems, therefore may benefit from this type of more deliberate engagement with the values-based element of value chains (Bloom & Hinrichs, 2011; Stevenson & Pirog, 2008).

Further research could be done to see whether openly committing to these non-economic goals helps new models of produce aggregation and distribution to have more success when they integrate conventionally-oriented businesses and enterprises into their networks. As the examples above suggest, the incorporation of individuals and businesses from the conventional food sector into hybrid value chains may not necessarily or automatically lead to the re-creation of a conventional food system mentality. Attention to the importance of communication and negotiation between all participants in hybrid food value chains may help articulate common goals and identify the mix of coordinating mechanisms that can best serve those goals. 

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Appendix. Summary of Questions Asked During Interview Process

This table summarizes the survey questions asked for each type of respondent; the complete questions are not shown. The interviews were semistructured and therefore the questions were used as a general guide, but participants had the freedom to elaborate on issues they perceived to be the most relevant.

Question Type	Producers	Distributors	Buyers
General Information			
Number of years in current line of work	X	X	X
How entered this line of work		X	X
Description of business	X		X
Number of employees	X	X	X
Gross sales or scale of business	X	X	X
Percentage of gross sales by market type	X	X	
Where purchase inputs or produce	X	X	X
Definition of local	X	X	X
How buying local fits into overall buying practices		X	X
Experience Marketing			
How initiated relationship with other value chain participant	X	X	X
Description of relationship with other value chain participant	X	X	X
How determined price of products and perception of fairness	X	X	
How changed operations to fit demands from buyers	X	X	
How promoted local purchases			X
Nature of customer demand			X
How business affected by local produce offerings			X
Expectations for continued local produce purchasing			X
Experiences Purchasing			
Decision and experience buying local produce		X	X
Type of information exchanged between seller and buyer	X	X	
Nature of purchasing agreements	X	X	
Willingness to pay more for local products			X
Comparison of local produce sources			X
Benefits of purchasing or selling local produce	X	X	X
Challenges of purchasing or selling local produce	X	X	X
Use of labels or certifications	X	X	X
Benefits and drawbacks of certification and/or label programs		X	
Perception of potential results of building a more localized food system	X	X	X
Personal Information			
How many years of formal education, and what specialty	X	X	X
Description of setting where individual grew up	X	X	X
Additional employment beyond this operation	X		
Current plans for continuing this operation or passing it on	X		

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Increasing farm income and local food access: A case study of a collaborative aggregation, marketing, and distribution strategy that links farmers to markets

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Abstract

As consumer interest in locally grown food increases, farmers and organizations are working on inventive ways to supply fresh and affordable local food to residents. The Intervale Center, a nonprofit in Burlington, Vermont, partnered with small and midscale farmers to create the Intervale Food Hub, a collaborative of staff and farmers that aggregates, markets, and distributes local products through both a multifarm community supported agriculture (CSA) program and wholesale. Informed by surveys conducted to assess supply and demand in the region, the Food Hub provides businesses, restaurants, retailers, institutions, and individuals with year-round access to a diverse mix of fresh and value-added local food. The Intervale Center serves as a local distributor, purchasing products from up to 30 farmers and coordinating packaging, marketing, distribution, and business operations. Year-round, shared space is available to conduct business operations, including packaging and short-term storage. After three years of operation, the Food Hub has begun exploring ownership structures and geographic expansion. Using a participatory action research approach, this case study reviews the enterprise's development and outcomes. We provide a qualitative assessment of farmer and staff perceptions of successful practices and limitations, and conclude with recommendations for future research.

Keywords

aggregation, collaborative, community supported agriculture, CSA, direct marketing, distributor,

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food system, participatory action research, social entrepreneurship, Vermont, wholesale

Introduction

Over the past four decades, researchers across disciplines have characterized a strong community food system as being locally based, ecologically sustainable, affordable for consumers, and economically viable for producers (Feenstra, 1997; Garrett & Feenstra, 1999; Herrin & Gussow, 1989; Kneen, 1993; Lappé, 1975; Lappé & Collins, 1978). More recently, experts in many fields from business and marketing to health and nutrition stress the importance of supporting and sustaining community food systems as a strategy for improving public health. Reducing the prevalence of obesity and diet-related chronic disease has long-term cost-saving benefits to society (Hamm, 2008; Story, Hamm, & Wallinga, 2009).

A community food systems approach identifies the relationships required to get food from farms to consumers. Feenstra (1997) includes producers, distributors, and consumers who take part in the system. Story et al. (2009) add mechanisms and structures for food production, processing, distribution, acquisition, preparation, and consumption. A systems approach respects the complexity of all components and their interactions because there is no one strategy or consistent solution (Stephenson & Lev, 2004). Jarosz (2000) states that the strength and vitality of a food system are critically related to the extent that relationships within regional food networks are based upon trust and cooperation among food suppliers, producers, workers, brokers, and consumers.

Amidst a flourishing local foods movement in the United States, farm groups are working to define and address the needs of their communities. A growing number of Vermonters and Vermont-based institutions desire fresh, locally produced fruits, vegetables, livestock products, and processed foods (USDA NASS, 2007). Between 2002 and 2007, Vermont farmers saw a statewide increase in sales from direct markets of 140%. Vermont farmers earned US$9.5 million from direct market sales in 2002 (an average of US$8,226 per farm), which jumped to US$22.8 million in 2007 (an average of US$15,511 per farm). In response to these local market forces, farmers throughout the state are seeking new business opportunities through collaborative and innovative market linkages (Berlin, Lockeretz & Bell, 2009; Kolodinsky, DeSisto & Schmidt, 2009; Timmons, 2006). The Intervale Center is a nonprofit in Burlington, Vermont, that is dedicated to strengthening community food systems. With a 23-year history of revitalizing 350 acres of land, enhancing the viability of farming, and engaging the community in support of sustainable agriculture, the Intervale Center was uniquely poised to pursue market development opportunities with farms.

Supported by funds from a U.S. Department of Agriculture Sustainable Agriculture, Research and Education (SARE) grant, the Intervale Center and farmers sought to strengthen one component of a local food system by initiating a farmer collaborative called the Intervale Food Hub. The dual goals of the Intervale Food Hub are to increase (1) farm profitability and (2) convenience in accessing locally grown food. Managed by the Intervale Center, the Food Hub aggregates, markets, and distributes local products to individuals, businesses, grocers, restaurants, and institutions through both a multifarm community supported agriculture (CSA) program and wholesale marketing and distribution.

This paper focuses on staff and farmer perceptions of the process over time to create, implement, and refine the Intervale Food Hub. Using a participatory action research (PAR) framework, we outline the implementation process of the Food Hub and identify the program's strengths, weaknesses, opportunities, and threats faced in carrying it forward. This case study reveals promising strategies, recommendations, and limitations for other communities to consider when implementing creative approaches to strengthen components of their food systems.

Background

Growing Consumer Demand

Consumer demand for year-round and convenient access to fresh and local foods continues to grow throughout the country (Berlin et al., 2009; Bruhn, Chapman, Vaupel & Vossen, 1992; Kolodinsky et al., 2009; Thomson & Kelvin, 1994; USDA NASS, 2007). Yet local food systems in regions with limited growing seasons, such as the Northeastern United States, suffer shortfalls in the supply of certain products at various points in the year (Farnsworth, Thompson, Drury, & Warner, 1996; Kolodinsky et al., 2009; Lockeretz, 1986). Questions also remain as to whether current distribution channels can adequately meet this demand (Berlin et al., 2009; Schneider & Francis, 2005; Stephenson & Lev, 2004).

Several studies on local food access in the United States demonstrate unmet consumer demand. Schneider and Francis (2005) found that in a Nebraska county there was potential for increased marketing of local farm products, but also a large gap between high consumer demand and farmers' ability to meet this demand. In Oregon, Stephenson and Lev (2004) found strong consumer demand for local food in convenient venues such as supermarkets. However, on the supply side, farms face obstacles to distributing their local food products using commercial outlets. A USDA meta-analysis across 15 local food case studies provides suggestions for ways farms can reach these markets (King et al., 2010). The report concluded that "farms and businesses in local supply chains can be successful if they offer unique product characteristics or services, diversify their operations and have access to processing and distribution services" (King et al., 2010, iv).

Collaborative Marketing and Distribution Strategies

Aggregating products from multiple farms is a strategy that can support a larger-scale distribution of local products to markets ranging from individuals to institutions. Collaboration reduces barriers that wholesale markets face with direct purchasing of local products, providing products that are predictable, priced fairly, delivered regularly, and of high quality (Azuma & Fisher, 2001; Grower's Collaborative, 2010; Johnson & Stevenson, 1998). While preserving farm identity and traceability, collaboration can also decrease farms' marketing costs and maximize production capacity (Campbell & Pearman, 1994; Day-Farnsworth, McCown, Miller & Pfeiffer, 2009; Fricker Group & Sunflower Strategies, 1994). Farmer collaboratives can share resources such as packing materials, storage space, distribution channels, revolving capital, expertise, and consumers (Campbell & Pearman, 1994; Fricker Group & Sunflower Strategies, 1994). Producers can also form a cooperative, where farms make a financial investment or pay a membership fee to cover overhead costs or pay for shared resources. Such aggregated models allow small-scale farmers to "scale up" by combining their products with that of other growers to gain access to larger markets that require a larger and/or more consistent volume of products than they are able to supply alone (Day-Farnsworth et al., 2009; Grower's Collaborative, 2010).

Collaborative approaches often link producers and consumers through a distributor, such as a non-profit, for-profit, professional, cooperative, or collaborative organization or group (Day-Farnsworth et al., 2009; Stephenson & Lev, 2004). There are many examples of successful initiatives that market and distribute local products aggregated from small to medium-size farms to a local market, along with an emphasis on paying farmers fairly. These programs are driven by nonprofits and/or producers, and all have relied on financial support from public and private grant sources. Farm Fresh Connection LLC (2009) is a nonprofit driven business, designed and implemented by the Maine Sustainable Agriculture Society, that brokers local foods to institutions in south-central Maine. Red Tomato (Stevenson, 2009) is a nonprofit that coordinates marketing, sales, and wholesale logistics for family farms in the Northeast. Grower's Collaborative LLC (2010) started as a nonprofit-run virtual farmers' market for California family farms. Despite ample demand for local product, Grower's Collaborative has struggled to become financially self-sustaining and is undergoing changes that will

position it as an aggregator and marketer rather than a distributor.

Farmer-driven alliances and cooperatives include Good Natured Family Farms (Dreier & Taheri, 2008) and Penn's Corner Farm Alliance (Self, 2011), which aggregate products for distribution in Kansas City and southwestern Pennsylvania, respectively. Eastern Carolina Organics (Self, 2009) was a project initiated by the Carolina Farm Stewardship Association in 2004 and in 2005 became a private, grower-owned limited liability corporation (LLC). Grasshoppers Distribution (Self, 2011) is a farmer-owned distribution company that exclusively distributes local food from small-scale farmers in Kentucky and southern Indiana through a CSA program and wholesale.

The Intervale Center is the local distributor for the collaborative of Vermont farmers that supply product to the Intervale Food Hub CSA and wholesale enterprises. The CSA offers subscribers spring, summer, and winter shares, which can be purchased individually or bundled together, that include a variety of local products. Subscriber purchases of CSA shares in advance of the season provide farmers with advance capital. For wholesale distribution, the Intervale Food Hub aggregates, markets, and delivers products biweekly to local restaurants, caterers, grocers, and institutions. This service provides food buyers with product availability lists from farms so they may purchase a wide array of local foods with a single order and single delivery. As a local distributor, the Intervale Food Hub is also committed to providing a consistent market and fair prices for farmers. This case study of the Intervale Food Hub conception and implementation can be used by farming communities and agricultural groups seeking to implement collaborative solutions to strengthen aspects of their local food systems.

Methods

Participatory Action Research

This case study is grounded in participatory action research and the concept of participatory learning (McIntyre, 2008; O'Brien, 1998; Pretty, 1995; Wadsworth, 1998). It is also grounded in an adaptive context, as discussed by Meter (2010), acknowledging that participants continually adapted this project to their changing needs and environment. Farmers, Intervale Center staff, and researchers engaged in reflection and action throughout the research process, and results were used to inform the project's implementation (McIntyre, 2008; O'Brien, 1998). Pretty (1995) explains that participatory methodologies imply a process of learning that leads to action, such as how staff and farmers refined implementation practices of the Intervale Food Hub by learning from their experiences and sharing reflective dialogue during focus groups. This research is also grounded in an adaptive context, as discussed by Meter (2010), acknowledging that participants continually adapted this project to their changing needs and environment.

Data Collection

Qualitative data were collected from Intervale Center staff and Food Hub farmers through in-depth interviews and focus groups following standard methodology (Krueger & Casey, 2009; Patton, 2002). Protocols focused on three major themes: (1) critical components to develop and implement the Intervale Food Hub; (2) strategies put into practice by the Intervale Food Hub to support demand for local foods while providing a fair return to farmers; and (3) successful practices and limitations of this model from which other communities can learn. The University of Vermont's Institutional Review Board approved all protocols prior to the study's commencement.

Research staff from the University of Vermont facilitated four focus groups with up to five Intervale Center staff. Sessions were held every six to eight months and lasted for two hours to two and a half hours. Focus group guides were developed for each session to gather information on project development and implementation over time. In-depth interviews with 18 farmers were conducted from August 2009 to November 2009. Although 30 farms initially supplied product to the Intervale Food Hub, only core farmers who formed the formal collaborative in 2009 were interviewed. Three farmers declined participation. The interview

protocol consisted of 10 items. Telephone and on-site interviews took one hour to one and a half hours to complete, and five farmers submitted written responses.

Coding and Analysis

A thematic analysis of the data was conducted using a grounded theory orientation (Coffey & Atkinson, 1996; Glesne, 1999; Patton, 2002). Researchers coded the data using an *a priori* and *posteriori* coding structure. A portion of the coded data was reviewed collectively to resolve any discrepancies and verify code reliability (Patton, 2002). Additional researchers reviewed the findings to check code validity and reliability of the analysis. In cases where codes were revised, data were reanalyzed.

The Case Study

This case study describes the process of creating and refining the Intervale Food Hub. Staff and farmers reflected on the learning process to identify the strengths and limitations of this approach that may benefit other farming communities. We use a narrative style to present the thematic findings of the Intervale Food Hub implementation process that led to outcomes presented in table 1. The Intervale Food Hub experienced notable expansion over time in the number of drop-off sites, subscribers, revenue streams, and total sales. The number of participating farms declined and leveled out as the collaborative strengthened and business expansion decreased reliance on grant funds. A discussion on the change in percent of sales returned to farms is presented in the Discussion section of this paper. See table 2 for a timeline of major Intervale Food Hub events.

Developing the Intervale Food Hub, 2007

The Intervale Food Hub farming community. The Intervale Food Hub facilities are located at the

Table 1. Outcomes of the Intervale Food Hub (all values in US$)

		2008	*2009*	*2010*	*2011 Projections**
CSA	Number of members (total of subscribers for all programs, including students)	208	355	555	755
	Number of workplace and student pick-up sites	7	20	25	30
	Summer CSA sales revenue (June–Oct.)	$68,000	$106,000	$158,000	$175,000
	Winter CSA sales revenue (Nov.–Feb.)	$30,000	$76,000	$93,000	$93,000
	Spring CSA sales revenue (March–May)	—	—	—	$45,000
	Fall student CSA sales revenue (Sept.–Dec.)	—	—	$15,000	$25,000
	Spring student CSA sales revenue (Jan.–May)	—	—	—	$18,000
Wholesale	Number of wholesale accounts	—	—	30	45
	Wholesale revenue to restaurants and institutions	—	—	$45,000	$85,000
Farmers	Number of participating farms	30	21	24	24
	Total sales returned to farmers	$60,920	$125,704	$200,345	N/A
	Range of sales to farms	$180–$8,777	$600–$22,423	$750–$30,170	N/A
	Percentage of sales from CSA returned to farmers	70%	70%	65%	65%
	Percent of wholesale returned to farmers	—	—	85%	85%
Grant funding	Grant funds used to support budget	$75,000	$93,000	$55,000	$6,000

* Projections are based on sales from previous years and the capacity of the Intervale Food Hub to expand.

Table 2. Intervale Food Hub Implementation Timeline

Date	*Event*
2007–2008	• Food Hub conducts background research on consumer demand, farmer needs assessment, and institutions and chef wholesale needs assessment.
Summer 2008	• Food Hub launches the pilot year of the business with 122 summer CSA subscribers.
Winter 2008	• In response to consumer demand, Food Hub immediately opens a winter CSA program with 86 members.
2009	• The Food Hub expands the summer CSA to 198 subscribers and moves cold storage space to a barn adjacent to the Intervale Center. • A total of 157 winter CSA shares are sold.
2010	• The Food Hub hires an additional FT staff person. • The Food Hub expands to 325 summer subscribers and 165 winter subscribers. • The Food Hub launches a student share program for the fall 2010 semester with 65 members from a local University and College. • The Food Hub launches a wholesale program, providing 12 restaurants and institutions with wholesale products. Buyers are provided with a product list and delivery of purchased items two times a week.
2011	• The Food Hub continues to plan for summer, winter and spring student CSA programs. • The Food Hub also plans to start a spring share program, providing subscribers with year round local food through three programs. • The Food Hub also plans to include additional wholesale accounts. • The Food Hub collaborative discusses different ownership models.

Intervale Center in Chittenden County, Vermont, and the CSA and wholesale enterprises serve consumers in this county. Most of the farms supplying the Intervale Food Hub are located in Chittenden and the five surrounding counties of northern and central Vermont. The growing season ranges from 100 to 130 days a year in the colder northeastern counties and 130 to 150 days a year in warmer counties located on Lake Champlain (Orth, 2003). A productive, working landscape and local food access have long been valued in the six-county area. A restaurant review in a local weekly newspaper begins, "Maybe The Farmers' Diner [restaurant] could only happen in Vermont, where robust, modern 'localvore' principles coexist with old-fashioned American ag [sic] of the plaid-clad-farmer variety" (Podhaizer, 2009). Regional plans mention the importance of agriculture and list the loss of agriculture as a potential threat to the economic, social, and environmental health of the area (Addison County Regional Plan, 2008; Central Vermont Regional Plan, 2008; Chittenden County Regional Plan, 2006). In 2007 there were 2,962 farms in this five-county area, accounting for 42% of total Vermont farms, and 29% of this land (578,786 acres or 234,226 hectares) is used as farmland (USDA, 2007). A farm of 50 to 179 acres (20 to 72 hectares) is the most common farm size. Data show a 5% decrease in acres harvested from 2002 (256,732 acres or 103,896 hectares) to 2007 (241,002 acres or 97,530 hectares); however, the number of farms increased by 7.3% during the same time frame, a rate higher than the statewide increase of 6.3%.

Exploring consumer demand. In 2007, the Intervale Center commissioned a household study in Chittenden County (N= 412, a 42% response rate) to explore consumer demand for local food through direct agricultural markets (Kolodinsky et al., 2009). This study found that only 4% of local food shoppers surveyed were currently members of a CSA. Forty percent of non-CSA members expressed interest in joining one, specifically if the share was convenient to access such as through a home or workplace delivery. Consumers' desired product mix extended beyond produce and included fruit, eggs, dairy, and meat. Residents asked

for greater access to high quality and reasonably priced local foods during the winter months. The Intervale Center also conducted in-depth interviews with 18 restaurant food buyers (Abda, 2007). Common barriers cited by food buyers to regularly purchasing local foods were availability, price, seasonality, variety, consistency, and volume of supply. Seventeen of the buyers were interested in working with a consolidated food distribution delivery service offered by the Intervale Center.

Exploring farmer needs. In 2007, the Intervale Center also conducted a mail survey of Vermont farmers to assess marketing practices, farms' capacity to expand production, barriers to expansion, and interest in new activities that could increase farm marketing capacity (Intervale Center, 2009; Schattman & Cannella, 2008). A total of 113 farmers responded for a response rate of 35%. Respondents had been farming an average of 20 years (median 14 years), and total farm acreage (including forested land) ranged from one acre (.4 hectare) to 1,200 acres (486 hectares), with an average of 169 acres (68 hectares). A third of responding farms were five to 49 acres (2 to 20 hectares), 21% were 100 to 199 acres (40 to 81 hectares), 17% were 300 or more acres (121 hectares or more), and 10% were five acres or less (2 hectares or less). Over half of farms (57%) surveyed provided a gross income of US$49,000 or less.

Seventy-four percent of responding farmers had the capacity to expand on-farm production if they could access profitable markets. Common barriers to expansion were limited labor supply (48%), storage (44%), management capacity (30%), land (30%), marketing capacity (26%), and production equipment (26%). Farmers ranked their preferences for the following three marketing practices: 38% preferred a new broker service to access institutions and larger volume accounts; 35% preferred a multifarm CSA program; and 18% preferred enhanced storage facilities. Farmers who identified a marketing capacity barrier were most interested in the brokerage service alternative and pursuing joint marketing with other farms. This supply and demand background research informed the conceptualization of the Intervale Food Hub.

To gather more in-depth information, Intervale Center staff also engaged in dialogue with 30 to 50 farmers who participated in the nonprofit's agricultural development programs (Intervale Center, 2007), revealing how the Intervale Food Hub could meet their needs. These farmers generally ran small to medium-sized, organic and/or niche-market family farms, and sought profitable ways to meet growing consumer demand. Most farmers were already selling product in Chittenden County; however, many expressed interest in further diversifying and expanding their production capacity, tapping into new markets, and sharing the costs, benefits, and risks of direct marketing with other farmers.

Relationship-building efforts. With this groundwork in place, Intervale Center staff and farmers worked together to develop the Intervale Food Hub enterprise. Good rapport and communication between farmers and staff were essential to developing strong working relationships. Though the Intervale Center had a longstanding history with the farming community, staff took numerous steps to further build trust and rapport. Having open communication channels on an ongoing, as-needed basis was critical to the co-learning process in developing the Intervale Food Hub. Communication between staff and farmers occurred weekly by telephone, email and in-person meetings. Farmers and staff worked individually and as a group to determine product quality, quantity, diversity, pricing, and farmers' desired contribution to the mix. Networking and information-sharing was also critical to project development. Several start-up farmers worked with staff to refine their business and farming practices. Staff also facilitated networking among farmers for peer-to-peer support and mentoring, and referred farmers to community resources when outside expertise was needed. During the interviews, staff described this approach as "applied and real time" business development that created an "open environment for farmers and staff to support each other" as needed. Relationship-building efforts

paid off as the Intervale Food Hub was launched in spring 2008.

Launch of the CSA, 2008

To prepare for the CSA launch, staff developed a clear and consistent message for all marketing and promotional materials of the Intervale Food Hub. It should be noted that while staff and farmers refined marketing materials over time through an ongoing learning process, the project goals remained the same. Staff streamlined communication with project partners so that individuals worked consistently with specific staff based on expertise or existing relationships. The Intervale Center leased a 4,300 square foot (399 square meter) warehouse space and purchased a walk-in cooler and a delivery van in spring 2008. The CSA's pilot season ran from June to November 2008. Guided by a business plan, staff and farmers estimated a total quantity of products needed on a weekly basis to fulfill shares purchased by 122 subscribers (who were individuals, families, and households). Intervale Center staff purchased products throughout the growing season from 30 farms. During the pilot season, purchasing of products was less formal and occurred weekly according to product availability rather than in advance of the season.

Partnering with employers to maximize CSA marketing. Staff recruited seven businesses in the local area to be pick-up sites for shares during the 2008 CSA program so that their employees could access purchased shares at their workplace (see table 1). The concept of collaborating with businesses enhanced marketing efforts greatly by helping reach a larger, targeted audience and generating greater awareness of the local agricultural movement. However, several challenges occurred while soliciting sites. Many businesses were interested in supporting employee membership, but logistical issues such as use of parking space, customer traffic, security clearance, and prior approval from landlords did not make participation feasible. Several businesses also deferred their involvement until the CSA demonstrated a successful first season.

Subscriber payment plans. By mid-May 2008, the Intervale Food Hub had sold shares to 122 customers at seven business pick-up sites. To increase the affordability of CSA membership, the Intervale Food Hub offered diversified payment options ranging from full, up-front payment to monthly payments of equal installments from May to September. Due to the payment plan options, Intervale Center staff paid farmers 25% of the payments received by May 2008 as advance capital. Farmers were also paid weekly based on items purchased. Staff reconciled farm accounts at the end of the season.

Minimizing competition and promoting the local foods movement. Staff made numerous efforts to co-market the Intervale Food Hub CSA alongside all other local CSA and food outlets in the county. Providing information on individual farms on the Food Hub website and other marketing materials minimized competition and educated consumers about all resources available.

Addition of a winter share. Staff conducted an online survey of subscribers at the end of the first CSA season to gather their feedback and develop future plans. Customers indicated high satisfaction with their share mix and the convenience of workplace pick-up. They also expressed demand for continued access to the CSA through the winter. Using the aforementioned planning model, staff and farmers immediately developed and sold a winter share option for employees of the seven business pick-up sites. The 2008–09 winter share generated US$30,000 in sales revenue, compared with the US$68,000 generated by the summer share (see table 1). The winter share helped provide subscribers with year-round access to local foods and extended farm production and access to a market beyond the growing season.

Establishing the coordinator position. By late 2008 staff roles became more defined and specialized based on individual skills and strengths that emerged from working together. One staff person demonstrated significant growth in leadership and coordination skills and became the project coordinator and primary liaison with farmers and consumers. The Intervale Center gave this staff person

more autonomy and decision-making authority, which improved the efficiency and effectiveness of business management. The coordinator's main responsibilities included advertising and marketing, securing pick-up sites, recruiting and invoicing subscribers, paying farmers, and overseeing product aggregation and delivery. This staff person also coordinated the advance crop planning process and was ultimately responsible for ensuring that consumers received high quality and diverse shares.

Refining the advance crop-planning model. In planning the second year of the CSA, the collaborative of farmers and staff refined and more formally implemented the practice of developing advance purchasing plans for each farm that itemized what product quantity they would supply to the CSA and during what time frame. This advance planning process enabled the coordinator and participating farms to design a share mix of products that ensured greater quantity, variety, and quality of products for subscribers. The collaborative met several times in winter 2008–2009 to define which farms would supply each product, reconciling diversity of products needed for shares, farm expertise in growing select, niche, high quality products, and prior contribution of farms to the Food Hub. Benchmarks for anticipated products were set for the following year based on the previous year's experience, expected increases in accounts, and any surplus or crop issues that farms faced. Staff and farmers prioritized equitable purchasing of products across farms, while accommodating farmers who wanted to supply more or less to the share mix. The end result of this planning process was a grid that delineated products each farm would supply during the CSA season. The coordinator provided an itemized crop plan to each farm in the spring, confirming the farm's agreed-upon contribution to the Intervale Food Hub in terms of product quantity, price, and delivery schedule. Farmers interviewed liked the organization and clarity of the advanced ordering process because they could more accurately plan for their growing season and manage business finances.

CSA Expansion, 2009–2011

Building on the success of the pilot year, the CSA continued operation through 2009, with share pick-up at the seven original sites plus 13 additional locations and a total of 355 members (see table 1). In 2010, 25 business sites, including the original seven, participated in the CSA and, including the new student share program, membership increased to 555. New subscribers were solicited in a variety of ways. Some business sites sent an email to an employee-wide email list, depending on company policies. Previous subscribers were also contacted directly by email and mail to invite their return and ask for their help in promoting membership to others. Staff also advertised shares through posters and informational tables at businesses. In the second and third CSA seasons, share membership was opened up to the larger public rather than limiting membership solely to site employees by offering the Intervale Center as a pick-up site. However, employees remain the majority of subscribers. In addition to diversifying payment options, the CSA participates in the NOFA-VT Farm Share program. The Intervale Food Hub also launched a student share program for students at two local colleges, offering weekly share delivery to campus sites during the fall (September to December 2010) and spring (January through May 2011) semesters. These two programs had 117 members and grossed US$33,000 in sales. The Intervale Food Hub plans to continue all four CSA options in 2011.

Table 3. Examples of Intervale Food Hub Share Types and Cost for Summer and Fall Student Shares, 2010 (all values in US$)

Share type	*Cost*
Summer vegetable share (small / large)	$350 / $525
Fruit and berry	$295
Eggs (biweekly / weekly)	$65 / $125
Cheese	$200
Bread	$110
Meat sampler, monthly	$250
Chicken, monthly	$125
Fall student share (basic / deluxe)	$260 / $340

Examples of share types and cost are presented in table 3, which staff notes are priced competitively with area CSA programs. Share types are purchased by a number of employees at a variety of local businesses, such as a website development firm, snowboard manufacturer, and hospital. At the hospital, subscribers include doctors, nurses, and food service and custodial staff. In the first three years of the CSA, retention rates ranged from 30% to 40%. In 2009, the CSA had an average retention rate of 40%. Staff anticipates that customer retention will increase with the longevity of the business, as in the beginning, new members try out the program and determine if it is the right program for them.

Refining product prices and operating margin. At the start of the CSA, staff and farmers agreed that the prices farmers were paid for their crops were high in comparison to regular wholesale market prices. While high price points were profitable for farmers, in winter 2009 farmers chose to reduce produce prices to better reflect the market needs and help the Intervale Food Hub become economically viable over time. Farmers agreed upon a price list that is less than the original prices but still profitable and fair. Farmers will renegotiate this price list in the future as they see the need to do so. With these changes, the collaborative also agreed to slightly increase the proportion of gross revenue that covers business overhead costs from 30% to 35% to cover operational costs for business marketing, sales, product aggregation and packaging, and distribution to sites. Farmers interviewed recognize the Intervale Food Hub as a low maintenance, all-inclusive account that has a profitable return for farms. Intervale Center staff noted that any increase in the operating margin will be covered by business revenue and prices to farmers will not change from the set amounts (unless change is determined by the collaborative).

Solidifying the collaborative. During the first year of the project, 30 farms supplied product to the Intervale Food Hub. However, in the pilot season farmers and staff did not operate as the current collaborative, with farmers involved and invested in decision-making, because business relationships were newly formed and farmers were still testing the waters of the food hub. By early 2009, 21 of the original 30 farms forged stronger business relationships and formed the base of the current collaborative. Alongside Intervale Center staff, these farmers have taken a more active part in business development, crop planning, and product pricing for upcoming seasons. Nine farmers chose to stop supplying food to the Intervale Food Hub, mainly because the account did not fully align with their individual business goals. For example, a smaller farm decided to market its products through its own CSA rather than participating in the aggregated, co-marketed program. The 21 core farms remain committed to the present, joined by three additional farms in 2010, growing the collaborative to a total of 24 farms. Fewer farms and more subscribers yielded a higher sales volume per farm, depending on quantity and variety of product purchased, with farm sales ranging from US$180–US$8,777 in 2008 and US$750–US$30,170 in 2010.

Ownership of the facility. Another critical change in 2009 was shifting the Intervale Food Hub's warehouse and cold storage facility space from the leased location to a newly renovated barn located adjacent to staff offices and owned by the nonprofit. Staff determined that the capacity of the space was suitable to meet storage needs in terms of space per pounds of food (including dry, cold, wet, and frozen food), cooler and freezer space, and general climate and moisture control. The new, central location enhanced CSA operations. Though the overall square footage of the storage space is smaller than the previous site, on-site staff has better organized and utilized the space. Because the Intervale Center owns rather than leases this space, the building and property are maintained and tailored to better meet farmers' needs. In addition, business finances cover depreciation costs. The facility uses a code access padlock, allowing farmers to drop off and store delivery items in designated spaces at their convenience rather than during designated times. Staff offices are located next to this facility so they can meet with farmers who drop off product during business hours. The space is also more suitable for subscribers to visit so they can connect more directly with the business

and farmers. Additionally, the Intervale Center converted the basement of this facility into a regulated, cold storage space that the Intervale Center leases to neighboring farms for long-term winter storage. The Intervale Center is exploring plans to construct another storage, packing, and distribution facility on site to support business expansion.

Expansion to Wholesale Distribution, 2010

In 2010, the Intervale Food Hub launched a wholesale marketing and distribution program to area businesses and institutions, which is also managed and coordinated by Intervale Center staff. Intervale Food Hub farmers provide staff with a weekly list of products that are aggregated and provided to 30 area chefs and food buyers. Wholesale customers make biweekly purchases from the Intervale Food Hub and, similarly to the CSA, Intervale Center staff aggregate, package, and distribute products to each location. In the first year, wholesale sales reached US$45,000 and returned 85% to participating farms. Wholesale sales provide farmers with a higher return compared to the CSA because this business is less labor intensive, even though wholesale markets demand a lower price point than a household market. The Intervale Food Hub's goal is to grow the wholesale program to US$85,000 in gross sales by 2011.

Examining Benefits to Farmers, 2010

Interviews with farmers at the end of the 2009 CSA season explored their perceptions of how the Intervale Food Hub has benefitted their farm. A common theme that emerged from farmer interviews was that the Intervale Food Hub model, as refined over time, supports farm viability. The Intervale Food Hub is a reliable and fruitful account for farmers because of the advance crop planning and set product pricing. On average, shares are priced so that the farmers receive higher than standard wholesale prices for supplying wholesale quantities of products to the CSA. The price ranges between 5% and 30% above wholesale prices, varying by the crop. Farmers work with the Intervale Food Hub collaborative to set the prices for products they will supply, based on their cost of production as well as a realistic price that the market will bear. In general, farmers net between 60% and 70% of CSA share revenue and 85% of wholesale revenue. Farmers receive 25% of gross CSA sales as capital in advance, providing them with revenue early in the growing season when cash flow is generally limited. This model of advance capital and fair prices insulates farmers from some of the financial risks associated with a farming business. Farmers also benefit from time and cost savings associated with combined storage, marketing, and shared distribution.

Farmers also benefit from the Intervale Food Hub coordinator position, which alleviates farms' cost and responsibility associated with business management. Farmers expressed a high level of trust in business management and overall operations. All farmers interviewed also noted the benefit from working as a collaborative operation. Aggregating products from multiple farms has improved the quantity, quality, and variety of products available for Intervale Food Hub consumers (both CSA and wholesale). Collaborating also minimizes risks shared by a traditional single-farm CSA. For instance, if a single-farm CSA program suffers crop losses, subscribers would receive a reduced quantity or variety of products for the same cost. With multiple farms involved, the coordinator explained that she can make alterations to weekly purchasing plans to replace or substitute items as needed. However, she ensures that each farmer reaches his or her sales targets throughout the season. This practice of "real-time" buying for the Intervale Food Hub protects accounts from any unintended gaps in the quality and variety of their purchase.

Exploring Ownership Models

While the collaborative has loosely discussed ownership possibilities in the past, the collaborative plans to have more focused discussions on business and asset ownership options in 2011. Because grant funds were secured by Intervale Center staff, farmers were not asked to make a financial investment in the Intervale Food Hub. Grant funds allowed the Intervale Center and farmers to intentionally take an incremental approach to exploring ownership models of the food hub. Farmers are eager to continue this business with marketing and

distribution handled by the Intervale Center. Farmers are also interested in making a financial contribution to help sustain operations after grant funding ends and until the business breaks even (projected to occur in 2012). A small group of farmers who emerged as natural leaders of the group would like to transition the Intervale Food Hub into a more formal farmer cooperative. Staff explained that "some farmers want more decision-making power in the business while other farmers just want to supply product and get paid for it."

As the Intervale Food Hub continues operation and business expansion, Intervale Center staff and farmers continue to discuss potential changes to the food hub. Who should own the CSA and/or wholesale businesses? Who should own facilities and other assets of the business to ensure they are maintained? What other grant funding, if any, might be available to support smaller needs of the project? How much money are farmers willing to invest and at what point is investment needed or not, such as only investing money if the business needs working capital to purchase assets (e.g., a delivery truck)? Should the business whittle down to a small core group of farmers or break into regional groups of farmers? Furthermore, once the business exceeds a certain scale and profit margin, at what level should the nonprofit remain involved? These questions illuminate the many possible ownership models and their implications that staff and farmers may consider as the Intervale Food Hub continues to expand.

Discussion

Through CSA and wholesale purchasing, the Intervale Food Hub has the potential to provide farmers with solutions to the marketing, distribution, logistical, and storage challenges faced in meeting increased consumer demand. In its first three years, the Intervale Food Hub has demonstrated success in meeting financial targets and projections. If the business continues this upward trend and becomes economically viable by 2012, the Intervale Food Hub will have succeeded in creating a new, convenient, profitable, and fair market for farmers.

A related analysis of farm sales data conducted by the authors demonstrates that Intervale Food Hub sales to farmers significantly increased from 2008 to 2009 by an average of US$3,188 ($p=.01$) (Schmidt, Kolodinsky, Conte, DeSisto & Hyman, 2010). Supporting these findings, many farmers reported an increase in their farm's food production, sales, and income because of their Intervale Food Hub account. Several farms located outside of Chittenden County also gained exposure to a new customer base. The Intervale Food Hub's approach is similar to related ventures such as Eastern Carolina Organics (2009), Penn's Corner Alliance (2011), and Grasshoppers Distribution (2011). Based on the findings, we present a strengths, weaknesses, opportunities, and threats (SWOT) analysis in table 4 (next page). The following narrative reviews the lessons learned from this case study, including strengths and limitations.

Use of Grant Funds

Grant funds totaling approximately US$229,000 supported research, business start-up, and development costs to avoid placing a financial burden on farmers, as would happen in a cooperative approach. Utilizing a nonprofit distributor or forming a nonprofit run by farmers are strategies that similar ventures can use to leverage grant funds or donations that offset start-up costs. Both private and public grant funds covered specific aspects of the business, such as background research, business planning, development of marketing materials, expansion into wholesale distribution, website development, and agricultural development work with farmers. However, grant funds generally did not cover the cost of day-to-day business operations. Use of grant funds enabled the staff and farmers to start the business using a participatory learning and adaptive process, allowing time for midcourse corrections rather than forcing hasty decisions to meet a bottom line. The Intervale Center's ownership of the business allowed staff and farmers time to explore different ownership models using the participatory learning process in order to find the one that will best suit individual and group needs. Similar ventures that have relied on grant funds remain in business,

Table 4. SWOT Analysis of the Intervale Food Hub

Strengths	• The Food Hub (FH) is made up of an engaged and committed group of farmers and nonprofit staff. • FH sales continue to increase. • The Intervale Center's ownership of the FH provides access to a diversity of farmers, program expertise, and funding. • The FH has significantly expanded the communities' access to fresh, local food. • The FH has attracted new local food customers. In its first year, 85% of subscribers had not previously participated in a CSA. • The FH provides single-contact access to over 25 local producers.
Weaknesses	• The FH meets the needs of only a small portion of the community, although the diversity of share-holder programs is growing. • CSA shares have a high up-front cost for consumers that may not be sustainable. • Some farmers expressed concern about maintaining their individual farm identity and questioned whether subscribers feel a connection to the producing farms because farms are removed from employer-based pick-up sites. The FH has taken many measures to address this issue.
Opportunities	• The FH could expand distribution to additional institutional markets, such as countywide farm to school distributions. • The FH could expand its geographic distribution throughout the state and to other states. • Farmer ownership models can be explored.
Threats	• There is a potential divide between the needs of small growers, who want to sell small volumes at high prices, and larger growers, who want to sell higher volume at lower prices. Farmers have agreed upon uniform prices for all growers. • More farms are offering convenient services like those of the FH. The continued growth of CSA programs will force the FH to compete in this market. • Overhead costs of the FH might be too high because the business is labor intensive.

including Farm Fresh Connection LLC (2009), Red Tomato (Stevenson, 2009), Good Natured Family Farms (Dreier & Taheri, 2008), and Penn's Corner Farm Alliance (2011). The Intervale Food Hub aims to be financially viable and no longer reliant on grant funding by 2012, having the CSA and wholesale markets generate US$500,000 in local food sales and returning US$325,000 into the hands of farmers. To reach this breakeven point, the Intervale Food Hub needs to increase both CSA and wholesale revenues.

Strong Working Relationships

The staff and farmer collaborative of the Intervale Food Hub is the result of strong, ongoing communication and relationship-building efforts, which mirror the conclusions of Jarosz (2000). Communication and relationship-building framed the Intervale Food Hub as a collaborative of co-learners rather than as a set of players in a "top down" approach where experts control and instill knowledge in local practitioners. Future programs should make sure that staff and farmers build trust and a rapport of mutual respect. Food Hub farmers have become personally invested in sustaining operations and may consider different ownership and investment models. Similar nonprofit-initiated ventures such as the Farm Fresh Connection LLC (2009) and Eastern Carolina Organics (2009) have successfully transitioned to farmer-owned cooperatives.

Paid Staff Coordination

The Intervale Food Hub's success in building strong relationships was due in part to having paid staff to coordinate business operations and provide consistent communication with customers, project partners, and farmers. The paid coordinator position minimized the strain on farmers' time and resources. Farmers noted a high level of trust and respect for the coordinator of the Intervale Food Hub, who has held that position since the pro-

gram's inception. There is a concern, however, that the trust and rapport between staff and farmers that characterize and bolster the current business model would need to be reestablished if this position turned over.

Current Intervale Food Hub positions include a full-time business manager/coordinator (with benefits), a full-time CSA coordinator (with benefits), and a part-time packing and distribution staff person. These positions are projected to be covered as part of business expenses once the venture breaks even. Staff members also recognize that paid staff positions and their job descriptions may change in the future, depending on who (the nonprofit or the farmers) owns the business. Staff members recommend that newer programs with less experience should consider engaging community members and local professionals as an advisory board to provide outside expertise and a consumer perspective.

Multifarm Aggregation

Aggregating products from multiple farms yielded favorable returns to farms for supplying select, specialty, and niche products to the mix. Aggregating a variety of products from farms of varying size and expertise helped to minimize the shared risks inherent in a single-farm CSA or wholesale program, such as smaller quantity or less variety of products during difficult growing seasons. Ventures should consider tailoring an advance planning and payment model, as used by the Intervale Food Hub, to best meet farmer needs. However, a challenge to this approach is maintaining equity among farmers in terms of the volume, price, and diversity of products the farmers wish to provide. In a multifarm model, there is also the potential for tensions to divide growers based on preferences, such as small growers who want to sell small volumes at high prices and larger growers who want to sell more volume at lower prices.

Farmer-led Development of Pricing

The Intervale Food Hub is committed to providing a consistent market and fair prices for farmers. In the winter of 2009, farmers agreed on the price list for Intervale Food Hub purchases. The business returns between 65% and 70% of CSA and 85% of wholesale gross sales to farmers. The Food Hub is currently running on a combined 40% margin, and the goal is for all expenses to eventually be covered by revenue.

During the first year of CSA operations, farmers enjoyed high prices set for wholesale quantities of food. However, many questioned whether the prices were sustainable, suggesting that prices should be lowered to increase affordability and maintain or increase demand. Farmers and staff realized this limitation of the Intervale Food Hub's price structure and instituted several strategies to balance affordability for customers while providing a reasonable profit margin. In 2009, farmers agreed upon a reduced yet fair price list for summer and fall/winter seasons, including different unit prices for CSA and wholesale products. The Intervale Food Hub also offered alternative payment plans so customers could pay down their account on affordable terms. The Food Hub participates in the NOFA-VT Farm Share program and in the past offered subscribers the opportunity to make a donation in support of reduced-rate shares. As an improved strategy, in 2011 the Food Hub developed a low-income access program where 1% of all share sales are put into a fund to subsidize 30 shares for qualified low-income households. The Food Hub has also acquired an EBT machine so that members can pay with food stamps.

In addition to alternative payment strategies, staff and farmers recommend that other programs, specifically single-farm CSAs, consider offering a "working membership" option, as suggested by Fieldhouse (1996) and Kneen (1993), to increase the affordability of share membership and further engage CSA members. A working membership is not feasible for the Intervale Food Hub because simple volunteer options such as providing on-farm labor are not available from the business as a whole, while packing and distributing shares are complex processes requiring high levels of management and quality control.

Partnering with Local Employers

A strong marketing strategy of the Intervale Food Hub was to partner with local employers, universities, and colleges to provide employees and students with convenient share pick-up sites. The Food Hub reached a large target market through word-of-mouth referrals and visibility during share pick-up times. Staff members hope that subscribers will continue to encourage their employers to purchase wholesale products to sell on site or serve in cafeterias, which has occurred in the cafeterias of several CSA businesses. Staff and farmers recommend that similar ventures work with employers and insurance companies to promote cost sharing or reimbursement of CSA membership for individuals because of the preventative health benefits associated with eating a diet high in vegetables and whole foods. Though Food Hub shares are available for purchase by the general public and are no longer restricted to employees, employees remain the majority of Food Hub subscribers. The general public might benefit from increased access to shares if the Food Hub selected conveniently accessible public places as pick-up locations, in addition to alternative pricing options. Staff members and farmers also recommend using the program website as a tool for real-time brokering so that subscribers can make specific share selections or purchase additional products at their convenience.

Maintaining Farm Identity and Traceability

Because the Intervale Food Hub fuses a brokerage and CSA model, the direct connection of the producer to the consumer is limited when compared with a single-farm CSA. Farmers questioned whether subscribers feel a connection to the producing farms since the farms are removed from employer-based pick-up sites. Some farmers also expressed concern about maintaining their individual farm identity while participating in the collaborative. Food Hub staff co-marketed individual farms alongside the Food Hub and informed subscribers weekly of the individual farms that supplied each product. Farmers recommend that similar collaborative programs use multiple marketing formats to inform subscribers about individual farms, their specialties, and where customers can find their products (e.g., local grocery stores, farmers' markets, or pick-your-own locations). The Food Hub also provided subscribers with opportunities to get to know farmers more directly at varying levels. Opportunities included an electronic newsletter sent to subscribers that lists weekly share contents per farm and highlights a different farm each week; the Intervale Food Hub website that included farm descriptions, contact information, and links to farm websites; and Food Hub and general community dinners hosted by the Intervale Center, which were events and celebrations where subscribers and the public could meet farmers and sample and purchase products directly from them.

Conclusions

Using the published literature, informant expertise, and participatory learning research methods, this case study describes the process of creating and refining the Intervale Food Hub and its business outcomes. Through the Intervale Food Hub, farmers benefitted from creative strategies to secure stable, new markets and mitigate challenges with marketing, distribution, and storage. Consumers gained weekly access to a variety of fresh, local agricultural products that were delivered conveniently to their workplace as prepackaged shares. Wholesale purchasing also increased the use of local foods by 30 area businesses, schools, and restaurants. A preliminary analysis of financial data shows that this approach has effectively increased income for all participating farms (Schmidt et al., 2010), while providing customers with increased year-round access to fresh, local food. The Intervale Food Hub incorporates innovative strategies to assist farmers with securing new, stable markets that provide a relatively high financial return for their products with low overhead costs.

Critical components of the project's progress to this point include:

- Use of grant funding and revenue-generating opportunities;
- Relationship-building strategies;
- Staff coordination of the business;

- Multifarm collaborative and aggregation;
- Combined marketing, storage, and delivery;
- Maintenance of farm identity and traceability;
- Real-time and peer-to-peer business assistance to farmers;
- A CSA that features weekly workplace delivery of a high quality and diverse share, available year-round; and
- Wholesale to 30 area businesses.

Agriculture professionals and practitioners seeking to implement creative solutions to support their local food system should consider the promising practices and limitations observed in this case study.

The Intervale Food Hub enterprise and other food systems businesses and programs could benefit from additional research conducted on household and institutional consumer demand for local food products and additional needs of area producers to serve expanded markets. The following are recommendations from researchers and program staff on future research topics:

- Future research could include conducting shareholder and communitywide surveys on an annual basis to build relationships and awareness of the local foods movement, determine shifts in consumer needs, and generate new ideas to improve program offerings.

- Intervale Center staff members recommend conducting consumer studies to determine what facets of the program consumers value, which may offer insight on ways to maximize consumer satisfaction, membership renewal, and project expansion. This information could also inform household-level educational materials about the local food movement, which could be distributed to households, work places, and other community sites such as schools, churches, medical offices, and civic centers.

- Future research should explore the experiences of farmers as this initiative evolves over time, examining how farms benefit from the Intervale Food Hub, both financially and in other ways. Other questions include: what percentage of total farm revenue comes from Intervale Food Hub sales and how does this percentage change over time? Does the multifarm business model protect individual farms from the financial hardship associated with crop loss?

- Other areas to explore include the production levels required to meet large-scale demand, the optimal number of farms necessary for a profitable program, and how much money, if any, farmers should pay to invest in and take ownership of the business.

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The potential of an "Agriculture of the Middle" model in the context of EU rural development: An American solution to an Irish problem?

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Abstract
In the context of historical policies that pursue economies of scale in agriculture, and of ever-declining farm incomes among small and midsized farms, rural policies of the European Union's Common Agricultural Policy (EU CAP) have demonstrated a shift from productivist commodity agriculture toward modes of economic activity that are innovative as well as environmentally and socially sustainable. One of the key policy initiatives implemented by the EU is the Liaisons Entre Actions de Developpement de l'Economie Rurale (LEADER) initiative, a governance and rural development program designed to foster a participatory approach to cultivating economically diversified, innovative local economies. Indigenous Irish farmers have been slow to engage with the LEADER program, however. Recent research points to farmers' experiences of occupational and cultural estrangement when challenged with making the transition from primary agricultural production activities (and the associated forms of social and cultural capital that are esteemed by farmers) toward economic activities supported by LEADER that are based on service provision and processing. In light of this research, rather than focusing on encouraging farmers to adopt alternative rural enterprises, this paper proposes that a more promising policy approach may lie in a form of organizational innovation that builds on and valorizes indigenous farmers' existing range of agri-cultural practices. Drawing on the example of the American "Agriculture of the Middle" (AotM) movement, parallels are drawn between the policy aspirations of the EU governance and rural development model, and the economic, social and cultural aspirations of the AotM model. The organizational characteristics of how middle agriculture could be practicably operationalized in the Irish context are explored.

Keywords
agriculture of the middle, European Union, farmers, food value chain, governance, innovation, Ireland, rural development, value-added

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Introduction

The problem of poor economic farm viability is a longstanding issue in the European Union (EU) and is associated with forms of social and cultural decline in agricultural regions. In rural Ireland and across rural areas of the EU, a number of socio-economic problems were reported as having reached crisis proportions in the late 1980s (see Kearney, Boyle and Walsh, 1994). An alternative policy framework to development models emphasizing large-scale agricultural production was instigated to respond to the failure of such policies to deliver economic and social prosperity (CEC, 1988). Alongside policies that pursue economies of scale in agriculture, a post-productivist agenda in EU rural development policy has accelerated since the late 1980s, a trajectory that is set to continue. Contemporary policies demonstrate an increased focus on value-added products and innovation in rural economies. Governance and rural development programs, such as the EC LEADER Program,[1] have been in place since the early 1990s to assist diversification of rural economies. The governance and rural development approach is designed to foster a participatory democratic process at the local level, which allows the input of local people in designing and implementing development strategies that are appropriate for local conditions (Ray, 2000). Over the past two decades, three main forms of activities are noted to have emerged at the core of programs such as LEADER: culturally oriented tourism products and services; differentiated and artisan food production; and alternative uses of agricultural resources for energy generation and recreational pursuits (CORASON, 2009). These types of economic activity are intrinsically different from conventional agricultural production, in that they depend on service provision, value-added production through design and novelty, and manufacturing and processing.

Poor participation by farmers in contemporary rural development schemes has been noted in Ireland (Conway, 1991; Macken-Walsh, 2009a; Teagasc, 2005), as well as elsewhere in the EU (Esposito-Fava & Lajarge, 2009; Osti, 2000; Van der Ploeg, 2003). The estrangement of farmers from contemporary rural development programs is partly explained on the one hand by their attachment to those forms of social and cultural capital closely associated with agricultural production; and, on the other hand, by conventional farmers' lack of occupational preferences for income-generating activities such as service provision and processing. However, a movement originating in America, the Agriculture of the Middle movement, may offer a suitable institutional vehicle for addressing some of these issues. The movement is characterized by a discourse that, similar to governance and rural development discourses in the EU, emphasizes principles of popular participation and local ownership of economic development. Furthermore, the movement focuses on supporting farmers in adding value to their production, and in so doing attempts to address the problem of poor economic viability among small and midsized farms.

This paper gives an overview of the agricultural context in Ireland, focusing on current farm viability and some of the main "barriers" to engagement by farm families in contemporary EU rural development programs. Against this backdrop, the paper goes on to discuss the potential of the AotM model and draws key comparisons between AotM and the EU governance and rural development model. Two key areas of confluence between the AotM and the EU governance and rural development models are examined: the type of diversified and innovative products associated with the models, and the type of participatory democratic processes fostered by the models.

Farm Viability in Ireland

Data from Ireland's annual National Farm Survey (NFS) show that the overall number of farms in Ireland is on the decrease, from 163,000 farms in 1993 to 113,200 farms in 2006 (Connolly, 2009).[2] The ratio of economically unviable to viable farms is remaining more or less constant. An economically viable farm is defined as having the

[1] Liaisons Entre Actions de Developpement de l'Economie Rurale (LEADER)

[2] The average size of farms, however, is increasing.

capacity (a) to remunerate family labor at the average agricultural wage, and (b) to provide an additional 5% return on non-land assets (Frawley & Commins, 1996, cited in O'Brien & Hennessy, 2008, p. 17). Using such criteria, approximately a quarter of farm enterprises in 2008 were classified as economically viable (T. Hennessy, personal communication, 2010). It is noted that approximately 40,000 additional farms (32%) that were economically unviable in 2008 can be classified as "sustainable" because of the presence of off-farm income. Hennessy (personal communication, 2010) classifies 25% of farms as economically vulnerable, and suggests that these farms are economically unviable and lack adequate off-farm income. In 2008, an Irish study of the contribution of off-farm income to farm households found that income diversification is a "key factor to stabilizing incomes in Irish rural areas" (Keeney & O'Brien, 2008, p. 133). A high proportion of economically unviable farms are dependent on off-farm income; in 2008 it was determined that 70% of farm households would be in an economically vulnerable position without it (O'Brien & Hennessy, 2008). Meredith, Dillon, and Behan (2009) note that off-farm employment declined by 30.2% between the second quarter of 2008 and the second quarter of 2009, and that a decline in construction-related employment accounts for 52% of the overall reduction in off-farm employment. The construction sector has virtually collapsed in Ireland and is unlikely to recover to previous levels of activity.

Policy Actions to Improve Farm Viability

The continuing and future decline in numbers of those engaged in agriculture is acknowledged to be a problem at the EU level, not only from an economic perspective but also in considering associated consequences, such as land abandonment, land degradation, and the loss of rural services and infrastructures (CEC, 1988). Agriculture is noted to have benefits that extend beyond farmer enterprises' economic performance. For example, the maintenance of landscapes through active agriculture is noted to be a positive determinant in public preferences for recreational landscapes (Howley, Hynes, & O'Donoghue, 2009). From a social perspective, problems associated with the decline of farm numbers on what in EC terms is called the "rural social fabric," is referred to in the EC's *Future of Rural Society* document (CEC, 1988). Networks of family farms are acknowledged in this document to be a crucial component of rural societies across the EU.

There has been an increase in EC policy attention and commitment to the noncommodity-oriented aspects of agriculture, such as protecting the environment through custodianship and stewardship, as well as the need to cultivate diverse high value-added enterprises outside of conventional agriculture. The contemporary EU rural development agenda is oriented around three major paradigmatic shifts. The first arises from a context in which there has been official recognition of the environmentally, socially and economically damaging effects of policy interventions supporting industrial scale agriculture alone (see CEC, 1988; Kearney, Boyle, & Walsh, 1995; Gray, 2000). The second paradigmatic shift is less specific to rural areas and concerns consequences of globalization, involving not only external pressures to compete by developing appropriate products to cater to increasingly homogenized world markets, but pressures for localities to indigenize and differentiate their economies for higher value-added: "globalisation not only pulls upwards, it pushes downwards, creating new pressures for local autonomy" (Giddens, 2003, p. 13). The third paradigmatic shift represents a transition from "top-down" sectoral models of development to "bottom-up" participatory governance models, in which the design and implementation of development action is handed over to local development stakeholders. From these three broad paradigmatic shifts, new objectives for rural development have emerged in line with a "postproductivist," "culture economy," and "governance-based" approach.

Farmers' Engagement in Contemporary Rural Development

Various schemes have been implemented in line with the contemporary EU rural development agenda, some more successful than others. Irish farmers have readily engaged with agri-environmental schemes: in 2007, over 59,000 Irish farms

were participating in the Rural Environmental Protection Scheme (REPS).[3, 4] In comparison to agri-environmental schemes,[5] however, there has been weaker engagement on the part of Irish farm families with governance and rural development programs such as the EC LEADER program.[6] Although the design of the LEADER rural development program was inspired by problems in the agricultural economy, it has been noted since the first LEADER program that farmers are more reluctant than other social and professional groups to engage with the program, both in Ireland (Conway, 1991; Macken-Walsh, 2009a; Teagasc, 2005) and elsewhere in the EU (Esposito-Fava & Lajarge, 2009, Osti, 2000; Van der Ploeg, 2003).[7] As the farming community is a major social group in most EU rural areas, poor engagement by farmers poses a conundrum for the LEADER program, which is explicitly intended to provide a democratic participatory forum for rural social groups in designing and implementing local development actions.

Some sociological studies have illuminated how changes in agriculture and rural development policy have differentially enfranchised and disenfranchised various social groups. In the establishment and operation of locally led developments there is a risk that only a limited number of local inhabitants will get involved, confining participation to "a very small number of enthusiastic members" (Breathnach, 1984, p. 6). Mannion (1996), for example, points to the danger of local development ending up in the hands of a few.[8] Similarly, Varley (1991) notes that local community-based development movements "tend to be dominated by a small group of enthusiasts, adept at assembling the illusion of consensus that allows the interests of some to masquerade the interests of all" (p. 236). Kovach and Kucerová (2006) detect the rise of a "project class" that is particularly well suited to new rural development opportunities in Central and Eastern Europe. From another perspective, Osti (2000) claims in his study of the governance and rural development processes underpinning LEADER in Italy that farmers' organizations are "bewildered by the disappearance of their traditional, privileged channels of influence" (p. 176).

Contemporary rural development policy is sometimes perceived as having "soft" and somewhat intangible goals, in part because of its governance-based approach. The governance and rural development model is committed to a distinctive development approach, centered on a "facilitation," "animation," and "mobilization" methodology that is purposefully nonprescriptive. EU governance and rural development programs, such as LEADER, generally do not involve the implementation of any predefined nonproprietary program or measure, and instead involve a proprietary innovation on the part of an individual or group. Contemporary rural development programs depend on proactive engagement by rural inhabitants to become involved in capacity-building processes and/or to seek practical and financial support for establishing rural enterprises.

For family farms across the EU, the governance and rural development model represents a break in tradition from the EC CAP in terms of ethos, process, and development rules (Macken-Walsh, 2009a). Traditionally, the trajectory of CAP regimes and measures has contributed to a gradual loss of farm families' autonomy in decision-making

[3] The scheme has been replaced by another one since 2010.
[4] See Lenihan and Brasier (2009) for an analysis of the participatory deficits of how schemes such as the REPS are operationalized in the Irish context.
[5] A criticism of agri-environmental schemes in the EU context has been that they have been regarded merely as income-support schemes for farm families, rather than as instrumental for market value-adding or for sustainable change in farming practices.
[6] This program is funded partly by the Irish Exchequer; its funding has increased almost ten-fold since the program's inception in 1991, to €425m for the period of the current EC CAP programming period (2007–2013).
[7] At the EC Rural Development Conference in Salzburg in 2003, Van der Ploeg (2003) noted that "the role of farmers is relatively modest if not marginal, not in all, but in many LEADER projects" (p. 2).
[8] There is a debate in the literature concerning the legitimacy of nonelected actors and nongovernmental organizations playing a significant role in governance at local and international (European) levels (Goodwin, 1998, p. 8).

relating to management and production activities. It is arguable that to some extent a culture of dependency has been created by such policy regimes, and by supporting extension measures in which science-based farm management and production systems are developed independently from and then prescribed to farmers. As a result, it may be the case that over time many farmers have become unaccustomed to creating products or services, or making independent decisions in dealing directly with the market (Heanue & Macken-Walsh, in press). Furthermore, the poor economic viability of many family farms may contribute to a general reluctance toward entrepreneurship, which inevitably requires capital, investment, and risk. Farmers are cognizant of their economically precarious circumstances and can experience disillusionment in light of the changing policy and market circumstances governing the viability of their farms (Macken-Walsh, 2009a). In turn, feelings of disillusionment and hopelessness may hamper innovative, self-led rural entrepreneurship.

Undertaking economic activities in line with the contemporary EU rural development agenda (i.e., culturally oriented tourism products and services, differentiated and artisan food production, and alternative use of agricultural resources for energy generation and recreational pursuits) can raise professional capacity issues as well as issues with social and cultural identity for farmers. Projects and enterprises eligible for LEADER funding are, by definition and according to the program's rules, outside conventional agriculture and fishing activities. Farmers engaged in conventional agricultural production generally are not expert in activities such as energy production, food processing, marketing, or tourism operation. More fundamentally, farmers may have little inclination or preference toward acquiring new skills in service-based activities (Macken-Walsh, 2009a). Qualitative studies have discussed how farmers' occupational identities and associated forms of social and cultural capital are firmly entrenched in farming and agricultural production activities (Burton, 2004a; Burton, 2004b; Burton, Kuczera, & Schwarz, 2008; Macken-Walsh, 2009a). Farmers have been found in case-study analyses to attach more prestige (cultural capital) to conventional production activities, and less to other forms of professional activity (see, for example, Macken-Walsh, 2009a).

In the nearly 20 years since the initial implementation of the LEADER program in 1992, conventional indigenous farmers have not emerged as leaders of the Irish high value-added artisan foods industry. This industry tends to be led and defined more by cosmopolitan European consumer trends rather than by indigenous tradition (Dilley, 2009; Macken-Walsh, 2010). A study of Irish farmers' markets, one of the more obvious venues for the sale of locally produced, high value-added food products, found that 17% of the products or ingredients were sourced outside of Ireland (Griffin, 2009). One of the common observations in sociological research on "alternative" food movements in Ireland — such as farmers' markets, local food markets, and organic and artisan food production — is that the individuals who tend to engage in such activities often come from a "surprising diversity of backgrounds" outside indigenous agriculture (Moore, 2003; Tovey, 2006; Tovey & Mooney, 2006; Macken-Walsh, 2009a). Similarly, in the case of organic production, it has been noted that the pioneers have been non-indigenous "waves of incomers" (Tovey, 2006, p. 175). Furthermore, Läpple's (2010) quantitative study of a representative sample of organic farmers in Ireland shows that existing farmers are less likely than other occupational and socio-economic groups to become involved in organic farming. The marginalized status of indigenous farmers in the high value-added and artisan foods industry poses problems not only for farmers who are challenged with increasing their profit margin in order to remain viable, but also for the authenticity of claims made to consumers regarding local food culture and food origin. The high food miles associated with differentiated and organic food products is gaining increased consumer scrutiny in a culture that is more environmentally, culturally, and socially aware.

Agriculture of the Middle (AotM)

The AotM movement,[9] as well as seeking to improve the economic standing of family farms, also has explicit social objectives that closely resonate with contemporary EU governance and rural development policy. Kirschenmann & Stevenson, pioneers of the AotM movement, make the following argument in summation of the economic, public-goods, and social motivations behind supporting an "agriculture of the middle":

> This is not just about "saving" the family farm. It is about the social, economic, and environmental costs to American society. With the loss of each family farm, a rural community loses approximately [US]$720,000 in related economic activity. Ecologists now affirm that the only way we can manage farmland in an ecologically sound manner is by having the farmer living on his/her land long enough and intimately enough to have learned how to manage it properly. With the loss of ecological land health we see the loss of soil quality, wildlife, and recreational areas. And with the loss of rural populations, the loss of public services — education, health-care, transportation — inevitably follow. (Kirschenmann & Stevenson, 2004, notes for slide 5)

The genesis of the declining numbers of family farms has been linked to a conundrum of bifurcated markets. The white paper on middle agriculture discusses how the U.S. food system has "increasingly followed two new structural paths": the path of artisan food production and direct selling, and the path of mass-producing agricultural commodities (Kirschenmann, Stevenson, Buttel, Lyson, & Duffy, 2005, p. 1). The problem that arises from this bifurcation is the loss of what the white paper calls "middle agriculture," evident from the rapid decline in the number of economically unviable farms that are midsized.[10] As the white paper discusses, the problem of the declining midsized farm is a market-structure phenomenon rather than strictly a scale-phenomenon. While the problem is "not scale-determined, it is scale-related. That is, farms of any size may be part of the market that [at any given time] falls between the vertically integrated, commodity markets and the direct specialty markets" (p. 1). The white paper states furthermore that "the mid-sized farms are [always] the most vulnerable in today's polarized markets, since they are too small to compete in the highly consolidated commodity markets and too conventional and commoditized to sell in the direct specialty markets" (p. 1).

Kirchenmann (2008), in his work on AotM, cites two ways to be competitive in a global economy:

1. being the lowest cost supplier of an undifferentiated commodity [price], or
2. providing the market with a unique and superior value in terms of product quality, special features or after-sales service (differentiation). (Kirschenmann, 2008, p. 12)

Kirchenmann cites Porter's *The Competitive Advantage of Nations* (1990): while not impossible, it is difficult for the same firm to pursue both routes towards competitiveness. The first route toward competitiveness is being pursued with some success by some farms in Ireland, but it is not succeeding in sustaining the viability of the larger number of farms. The second route — providing the market with a unique and superior value in terms of product quality and special features — is advocated in the context of AotM, and may hold potential for Irish small and midsized farms that are finding it difficult to pursue economies of scale.

The AotM literature details the process of building up and attaching a "food story" to the product; that is, incorporating the forms of social, cultural, and ecological capital that are identified as core to the branding strategies of contemporary rural

[9] See http://www.agofthemiddle.org

[10] In a European context, size can be defined by a range of configurations, including the number of hectares, animals, Economic Size Units (ESU), or Standard Gross Margins (SGM).

development products. Agri-food, agri-energy, and agri-leisure branding predominantly utilizes scenic countryside imagery, typically incorporating an image of a small farmhouse and cultivated terrain. Generally, marketing imagery for selling environmental and natural goods features such rural scenes, and Ireland's image internationally represents very much a quintessential, perhaps fetishised, rural image (see Van Auken, 2010). The Irish potential for such products, both domestically and internationally, is considerable, as discussed by Bell and Shelman (2010). As hitherto noted, conventional farmers may be disinclined towards food processing and service-based activities. Differentiated food does not mean processed food, however, and following the example of the strategy employed by AotM, there is vast potential for adding branding to Irish primary products which have a place-based regional distinctiveness. Irish food historian Regina Sexton recognizes a plethora of primary food products that are authentically rooted in Irish food culture, and identifies a typology of livestock and horticultural breeds indigenous to Ireland (Cowen & Sexton, 1997; Sexton, 1998).

Arguably, Irish farmers are already producing many foods with cultural and environmental distinctiveness, but the remaining challenge is for the application of branding and marketing to enter high value-added markets. High environmental quality and farm systems features, such as grass-fed beef, put Irish products in a potentially very strong marketing position (Bell & Shelman, 2010). Recent EC policy developments emphasize the importance of environmental public goods produced by agriculture and the need to maximize livestock access to pasture (Boyle et al., 2008; Cooper, Hart, & Boldock, 2009). Ireland's farms have a favorable compliance rate with EC legislation with regard to food production standards. The large proportion of farmers who participated in the Rural Environmental Protection Scheme (REPS) is also an indication of Irish farmers' conduciveness to the production of food that has the branding stamp of "sustainability." The value of REPS and of the linkage between ecologically conducive farms and a wide variety of other public goods, however, remains to be built into the branding food story and the added value of the farm food product (Dunne, O'Connell, Shanahan, Drennan, & Keane, 2009). The beef grading grid system in place at Irish meat processing plants since January 2010 rewards farmers for meat yield, but a system to reward the ecological, social, and cultural benefits of farming beef (outside of organic products) remains lacking.

Operationalizing AotM: A Governance Approach

While "middle" farmers in the United States are considered as having too much output to be conducive to small-scale artisan marketing, the Irish case would suggest that the obstacle to market viability hampering many Irish "middle" farms may not be excessive output, compared to farms internationally, but output that is undifferentiated in the marketplace and the absence of occupational skills — and, perhaps more fundamentally, occupational preferences — that prevent many conventional farms from entering artisan production and trade. The AotM movement presents a potential solution, as it seeks to join together strategically the practices and resources of small and midsized farms with the necessary professional and cosmopolitan industry skills to market, brand, package, and distribute their products. In so doing, the product is intended to move up the value chain and result in a more sustainable profit for the producers. Kirschenmann (2008) argues that in order for farmers to become economically successful "they need to become part (owners) of a functional value chain structure which connects them to the markets, and organized into marketing networks to reduce transaction costs." In this regard, the AotM movement emphasizes the need not only for farm families to move up the value chain, but also to take ownership of a greater proportion of the value chain. This is consistent with the governance aspect of contemporary rural development policy. Farmers' ownership of the product, however, is also an intrinsic element of the marketing strategy of AotM, because consumers prefer assurances of an authentic connection between the product and the producer.

Advocates of AotM advocate a cooperative approach to achieving the aspirations of the AotM

movement. In the context of AotM, many aspects of how cooperatives are formed and operate are comparable to aspirations of the EU governance and rural development model. Cooperatives are simply defined as "user-owned and controlled businesses from which the benefits are derived and distributed on the basis of use" (Dunn, 1988, p. 85, cited by Gray & Stevenson, 2008, p. 37). However, over time cooperatives have shifted their emphasis from profit accumulation towards governance. The evolution of the cooperative movement is aptly summed up as follows:

> Historically, many agricultural cooperatives were organized to oppose monopoly investment firms on the local, regional and national levels.…It needs to be noted, however, that these older cooperative associations were formed in an era when mobilizations were organized predominantly for power and getting a fair share. Many are rooted in the first half of the twentieth century when words like "ecology" and "sustainability" were barely in the language. [As mentioned], collective mobilizations and "new social movements" within the socio-economic culture of high modernity tend more often to be grounded in concerns of identity, safety, a sense of permanence, and a broader democratization of or opposition to unaccountable power. (Gray & Stevenson, 2008, p. 39)

Values surrounding identity, safety and security, permanence, and democratization are central to the motivations underpinning the formation of contemporary cooperatives. Such cooperatives clearly adhere to principles of governance, yet it is also explicit in

the approach of AotM that such principles are instrumental for marketing and branding activities that rely on the existence of an authentic relationship between the producer and the product. AotM cooperatives, following the value-added noncommodity route, cater to a clientele that is strongly influenced by matters of authentic food origin. Furthermore, issues of environmental and social sustainability feature prominently in the identity and ethos of many such nouveau cooperatives. It is also so that efforts to safeguard environmental and socio-economic sustainability complements the rhetoric of the governance-based approach.

Cooperatives have a long history in Ireland, particularly in the agriculture sector.[11] Many agricultural cooperatives are very large, selling undifferentiated commodities and challenged to achieve even greater membership growth to remain competitive. There is evidence to suggest, however, that Irish cooperatives may function more efficiently and remain more democratic when they are smaller in size (Briscoe & Ward, 2006). In this regard, the federated cooperative structure that is advocated in the context of AotM may be suitable in the Irish context.

The federated cooperative structure joins together and represents the interests of individual small cooperatives, which remain autonomous under the umbrella of the federated cooperative. The small local cooperatives co-own the federated cooperative, which provides coordinated services and facilities such as processing and packaging to the member cooperatives with the primary aim of improving their positioning and bargaining power in the market. The local cooperatives remain distinguishable from each other in regards to their product and local production arrangements, although the federation can engage in quality control by allocating a seal of approval to its member cooperatives.

As discussed by Gray and Stevenson (2008, p. 49), the following summarizes the main activities of a federated cooperative:

- Professional broad-scale marketing and advertising;
- Regional and/or national coordination of activities and flows of product;

[11] Informally, farming communities have worked together for generations; the Irish term *meitheal* refers to the unique systems of reciprocity and cooperation in Irish agriculture.

- Research, education, and other professional supports; and
- A third-party certification methodology bringing consistency and guarantees.

In the contemporary rural economy, there are other formalized mechanisms for family members and neighbors to work together. Formalized farm partnerships between spouses, siblings, parents and offspring, and local business partners are possible mechanisms to support entrepreneurship arising from pooled skills, resources, and occupational preferences (Macken-Walsh, 2009b; Roche, 2009). Within contemporary farming communities, there are many individuals with diverse traditional and contemporary skills (Crowley, Walsh, & Meredith, 2008), and joint ventures[12] hold potential to bring the necessary skill components together to establish differentiated rural enterprises.

Conclusion

Economic viability is a problem for a significant number of farm enterprises in Ireland that have little success in pursuing economies of scale. Policies have emerged at the EU level designed to offer alternatives to mainstream industrial agriculture in the rural economy and to compensate farmers for producing environmentally sustainable goods. While farm families have readily engaged with some contemporary rural development support schemes, such as environmental protection schemes, they have tended not to engage *en masse* with other rural development programs, such as LEADER. Farmers' occupational identities are strongly rooted in agriculture, and most farmers are not experts in the service-based processing and marketing activities that are conventionally funded by LEADER. Lack of skills and, more fundamentally, lack of occupational preferences for service-based processing and marketing activities can impede farmers' engagement with supports such as LEADER.

Developing aspects of high modern food culture (Gray, 2000) presents new opportunities for small and medium-sized indigenous producers. Consumer preferences, in the context of growing scrutiny of the high food miles associated with imported organic and artisan food products, are increasingly inclining toward more local, high quality, and sustainably produced food products. Branding resources such as high farmer participation rates in agri-environmental schemes and the large proportion of relatively small and midsized farms, give Ireland a valuable market opportunity. What is required to valorize the products and practices of such producers is a form of organizational innovation that focuses on "creative combinations" of cross-sectional industry strengths (Heanue & Macken-Walsh, in press).

AotM addresses some of the key problems relating to the viability of Irish farms and also the objectives of contemporary EU rural development policy. There are two main areas of confluence between the governance and rural development model and AotM: the product fostered by the models is a high value-added, noncommodity product that is characterized by responsiveness to high modern consumer trends; and the development process fostered by the models subscribes to a distinctive democratic approach based on principles of social justice. As a model that is specific to farmers and their products, however, AotM may hold greater potential to engage farmers who are failing to engage with EU governance and rural development programs.

AotM promotes a federated cooperative structure for valorizing family farm products with the goal of improving farm viability. The model is designed to facilitate farmers' moving up the value chain and, most crucially, taking ownership of a greater proportion of the value chain. In adding value to primary agricultural products — by developing a regional product brand, for example — the AotM model responds to some of the key objectives of EU rural development policy. It represents an institutional innovation whereby cosmopolitan industry services are contracted or employed by the federation to provide the necessary service-

[12] Joint ventures fostered by the legal arrangements adjusted to the Irish legal structure have been developed by Teagasc and include Share Farming and Farm Partnerships.

oriented, processing, branding, marketing, and other industry expertise to add value to farmers' produce. The federated cooperative, constituted through a diversity of small cooperatives is, by definition, farmer-owned and farmer-operated. As such, it is compatible with the democratic principles espoused by the EU governance and rural development model.

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Agricultural economic development at the rural-urban interface: Community organization, policy, and agricultural change

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Abstract

Utilizing data from a survey of key informants from U.S. counties at the rural-urban interface (RUI) with substantial agricultural production, this paper explores the relationship between the existence of formal organizations focused on agricultural economic development or food policy and the existence of other types of farm business or local food-system development programs. The research draws on concepts associated with traditional community-development theory and tests whether there is a relationship between the existence of social organizational capacity and various activities and outcomes. The analysis includes descriptive, bivariate, and multivariate analyses of data from over 500 U.S. counties located at the RUI. We find that counties that have formally organized, such as through the formation of a committee to support agricultural economic development or the formation of a food policy council, also have more agricultural business and local food-system development programs and policies. We also find that the counties with greater formal organizational development in support of agriculture are counties with larger populations, greater rural population densities, and larger numbers of farms compared to counties with less organizational development. We also find that the existence of these organizations is associated with greater optimism about the future of local agricul-

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ture among county key informants. The results suggest that local community development policy in support of agriculture at the RUI is warranted and the findings suggest opportunities for further research.

Keywords
agricultural economic development, community development, local food systems, rural-urban interface

Introduction and Review of the Literature

Although farming is often perceived as a rural activity, a significant amount of food production occurs in metropolitan counties or nonmetropolitan counties adjacent to metropolitan areas. In fact, a substantial proportion of U.S. agricultural sales and a great majority of U.S. fruit and vegetable sales occur in metropolitan counties (Thomas & Howell, 2003). There are unique opportunities associated with farming in these counties, such as easy access to large, urban markets; but there are challenges as well, such as having to contend with large nonfarm populations and development (Sharp & Smith, 2004; Berry, 1978). Analysis of recent Census of Agriculture data suggests that many farmers are successfully adapting to the opportunities and challenges at the RUI (Jackson-Smith & Sharp, 2008), though the pattern of farm change can vary widely across urbanizing landscapes. In this research we examine the extent to which formal community programs and institutional arrangements designed to support the local farm economy at the RUI are related to the aggregate patterns of change.

While the impact of farming on community quality of life has received considerable academic attention (Goldschmidt, 1978; Lobao & Stofferahn 2008; Lyson, 2004), the role of communities in supporting local agriculture has received modest attention.[1]

Given the public enthusiasm for locally produced foods and the growing interest among local governments and nonprofits in meeting economic and social goals through food-system development, it is necessary to systematically assess the extent to which communities are developing programs to support local agriculture and to identify the preconditions and outcomes of these activities. We approach this project viewing efforts to develop the local food and farming sector as essentially a form of community self-development, in which the community relies on local resources and/or assets to improve its social and economic well-being (Christenson, Fendley, & Robinson, 1989), and we draw on insights from the community- and self-development traditions, focusing on the importance of organizational capacity and development programs.

We conduct descriptive, bivariate, and multivariate analysis to explore the relationships among community organizational capacity, development policies and programs, and changes in local agriculture. We first determine the extent to which communities have formally organized themselves to support farming and food system development, and we identify the distinctive characteristics of the places that are most aggressively working to support local agriculture. We then review the incidence of various programs and policies aimed at supporting the viability and development of local agriculture. We anticipate a strong association between social organizational development and the development of specific programs and policies. Finally, we expect that both organizational and programmatic work will impact the structure of local agriculture.

Work such as this is necessary (1) to validate that existing local social organizational and development policy efforts are having an impact and (2) if such an impact is identified, to provide evidence to other communities not currently organized or engaged in development activities that such efforts merit consideration. In addressing these two needs, the results should be of immediate use to practitioners and officials considering or already engaged in food-system development work by validating or inspiring their continued effort. The research also

[1] It must be noted that the work of Lyson and colleagues (Lyson, 2004; Hinrichs & Lyson, 2007) provides a starting point for discussing the relationship of communities and agriculture, but that work so far has generally focused on the "civic" contributions of agriculture to the public good and less on the community strategies and policies to foster civic agriculture.

contributes to the ongoing scholarly questions related to food-system change, particularly the opening up of a new avenue of inquiry related to the notion of civic agriculture (Lyson, 2004) by being attentive to how communities can contribute to agricultural vitality.

Community Development

Community development has been defined as "a group of people in a locality initiating a social action process (i.e., planned intervention) to change their economic, social, cultural, and/or environmental situation" (Christensen et al., 1989, p. 14). Explanations of why some communities are able to effectively work together and others are not include the importance of social interactions and local organizational capacity. As a starting point, we acknowledge the insights of interactional field theory, which emphasizes that communities are made up of numerous fields of social interaction that develop over time among local actors (Wilkinson, 1970, 1972). Interactional field theory anticipates that the existence of community-planning processes, community-oriented leadership, structures, and processes of mobilizing local resources, and organizations with the ability to coordinate local action all can contribute to increased capacity for community action and development.

More contemporary concepts such as social capital or social infrastructure build on the basic premise of interactional field theory. One social capital scholar, Woolcock (1998), argues that people are most powerful when they are connected to others and can inform and assist one another and work together to create change within their communities. Flora and Flora (1993) describe how their awareness of social infrastructure developed from their finding that outstanding leaders from one community were totally ineffective when moved to another. Though the communities were similar in size, physical infrastructure, and economic base, there existed important differences in community-level social and organizational characteristics. Based on these insights and a body of supporting research (Putnam, 1993; Flora & Flora, 1993; Sharp, Agnitsch, Ryan, & Flora, 2002; Green & Haines, 2008), we anticipate that farming and food-system development at the community level is enhanced to the extent there exists social institutional and organizational infrastructure that is capable of facilitating these activities.

The literatures on both community development and local food systems identify local organizations as a key element in affecting change. The practice of self-development involves citizen participation, with the assumption that people working together can improve their situations. Through participation, community members develop their own capacity to contribute to community change, learn about issues and alternatives, and become integrated into collective action. Community members who have the opportunity to share their input are more invested in the success of development activities (Green & Haines, 2008); and social processes that bring people together to discuss concerns can facilitate agreements being reached and plans of action being made and implemented (Littrell & Hobbs, 1989). Local organizations, then, are a necessary condition for development in that they provide a vehicle for citizen participation (Garkovich, 1989). The community-development literature specifically highlights the importance of umbrella or coordinating organizations that include diverse interests (Sharp, 2001; Littrell & Hobbs, 1989) and can serve as a social hub in which individual interests are expressed and translated into goals, diverse local resources are identified, and these resources are mobilized to achieve those goals (Garkovich 1989, Green & Haines, 2008). Organizations also can serve as intermediaries between local citizens and the state, assist in the acquisition and management of state support, and present local demands to outside organizations and bureaucracies. Finally, the existence of diverse community organizations has been found to improve the capacity of communities to access external resources and coordinate the flow of information and resources that support community development (Sharp, 2001).

Food-System Development Capacity

Approaching local food-system development as a particular variation of community development, we

anticipate that a community's capacity to develop the local food system is enhanced where the diverse food-system actors in a community are connected via an organization that provides structure for action around common goals. Wright and colleagues (2007, p. 42) explain:

> We contend that communities will best be served to withstand economic and social change by becoming proactive and preparing for vigilant engagement through multi-stakeholder collaboration…this approach can allow communities to become 'food system makers' rather than "food system takers" in the new global economy.

This observation is supported by a study of programs funded by the federal Sustainable Agriculture Research and Education (SARE) program over 10 years in which Feenstra (2002) finds that a key theme running through successful local food-system development programs is the ability of community leaders to "create space" for the development of local food-system activities. The kind of spaces that these leaders create include social space for diverse people in the community to come together to get to know each other, as well as space for celebrating and enjoying each other, such as at a fair or festival.

Two prominent examples of local social organizations that facilitate discussions among diverse stakeholders about the future of local agriculture include farm-oriented development committees and food policy councils. In the first instance, many communities have created agriculture-related committees or advisory boards to provide feedback to local governments about the impacts of local policies on farmers and to coordinate efforts to pursue agricultural economic-development and farmland-preservation initiatives in support of local farming (Lyson, 2004). Local agricultural committees have historically focused mainly on the interests and needs of farmers, local agribusinesses, and rural landscapes. By contrast, food policy councils tend to originate in urban areas, with the voices of consumers, environmental groups, and social justice organizations more prominently represented in addition to representation of farmer and agribusiness interests (Clancy, Hammer, & Lippoldt, 2007).

Farm and Food-System Development Programs and Policies

Our community-development orientation leads us to further anticipate that the creation of formal institutions or organizations can provide a critical foundation for the development and implementation of effective programs and policies. In this section, we consider the potential significance of these programs and policies for shaping patterns of agricultural change at the RUI.

Programs and policies to support local agricultural and food-system development are generally consistent with the programs and policies associated with other forms of self-development that many rural communities have engaged in over the years. Self-development, in contrast to efforts to recruit extra-local (often industrial-scale) firms, focuses on local economic strengths and often relies on local resources to support the growth and development of local businesses (Blakely, 1994; Flora & Flora, 2004; Green & Haines, 2008). Efforts to support and develop local firms has been shown to have meaningful implications for community economic vitality and well-being (Korsching & Allen, 2004; Muske, Woods, Swinney, & Khoo, 2007) as the owners of these firms often give back to the community, take leadership roles and tend to be quite civically minded (Muske & Woods, 2004).

Unfortunately, the food and farming sector has often been overlooked as an economic asset to be developed, with Lyson arguing that "it is time to put agriculture and food on the political agendas of local communities" (2007, p. 29). Lyson further observes that "local agriculture and food businesses need the same access to economic development resources—such as grants, tax incentives, and loans—as nonfarm-related businesses" (p. 30). In many urbanizing communities, though, agricultural economic-development efforts may be perceived as a relic of the localities' rural past rather than a developable asset relevant to its future. Agricultural development may also not have the same allure to

development professionals as the impact of a successful effort to recruit a new industrial employer capable of creating numerous new jobs in a community.

Nevertheless, there has been growing interest in the economic development potential of agriculture, with a number of emerging programmatic and policy initiatives appearing across the United States (Preston & Bailey, 2007). Farm-oriented development efforts are being considered in response to the economic downturn that has seen a decline in industrial and construction sectors in some regions. Farm-oriented development to improve agricultural profitability has also been pursued in some places as an effort to enhance farm viability and slow down the conversion of farmland to nonfarm purposes. Such efforts can include general support for local farm businesses (including providing access to business skills training and credit), technical support for business diversification or new enterprise development, and beginning farmer programs designed to facilitate the transfer of family farms across generations (Nelson, Mullan, O'Neill, & Morse, 2004). Other economic-development projects have involved tax incentives and other initiatives to attract value-added food-processing facilities and adjustments to local land-use ordinances to enable farmers to conduct on-farm processing and retailing of their agricultural products (Cowan, 2002). One particular area of food and farming development activity that has received increasing attention are efforts to support the development of "local food systems" (Hinrichs & Lyson, 2007; Sharp, Clark, Davis, Smith, & McCutcheon, 2011). Local food-system programs include activities to support direct marketing by local farms (farmers' markets, direct sales to local institutions) and enhancing opportunities for local residents to produce their own food (e.g., community gardens and urban farming ventures).

Recognizing that these various development programs and policies are emerging in some localities, we hypothesize that communities that have developed the social infrastructure or organizational capacity to support food and farm system development will be more likely to enact agricultural economic-development policies and programs as well as local-foods–oriented activities. In turn, we also expect that the existence of these programs and policies will positively affect the viability of local agriculture and other characteristics of farming (such as more farms, more agricultural sales, etc.).

Data and Methods

As noted in the introduction, our contextual setting of interest is the subset of U.S. counties located at the RUI. We further narrow our attention to focus on those counties at the RUI that generate a substantial amount of agricultural production. The focus on these agriculturally important (AI) counties at the RUI allows us to assess the impact of local organizations and programs across relatively comparable urbanizing landscapes of the United States. Also, during the 2000s, in areas where there is both significant agricultural activity and urban growth, the local farm sector is typically confronted with both challenges (such as competition from nonfarm growth and development) and opportunities (linked to growing urban interest in local and regionally produced foods). Indeed, almost half of all U.S. direct sales of farm products to consumers in 2007 occurred in counties that were both agriculturally important and at the RUI (Porreca, 2010). Thus we expect the incidence of food and farming system development to be substantial and also quite salient in RUI settings, providing an appropriate context for investigating our basic questions.

The data for this analysis comes from the 2008 survey *Agricultural Change, Land Use, and Economic Development at the Rural-Urban Interface*, a key informant survey of agriculturally important RUI counties in the United States. The survey was funded by the United States Department of Agriculture National Research Initiative (USDA-NRI). Additional data is drawn from the 1997 and the 2007 USDA-National Agricultural Statistics Service Census of Agriculture (USDA NASS, 2004, 2009) and the 1990 and 2000 United States Census. To identify RUI counties, we utilized the urban influence codes (UIC) developed by the USDA Economic Research Service. These codes classify

U.S. counties according to whether they are metropolitan or nonmetropolitan, and in the case of nonmetropolitan whether they are adjacent to a metropolitan area. We first focused our attention on U.S. metropolitan counties or nonmetropolitan counties adjacent to large metropolitan areas (UIC codes 1–4, of which there are 1,267 counties) and some nonmetropolitan counties adjacent to small metropolitan counties (UIC codes 5–7 that experienced population growth above the national average of 13.15% between 1990 and 2000, of which there are 255 additional counties).[2] From this set of counties, we then focused on the subset of RUI counties that are *agriculturally important,* defined as being in the top quartile of U.S. counties ranked by farm sales in 1997 (Jackson-Smith & Jensen, 2009).[3] The 40% of all RUI counties that are agriculturally important account for almost 80% of the agricultural production occurring at the RUI (Jackson-Smith & Sharp, 2008).

We then conducted a survey of key informants in each of these 619 counties. We focus on counties as our unit of analysis, due in part to the fact that counties are generally the unit of government across the United States that has responsibility for agricultural land use and also often plays an important role in rural economic development.[4] We also focused on the county as a unit of analysis because extensive Census of Agriculture data is reported for this geographic unit. To acquire additional information about counties, a key informant survey is an effective strategy for eliciting factual information about a county. Because one informant might have limited knowledge about some aspects of the community or county, we sought information from several key informants. The key informants from each county were identified through web-based research of county institutions and telephone surveys of county extension or local government staff. We purposefully sought to identify informants from different institutional backgrounds to maximize the likelihood that accurate community information was acquired. The final sample included five key informants from each of the counties, although a couple counties had fewer, due to the absence of the desired informant in the community. A key informant from each of the following classes of individuals was surveyed in each county:

- a local government official familiar with local land-use planning and policies;
- an economic-development professional or business leader familiar with economic-development efforts related to agricultural development programs;
- a natural resource professional familiar with farmland preservation, conservation, and management;
- an agricultural professional, such as the county agricultural extension agent; and
- an agricultural organization representative, such as a county Farm Bureau president or other agricultural leader familiar with local challenges to farmers and adaptive strategies in response to these challenges.

The survey of the sample of key informants was conducted in winter 2008. The Tailored Design Method (Dillman, 2007) guided the data collection process. The sampled respondents received a pre-notification letter, a cover letter and survey instrument, a reminder postcard, and a replacement survey when necessary (including surveys to potentially new respondents nominated in surveys returned from the initial mailing). A total of 1,938 useable surveys from a total of 619 counties were ultimately received, with at least one informant replying from each of the counties surveyed and an average of three informants per county. Responses

[2] UIC codes are developed by the USDA-ERS and can be accessed online at http://www.ers.usda.gov/Briefing/Rurality/urbaninf/

[3] See Clark (2009) for a more detailed discussion of the methods used to identify agriculturally important counties.

[4] We know that in some states, other units of local government wield important power (such as the power Michigan townships have over land use), but even in this context counties remain an important entity in regards to agricultural development and change. Still, future research should be attentive to the development role of subcounty units of government as well as state governments, which are not addressed in this research.

from key informants from the same county were aggregated to create a county-level attribute (Krannich & Humphrey, 1986). For questions involving facts, such as, "Does policy A exist in the county?" the modal response of all respondents from that county was used. With questions of a more subjective nature, the mean response of all respondents from the county was utilized.

One final note regarding the sample is the discovery of a number of influential data points and/or outliers during our evaluation of the data that led us to exclude several counties from our final analysis. Data from these counties were excluded because their values for certain variables of interest are so exceptional when compared to most other counties that they adversely impact our statistical analysis and our ability to understand the relationships of interest. Specifically, California counties were excluded from the analysis due to agricultural and demographic statistics for these counties being substantially larger than nearly every other U.S. county.[5] In addition, two Arizona counties (Navajo and Maricopa) were excluded due to influential data points that likely arise from changes in how official population or agricultural data for these counties have been enumerated across time.

Measures of Key Concepts

We now turn our attention to how key variables and concepts were measured in the survey and/or operationalized for this analysis. To measure the level of community organizational development around the food and farming system, we utilized responses from two survey questions. One question measured whether the county had formed a committee or group to promote the viability of agriculture, and another question assessed whether citizens of the county had formed a food policy council or other program aimed at tackling issues of nutrition, hunger, and/or food access. These reflect two common organizational structures that have been used to develop and enact policies in support of local food and farm systems. The responses to these two questions concerning organizations were combined into a scale with three discrete categories. The county might have reported no organizational development around farming and the food system (labeled *None* in our tables), there might be one or the other type of organization (*Moderate Organization*), or both a committee or group working to promote the viability of agriculture and a food policy council existed in the community (*Advanced Organization*).

Key informants were also asked questions related to the existence of a wide range of local farm and food policies and programs. These policies and programs were generally of two types. The first includes general policies in support of local farming enterprises and value-added processing that are designed to encourage the viability of local farms and to promote local economic development activities. In our analysis, we utilized measures of the following agricultural economic-development activities: (a) business planning training for local farmers, (b) promotion of crop diversification or use of alternative production practices, (c) efforts to facilitate access to credit by local farms, (d) support for beginning farmers, (e) development of locally owned, value-added processing facilities, and (f) amendment of local ordinances to facilitate on-farm processing or sales. These six items were also summed to create a Farm Business Development scale reflecting the amount of local agricultural economic-development activity in each study county.

The second type of food-system development activities consists of programs and policies specifically designed to facilitate the emergence of "local food systems" in which local consumers are provided with greater opportunities to purchase food from local farmers. In the analysis below, we utilize indicators of the presence of the following types of local foods initiatives: (a) programs to promote direct marketing of local food products, (b) publication of a directory of local food suppliers, (c) programs that promote agritourism, and (d) efforts to develop marketing labels that identify

[5] We recognize that California is an important situation that warrants full consideration and recommend that California-specific case study research may be a more appropriate approach to considering our questions in regard to that context.

locally grown foods. A Local Food System Development scale was created from these items to reflect the relative amount of this type of programmatic activity in each study county.

Results

Level of Food and Farm-Oriented Social Organization
The results of the key informant survey across our sample of AI/RUI counties reveal that nearly 76% have a committee to support the viability of agriculture, while nearly 42% have organized a food policy council or similar organization (see table 1). This pattern suggests that food policy councils may be a more advanced form of food system organizational development, although we note that the incidence of food policy councils was higher than we expected and that the policy council indicator may reflect informants' awareness of policy-oriented organizational development, but not necessarily instances of food policy councils as formally described in the local food systems literature (e.g., Clancy et al., 2007). Of the 512 counties for which we received complete data, 18.6% reported having neither organization, 45.3% reported one organization working on farming and food system issues, and 36.1% have both (see table 1). The pattern of agricultural viability organizations being more common and food-policy–oriented development being less common is consistent with our own investigation of RUI counties in recent years (Clark, Inwood, Sharp, & Jackson-Smith, 2010).

Table 1. Organizations and Organizational Development in Study Counties (*N*=512)

Organization	% of counties
Type of organization in the county	
Committee to support the viability of agriculture	75.8%
Food Policy Council	41.8%
Level of organizational development in the county	
No organizations	18.6%
Moderate (1) organization	45.3%
Advanced (2) organizations	36.1%

Given the pattern of some counties being more formally organized versus some being less formally organized, we examined how population demographics, farming and food system development, and agricultural structure vary by each of the levels of organization in each county.

Population Demographics by Level of Organization
We first considered the extent to which basic population demographics vary by level of social organization. Recall that our sample is composed of counties located at the RUI, so it is quite likely that nonfarm population growth can be a factor in local planning and development policy related to agriculture. Our analysis reveals an association between level of organizational development and population characteristics, with more populous and more densely populated RUI counties reporting more organizational development when compared to less populated counties (table 2). Higher rural population densities (measured as persons per square mile in unincorporated areas, or outside of incorporated municipalities in a county) were also associated with more advanced levels of organizational development. Also, the rate of population growth tended to be higher in the less organized counties. However, their higher rate was largely a function of their smaller initial size. Net population change between 1990 and 2000 was higher in counties with more advanced organizational development.

Table 2. Population Demographics by Level of Organization (*N*=512)

	None	Moderate	Advanced
Total population (2000)	115,132	190,670	254,489*
Population density (per/sq. mile) (2000)	201	184	310*
Rural population density (2000)	53	57	67*
Population change, 1990–2000 (%)	21.6%	17.7%	16.4%*
Net population change, 1990–2000	18,102	16,135	27,903*

* F-test significant at .05 level

Social Organizational Capacity and Agricultural Development and Food System Policies and Programs

We next explore the association between the presence of social organizations and the enactment of farm business development or local food-system development programs and policies. Looking first at the farm business development activity, table 3, we find that the most common activities in AI/RUI counties are programs related to business planning, crop diversification, and enhancing access to farm financing. Moreover, there is a positive relationship between the existence of farm- and food-oriented social organizations and the presence of these types of agricultural development activity. Generally speaking, about 80% of the counties with some organizational development reported these activities, while only two-thirds of counties with no organizational development reported these types of development activities. Programs to support beginning farmers were also quite common in counties with more advanced organizational development (83% of counties) and less common in moderately organized counties (69%). Just less than half the counties with no formal organizations reported these sorts of programs.

Efforts to develop locally owned processing facilities and where local land-use ordinances had been amended to facilitate on-farm processing or sales were most common in counties with advanced organizational development, but at noticeably lower frequency than was the case with more business- and finance-oriented activities. Relatively few of the counties with no organizational developments reported that there had been efforts to develop value-added processing or ordinance amendments.

Looking at the Farm Business Development Scale (a count of the presence of these six farm business development programs and policies), we find that counties with more advanced levels of social organizational development reported more farm business development activities (4.6 on average). Counties with moderate organizational development reported an average of 3.9 activities. The counties with neither organization reported an average of 2.8 activities.

Due to their proximity to larger urbanized areas as well as relatively large local populations of their own, we anticipated there would be substantial local food-system development activity in our RUI study counties. Data for the Local Food System Development Scale and associated sub-items are

Table 3. Farm Business Development Activity by Level of Organization (*N*=512)

	All counties	None	Moderate	Advanced
	Mean			
Farm Business Development Scale	3.9	2.8	3.9	4.6**
Specific Activities	Percentage			
A course or program that provides training in business planning for county farmers or ranchers	87.4%	74.2%	87.0%	94.5%*
Program to promote crop diversification or alternative production techniques	83.4%	61.7%	84.7%	92.9%*
Program facilitating access to public or private credit for farmers or ranchers	78.2%	62.9%	78.3%	85.6%*
Program to support beginning farmers	70.1%	47.4%	69.4%	82.7%*
Successful effort to develop a locally owned, value-added processing facility	45.9%	20.2%	45.2%	59.8%*
Amendment of local ordinances to facilitate on-farm processing or sales	34.5%	15.8%	32.3%	47.4%*

*chi-square significant at .05 level, **F-test significant at .05 level

Table 4. Local Food System Development Activity by Level of Organization

	All Counties	None	Moderate	Advanced
Local Food Development Activity Scale (mean)	3.0	2.0	2.8	3.6**
Specific Activities	%		% of counties	
Program to promote direct marketing of local food products in the county	86.1%	68.4%	84.1%	97.8%*
Program or event to promote agritourism opportunities	76.3%	53.7%	74.19%	90.8%*
Published directory of local food producers, retailers, or farmers' markets	72.5%	43.6%	68.8%	91.8%*
Promotion of local/homegrown food product labels and campaigns	61.2%	37.9%	52.4%	84.2%*

*chi-square significant at .05 level, **F-test significant at .05 level

reported in table 4, along with comparisons of the use of these activities by level of county organizational development. Local food system policies and programs were reported in most AI/RUI counties, although the counties that reported more formal organizational development were much more likely to report local food-system development activity than counties with less development. In counties that had established committees to promote local farming and created food policy councils, over 90% reported the presence of programs to promote direct marketing, publication of local food directories, and programs to promote agritourism. The promotion of a local label or campaign was quite common in the most organized counties; it sometimes occurred in the moderately organized counties; and it was much less common in the counties with no organizational development.

Table 5. Influences on Agricultural and Local Food Development Activity

	Agricultural Business Development Activity (scale)	Local Food Development Activity (scale)
	Standardized Coefficient	
Rural population density (2000)	–.04	.16*
Net population change, 1990–2000	–.04	–.01
Farms, 1997	.08	.17*
Agricultural sales, 1997	.09*	.01
Level of organizational development[a]		
Moderate organizational development	.35*	.28*
Advanced organizational development	.54*	.58*
F-test	21.09*	34.66*
Adj. R-square	.19	.28

* significant at .05 level, [a] Reference group is none.

In terms of the Local Food Development Activity Scale (which summarizes the existences of these various programs in a county, with the scale ranging from 0 to 4), the most organized counties reported an average of 3.6 of the activities, while 2.8 of the activities were reported on average in the counties with moderate levels of organizational development. The counties with little organizational development reported an average of only 2 of the activities.

To arrive at a more nuanced analysis of the relationship between organizational development and the existence of agriculture-oriented local policies and programs, we conducted a series of multivariate analyses (results are reported in table 5).[6] Both

[6] In these models, we control for important demographic and farm-sector characteristics and examine whether the presence

regression models find that development of social organizations around farm and food issues is a strong predictor of the emergence of local farm and food policies and programs. We find that counties with moderate and advanced organizational development also report more agricultural business development activity and local food development activity compared to communities that report no organizational development. We also find that local food development activity is more likely in counties with high rural population densities and where there are more farms. In other words, a high density of both farms and rural residents appears to be more conducive to the emergence of local food development activities. We find that higher rural population densities and the existence of more farms is not related to agricultural business development activity (see table 5).

Organizational Capacity and Local Farm Conditions
Community organizations to promote local agriculture and food systems are created not only to facilitate development of programs and activities, but ultimately to enhance prospects for local farmers, stimulate local agricultural economic activity, and protect against farmland loss. Because our data reflect a cross-sectional snapshot of conditions in each county in 2008, it is impossible to prove whether forming these organizations *causes* different changes in farm and food system outcomes. However, distinctive patterns of association between the presence of local organizational development and certain indicators of farm-sector conditions can provide insights into the characteristics of places most likely to adopt these strategies, as well as tentative evidence of their impacts on the health of the local farm and food sector.

A comparison of farm-sector characteristics and trends from the 1997 and 2007 Censuses of Agriculture (table 6) by level of organizational development suggest some interesting relationships between the level of organizational development and farm-sector conditions. Generally speaking, the more organizationally developed counties tend to have larger agricultural sectors (in terms of total farm numbers and total agricultural sales). Interestingly, there is no difference among the different groups of counties in terms of the rate of change in number of farms or change in agricultural sales between 1997 and 2007. This suggests that organizational development over the previous decade did not systematically affect the pace and direction of changes in the size or structure of the local farm sector (or that rates of farm change were not systematically related to the emergence of these organizations). Meanwhile, average sales per farm and the rate of change in sales per farm were similar across farms in all three sets of counties.

One major goal of local farm and food organizations is to promote greater sales of locally produced farm products within the community. In the most organizationally advanced counties, the number of farms with sales direct to consumers was considerably higher than in the counties with less organizational development. The total amount of direct farm sales in the most organizationally advanced counties was over US$1.2 million in 2007, nearly double the level in the moderately advanced counties, and three times the level in the counties with the least organizational development. A surprising result was that counties with greater organizational development had lower growth rates in the numbers of farms with direct sales and the total volume of direct sales. To some extent, lower growth rates might reflect the fact that the counties without these organizations had much lower initial levels of direct sales and thus a greater statistical tendency for high rates of growth (relative to places that had high initial levels of direct sales).

or absence of social organizations to promote farm and food initiatives is associated with the development and implementation of agricultural economic and local food system policies and programs. We include rural population density and net population change in these models because we anticipate both might adversely impact agricultural outcomes (such as growth in the sector). From the Census of Agriculture, we include measures of the number of farms and the total agricultural sales in a county as reported in 1997. We include these items because we appreciate that those counties with large agricultural sectors may be better positioned to sustain a critical mass of production across time that allows the sector to remain vibrant and may mitigate some of the nonfarm population pressures.

Table 6. Current Status and Rates of Change in Local Farm Sector by Level of Organization

	None	Moderate	Advanced
Farms, 1997	855	1,025	1,121*
Farms, 2007	864	1,004	1,104*
Δ Farms, 1997–2007 (%)	–0.1%	–1.8%	–1.7%
Ag. sales, 1997 (US$ million)	94.8	108.4	125.5*
Ag. sales, 2007 (US$ million)	136.2	160.0	181.4*
Δ Ag. sales, 1997–2007 (%)	49.6%	48.3%	48.9%
Average sales per farm, 1997 (US$)	128,969	122,553	117,157
Average sales per farm, 2007 (US$)	185,729	187,423	179,225
Δ Sales per farm, 1997–2007 (%)	49.9%	51.9%	52.7%
Direct Farm Sales to Consumers[1]			
Farms with direct sales, 2007	52	75	104*
Δ Farms with direct sales, 1997–07	34.5	22.5	23.1*
Total direct sales dollars, 2007 (US$)	410,000	677,050	1,249,700*
Δ Direct sales, 2002–07 (%)	182%	100%	110%*

Tests of statistical significance from ANOVA F-test (*=signif. at .05 level) [1] Direct farm sales reflect sales direct to consumers by the farm producer and have been collected as a specific category of sales by the U.S. Census of Agriculture since 1992.

Table 7. Policy Impacts and Perceived Optimism by Level of Organizational Development

	Level of Organizational Development[a] (mean)		
	None	Moderate	Advanced
Policies keep land in this county in farming or agricultural uses	3.1	3.3	3.6*
Policies maintain the viability of *farms* in this county	3.2	3.4	3.6*
Policies enable *new farms* to get started in this county	2.8	3.0	3.1*
Optimism/pessimism about the future of agriculture in this county?	4.1	4.5	4.6*

[a] Reference group is none.

Another possible measure of the impact of organizational development is reflected in more subjective assessments of the key informants concerning their perceptions of the impacts of

local organizations and policies on local farm viability and farm-sector conditions. Specifically, informants were asked the extent to which agricultural economic development programs and policies had affected "keeping land in this county in farming or agricultural uses," "maintaining the viability of farms in this county," and "enabling new farms to get started in this county." Response categories ranged from a strong positive impact (coded 5) to a strong negative impact (coded 1), with the middle category (3) being no or mixed impact. A comparison of mean scores on these items by level of organizational development is shown in table 7. The results suggest that key actors in counties with more organizational development have more positive impressions of the impact of local efforts across all three measures. A final question was asked of key informants: "using a scale of 1 to 7 (where 1 is

Table 8. Subjective and Objective Assessments of Agricultural Change

	Policies Keep Land in Farming	Policies Maintain Farm Viability	Policies Enable New Farms To Start	Optimistic About Future of Agriculture
	Standardized Regression Coefficients			
Rural population density (2000)	–.04	–.13*	–.12*	–.14*
Net population change, 1990–2000	–.13*	–.13*	–.13*	–.26*
Farms, 1997	–.08	–.10*	–.05	–.04
Agricultural sales, 1997	.06	.12*	.04	.14*
Agricultural business development activity	.25*	.28*	.29*	.19*
Local food development activity	–.05	–.08	–.08	–.07
Level of organization development[a]				
Moderate organizational development	.08	.10	.04	.08
Advanced organizational development	.25*	.19*	.16*	.10
F-test	11.01*	12.34	10.79*	12.86
Adj. R-square	.14	.15	.13	.16

*F-test significant at .05 level. [a] Reference group is none.

'very pessimistic' and 7 is 'very optimistic'): Are you optimistic or pessimistic about the future of agriculture in this county?" In all counties the mean response of the key informants was toward the optimistic end of the spectrum, although the counties with higher levels of organizational development reported greater optimism for the future of agriculture in their county.

Integrated Assessment of Organizational and Policy Impacts

As a final step in our analysis, we estimated several multivariate models that seek to explain variation in indicators of the vitality of local agriculture and food systems using information about the level of social farm- and food-oriented organizational development, on the one hand, and the presence of key local agricultural development and food-system programs and policies on the other hand (see table 8).[7] The results suggest that organizational development and local policies and programs can have statistically significant impacts on perceived policy impacts across our study counties. In other words, key informants in counties with advanced levels of organizational development and a wider array of specific agricultural development activities are more likely to feel that their community's efforts have kept land in farming, helped maintain the viability of local farms, and encouraged beginning farmers. One of the models examining factors related to average informants' optimism about the future of local agriculture in the county is not strongly related to level of organizational development, but was related to the existence of local agricultural development activities. Interestingly, moderate levels of organizational development (having either a local committee or a food policy council, but not both) and the presence of more specific local food systems activities were not associated with more positive perceptions of local policy impacts.

[7] In each model, we control for basic differences in rural population density (in 2000), rates of population growth (1990–2000), and number of farms and volume of county farm sales in 1997. Standardized regression coefficients for model variables and model fit statistics are reported in table 8.

Discussion and Conclusions

Our investigation of the relationship between agriculturally oriented community organizational development and the emergence of specific programs and policies to promote local agriculture reveals a number of interesting findings. First, it appears that organizational development has been greatest in the larger, more urbanized locales and in counties with a more dense agricultural landscape (i.e., more farms and total production). We also find a clear connection between organizational development and the existence of policies and programs that support agricultural businesses in general, as well as local food system development. This suggests that the facilitation of social organizational development (in the form of agricultural committees and food policy councils) may be important in creating a social infrastructure that is likely to generate and support the use of concrete policies, programs, and activities to support local farming and food systems. Social capital and social infrastructure have been found to be necessary ingredients in community development. Putnam (1993), Flora and Flora (1993), Sharp et al. (2002), Flora (1998), Green and Haines (2008) and this study support such an interpretation.

Subjective measures of the vitality of local agricultural systems were more positive in counties that had advanced organizational development and that had enacted more agricultural business-development policies and programs. Interestingly, local food-systems–oriented activities were not consistently related to informant perceptions of the local farm-sector conditions. Given the cross-sectional nature of our data (and the absence of information about how long such organizations and policies have been in place), we were unable to explore whether they have had the material impacts on trends in the farm sector that they were intended to create.

There are some limitations to this work. First, the data for this study, collected during one year from key informants, is not adequate to infer causal relationships between the variables. Another limitation is that it is not possible to directly assess the internal dynamics and degree of activity in local agriculturally oriented organizations. While a food policy council may exist in a community and its presence is associated with other local programs and policies, there is no way from the survey instrument to evaluate how well a food policy council functions or the intensity with which it carried out its work. In addition, we did not have adequate information to assess the extent to which these organizations and the various policies and processes were inclusive or supportive of the diversity of local agriculture and food-system stakeholders. Future qualitative studies of these organizations in AI and RUI counties will contribute to a better understanding of how organizational activities qualitatively vary and how these differences might influence patterns of local farming and food systems change.

This research has several implications for policy around local agriculture and food system development. Indeed, contrary to the belief in an "impermanence syndrome" (Berry, 1978) or the notion that farmers begin to make strategic decisions to disinvest in their operations due to the perception that urban pressures or competition will make the long-term future of local agriculture tenuous, we find that farmers and communities at the RUI are generally not responding to the potentially disempowering and homogenizing effects of urban pressures by simply allowing agriculture to fade away. Instead, our data reveal that many places are choosing to act by forming committees and food policy councils to support the viability of agriculture in their communities and implementing various programs and policies in order to develop a stronger, more vibrant local agriculture. This study finds that organizations such as committees to support the viability of agriculture and food policy councils are related to a community's ability to market local food, develop initiatives that increase the self-help capacity of the community, and increase farmers' participation within the local food system.

This research also offers strategic guidance to local leaders. For some, the idea that social development of the community may be a precondition or important factor in the ultimate success of achieving a

particular programmatic or economic outcome may be surprising. But classic community-development theory, validated by these research findings, reveals that the development *of* the community (the community's organizational and social structures) qualitatively impacts developments *in* the community (such as particular projects and forms of economic activity). In fact, one member of this research team currently works for an alternative agricultural organization engaged in development work, and the lack of organizational capacity for food-system development is recognized as a clear limitation to the ambition of what can be proposed or pursued by some communities. This research has allowed that individual to think strategically about their work, and we anticipate that other practitioners might similarly benefit from the insights of this research.

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Out in the cold about COOL: An analysis of U.S. consumers' awareness of mandatory country-of-origin labels for beef

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Abstract

Mandatory country-of-origin labeling (COOL) is a policy that requires a label noting what country or countries from which many fresh food products derive. While some have favored the policy as a marketing tool, others have criticized it as confusing, expensive, and difficult to mandate. An online survey of U.S. beef consumers who were their households' primary grocery buyers (*N*=396) was conducted to examine their knowledge and awareness of COOL and the information sources they use to make food purchases. Only 10 respondents (2.5%) knew COOL stood for country-of-origin labeling, and 287 respondents (72.5%) indicated they had never heard of COOL. Despite an apparent lack of knowledge and awareness, a majority of the participants still supported the idea of mandatory COOL and preferred to have COOL for beef. The results indicated that more consumer education is needed about COOL. Further research is necessary to examine this policy as it diffuses among consumers.

Keywords

agricultural marketing, beef, consumer behavior, country-of-origin labeling, diffusion, food policy, labeling

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Introduction and Literature Review

When food shopping, consumers often look for distinguishing features, such as brands, labels, store signs, and unique packaging, to select one food item over the other (Schupp & Gillespie, 2001). Food recalls and cases of food-borne illness have also influenced how consumers decide what to purchase. These issues have raised questions about the role of country-of-origin labels, traceability, and food safety inspections in shaping consumers' perceptions of food safety and quality worldwide (Loureiro & Umberger, 2007).

In the United States, specifically, various agricultural and consumer advocacy groups have argued and pushed legislation for country-of-origin labeling (COOL). They claim such labeling may alleviate food safety concerns and garner support for U.S. products (Krissoff, Kuchler, Nelson, Perry, & Somwaru, 2004). Srivastava (2003) reported three reasons the United States Department of Agriculture (USDA) considered mandatory traceability for food: (1) to protect consumers from fraud and producers from unfair competition, (2) to facilitate and monitor the food chain to enhance food safety, and (3) to address consumer information gaps about food safety and quality. The mandatory U.S. COOL program developed as a result of objectives such as these and created a system in which consumers can select and purchase foods based on where they come from, therefore giving them more buying power (Quittner, 2007).

U.S. lawmakers, with approval from the USDA, included legislation for mandatory COOL in the 2002 U.S. Farm Security and Rural Investment Act, or farm bill (Quittner, 2007). The provision in the bill required COOL for beef, lamb, pork, fish, perishable agricultural commodities, and peanuts by 2004. In January 2004, the implementation of mandatory COOL was delayed for all covered commodities aside from wild and farm-raised fish and shellfish until September 30, 2006. The mandatory implementation for these other commodities was again delayed in November 2005, and the extension was set to September 30, 2008 (USDA, 2008b).

The U.S. Food, Conservation, and Energy Act of 2008, known also as the 2008 Farm Bill, expanded the list of covered commodities in mandatory COOL to include chicken, goat meat, ginseng, pecans, and macadamia nuts (USDA, 2008b). Restaurants and other food-service providers are exempt from COOL, along with cooked, cured, smoked, and restructured meats (USDA, 2008a; Kay, 2008b). Lawmakers created the interim final ruling for mandatory COOL in the United States on August 1, 2008, and instituted that ruling on September 30, 2008.

The final mandatory ruling for COOL went into effect in March 2009 (Bjerga, 2009). The final rule outlined the requirements for labeling covered commodities and the record-keeping requirements for retailers and suppliers. A penalty was put in place for those who fail to follow the guidelines. Specific criteria determined if a product can bear a "United States country of origin" declaration, or if it must be labeled as foreign origin or have a multicountry-of-origin label (USDA, 2009a).

Prior to the implementation of mandatory COOL in the United States, studies found that consumers favored the idea of mandatory COOL and would be willing to pay more for COOL beef (Dickinson & Bailey, 2005; Loureiro & Umberger, 2003; Schupp & Gillespie, 2001). Research has also shown that most consumers would prefer U.S.–labeled beef over beef labeled from another country or labeled with a multicountry-of-origin label (Loureiro & Umberger, 2003).

Mandatory COOL in the United States means more information for consumers on where their food comes from, but conversely the program has also drawn resistance from some food producers and agricultural leaders who say it requires too much time, work, and money in order to comply. In addition, implementing the program might have caused confusion among consumers when viewing food labels (Siegrist, 2009). Although many people have supported COOL, government officials, commodity and consumer groups, and the media have had differing viewpoints on the true purpose of the policy. According to Bjerga (2009), in

January 2009, then U.S. Secretary of Agriculture Ed Schafer said COOL was implemented to market U.S. beef: "This is not a food safety issue. This is not a competitive issue or trade issue. This is a marketing issue. This is the ability of U.S. producers to label beef" (para. 8). The American Farm Bureau Federation (AFBF, 2007) also said that COOL is a marketing issue, but many people have perceived it as a food safety issue. In an article by Talbot (2009), COOL was addressed as a policy meant to help consumers protect their health by avoiding foods from certain countries when a health risk, such as salmonella, is reported there: "Advocates for food safety and individuals who care about the point-of-origin of the products covered celebrated the implementation of the law" (para. 6).

Another criticism of COOL is that the program is expensive to implement and maintain. The AFBF reported the program would cost between US$500 million and US$3.9 billion in its first year, and subsequent years were expected to run between US$140 million and US$600 million (AFBF, 2007). COOL opponents argue that the costs for a more accurate record-keeping system would be passed to the consumer and raise food prices (Krissoff et al., 2004).

Because the program requires more record keeping, U.S. beef and pork companies are either refusing to buy or are putting more emphasis on segregating cattle and hogs from outside the United States (Burgdorfer, 2009). In October 2009, officials from Canada and Mexico contacted the World Trade Organization (WTO), claiming that COOL was damaging North American trade (Lynn, 2009). Many livestock producers and industry experts say consumers do not care about the country of origin or pay attention to the labels, and the added cost of implementing the program is hurting the meat industry (Burgdorfer, 2009).

On average, a U.S. consumer eats 67 pounds of beef per year (Davis & Lin, 2005). The USDA reported the retail value of beef in the United States in 2008 at US$76 billion (USDA, 2009b). U.S. cattle feeders and meat packers, processors, and retailers have generally opposed required country-of-origin labeling (Krissoff et al., 2004). Due to costs associated with more record-keeping and segregating animals from different countries, mandatory COOL for the beef industry is expected to cost cattle producers US$9 more per head, packers and wholesalers 1.5 cents (US) more per pound, and retailers about 7 cents (US) more per pound (Kay, 2008a).

The label for beef first lists the country where the animal was processed or slaughtered, and then retailers are responsible for listing other countries of origin on the label in alphabetical order (Kay, 2008b). In order to minimize costs, however, some food retailers are adopting a catch-all blanket label for beef, which includes a list of all the countries from which the product potentially could have come. This label is placed on all products, regardless of actual origin, so the use of the "Product of the United States" label for beef might be more limited than supporters of COOL had hoped. The USDA is combating this by requiring beef from the United States to be labeled as U.S. beef, rather than allowing a blanket label (Hagstrom, 2008).

Theoretical Contribution

Rogers' (2003) Diffusion of Innovations theory was applied in this study to help understand how information about labels diffuses through a system, and how consumers' knowledge about COOL influences their food purchases. Diffusion is defined as "the process in which an innovation is communicated through certain channels over time among members of a social system" (Rogers, 2003, p. 5). COOL is required by law, and therefore, is an authority-influenced innovation, which means that relatively few individuals in a system who possess power—in this case, U.S. lawmakers—make the decision for everyone in the social system to adopt the innovation.

Purpose and Research Questions

The purpose of this study was to explore U.S. beef consumers' knowledge and awareness toward country-of-origin labels following the implementation of mandatory COOL in the United States. The following research questions were used to guide

the study:

RQ1. What are the demographic characteristics of the sample?

RQ2. What are the information sources consumers use to make food purchases?

RQ3. How aware are U.S. consumers of COOL?

RQ4. What are the relationships between selected consumer demographics, COOL awareness, and the information sources consumers use to make food purchases?

Applied Research Methods

This study used a descriptive survey design by means of a questionnaire administered online by Zoomerang™ to a nationwide sample of U.S. primary household grocery buyers. The researchers were able to use Zoomerang to administer the questionnaire only to those people who indicated they were the primary grocery buyer for their household. Targeting a sample as specific as this on a national scale using any method other than online was not feasible, and might even have been impossible. According to Zoomerang (2010), its more than two million survey respondents are profiled using more than 500 demographic, lifestyle, occupational, and geographic attributes, which give researchers access to specific target groups, such as U.S. primary household grocery buyers. Therefore, the accessible population was individuals in Zoomerang's online survey panel who had indicated, on an extensive personal disclosure, that they are the primary grocery buyer for their household.

As this survey was a national assessment, the entire population of the United States was taken into account to determine sample size. The U.S. Census Bureau estimated the total U.S. population in December 2009 at more than 308 million (U.S. Census Bureau, 2009). According to the Krejcie and Morgan (1970) table for required sample size, a population size of more than 300 million requires a sample size of 384 participants with a 95% confidence, 5% margin of error. Zoomerang charges by the number of respondents, meaning that when a certain number is reached, access to the online questionnaire is closed. This method provided the specific, mutually exclusive quota sample of U.S. primary household grocery buyers the researchers needed.

The respondents were asked at the beginning of the questionnaire if they or anyone in their household consumed beef or other meat products. If the respondents answered "no," they were directed to complete the demographics section only, and their responses were not used when analyzing the results for this study. Only those people who indicated that they or someone in their household consumed beef were used to ensure the collected data were from beef consumers. A total of 413 people completed the online questionnaire before Zoomerang closed access. Of the completed questionnaires, 17 claimed to not be consumers of beef. Therefore, the sample used for this study included 396 respondents.

A researcher-developed questionnaire (see the full instrument in the appendix) was administered online to collect data to address the research questions. The instrument was tested for validity using a panel of university faculty experts and reliability using a pilot test of 30 participants before Zoomerang was used to administer the questionnaire to the sample. Reliability and validity were assessed online using the same method of administration as the actual survey to the respondents. The survey was conducted in the fall of 2009.

Once the survey was complete, data analysis was conducted using SPSS® version 17.0 for Windows. Demographic questions were analyzed using descriptive statistics, specifically measures of central tendency. The researchers found common themes when evaluating open-ended answers and calculated frequencies for the answers.

Results

RQ1: What are the demographic characteristics of the sample?

The sample for this study included 396 respondents. Demographic questions asked participants

to disclose or classify a number of characteristics. The items reported in this paper are gender, age, highest level of education obtained, state of residence, estimated annual household income, ethnicity, and level of involvement in the beef industry and agricultural industry. More females (*n* = 268, 67.7%) responded to the survey compared to males (*n* = 128, 32.3%). Respondents' ages ranged 66 years, from age 18 to age 84, with a mean age of 48.63 (*SD* = 14.33). While education ranged from less than a high school education (*n* = 4, 1%) to a doctorate degree (*n* = 6, 1.5%), most respondents indicated they had some college education (*n* = 115, 29%) or a bachelor's degree (*n* = 100, 25.3%).

Respondents reported residing in 42 U.S. states. The largest number of respondents said they reside in California (*n* = 75, 18.9%), followed by Texas (*n* = 34, 8.6%), and New York (*n* = 30, 7.6%). The eight states not represented by the sample included Alaska, Idaho, Maine, Nevada, New Hampshire, North Dakota, Rhode Island, and South Dakota. Income levels ranged from less than US$15,000 annually to more than US$105,000 annually, with the largest number of respondents making between US$45,000 and US$59,000 per year (*n* = 69, 17.4%). Most survey respondents were Caucasian (*n* = 332, 83.8%), followed by Hispanic (*n* = 20, 5.1%), African American (*n* = 17, 4.3%), Asian American (*n* = 16, 4%), Other (*n* = 10, 2.5%), and Native American (*n* = 1, 0.3%). Respondents were asked to rate their level of involvement in the agricultural industry and the beef industry on a five-point Likert-type scale (*1 = not at all, 5 = quite a lot*). Overall, respondents indicated they have a fairly low involvement in both the agricultural industry (*M* = 1.62, *SD* = 1.03) and beef industry (*M* = 1.54, *SD* = 0.94).

RQ2: What are the information sources consumers use to make food purchases?

Research question two sought to analyze the sources of information used to make food-purchasing decisions. Participants could check off all the resources they use on a provided list (family and friends, Internet, newspaper, magazine, radio, supermarket advertisement, and television). They could also disclose other resources they use that were not on the provided list. Consumers indicated they receive information from many different places when making food purchases. Supermarket advertisements were used by the largest percentage of respondents (*n* = 244, 61.6%). Half of the respondents (*n* = 198, 50%) said they also get information from family and friends. Traditional information sources were also mentioned: newspaper (*n* = 122, 30.8%), Internet (*n* = 105, 26.5%), television (*n* = 98, 24.7%), magazine (*n* = 55, 13.9%), and radio (*n* = 21, 5.3%). In addition to the provided responses, 40 respondents (10.1%) said they used other sources of information to make food-purchasing decisions, including personal experiences (*n* = 11, 2.8%), the store itself and its employees (*n* = 10, 2.5%), and the product labels (*n* = 4, 1%).

RQ3: How aware are U.S. consumers of COOL?

The intent of research question three was to determine the knowledge and awareness levels consumers have of COOL. The first survey question asked participants if they knew what COOL stands for in regard to food buying to initially assess knowledge of COOL before it was explained in further detail later in the questionnaire. Seventy-three respondents (18.4%) said they did know what COOL stands for, while 323 (81.6%) said they did not know. Respondents were then asked to provide an explanation of what COOL stands for. Of the 72 respondents who elaborated, 10 (2.5%) reported COOL stands for country-of-origin labeling. Most respondents (*n* = 47, 11.2%) who elaborated said COOL was related to temperature or keeping products cold, refrigerated, or frozen.

Later in the questionnaire, respondents were asked if they have ever noticed the country-of-origin label on their purchased beef products, and 110 respondents (27.8%) said yes, while 286 respondents (72.2%) said no. Respondents were then asked to explain where they had seen the country-of-origin labels located on the products. Of the 112 respondents who elaborated, the largest number of respondents (*n* = 24, 21.4%) said they had seen the country-of-origin label on the front of the package, 20 respondents (17.9%) said on the backside or bottom of the package, and 11 (9.8%) said the label

was somewhere on the package in fine, small, or hard-to-read print. Thirteen respondents (11.6%) did not recall exactly where the country-of-origin label was located, and nine respondents (8%) reported seeing the label in many different places, including the top and bottom of the package and on the store meat case.

All 396 respondents were also asked to think about the last beef product they purchased, and then to indicate from which country or countries that product originated, using a list that included the United States and its top 10 beef importers, based on importer data from the USDA (2010) (see table 1). The respondents could check all the countries that applied, given that their last purchased beef product could have had a multicountry-of-origin label. Twelve respondents indicated at least one country of origin for their last purchased beef product and also selected "don't know."

When asked to check all the resources that provided them with information about COOL, most respondents said they had not heard of COOL (n = 287, 72.5%). If respondents had heard of COOL, the most common resource was the Internet (n = 36, 9.1%). Table 2 provides the frequencies and percentages of each source.

Table 1. Country-of-Origin for Last Beef Product Purchased by Respondents (N = 396)

Country	Frequency	Percentage
United States	216	54.5%
Don't know	179	45.2%
Canada	11	2.8%
New Zealand	9	2.3%
Mexico	8	2.0%
Argentina	6	1.5%
Australia	4	1.0%
Brazil	2	0.5%
Costa Rica	1	0.3%
Honduras	1	0.3%
Nicaragua	1	0.3%
Other	1	0.3%
Uruguay	0	0.0%

Note. Mode = United States. Respondents could check multiple answers; percentages do not equal 100%.

Twelve respondents provided other resources for COOL not included in the list. The most common other response was that this survey was the first time they had heard of COOL (n = 4, 1%).

When asked if they had heard of mandatory country-of-origin labeling in the past year, 381 respondents (80.3%) said they never heard of mandatory COOL. Fifty respondents (12.6%) said they had heard of COOL once, 21 respondents (5.3%) had heard of COOL 2–5 times, and seven respondents (1.8%) had heard of COOL more than five times. On a five-point Likert-type scale (*1 = not at all, 5 = quite a lot*), respondents indicated they were not very aware of labeling policies for beef (M = 2.17, SD = 1.08) and even more unaware of COOL for beef (M = 1.76, SD = 1.07).

After analyzing initial awareness of country-of-origin labeling, the questionnaire asked participants to rank the importance of having a country-of-origin label on four commonly purchased beef cuts (ground beef, roast, steak, and stew meat) using a five-point Likert-type scale (*1 = not at all, 5 = very*). Respondents consistently put a relatively high importance on having a country-of-origin label on all beef cuts: ground beef (M = 4.25, SD = 1.02), roast (M = 4.19, SD = 1.01), steak (M = 4.23, SD = 1.00), and stew meat (M = 4.18, SD = 1.05).

Table 2. Resources Providing Information About COOL (N = 396)

Resource	Frequency	Percentage
Have not heard of COOL	287	72.5%
Internet	36	9.1%
Don't know	25	6.3%
Television	24	6.1%
Family/Friends	21	5.3%
Newspaper	19	4.8%
Supermarket advertisement	13	3.3%
Other	12	7.8%
Radio	10	2.5%
Magazine	9	2.3%

Note. Mode = Have not heard of COOL. Respondents could check multiple answers; percentages do not equal 100%.

Two open-ended questions asked what mandatory country-of-origin labeling means to the participants personally and what the participants believe is the government's purpose for implementing country-of-origin labeling in the United States. The researchers categorized common responses to the questions, and frequencies were determined. Six of the open-ended responses could not be categorized due to the inability to interpret those responses or to fit them in the emergent categories, so percentages do not equal 100%. Analysis of these open-ended answers found that most respondents said mandatory country-of-origin labeling just told them what country or countries the product was from, nothing more (n = 111, 28%). Sixty-three respondents (15.9%) said COOL calls for more responsibility of beef producers, packers, retailers, importers, and the U.S. government, and 50 respondents (12.6%) said they did not know or did not understand COOL. Other open-ended responses included: provides more information and more choices when buying food (n = 45, 11.4%), makes food more safe (n = 44, 11.1%), nothing or apathetic towards COOL (n = 41, 10.4%), made more aware of COOL after this survey (n = 13, 3.3%), keeps foods fresh or cold (n = 8, 2%), COOL is important (n = 8, 2%), COOL is not important (n = 4, 1%), and I will only buy U.S. beef (n = 3, 0.8%).

The next open-ended question asked what the participants believed was the purpose of the government in implementing mandatory country-of-origin labeling in the United States. Nine of these responses could not be categorized, so percentages do not equal 100%. The largest portion of respondents said they believed the decision to implement mandatory COOL was made to increase consumer awareness of where their products originate (n = 113, 28.5%), while the second most frequent response was that they believed the government implemented COOL to protect consumers from diseases and contaminated foods and to keep consumers safe (n = 102, 25.8%). Other open-ended responses included: don't know or unsure (n = 52, 13.1%), provides more choices when buying food (n = 46, 11.6%), nothing or apathetic towards the purpose (n = 19, 4.8%), promotes U.S. beef over foreign beef (n = 17, 4.3%), confuses consumers (n = 10, 2.5%), ensures higher-quality foods (n = 8, 2%), keeps foods fresh or cold (n = 8, 2%), provides a good or important program (n = 5, 1.3%), provides better tracking and inspections for food (n = 4, 1%), and requires more truthful information on label packages (n = 3, 0.8%).

RQ4: What are the relationships between selected consumer demographics, COOL awareness, and the information sources consumers use to make food purchases?

Correlations were performed to determine the relationships between selected demographics, COOL awareness, and the information sources consumers use to make food purchases. The strength of the relationships was reported based on Davis (1971), where 1.00 is a perfect relationship, .70–.99 is a very high relationship, .50–.69 is a substantial relationship, .30–.49 is a moderate relationship, .10–.29 is a low relationship, and .01–.09 is a negligible relationship. Significant relationships found at .05 *a priori* are noted within the tables.

Table 3 shows the relationships between self-perceived involvement in the agricultural and beef industries and respondents' self-perceived knowledge of what COOL stands for, as well as self-perceived awareness of both labeling policies in general and COOL for beef. All relationships in

Table 3. Relationships Between Industry Involvement and Knowledge/Awareness

Characteristic	Agricultural industry involvement	Beef industry involvement
Knowledge of what COOL stands for (r_{pb})	.12*	.11*
Awareness		
Labeling policies for beef (r)	.52*	.55*
COOL for beef (r)	.54*	.53*

Note. * $p < .05$.

Table 3 are positive and significant. Knowledge of what COOL stands for and industry involvement showed low relationships, while awareness of COOL and labeling policies and industry involvement showed substantial relationships.

Table 4 shows the relationships between information sources used for COOL and agricultural and beef industry involvement. All relationships are low; however, "have not heard of COOL" and agricultural (r_{pb} = –.20) and beef industry (r_{pb} = –.20) involvement are the only negative relationships reported. The relationships were significant at alpha level .05 for both agricultural and beef industry involvement and the following items: have not heard of COOL, family/friends, Internet, newspaper, magazine, and radio. The strongest associations were between agricultural (r_{pb} = .35) and beef industry (r_{pb} = .29) involvement and use of magazines as a resource for COOL.

Table 5 shows the relationships between sources of information, awareness of labeling policies, and awareness of COOL. There was a low, negative correlation between perceived knowledge of COOL and "have not heard of COOL" (φ = –.17), which was significant at alpha level .05 and was the only negative relationship in the column. The relationship between awareness of labeling policies and "have not heard of COOL" was a low, negative relationship (r_{pb} = –.25) significant at alpha level .05. The relationship between "have not heard of COOL" and perceived awareness of COOL was a moderate, negative relationship (r_{pb} = –.41) significant at alpha level .05. The other information sources showed positive relationships with perceived knowledge and awareness variables, and many were significant at alpha level .05. Awareness of COOL overall had stronger relationships with the information sources for COOL.

Conclusions and Recommendations

First, twice as many women responded to the survey, but it was expected that more women would respond as the study targeted primary household grocery buyers. In Loureiro and Umberger's (2003) study of COOL, they found that females are most often the household grocery shoppers. Respondents in the current study were primarily Caucasian (n = 332, 83.8%). This is not representative of the U.S. population, which according to the latest census is 75.1% Caucasian (U.S. Census Bureau, 2002). Respondents' ages

Table 4. Relationships Between Industry Involvement and Information Sources Used for COOL

Information source	Agricultural Industry Involvement (r_{pb})	Beef Industry Involvement (r_{pb})
Don't know	.07	.06
Have not heard of COOL	–.20*	–.20*
Family/Friends	.23*	.23*
Internet	.20*	.22*
Newspaper	.18*	.17*
Magazine	.35*	.29*
Radio	.19*	.18*
Supermarket advertisement	.08	.12
Television	.03	.03

Note. * p < .05.

Table 5. Relationships Between Knowledge/Awareness and Information Sources Used for COOL

Information source	Knowledge of COOL (φ)	Awareness of Labeling Policies (r_{pb})	Awareness of COOL (r_{pb})
Don't know	.04	.05	.12*
Have not heard of COOL	–.17*	–.25*	–.41*
Family/Friends	.18*	.22*	.30*
Internet	.17*	.23*	.33*
Newspaper	.20*	.16*	.26*
Magazine	.23*	.29*	.37*
Radio	.21*	.18*	.29*
Supermarket advertisement	.06	.20*	.17*
Television	.07	.13*	.27*

Note. * p < .05.

were more diverse, ranging 66 years, with a mean age of 48.63 (*SD* = 14.33), which is above the U.S. average age of 35.3 years. Education level was also diverse, as it ranged from less than a high school education to a completion of a doctorate degree, with most respondents indicating they had some college education (*n* = 115, 29%) or a bachelor's degree (*n* = 100, 25.3%). The latest U.S. Census showed 21% of U.S. citizens having some college education but no degree, and 15.5% holding a bachelor's degree. The sample, therefore, had obtained slightly more education overall compared to education levels of the U.S. population. Respondents' residences represented 42 of 50 U.S. states. Income levels were comparable to the latest U.S. Census data. The largest proportion of respondents (17.4%) indicated that they make between US$45,000 and US$59,000 per year. The latest U.S. Census showed the largest proportion of people (19.5%) made between US$50,000 and US$74,000 annually. Respondents indicated overall that they had low involvement in agriculture and the beef industry. This is not surprising because so few people in the United States remain directly involved in agricultural production.

At the beginning of the questionnaire, participants were asked if they knew what COOL stands for in regards to food-buying. Only 10 (13.7%) reported that COOL stands for country-of-origin labeling, while 47 (64.4%) said COOL was related to temperature or keeping products cold, refrigerated, or frozen. It was evident respondents did not know what the COOL acronym stands for or were confused by the question. Nearly three-quarters of the respondents said they had not noticed the country-of-origin label before when purchasing beef products. Respondents who had noticed the label reported seeing country-of-origin labels in many different and inconsistent places on the beef products, such as the top or bottom of the package. These differences could be attributed to the fact that the exact location of the country of origin on the label package is not mandated and therefore is inconsistent.

When asked to indicate from which country or countries the last beef product they purchased had originated, most respondents reported the United States or that they did not know. More respondents indicated their last beef product originated in the United States (*n* = 216) than the number of respondents who said they had noticed the country-of-origin label (*n* = 110) on the last beef product they purchased. Perhaps some of the respondents simply assumed their last product purchased was a U.S.-origin product.

Most respondents said they had not heard of country-of-origin labeling (*n* = 287, 72.5%). If respondents had heard of COOL, the data showed they used a combination of interpersonal and mass media resources to find out about COOL. Although supermarket advertisements were the most utilized resource for making food purchases, very few respondents heard about COOL from a supermarket advertisement. Interestingly, a few respondents said the survey they were completing was the first time they had heard of COOL.

Despite the variance in the information sources used to find information about COOL, most respondents admitted they were still unaware of the policy more than 11 months after it was implemented in the United States. Although most respondents had not heard of COOL and were not aware of the label on their beef, they still put a relatively high importance on having the label on their ground beef, roast, steak, and stew meat.

As self-reported involvement in the agricultural and beef industries increased, self-perceived knowledge of what COOL means also increased; therefore, those with more involvement in agriculture and beef were more likely to say they knew what COOL stood for and the more they believed they knew about COOL for beef and beef labeling policies. When examining the relationships between sources used to get information about COOL and respondents' involvement in the agricultural and beef industries, the use of magazines to get information about COOL showed the strongest relationship with agricultural and beef industry involvement. This indicates that people involved in the agricultural and beef industries were more apt to hear about COOL from a maga-

zine. Prior studies have found that people involved in agriculture rely on farm publications for information (Ford & Babb, 1989; Wadud, Kreuter, & Clarkson, 1998; Naile, 2006).

The sample used in this research study was a quota sample of primary household grocery buyers, so results cannot be inferred to the entire population of U.S. primary household grocery buyers. Overall, respondents in this study were not very knowledgeable or aware of COOL, but they still believed COOL is an important concept. Respondents' level of perceived awareness of beef labeling policies and COOL for beef was also low. Answers to open-ended questions regarding respondents' beliefs as to the purpose of COOL were varied. According to Rogers' (2003) diffusion theory, complexity adversely affects the adoption of an innovation in a social system. The contradictory statements about the purpose of COOL from the Department of Agriculture and farm organizations, likely shared through food safety and food industry mass media news, have led to the many interpretations of COOL by the respondents of this survey, generated more complexity in the issue, and have indeed generated confusion among consumers. These findings justify the need for practitioners to provide a more accurate description of COOL in their communication efforts. Policy and industry leaders alike need to provide a more focused description of the policy when working with the media and in their own communications.

Once a more uniform message is developed about COOL and labeling is consistent on food products, consumer understanding of COOL will likely increase. If COOL is meant to be a marketing tool for U.S. products, the USDA should consider an extensive marketing campaign for U.S. products such as one implemented in Australia (see Juric & Worsley, 1998). Policy-makers and -implementers need to be aware that marketing U.S. products is not likely to help alleviate trade barriers produced by COOL, especially with the United States' North American trade partners already reporting a decline in their U.S. exports. Communicators should focus on the most utilized communication outlets—supermarket advertisements and family and friends—to provide consumers with more information about COOL for beef. This might make consumers more knowledgeable and aware of COOL, but perhaps more importantly, it can also help clarify the purpose of the policy and decrease the amount of confusion.

This study focused strictly on beef, while COOL applies to a wide variety of other fresh foods; therefore, there are many opportunities to study COOL as it relates to other food products. Furthermore, COOL could be studied in greater detail using qualitative methods to make more sense of consumers' knowledge, awareness, and perceptions of COOL and how these factors motivate food purchases. Regional studies using focus groups, interviews, or other qualitative methods might provide more understanding of how consumers from specific areas relate to COOL. More research also needs to be performed looking at how COOL is portrayed in a variety of information sources. As shown in this study, consumers use many different methods to obtain information, and the information they have received about the purpose of COOL has been contradictory. A closer examination of consumer perceptions of COOL and the information sources they utilize is needed, as COOL policy could be adjusted based on the concerns of consumers, the food marketing chain, government and political leaders, and the vital world trade partners of the United States.

This study looked at factors relating to COOL from the perspective of the U.S. primary household grocery buyer. These people are an influential part of the food chain, because they generate demand for particular food products. This study found that while this sample of household grocery buyers believed COOL is important, they did not know much about it and what it truly means close to a year after COOL was mandated. As COOL diffuses into the marketing system, more people might become more knowledgeable about it and use it to make food purchases. In addition to consumers, many others in the food marketing chain have been affected by COOL. Farmers, processors, marketers, handlers, consumers, governments, and the general public have stakeholder interests in the

safety and cost-effectiveness of global agri-food supply chains (Opara, 2003). Quantitative and qualitative studies focusing on knowledge and awareness, perceptions, and behaviors of farmers, processors, packers, and retailers in the beef industry would provide an even broader understanding of how to work through the issues that COOL in the United States brings to the table both literally and figuratively. 

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Appendix:
Instrument

zoomerang

U.S. consumer perceptions of food buying and handling

Created: July 06 2009, 8:52 AM
Last Modified: July 06 2009, 8:52 AM
Design Theme: Basic Blue
Language: English
Button Options: Labels
Disable Browser "Back" Button: False

U.S. consumer perceptions of food buying and handling

Question 1 - Yes or No

In regard to food buying, do you know what COOL stands for?

- ○ Yes
- ○ No
- ○ If Yes, please describe.

Question 2 - Yes or No

Do you or anyone in your household eat beef, poultry, pork or other meat products?

- ○ Yes
- ○ No [Skip to 33]

Question 3 - Choice - Multiple Answers (Bullets)

In the past month, which of the following beef products have you purchased? (Check all that apply)

- ☐ Ground Beef
- ☐ Roast
- ☐ Steak
- ☐ Stew Meat
- ☐ Other, please specify.

Question 4 - Choice - One Answer (Bullets)

How often do you purchase ground beef from a grocery store, supermarket, or related retailer each month?

- ○ Never
- ○ Once
- ○ 2-5 times
- ○ More than 5 times

Question 5 - Choice - One Answer (Bullets)

How often do you purchase a beef product (other than ground beef) from a grocery store, supermarket, or related retailer each month?

- ○ Never
- ○ Once
- ○ 2-5 times
- ○ More than 5 times

Question 6 - Choice - One Answer (Bullets)

How often do you eat ground beef in your home each month?

- ❍ Never
- ❍ Once
- ❍ 2-5 times
- ❍ More than 5 times

Question 7 - Choice - One Answer (Bullets)

How often do you eat beef (other than ground beef) in your home each month?

- ❍ Never
- ❍ Once
- ❍ 2-5 times
- ❍ More than 5 times

Question 8 - Choice - One Answer (Bullets)

How often do you read food labels when purchasing ground beef for consumption?

- ❍ Never
- ❍ Seldom
- ❍ Often
- ❍ Always

Question 9 - Choice - One Answer (Bullets)

How often do you read food labels when purchasing a beef product (other than ground beef) for consumption?

- ❍ Never
- ❍ Seldom
- ❍ Often
- ❍ Always

Question 10 - Rating Scale - Matrix

How important are each of the following parts of a ground beef label to you?

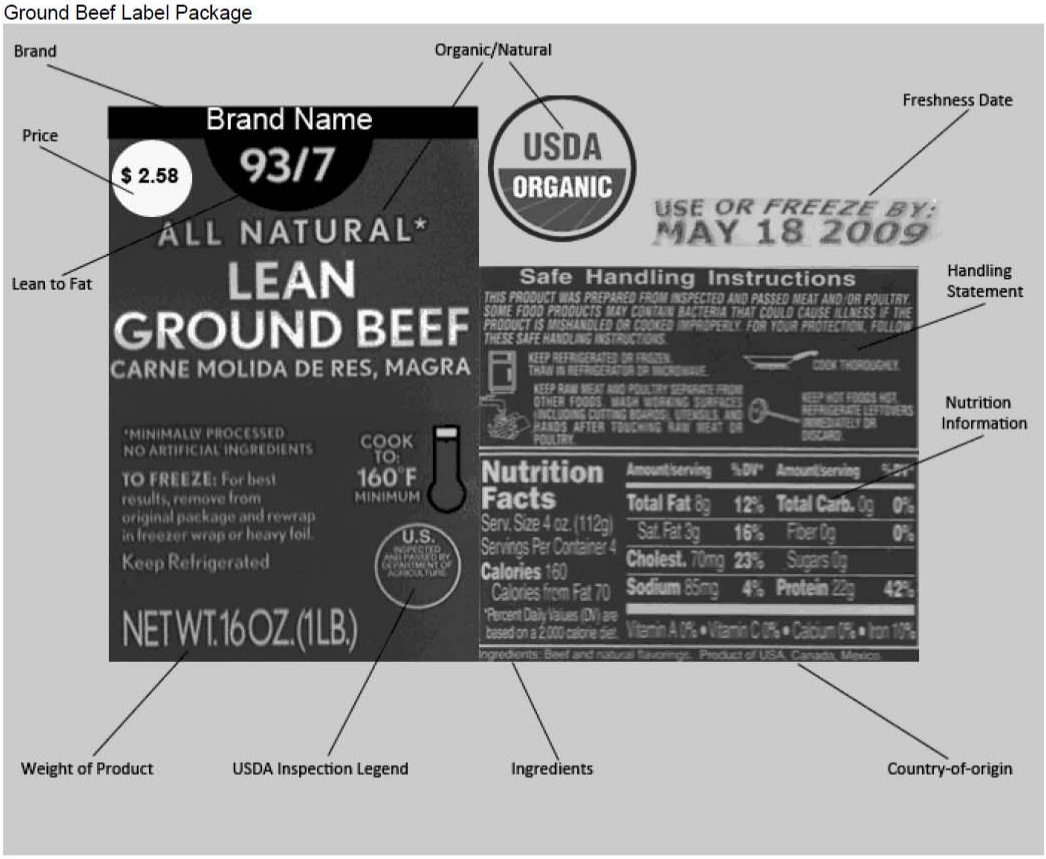
	Not at all important	2	Somewhat important	4	Very important
a. Brand	❍	❍	❍	❍	❍
b. Country-of-origin	❍	❍	❍	❍	❍
c. Freshness date	❍	❍	❍	❍	❍
d. Handling statement	❍	❍	❍	❍	❍
e. Ingredients	❍	❍	❍	❍	❍
f. Lean to fat	❍	❍	❍	❍	❍
g. Nutrition information	❍	❍	❍	❍	❍
h. Organic/Natural	❍	❍	❍	❍	❍
i. Price	❍	❍	❍	❍	❍
j. USDA inspection legend	❍	❍	❍	❍	❍
k. Weight of product	❍	❍	❍	❍	❍

Question 11 - Rating Scale - Matrix

How important are each of the following parts of a beef product label (other than ground beef) to you?

	Not at all important	2	Somewhat important	4	Very important
a. Brand	❍	❍	❍	❍	❍
b. Country-of-origin	❍	❍	❍	❍	❍
c. Freshness date	❍	❍	❍	❍	❍
d. Handling statement	❍	❍	❍	❍	❍
e. Ingredients	❍	❍	❍	❍	❍
f. Nutrition information	❍	❍	❍	❍	❍
g. Organic/Natural	❍	❍	❍	❍	❍
h. Price	❍	❍	❍	❍	❍
i. Quality grade	❍	❍	❍	❍	❍
j. USDA inspection legend	❍	❍	❍	❍	❍
k. Weight of product	❍	❍	❍	❍	❍

Ground Beef Label Package



Heading

Based on the above FDA-approved label package for ground beef, choose your preference for the following questions:

Question 12 - Choice - One Answer (Drop Down)

What is the most important to you?

- ○ Brand
- ○ Country-of-origin
- ○ Freshness date
- ○ Handling statement
- ○ Ingredients
- ○ Lean to fat
- ○ Nutrition information
- ○ Organic/Natural
- ○ Price
- ○ USDA inspection legend
- ○ Weight of product

Question 13 - Choice - One Answer (Drop Down)

What is the second most important to you?

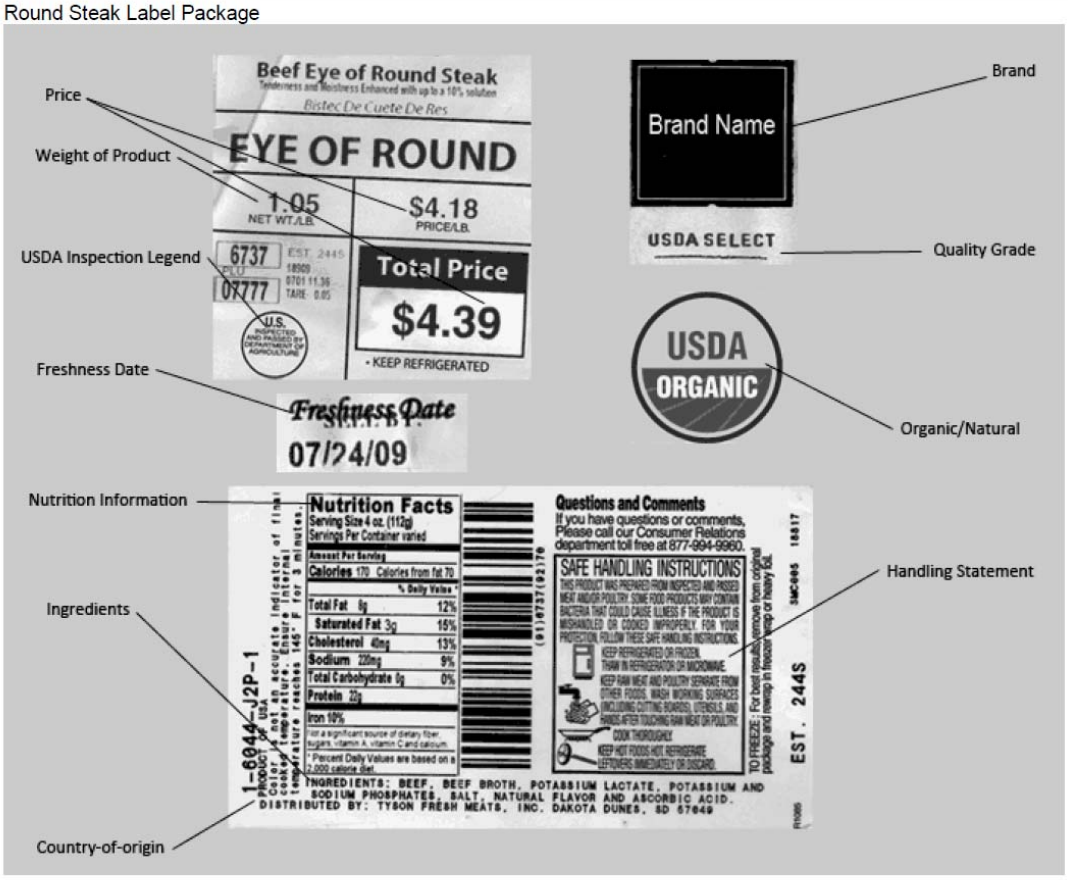
- ○ Brand
- ○ Country-of-origin
- ○ Freshness date
- ○ Handling statement
- ○ Ingredients
- ○ Lean to fat
- ○ Nutrition information
- ○ Organic/Natural
- ○ Price
- ○ USDA inspection legend
- ○ Weight of product

Question 14 - Choice - One Answer (Drop Down)

What is the third most important to you?

- ○ Brand
- ○ Country-of-origin
- ○ Freshness date
- ○ Handling statement
- ○ Ingredients
- ○ Lean to fat
- ○ Nutrition information
- ○ Organic/Natural
- ○ Price
- ○ USDA inspection legend
- ○ Weight of product

Round Steak Label Package



Heading

Based on the above FDA-approved label package for a beef product (other than ground beef), choose your preference for the following questions:

Question 16 - Choice - One Answer (Drop Down)

What is the most important to you?

- ○ Brand
- ○ Country-of-origin
- ○ Freshness date
- ○ Handling statement
- ○ Ingredients
- ○ Nutrition information
- ○ Organic/Natural
- ○ Price
- ○ Quality grade
- ○ USDA inspection legend
- ○ Weight of product

Question 17 - Choice - One Answer (Drop Down)

What is the second most important to you?

- ○ Brand
- ○ Country-of-origin
- ○ Freshness date
- ○ Handling statement
- ○ Ingredients
- ○ Nutrition information
- ○ Organic/Natural
- ○ Price
- ○ Quality grade
- ○ USDA inspection legend
- ○ Weight of product

Question 18 - Choice - One Answer (Drop Down)

What is the third most important to you?

- ○ Brand
- ○ Country-of-origin
- ○ Freshness date
- ○ Handling statement
- ○ Ingredients
- ○ Nutrition information
- ○ Organic/Natural
- ○ Price
- ○ Quality grade
- ○ USDA inspection legend
- ○ Weight of product

Question 19 - Choice - One Answer (Drop Down)

What is the least important to you?

- ○ Brand
- ○ Country-of-origin
- ○ Freshness date
- ○ Handling statement
- ○ Ingredients
- ○ Nutrition information
- ○ Organic/Natural
- ○ Price
- ○ Quality grade
- ○ USDA inspection legend
- ○ Weight of product

Question 20 - Rating Scale - Matrix

How likely are you to purchase a beef product that originated in these countries?

	Not at all likely	2	Somewhat likely	4	Very likely
a. Argentina	❍	❍	❍	❍	❍
b. Australia	❍	❍	❍	❍	❍
c. Brazil	❍	❍	❍	❍	❍
d. Canada	❍	❍	❍	❍	❍
e. Costa Rica	❍	❍	❍	❍	❍
f. Honduras	❍	❍	❍	❍	❍
g. Mexico	❍	❍	❍	❍	❍
h. Nicaragua	❍	❍	❍	❍	❍
i. New Zealand	❍	❍	❍	❍	❍
j. United States	❍	❍	❍	❍	❍
k. Uruguay	❍	❍	❍	❍	❍

Question 21 - Rating Scale - Matrix

How important do you feel it is to have a country-of-origin label on the following beef products?

	Not at all important	2	Somewhat important	4	Very important
Ground beef	❍	❍	❍	❍	❍
Roast	❍	❍	❍	❍	❍
Steak	❍	❍	❍	❍	❍
Stew Meat	❍	❍	❍	❍	❍

Question 22 - Yes or No

Have you ever noticed the country-of-origin label on the beef products you have purchased?

- ❍ Yes
- ❍ No
- ❍ If Yes, please explain where the label or labels were located.

Question 23 - Choice - One Answer (Bullets)

Where do you prefer to see the country-of-origin label for beef? (Select your most preferred choice)

- ❍ On top of each package so it is visible
- ❍ Anywhere on the package, even if not visible
- ❍ Sign over the meat case
- ❍ No preference
- ❍ Other, please specify.

Question 24 - Choice - Multiple Answers (Bullets)

Think about the last beef product you purchased. From what country or countries did this product originate? (Check all that apply)

- ❑ Argentina
- ❑ Australia
- ❑ Brazil
- ❑ Canada
- ❑ Costa Rica
- ❑ Honduras
- ❑ Mexico
- ❑ Nicaragua
- ❑ New Zealand
- ❑ United States
- ❑ Uruguay
- ❑ Don't Know
- ❑ Other, please specify

Question 25 - Choice - Multiple Answers (Bullets)

Where do you receive information to make your food purchasing decisions? (Check all that apply)

- ❑ Family/Friends
- ❑ Internet
- ❑ Newspaper
- ❑ Magazine
- ❑ Radio
- ❑ Supermarket Advertisement (in store or mail)
- ❑ Television
- ❑ Other, please specify

Question 26 - Rating Scale - Matrix

Please indicate how strongly you disagree or agree with the following statements regarding U.S.-origin (domestic) beef and imported beef.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
a. I am concerned with the purity of U.S.-origin beef.	❍	❍	❍	❍	❍
b. I am concerned with the safety of U.S.-origin beef.	❍	❍	❍	❍	❍
c. I am concerned with U.S.-origin beef carrying a disease.	❍	❍	❍	❍	❍
d. I am concerned with the purity of imported beef.	❍	❍	❍	❍	❍
e. I am concerned with the safety of imported beef.	❍	❍	❍	❍	❍
f. I am concerned with imported beef carrying a disease.	❍	❍	❍	❍	❍
g. U.S.-origin beef is higher quality than imported beef.	❍	❍	❍	❍	❍
h. If I had the choice to purchase a U.S.-origin beef product or an imported beef product at the same price, I would purchase the U.S. product.	❍	❍	❍	❍	❍

i. I would pay more for U.S.-origin beef than imported beef.	❍	❍	❍	❍	❍
j. I cannot tell the difference between a U.S.-origin beef product and an imported beef product without reading the label.	❍	❍	❍	❍	❍
k. The U.S. government assures wholesomeness for both U.S.-origin and imported beef.	❍	❍	❍	❍	❍
l. The U.S. government assures cleanliness for both U.S.-origin and imported beef.	❍	❍	❍	❍	❍
m. U.S.-origin beef and imported beef are often mixed (i.e., hamburger), so they must be of equal quality.	❍	❍	❍	❍	❍
n. I expect retailers to provide me with the best beef available.	❍	❍	❍	❍	❍
o. All beef products sold in grocery stores and supermarkets should include a country-of- origin label.	❍	❍	❍	❍	❍
p. I would prefer that restaurants also provide me with the country-of-origin for beef products.	❍	❍	❍	❍	❍
q. Country-of-origin labeling makes beef more safe to eat.	❍	❍	❍	❍	❍
r. I understand the concept of multi-country-of-origin labeling.	❍	❍	❍	❍	❍

Question 27 - Rating Scale - Matrix

Please indicate how strongly you disagree or agree with the following statements regarding beef buying habits.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
a. I will purchase ground beef of any origin.	❍	❍	❍	❍	❍
b. I will purchase ground beef with a multi-country-of-origin label.	❍	❍	❍	❍	❍
c. I will purchase other beef products (i.e., roast, steak, stew meat) of any origin.	❍	❍	❍	❍	❍
d. I will purchase other beef products (i.e., roast, steak, stew meat) with a multi-country-of-origin label.	❍	❍	❍	❍	❍

Question 28 - Rating Scale - Matrix

Please indicate your involvement or awareness level for the following questions.

	Not at all	2	Somewhat	4	Quite a lot
a. How involved are you in the agricultural industry?	❍	❍	❍	❍	❍
b. How involved are you in the beef industry?	❍	❍	❍	❍	❍
c. How aware are you of the labeling policies of beef?	❍	❍	❍	❍	❍
d. How aware are you about mandatory country-of-origin labeling (COOL) for beef?	❍	❍	❍	❍	❍

Question 29 - Choice - One Answer (Bullets)

How many times have you heard about mandatory country-of-origin labeling (COOL) in the past year?

- ❍ Never
- ❍ Once
- ❍ 2-5 times
- ❍ More than 5 times

Question 30 - Choice - Multiple Answers (Bullets)

If you have heard about mandatory country-of-origin labeling (COOL), what sources provided you with the information? (Check all that apply)

- ❑ Family/Friends
- ❑ Internet
- ❑ Newspaper
- ❑ Magazine
- ❑ Radio
- ❑ Supermarket Advertisement (in store or mail)
- ❑ Television
- ❑ Don't Know
- ❑ Have not heard of COOL
- ❑ Other, please specify

Question 31 - Open Ended - Comments Box

What does mandatory country-of-origin labeling (COOL) mean to you?

Question 32 - Open Ended - Comments Box

What do you believe is the purpose of mandatory country-of-origin labeling (COOL) in the United States?

Question 33 - Yes or No

Are you the main meal planner of the household?

- ○ Yes
- ○ No

Question 34 - Choice - One Answer (Drop Down)

What is your state of residence?

- ○ AL
- ○ AK
- ○ AZ
- ○ AR
- ○ CA
- ○ CO
- ○ CT
- ○ DE
- ○ FL
- ○ GA
- ○ HI
- ○ ID
- ○ IL
- ○ IN
- ○ IA
- ○ KS
- ○ KY
- ○ LA
- ○ ME
- ○ MD
- ○ MA
- ○ MI
- ○ MN
- ○ MS
- ○ MO
- ○ MT
- ○ NE
- ○ NV
- ○ NH
- ○ NJ
- ○ NM
- ○ NY
- ○ NC
- ○ ND
- ○ OH
- ○ OK
- ○ OR
- ○ PA
- ○ RI
- ○ SC
- ○ SD
- ○ TN
- ○ TX
- ○ UT

- ○ VT
- ○ VA
- ○ WA
- ○ WV
- ○ WI
- ○ WY

Question 35 - Choice - One Answer (Bullets)

How would you classify your place of residence?

- ○ Rural
- ○ Town (500-2,500 people)
- ○ Large town (2,501-25,000 people)
- ○ Small city (25,001-100,000 people)
- ○ Medium city (100,001-500,000 people)
- ○ Large city (more than 500,000 people)

Question 36 - Open Ended - One Line

In what year were you born?

Question 37 - Choice - One Answer (Bullets)

What is your gender?

- ○ Male
- ○ Female

Question 38 - Choice - One Answer (Drop Down)

What race/ethnicity do you most identify with?

- ○ Non-Hispanic Caucasian
- ○ Non-Hispanic African American
- ○ Non-Hispanic Asian American
- ○ Non-Hispanic Native American
- ○ Other, Non-Hispanic
- ○ Hispanic-Puerto Rican
- ○ Hispanic-Mexican
- ○ Hispanic-Mexican American
- ○ Hispanic-Cuban
- ○ Hispanic-Cuban American
- ○ Hispanic-Central American
- ○ Hispanic-South American
- ○ Other-Hispanic

Question 39 - Choice - One Answer (Bullets)

Are you a citizen of the United States?

- ○ Yes, born in the United States
- ○ Yes, born in Puerto Rico, Guam, the U.S. Virgin Islands, or Northern Marianas
- ○ Yes, born abroad of American parent or parents

- ○ Yes, U.S. citizen by naturalization or other legal means
- ○ No, not a citizen of the United States

Question 40 - Choice - One Answer (Bullets)

What is your household status?

- ○ Single adult
- ○ Single parent with child/children
- ○ Couple without children
- ○ Couple with child/children
- ○ Other, please specify

Question 41 - Choice - One Answer (Bullets)

What is your current employment status (choose the most fitting answer)?

- ○ Unemployed
- ○ Employed
- ○ Homemaker
- ○ Retired
- ○ Student

Question 42 - Choice - One Answer (Drop Down)

How many hours a week do you work outside the home?

- ○ 0-10
- ○ 11-20
- ○ 21-30
- ○ 31-40
- ○ 41-50
- ○ >50

Question 43 - Choice - One Answer (Bullets)

What is the estimated total income for your household?

- ○ Less than $15,000
- ○ $15,000-$29,999
- ○ $30,000-$44,999
- ○ $45,000-$59,999
- ○ $60,000-$74,999
- ○ $75,000-$89,999
- ○ $90,000-$105,000
- ○ More than $105,000

Question 44 - Choice - One Answer (Bullets)

What is your highest level of education?

- ○ Less than a high school education
- ○ Some high school education (no graduate)
- ○ High school graduate (diploma or GED)
- ○ Technical school

- ○ Some college education
- ○ Associate's degree
- ○ Bachelor's degree
- ○ Master's degree
- ○ Doctorate degree

End of survey

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Reforming our industrial agriculture economy

Book review: *Revolution of the Middle…and The Pursuit of Happiness* by John Ikerd

Review by Frederick Kirschenmann

John Ikerd (2011). *Revolution of the Middle...and The Pursuit of Happiness.* Available online at http://sites.google.com/site/revolutionofthemiddle/. Also available as an audio book (read by the author) at http://www.johnikerd.com/johnikerd.com/Revolution_of_the_Middle.html.

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John Ikerd, a deep-thinking economist who, among other things, taught economics at four major state universities, reminds us that he went through a mid-career transformation. As he puts it, "I spent the first half of my career as an advocate of conservative, free-market economic thinking," but the reality of the functioning economy convinced him that this "neoclassical concept of capitalism is simply not sustainable." This awareness put Ikerd on an intellectual journey, devoting his life to the question of "what we must do, individually and collectively, not only to create a sustainable economy but also to sustain society and humanity." His most recent book, *Revolution of the Middle . . . and The Pursuit of Happiness,* is his most recent view of that long journey.

Much of neoclassical economic thinking is based on the money economy, which largely focuses on short-term economic return and therefore is committed to a future of unlimited economic growth. It mostly ignores the unintended consequences that, in fact, make continued growth impossible. It also focuses all of our attention on material wealth, largely ignoring our actual well-being. It is interesting that studies like those highlighted by Tim Kasser in his enlightening book, *The High Price of Materialism,* point out that as our material wealth has dramatically increased in the past half century, all the indicators of our well-being have actually decreased.

It is these negative consequences, along with the destruction that this extractive and exploitive

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economy is doing to our natural world, that has led Ikerd to conclude that this economy is simply not sustainable very far into the future. The alternative economy that he proposes would focus less on "stuff" and more on the "pursuit of happiness." As Ikerd points out, the Declaration of Independence, which articulated the American dream, guaranteed us the right to "life, liberty and the pursuit of happiness," not the pursuit of wealth! Ikerd's work provides the average reader with a very readable and inspiring account of how to begin our process of pursuing greater happiness and quality of life, instead of continuing our pursuit of more "stuff" at the expense of our well-being and the health of the planet. Anyone interested in that transformation should read this book.

Ikerd's vision is particularly relevant to understanding our current economic crisis. Both conservatives and liberals today seem to be focused on the question of how to get the economy back on track. But the core problem of our present economic paradigm is that our economy is, as Ikerd keeps pointing out, not sustainable. Consequently, simply trying to restore the economy to a time when it was performing a bit better will not solve our long-term problems. Herman Daly has pointed out for 30 years or more that our human economy is a subsystem of the ecosystem, and that we must therefore design it to function within the constraints of a functioning ecosystem rather than manage it like a "bubble floating in space." So until we are willing to redesign our economy so that it restores what it depletes, cleans up what it pollutes, and is adaptive to changing social, ecological, and economic cycles, we will not have a sustainable world. Changing our focus from pursuing wealth to pursuing happiness, or well-being, is therefore a necessary part of designing the new economy. Ikerd's book goes a long way toward helping us envision how we might do that.

This is, of course, no easy task. We have developed a culture that convinces us that the human species is separate from nature, that it can dominate nature, that material wealth is synonymous with well-being and that we are individually responsible for achieving such wealth regardless of the consequences to our communities or our natural world. The notion that we are "simply plain members and citizens" of the rest of the biotic community, as Aldo Leopold put it, consequently is hard for us to imagine. Yet such a cultural shift is essential to the kind of changed behavior that is essential to avoiding the potential catastrophes of climate change, diminished biodiversity and genetic diversity, and dysfunctional societies. As Herman Daly has pointed out, we harbor three great "anathemas" in our culture, ideas that we do not even want to talk about, let alone do anything about. They are (1) questioning the viability of unlimited growth, (2) entertaining the notion that there are limits to population growth, and (3) exploring the means of a more equitable distribution of wealth among the global community. All of these are part of designing an economy that enables us to "guarantee the right to life, liberty and the pursuit of happiness" to the global family. John Ikerd's book goes a long way to helping us understand how we can begin this long journey of redesigning our economy.