

Native American agriculture and food systems: Challenges and opportunities presented by the COVID-19 pandemic

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Abstract

The COVID-19 pandemic has unveiled deep and systemic weaknesses and gross inequalities in U.S. food and farming systems, compounding the effects of an already unjust food and agricultural system. Emergent studies reveal disproportionate effects of the pandemic on minority farmers and vulnerable communities, as well as inequitable access to critical relief programs. Less is understood about the experiences and responses of Native American producers, tribal governments, and tribal-led organizations to the COVID-19 cri-

sis. As the nation's primary Native American agriculture and natural resources organization, serving 574 Federally Recognized Tribal communities throughout the United States, the Intertribal Agriculture Council (IAC) received a resounding increase in inquiries during the pandemic pertaining to a number of challenges that tribal producers and governments face. In response, IAC launched a series of national surveys to assess the impacts and needs of Native American producers, tribal governments, and grocery stores in and near tribal communities, with the goal of identifying effective

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strategies to address tribal priorities in policy and programming. As we continue to learn about the causes and consequences of food system ruptures during the COVID-19 pandemic, it has become abundantly clear that increased investment in and sovereignty over decentralized regional food and farming systems' infrastructure and markets are needed to strengthen the economic viability and resilience of Native American agriculture and food systems.

Keywords

Agriculture, Food Systems, Native Americans, COVID-19, Pandemic, Intertribal Agriculture Council, American Indian/Alaska Native, Food Sovereignty, Supply Chains

Introduction

As the impacts of COVID-19 began to reverberate across the nation, it became evident that our food system was woefully unprepared to respond to the chaos that ensued: grocery store shelves ran empty while farmers across the country suffered drastic market losses. Researchers found not only disproportionate impacts on minority farmers (Haqiqi & Horeh, 2021) but also inequitable access to relief programs, which disproportionately benefited larger-scale and better-resourced farm operations (Brown, 2020). According to Haqiqi and Horeh (2021), small-scale producers and Hispanic and African American–operated farms suffered the most loss of productivity during COVID-19, with livestock producers losing twice as much as crop producers. Another study found that COVID-19 relief funds intended to support struggling agricultural producers were actually distributed to wealthier and large-scale land owners rather than those truly at risk in the crisis (Brown, 2020). Yet very little information was being generated about the impact of COVID-19 on Native American producers,¹ a sector of producers with a history of vulner-

ability through inequitable resource allocation and support.

As the nation's primary Native American agriculture and natural resources organization, serving 574 Federally Recognized Tribal communities throughout the United States, the Intertribal Agriculture Council's (IAC) capacity and integration into tribal communities are unmatched. As the effects of the pandemic deepened, IAC received a resounding uptick in inquiries pertaining to a host of issues with which tribal producers and governments were contending. With the impacts of COVID-19 being felt so resoundingly across the country, and especially within rural tribal communities, it became imperative to inform the U.S. Department of Agriculture (USDA) and IAC's multisectoral partners of the unique and exacerbated issues tribal producers and communities were facing (Hoover, 2020). IAC responded quickly, launching a series of surveys to assess the impact on and needs of Native American producers, tribal governments, and grocery stores in and near tribal communities. In collaboration with academic researchers from The University of California Berkeley, The Pennsylvania State University, and the Indigenous Food and Agriculture Initiative (IFAI), IAC analyzed the results of these surveys to better understand both the impact of the COVID-19 pandemic on Native American farmers and food systems as well as tribal-identified needs and priorities. The results are intended to help inform programming that serves Native American producers and communities as well as 2023 farm bill priorities. As we continue to learn about the causes and consequences of food system ruptures during the COVID-19 pandemic, it has become abundantly clear that increased investment in and sovereignty over regional food and farming systems infrastructure and markets are needed in order to strengthen the economic viability and resilience of Native American agriculture and food systems.

¹ In this article, we use the term Native American or Native when referencing the people or communities (inclusive of all Native American and Alaska Native people residing in the U.S.), and we use AI/AN (American Indian/Alaska Native) when referring to statistics from government documents. The term *producer* describes the spectrum of entities across Indian Country that the Intertribal Agriculture Council engages with that may include, but are not limited to individuals, tribes, tribal for-profit and nonprofit corporations, cooperatives, organizations, collectives, associations, and others engaging in intentional land or waterway management for food, fiber, medicines, and other cultural products.

This paper begins with an overview of historical injustices against and the resilience of Indigenous producers, followed by a methods section describing the IAC-led surveys and data analysis. Next, through our results, we detail the impact of COVID-19 on Native American producers, food systems, and communities through the experiences and voices of Native American producers and leaders as well as broader trends identified in the survey. We also report desired resources to mitigate the impact and foster resilience. We end with a discussion of our findings, emphasizing the need to shorten and decentralize supply chains, scale up direct marketing, and enable more tribal-owned and -operated food production, highlighting key avenues of investment.

COVID-19 Exacerbates Historical Inequities in Indian Country

According to the 2017 USDA Agriculture Census, there are 79,198 farms with AI/AN producers² in the U.S., accounting for 2.94% of all American farms and 6.53% of all farmland, largely concentrated in Arizona, Oklahoma, New Mexico, and Texas³ (USDA National Agricultural Statistics Service [USDA NASS], 2017a, 2017b). AI/AN producers are the second most prevalent of all Black, Indigenous, and People of Color (BIPOC) farmers, with a growing population second to Hispanic farmers (USDA NASS, 2017c). These numbers are quite remarkable, given the colonial history and legacy of displacement, chronic underfunding of Indian agriculture, and the longstanding history of discrimination against Native American farmers and ranchers, similar to other minoritized farmers (Brewer & Stock, 2016; Vernon, 2015). Notably, in the historic 1999 Keepseagle lawsuit, plaintiffs alleged that since 1981, the USDA had systematically denied Native American farmers and ranchers the same opportunities as white farmers to access low-interest loans and loan servicing, causing them hundreds of millions of dollars in economic losses

(VanWinkle & Friedman, 2019). In 2011, the U.S. District Court for the District of Columbia approved a US\$760 million settlement, with payments of US\$680 million made to claimants, US\$80 million for debt relief, and the remaining US\$380 million disbursed to organizations and nonprofits serving Native American farmers and ranchers through the Native American Agriculture Fund (NAAF), established for this purpose (NAAF, 2018).

From 2012 to 2017, AI/AN producers and AI/AN-owned farms grew by 7 and 10 percentage points, respectively, during a time when the number of farms in the U.S. actually decreased (USDA NASS, 2017b), suggesting, perhaps, positive results from the Keepseagle settlement, including increased access to capital, financing, and technical assistance from IAC and other organizations serving Native American farmers and ranchers. Yet in spite of these upward trends, even prior to the pandemic, the net cash farm income of AI/AN producers was just one-fifth of all other producers in the U.S., and the market value of products sold by AI/AN producers was less than a third of those produced by other ethnicities (USDA NASS, 2017a). Most AI/AN farms are family farms (96%), yet very few sell directly to consumers (only 6%), and only 1% are certified organic, suggesting that few Native producers profit from higher organic prices and most depend on non-local markets for their livelihoods. The pandemic further stressed and challenged Native American producers and food systems in Indian country, as grocery stores, processing facilities, and marketing outlets were shut down (Stranger-McLaughlin et al., 2021).

Despite the challenges posed by the pandemic, many small-scale producers with internet access and direct access to consumers (i.e., short and flexible supply chains)—a minority in Indian Country—pivoted to mail order and home delivery e-commerce, with direct sales by some tech-savvy

² Those that identified as AI/AN alone or in combination with another race. AI/AN farmers have been undercounted traditionally in the Census of Agriculture; it is likely the count is actually higher (Rosenberg, 2017).

³ While Texas has over 100 million acres in agricultural production, only 1.3 million acres are owned by AI/AN producers, despite a high concentration of AI/AN producers in the state. This reveals a land base that is less tribally run or owned, presumably due to the history of displacing AI/AN people from their tribal homelands throughout the country and forcing their relocation to Texas.

farmers actually predicted to have increased during the pandemic⁴ (Goetz et al., 2020). Many cities and states declared farmers' markets essential services allowing them to remain open when other food retail operations were closed, sustaining this important market for many direct-market producers (Greenaway, 2020). However, as noted earlier, only 6% of Native producers sell direct, and therefore very few were able to take advantage of these local and regional marketing opportunities.

Methods

IAC's membership consists of all 574 Federally Recognized Tribal communities across the country. From April through August 2020, IAC administered a series of surveys (with a follow-up survey in December 2020) as a rapid response to assess COVID-19 impacts on rural tribal communities and Native American producers. Rapid-response, online surveys were a common method employed across the food system to understand COVID-19 impacts while minimizing the risk and spread of COVID-19 (e.g., Riden et al., 2020). The surveys were distributed to all active member tribes in which outreach was deployed within the last five years. An internal committee of IAC leadership and staff designed the surveys utilizing short-answer, multiple-choice, and fill-in questions. Five surveys were conducted that targeted different food system stakeholders: producers (any Native American producer who may have received technical assistance from IAC), American Indian Foods

producers,⁵ tribal leaders, grocery stores in or near tribal areas, and a follow-up survey administered at the virtual, annual IAC conference (see Table 1). Themes covered in the surveys include COVID-19's impact on producers, tribal communities, and grocery stores; response to COVID-19; type of producer and demographics of the respondents; utilization of various technical services (Federally Recognized Tribes Extension Program [FRTEP], Farm Service Agency [FSA], Natural Resources Conservation Service [NRCS], and 4-H); and desired resources to help support producers and communities. Each survey included unique questions as well as some questions that were common to all five surveys. The surveys were administered using Google Forms, a tool that had been used successfully by IAC in the past. Social media posts, email communications, phone calls, promotions on IAC national webinars and a number of partner webinars, and one-to-one remote support were employed across IAC's 12 regions to stimulate participation once the surveys were designed and ready to be deployed. Survey respondents with limited internet access were administered the survey over the phone to minimize the exclusion of respondents with internet limitations.

IAC estimates that around 2,000 people were meaningfully exposed to or reached with the survey through outreach activities. In total, 401 surveys were completed across all five surveys conducted (see Table 1), with an estimated 20% response rate. The responses were analyzed in partnership with

Table 1. Surveys Administered to IAC Members

Survey	Sample Size
Producers survey	249
American Indian Foods producers survey	36
Tribal leaders survey	53
Grocers survey	24
Follow-up producers survey	39

⁴ In 2018, Americans only spent 0.3% of expenditures on food obtained through direct sales (Elitza & Okrent, 2018, in Goetz et al., 2020).

⁵ American Indian Foods producers are those who are officially part of the American Indian Foods program of the Intertribal Agriculture Council, which began in 1998 under contract with the USDA Foreign Agricultural Service. "The partnership was developed as a platform for American Indian food businesses to showcase their products and share Tribal cultures with the world" (IAC, n.d., para. 1).

academic allies from the University of California Berkeley Environmental Science and Policy Management Department and Pennsylvania State University Social Science Research Institute. Quantitative data analysis was done in Stata using descriptive statistics. Qualitative data from open-ended questions were read collectively and then responses were coded by question for prevailing themes emerging from the data. Codes or themes were unique to each question, not uniform among all open-ended questions. After a first round of open coding for each question, coding was reviewed and adjustments such as combining codes, changing code names, moving passages between codes, or making new codes were made. We kept track of the number of responses that fell into each code for each question to understand the magnitude of experience. Our broader team of IAC staff, university researchers, and IFAI staff met over several months through video conference in order to collaboratively discuss and interpret the data and their implications.

Results

Demographics of Survey Participants

All 12 IAC service areas are represented in the survey, with participation fairly spread among regions; the number of respondents ranged from 43 in the Rocky Mountain Region to one in the Southern Plains Region, with a median of 32 among all regions. The majority of producers are 36–65 years old, with 12.3% of producers over the age of 65 and 2.8% of producers under the age of 25. Of the producers surveyed, 94.4% identify as Native American. About a quarter utilized various technical services (FRTEP, FSA, NRCS, and 4-H). Fifteen percent are farm-to-market vendors. Of the producers surveyed, 61.85% are livestock producers, 33.3% grow produce, 23.7% produce other products (including seafood), 15% produce traditional foods, 13.7% are retailers, 10.4% are specialty foods producers, and 5.2% raise nursery products. On average, survey participants produce 1.65 products, with the maximum number of products being 6. Livestock producers were the least diversified, while producers of traditional foods sold 2.86 products, produce producers 2.43 prod-

ucts, and specialty food producers 3.15 products, on average ($N=249$).

Impact of COVID-19 on Producers

Over 85% of producers have been negatively affected by the COVID-19 pandemic ($N=249$), and 53.7% of Native American producers or American Indian Foods producers experienced a complete or partial closure due to the pandemic ($N=285$). Additionally, about 36% of producers expected a loss of future sales and reduction of workforce. Almost half of all producers experienced a backorder or lack of availability of essential supplies ($N=249$) and 33% a supply-chain disruption ($N=285$). Twenty-three (23) producers reported major challenges accessing seeds, noting that seeds were being bought up by the general public, leaving producers without; they also reported challenges accessing feed (grains and hay), equipment and parts, and sanitation supplies due to the closure of stores, or that the products were backordered or delayed in delivery. These findings are broadly important as they illustrate where to target efforts to improve resiliency in markets and supply chains.

In terms of market demand, 52.2% of producers reported a decrease in market demand, 27.3% said market demand remained the same, 20.5% said market demand increased ($N=249$). The latter involved those selling produce, seedlings, beans, hay and/or alfalfa, livestock (for home consumption), traditional foods, and specialty crops and retailers. One farmer who is known to save seed and grow produce saw a doubling in the number of consumers, with an immediate 50% increase in retail sales. However, labor was in short supply, due to shelter-in-place orders, which challenged many farming operations further.

The most dramatic *decrease* in demand was in the livestock industry, with cattle prices at auction way down and some producers reporting up to a 50% reduction in price per pound for cattle, as processing plants shut down—yet consumer prices for beef went up. As one livestock producer stated, “Cattle prices keep dropping. They have been reduced to \$.30 per lb. . . . because of the processing plants being closed down . . . there is nowhere to process them, nowhere to sell them.”

As a result, consumer demand for meat products skyrocketed, such that the general public began “buying up beef calves to fill their own freezer.”

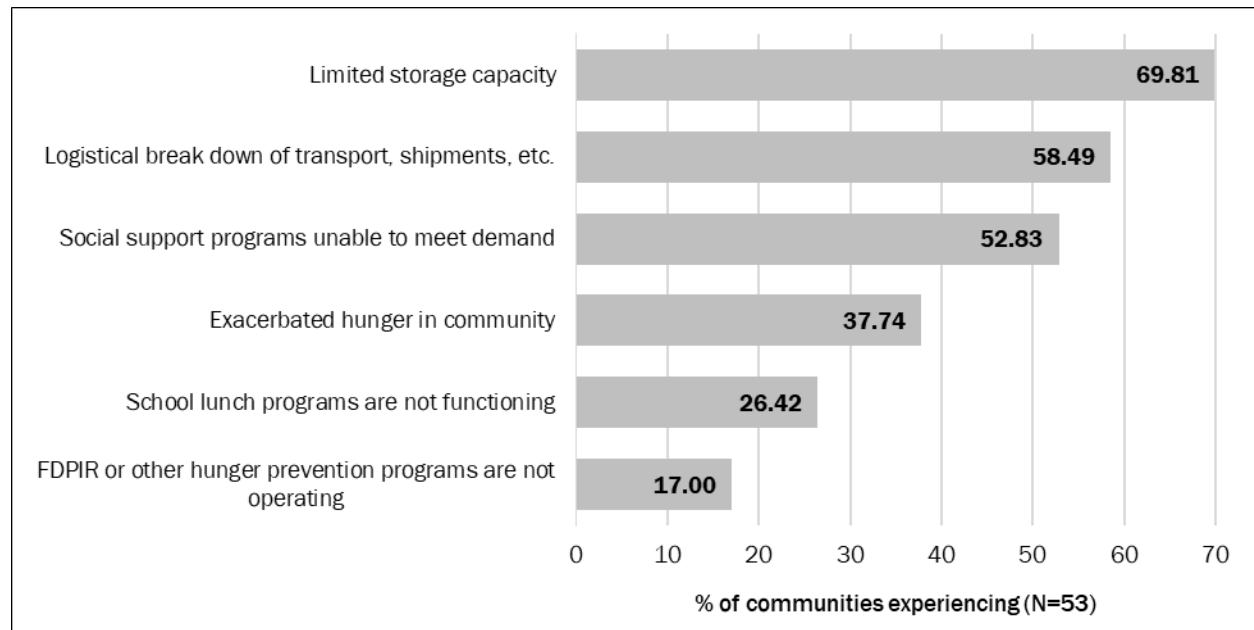
Other respondents in other sectors reported a loss of sales due to a reduction in spending power by consumers, as well as closures of prime sales outlets such as rodeos, events, restaurants, and farmers markets. One farmer stated that previously, “over 70% of our products were sold to restaurants or to distributors that sell to restaurants. The restaurant closures have significantly impacted demand in our largest market.” Another lamented the loss of farmers markets as well, saying “they provide 80% of our income for 5 months of the year.” Restrictions on travel due to shelter-in-place policies further affected product sales. One person cited losses due to expectations that food should be donated during the crisis. In a few cases, tribes tried to procure product from Native producers to distribute to tribal members. As one fisherman noted, “All fish markets that carry our product have closed and are not purchasing fish. However, one opportunity opened as a Tribe wanted to purchase our fish for their foods program, however the sale did not come to fruition.”

Impact of COVID-19 on Food Access and Food Systems in Tribal Communities

Tribal leaders reported interruptions to local food systems, an aggravation of food insecurity, and challenges in maintaining social support and hunger prevention programs (N=53). Seventy-nine percent of tribal leaders said their community had limited essential staples and almost 70% had limited storage capacity for stockpiling of any type of staple foods. Almost 38% said hunger was exacerbated in their community, and over half of the communities had an increased demand for social support programs that could not be met. School lunch programs in 26% of communities stopped functioning, and the Food Distribution Program on Indian Reservations (FDPIR) or other food assistance programs stopped functioning in 17% of communities (Figure 1). In response to new stressors, 34% of tribal leaders reported that they conducted a food security assessment in their community, and 73.6% desired assistance doing so. Additionally, 62.3% of tribal leaders said youth professional development efforts are needed to increase access to food supplies in their community (N=53). While the sample size is comparatively

Figure 1. Proportion of Tribal Communities Experiencing Each Food System Challenge During Spring and Summer 2020 of the First Year of the Pandemic

FDPIR=Food Distribution Program on Indian Reservations



smaller than that of producers surveyed, this information is significant in highlighting the community impacts of these market and supply chain shortcomings and includes tribal leaders from 53 different tribal organizations or entities.

The majority of tribal leaders reported that their communities were negatively affected by COVID-19, but also shared examples of community resilience. One respondent noted, “On the negative side, it’s been challenging for people with mental health issues with a spike in anxiety and other issues. The Tribe has been responding with food access, to reduce stress in access to food. Now the issue is isolation and how to respond to that while keeping people safe.” On the positive side, many tribal governments jumped into action, supporting gardening initiatives and mobilizing relief efforts. Meals were provided to elders and school kids, ensuring food was brought into local smoke shops and other spaces that would not ordinarily sell food as a food-access measure. In several cases, tribal governments stepped in to ensure ongoing access to fresh produce. Additionally, IAC provided individualized technical assistance and COVID-19 relief program outreach to tribal leaders, departments, and Native food and agriculture producers. Respondents cited how the pandemic has brought home the importance of Indigenous food sovereignty, by centering traditional foodways and focusing on gardening and self-sufficiency. It has also brought home the importance of disaster preparedness. One tribal leader spoke about the pandemic being an opportunity to strengthen food sovereignty:

Food donations of fresh vegetables have not always been appreciated by *numerous* community members because they are not used to purchasing fresh vegetables, much less how to prepare them. This is a major problem because many of them have that “commodity mentality” of canned vegetables and processed foods. The “stay at home” C-19 safety measures are an opportunity for families to start a small garden and learn how to diversify their garden beyond the corn and squash.

Food System Challenges Experienced by Grocers In or Near Tribal Communities

Seventy-five percent of grocers in or near tribal communities reported that demand for their products outpaced the supply (N=24). Additionally, 33.3% of grocers said wholesale prices increased and 62.5% experienced wholesale order restrictions or delays. Almost 38% of grocers surveyed said they sourced food from American Indian Foods producers and 87.5% of grocers wanted more information about sourcing wholesale products directly from American Indian Foods producers (N=24).

In response to the question (in the grocers’ survey) about how the pandemic has negatively or positively affected their production and/or business, respondents shared a desire for more decentralized, localized food systems. A few shared examples of how local businesses were able to supply food locally without raising prices. One community supported agriculture (CSA) producer described the challenges associated with the closure of CSA pick-up sites, loss of labor, decline in seed availability, financing needed to develop a website and online sales platform, no-contact delivery, and accessing a communal facility due to COVID-19 restrictions. Another highlighted the clear need to strengthen the resilience of food systems through decentralization to allow for greater flexibility and adaptability during times of crisis, such as by allowing for certification of mobile slaughterhouse facilities. This pandemic also shed light on the importance of having WiFi at farmers markets (to process online transactions), strengthening technology training and record-keeping, and mentoring the next generation of farmers.

Resources Desired by Producers

Producers were asked to identify which resources or information they desired to assist them in marketing or providing their products to their community or target market (see Figure 2); a complementary question provided space for producers to elaborate on their selections. More “financing or funding options” was the most desired selection (62.7%), followed by marketing support (49.4%), networking, resource identification, and technical

assistance⁶ (37.3%), business development (33.3%), and food systems support (28.9%) (Figure 2).

Financing or Funding

When asked to elaborate, again the most ($n=22$) cited need was financial help to get food producing businesses through this difficult financial time, including overcoming the challenges of borrowing money on the reservation, accessing programs to help community members afford to buy food, and general relief and disaster assistance. Respondents were also hoping for “better prices,” particularly related to cattle. Some respondents wanted to subsidize producers “to help support ranchers when prices become low”; others sought funds for consumers to be able to buy their product, such as “funds to subsidize costs for low-income consumers and tribal programs.”

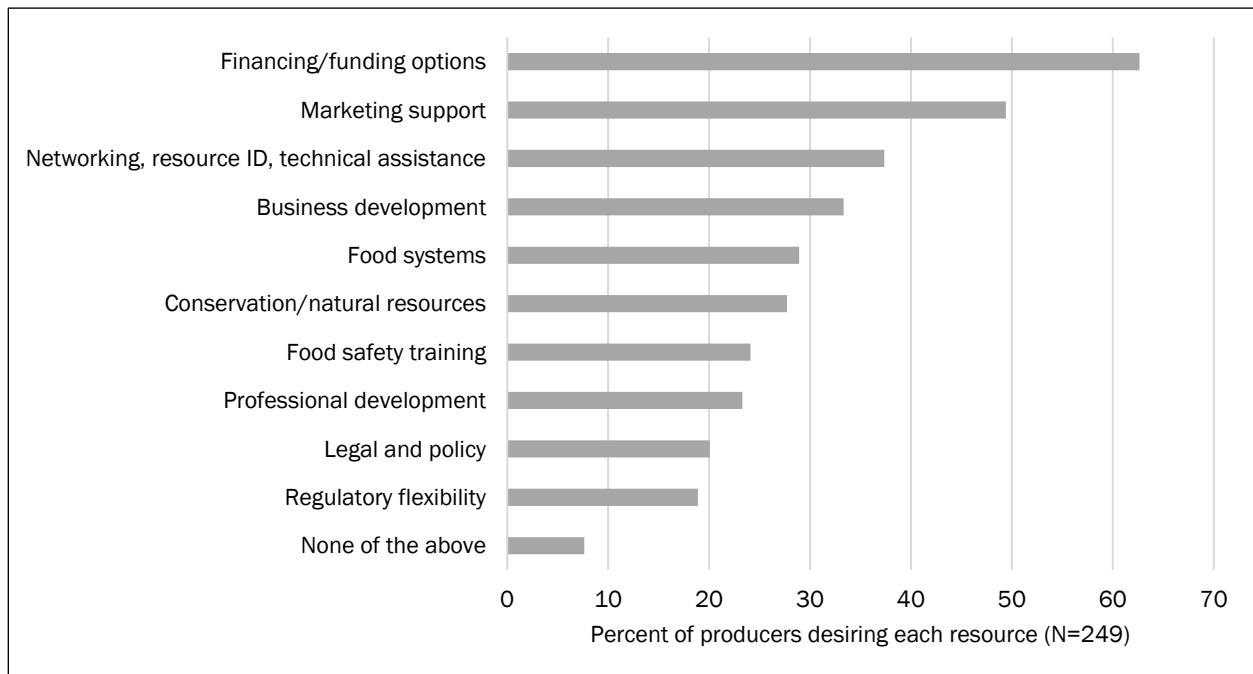
Approximately a year into the pandemic, IAC conference participants ($N=39$) still emphasized the need for better financing support and help applying to specific COVID-19 relief programs.

There was an observed gap in information access between large- and small-scale producers. People mentioned the need for information for *all* producers on accessing USDA resources and financial aid information (existing and upcoming) for short-term, long-term, and emergency programs. Other recommendations included continued financial aid or even multiyear aid to assist in recovery over time, and local, centralized outlets for technical assistance and information related to aid and relief with the option to make an appointment or join a mailing list.

Marketing Support and Advertising

An equally desired resource was help with advertising ($n=11$) or marketing ($n=11$). Beyond just citing the need for more advertising, one respondent felt that producers needed “national media attention,” and another felt they needed “promotional advertising from the community, tribe, or someone famous!” This included marketing not just to the broader public, but specifically “regional market-

Figure 2. Desired Resources by Producers to Help Their Products Reach Their Target Market or Community



⁶ Networking, resource identification, and technical assistance represents the support of IAC Technical Assistance by utilizing an array of USDA production expertise and resource-based networks to support initiatives to improve agricultural resiliency in tribal communities.

ing” and to local service providers: “To market to schools, senior centers, food distribution centers and food banks.” Four respondents wrote that they needed help specifically getting beef labeled and marketed. Successful marketing and advertising would include “packaging recognition, personal labeling, advertising for the right audience.” Six respondents indicated that “educating consumers” would be an important aspect of successfully marketing and selling products. Three respondents specifically wanted access to lists to help boost their sales: list of names for local consumers and lists of available markets for selling cattle and alfalfa. While two respondents (from Arizona and South Dakota) wrote that radio and newspaper advertising would be the tactic most helpful to sell products, more participants (5) indicated that they wanted help with online marketing, and learning how to use online platforms for marketing. An additional three mentioned that they were now using social media to do their marketing.

Regulatory Flexibility or Change

Fifteen respondents felt that regulatory change or flexibility was needed to help them more effectively sell their product during this time. Policy suggestions to address issues faced by producers included “a food and food safety code that made sense for the smaller tribal business” and country-of-origin labeling on beef to encourage consumers to buy local. Increasing regulatory flexibility around butchering and selling livestock locally ($n=5$) was seen as one avenue, with some respondents recommending “open sales of beef for local use” and “loosening requirements for the sale of meat products by private individuals/producers,” specifically making it possible to sell beef to the public “without so many hoops to jump through!” and “without USDA inspection.” These respondents felt the key was “regulatory flexibility to facilitate local sourcing.”

While some thought the answer was less regulation around local sales of meat, others saw the answer as regulating meat packers, suggesting “regulation for the meat packers that balances the market with producers,” breaking up meat packer monopolies, or requiring them “to purchase a larger percentage of their cattle from live markets rather than futures contracts.”

Localized Meat Processing

In order to supply more meat in a direct-to-consumer market, many (29) livestock producers cited the need for more localized meat processing facilities. The shutting down of larger meat packing plants during the pandemic was cited by one New Mexico rancher as evidence of the need for local plants. Being able to access “mobile processing centers” or other types of local facilities would spare ranchers from having to sell “mostly at auction” or “off the hoof.” Overall, being able to sell meat from ranchers direct-to-consumer was seen as a more effective way of providing food to communities and keeping ranchers in business.

Alternative Markets and Direct-to-Consumer Sales

The call for more local slaughter facilities was part of a broader movement toward wanting more localized direct-to-consumer sales. To make this happen would require creating new kinds of direct-marketing channels like farmers markets, roadside stands, or local storefronts. Aside from in-person sites from which to sell products, a New Mexico producer suggested “a mail order mechanism” and others suggested online marketing sites or “a direct to the public or boat to public phone app or internet website.” With the rapid shift of much of the economy to be online, 15 respondents also cited the need for other online services in addition to advertising, including support with setting up websites and carrying out online sales, the establishment of an online marketplace, and the development of a direct-to-the-public phone app or website for fishermen.

Business and Workforce Development

Ten respondents described the need for business development assistance, including creating a better business plan, finding more buyers, getting access to other tribal markets and other new domestic markets or wholesale contacts, and helping with CSA development training. For an additional 10 respondents, help with workforce and development, specifically increasing the number of staff, staff training, logistics, and delivery driving were the aspects of business development they needed help with most. Maintaining the safety of employ-

ees and increasing knowledge around safety and hygiene standards were also mentioned. The specific need for more Native food inspectors was also raised by two respondents in California.

Eight respondents described networking as a tactic for improving business viability, including “being able to have group meetings to share business opportunities” as well as “being able to network with other areas to improve regional marketing.” Creating or joining associations or co-ops in order to improve business prospects was also mentioned by four respondents.

Equipment, Storage, and Facilities

Part of building capacity for three of these food producers included the need for more equipment: generalized farm equipment, transportation equipment, and, for one Oklahoma farmer, being able to import the necessary equipment to process hemp. There was also cited the need for storage infrastructure, including refrigeration for butchered livestock. Processing equipment (like a corn mill and dehydrator) were also mentioned, as well as the broader need for a whole licensed commercial kitchen to be shared among rural community members.

The need for more transportation equipment ties to other responses around delivery issues: the need for help with “delivery of product,” “increased shipping options to the market,” “help with logistics and delivery driving,” and specifically more information on “how to deliver livestock” were all mentioned.

Discussion

Our study provides one of the most comprehensive assessments to date of the impact of COVID-19 on Native American producers, food systems, and communities across the United States (see also Stranger-McLaughlin et al., 2021). Out of 401 total survey respondents in our survey, 94% identified as American Indian or Alaska Native, 285 were tribal producers, 53 were tribal leaders representing their communities, and 24 were grocers in or near tribal lands. Our study illuminates the challenges and hardships exacerbated and generated by the COVID-19 pandemic on Native American producers and communities, with significant impacts on

Native-owned businesses and tribal community food security. Eighty-five percent of producers reported being negatively impacted by the pandemic, with almost 54% of Native-owned producers closing or partially closing as a result of the pandemic. A third experienced a reduction in their labor force, resulting in a projected loss of future sales and depletion of their cash reserves, having a substantial and lasting impact to a growing industry (USDA NASS, 2017b). Many producers reported closed markets, processing roadblocks, and decline in market price, particularly for livestock producers. Chapter 12 family farm bankruptcies for all U.S. farmers increased 8% between June 2019 and June 2020 (American Farm Bureau Federation, 2020), with an estimated decline of US\$688.7 million in sales across local and regional markets from March to May 2020 (Thilmany et al., 2020). With many Native-owned farms already experiencing a zero or negative margin of profit prior to the pandemic (USDA NASS, 2017a), the economic stress incurred has put many in survival mode—making risk-averse decisions just to stay afloat. More than a quarter of producers surveyed experienced supply-chain disruptions, with issues accessing livestock feed, supplies for hoop houses, and more. Supply-chain disruptions in transporting products and receiving essential agricultural supplies continue to be a major problem in agri-business in the U.S. and abroad (Barman et al., 2021; Swanson, 2021).

Shortening Supply Chains and Scaling Up Direct Marketing

Overall, about half (52%) of all Native producers reported a decrease in market demand; however, nearly half of respondents reported that market demand stayed the same or increased. Direct-market vendors including produce farmers, retailers, and traditional food and specialty food producers experienced an increase in demand for their products, whereas Native livestock producers across the board experienced dramatic market loss, as livestock auction prices fell due to supply-chain bottlenecks and closures, in spite of an *increase* in consumer demand for local meat. This trend mirrors the broad increase in demand for locally sourced food through direct sales via farmers markets, CSAs, and online sales (Goetz et al., 2020; Local

and Regional Food Systems Response to Covid, 2020), although the CSA model is underutilized by BIPOC producers (Local and Regional Food Systems Response to Covid, 2020). Short, direct supply chains have been proven the most successful and resilient in both providing and accessing agricultural products during the pandemic (Lioutas & Chrysanthi, 2021; Oliveira et al., 2020) as well as providing the most income (Verhaegen & Van Huylenbroeck, 2001).

Studies suggest that diversified producers tend to be more resilient to market volatility as well as to the shocks and stressors posed by the pandemic (Local and Regional Food Systems Response to Covid, 2020). Our study showed that Native producers engaged in direct marketing were more diversified in the number and type of products offered by their business, and many of them experienced an increase in demand. Yet during the pandemic, many diversified small and midsized farms, like our survey respondents, were unable to respond to changes in the marketplace and consumer demand due to cost, language barriers, lack of land access, labor shortages, and limitations in technological infrastructure. BIPOC farmers in particular experienced limited technical support to access COVID-19 relief programs and resources (Local and Regional Food Systems Response to Covid, 2020).

Many small to midsized agricultural operations did successfully pivot from in-person to online sales as demand for local food increased during COVID-19. However, according to the 2017 agricultural census, only 66% of AI/AN producers have internet access, with substantial variability by state; only 41% of AI/AN producers in Arizona and 32% in New Mexico have access to internet (NAAF, n.d.; USDA NASS, 2017a). Poor internet access makes it very hard for producers to sustain sales and reach customers and for customers to access local foods during a pandemic that has incurred market closures, processing and transportation bottlenecks, and reduced mobility. As the pandemic progressed, survey respondents emphasized the essential need for reliable internet. Over half of producers in our study expressed interest in training and support in developing ecommerce sites and improving their online presence.

Social isolation and reduced mobility affected not only people's mental and physical health, but also producer sales. However, a study of 504 Native respondents during the pandemic found that food sharing and trading had increased by 10% over pre-pandemic times, suggesting that reliance on social networks and families only grew stronger (Stranger-McLaughlin et al., 2021). Studies have found that strong farmer networks and trusted relationships between farmers and their community can also support resilience during times of crises. Sustained farmer networks and producer-to-consumer trust, even in times of social distancing, are important (Giampietri et al., 2018). Khanal et al. (2020) found that small, minority farmers embedded within strong community farming networks in Tennessee, Maryland, and Delaware had greater sales compared to those who were not as well connected to other farmers. The authors found that strong social network connectivity was crucial for production, marketing, and resource-sharing. This suggests that in addition to financing, technical assistance, and improved internet technology, investment in farmer networks in Indian country could strengthen the resilience to food system shocks.

Decentralized Meat Processing Is Needed

Increased consolidation of the meatpacking industry has had profound effects not only on reducing market access for small-scale producers (Newlin, 2020), but also increased vulnerability for livestock producers to supply-chain disruption during the pandemic. More than 60% of producers in our survey were cattle producers, which is reflective of the national distribution of AI/AN farmers by product type in the 2017 Agriculture Census (USDA NASS, 2017c). While cattle producers were more widely affected by market loss due to COVID-19 than other producers, they had lower rates of closure than other operations, suggesting more stability in emergencies perhaps through greater access to programs (NRCS and FSA) and resources, and potentially a larger financial base to withstand financial shocks. However, meat processing at USDA-approved slaughterhouses presented a major challenge to cattle producers in this survey as well as consumers who wanted to buy local meat but

could not because essential processing facilities were unavailable or backlogged. This trend has reverberated throughout the meat industry with meat processing and packing facilities experiencing closures, labor shortages, and reduced capacity from COVID-19 outbreaks and distancing regulations nationwide (Hobbs, 2021).⁷ According to the USDA (2021), the COVID-19 pandemic revealed that the meatpacking (slaughter and processing) system is “too rigid and too fragile” (para. 3). Even prior to the pandemic, access to USDA-certified meatpacking facilities had been a challenge for producers in remote areas, including tribal territories, as the meatpacking industry has become increasingly consolidated (Newlin, 2020). Today, just four large meat-packing companies control over 80% of the beef market alone, which has contributed to bottlenecks in America’s food supply chain (USDA, 2021).

In response to crippling meat supply disruptions, new policies developed during the pandemic may finally be addressing these issues—if they are sustained (Nickelsburg, 2020). In July 2021, as part of President Biden’s American Rescue Plan, the USDA announced that it “intends to make significant investments to expand processing capacity and increase competition in meat and poultry processing to make agricultural markets more accessible, fair, competitive, and resilient for American farmers and ranchers” (USDA, 2021, para. 1). Specifically, it is investing US\$500 million to expand processing facilities “so that farmers, ranchers, and consumers have more choices in the marketplace” (para. 2) and an additional US\$120 million to small and very small processing facilities to help them weather COVID-19. A North Dakota State University animal sciences professor notes, “We lost a lot of our small processing or locker plants and it’s really something I think we need. . . . It helps move some of the beef along. When you get down to it, the small plants don’t move that much beef, but it’s a good option for a lot of producers” (Newlin, 2020, “Show me the money!” para. 4). Yet it remains unclear whether this level of investment is sufficient.

There have been ongoing calls for decentralized, mobile, and tribal-run meat processing facilities, and as demonstrated in our study, the need is even greater during times of crisis. Many tribes have already responded to this need by opening their own meat processing facilities, such as the 4,800-member Quapaw Tribe of Oklahoma, who process bison and beef in the first tribally owned and operated meatpacking plant (Baca, 2018; Wallace, 2020). Similarly, the Blackfeet Nation is building a US\$10 million meat-processing facility to strengthen tribal food sovereignty, create jobs, and possibly enhance the production of “ancestral foods.” “If we had a local processing plant where people wouldn’t get ripped off, it might also encourage more producers to switch over from cattle to bison” (Greenfield, 2021, para. 8), said Danielle Antelope, a member of FAST (Food Access and Sustainability Team) Blackfeet. The Osage Nation used part of its CARES (Coronavirus Aid, Relief, and Economic Security) funding to open a meat processing plant, a long-term investment in food security and sovereignty (Stranger-McLaughlin et al., 2021). It’s clear that decentralizing the meatpacking industry by investing in local, tribal-owned and -operated meat-processing facilities can help mitigate food system shocks during times of crisis as well as strengthen tribal food sovereignty.

Tribal-Owned and -Operated Food Systems Are Pivotal

Even prior to the pandemic, Native Americans experienced some of the highest rates of food insecurity in the country, at least double that of white households, with variation by tribe (Jernigan et al., 2017; Sowerwine et al., 2019). This has only increased with pandemic challenges (Stranger-McLaughlin et al., 2021) and with the high dependency on social support services for food access and food security, due to the devastating legacy of settler colonialism on Native American tribes and communities (Sowerwine et al., 2019). Hoover (2020) argues similarly, “Even prior to the strain put on the food economy by the COVID-19 pan-

⁷ As of January 2021, 42,000 (out of an estimated 500,000) workers in meatpacking (slaughterhouse and processing) facilities had been infected with the novel coronavirus and 221 had died (Chadde et al., 2021).

demic, Native American communities have been fighting food insecurity. One quarter of American Indian/Alaska Native households receive Supplemental Nutrition Assistance Program (SNAP) benefits, 276 tribal nations administer the Food Distribution Program on Indian Reservations (FDPIR), 68% of AI/AN children qualify for free lunches, and AI/ANs make up more than 12% of the participants in the Women, Infants, and Children (WIC) nutrition program” (p. 569), with a 214% increase in FDPIR clients during the pandemic (Stranger-McLaughlin et al., 2021).

As the pandemic took hold, vital sources of food assistance (such as FDPIR and school lunch programs) as well as grocery stores were either scaled back or shut down, exacerbating food-insecurity trends and increasing vulnerability among many tribal communities. Over a third of tribal leaders said hunger had been aggravated in their community and important safety-net programs for children and adults (the school lunch program and FDPIR) had stopped functioning in up to a quarter of tribal communities surveyed. These program vulnerabilities are particularly concerning as Pindus et al. (2016) found that while FDPIR is meant to serve as a supplement to home food supplies, the monthly food supplement is the sole or primary source of food for 38% of households. Without this support many households would be in dire need of food. Data from our grocer survey confirmed a reduced supply of foods during the pandemic as well, with 75% of grocers saying that demand outpaced supply and 63% saying wholesale products were restricted or delayed.

One of the primary food assistance programs tailored to address food insecurity among federally recognized tribes, FDPIR, not only fell short during the pandemic, but chronically underserves tribal communities (Stranger-McLaughlin et al. 2021). In an effort to bolster the program in response to the pandemic, the third bill of the CARES Act included US\$100 million for additional food purchases and facility improvements for FDPIR (Hoover, 2020), although these funds were delayed, not applied to desired needs shared by tribal leaders and the National Association of FDPIR, and Tribal Nations were not able to use the funds to purchase directly from Native produc-

ers (Stranger-McLaughlin et al., 2021). While in 2021 the USDA Food and Nutrition Service (FNS) funded the FDPIR 638 Self-Determination Demonstration Project, which allows tribal organizations to contract directly with producers to provide food to FDPIR clients (IAC, n.d.-b), it was not enabled earlier in the pandemic. Additionally, the USDA, during the time of this writing, March 2022, is soliciting applications from state and tribal governments for the Local Food Purchase Assistance Cooperative Agreement Program (LFPA). This is a long-desired and anticipated goal of tribal communities to strengthen food sovereignty (Hipp & Duren, 2017; Mucioki et al., 2018). Almost 90% of grocers surveyed on or near tribal communities would like to purchase products directly from AI/AN producers, given the opportunity. Survey respondents shared tribal-led efforts to support the community through food boxes and fresh produce. Tribal-led, -owned, and -operated food systems have been pivotal to supporting community resilience during this period of crisis, and their even greater potential was untapped.

Opportunities for Investment


While this study presented many challenges and exacerbated stressors on AI/AN producers, communities, and food systems resulting from COVID-19, it also revealed community-led strategies for resilience and opportunities to support Native American food sovereignty and resilient tribal enterprises in practice and in policy. To better understand the experience of food insecurity and identify strategies to enhance resilience through comprehensive food system planning, three-quarters of tribal leaders would like assistance conducting food security assessments, while almost 34% had already conducted an assessment. The two areas of support most desired by Native producers included increased financing and/or funding (63%) and marketing support (50%), stressing the sustained need for better economic support and access to markets, since current pandemic relief programs for farmers overwhelmingly give preference to well resourced, white, male producers (Haqiqi & Horeh, 2021; Lioutas & Charatsari, 2021). Over half of respondents could benefit from rural broadband technology and expressed desire

for assistance with website development. There was also high interest in participating in courses related to market development, food safety, COVID-19 response, and transportation logistics, and a need for better access to information on USDA emergency relief programs. Government aid to AI/AN farmers has been perpetually lower than the national average even before the pandemic, with AI/AN-operated farms receiving US\$1,300 less than the national average of government payments to farms in 2017 and over US\$3,200 less than the national average in 2012 (USDA NASS, 2012, 2017a).

Additional priorities identified by Native producers in our surveys centered around increased technical assistance related to NRCS, direct marketing and branding, business development, understanding legal and policy issues, opportunities for enhanced networking, and strategies for new farmers to grow by strengthening connections between youth and natural resources programming. The top desired programs related to direct marketing were marketing and branding and trade show support. Producers using technical assistance had a greater desire for business development support. Young and beginning farmers prioritized resources related to legal and policy issues and food systems resources, whereas producers who already had access to extension desired additional resources related to networking and technical assistance. More than a quarter of producers desired NRCS support. There is a gap in connecting young farmers with NRCS support and opportunity for natural resources and youth programs to coordinate. Investing in opportunities to support organic certification would enable Native producers to garner increased profits. Organics are a growing sector, with sales of organic crops and livestock and poultry increasing by 38% and 44%, respectively, from 2016 to 2019 across the U.S. (USDA NASS, 2019). However, according to the 2017 Agriculture Census, only 3% of AI/AN producers reported having organic certification (USDA NASS, 2019), although the authors have observed many AI/AN farms that implement organic practices without having official certification.

Conclusion

The COVID-19 pandemic exposed just how vulnerable and underprepared the U.S. food supply chain is to major shocks. Producers were unable to source critical inputs and get their product to the market, while entire communities experienced skyrocketing rates of food insecurity as food and supply shortages swept the country. Families experienced job loss, children at home, fear associated with new uncertainties, and strict rules imposed to attempt to keep their communities safe. Federal food assistance social safety nets designed to ameliorate food insecurity, such as school lunch programs and FDPIR, fell critically short. Crises often shed new light on opportunities to enhance the resilience of systems impacted. The IAC took this opportunity to better understand how Native producers and communities were faring under the crisis, which resources they were able to access, and what opportunities there would be for investment in technical assistance and other programming to enhance economic viability and resilience. The findings suggest that not only did the pandemic exacerbate challenges Native producers and communities were already experiencing, but that there are many tribal-identified solutions that can be immediately invested in that would strengthen tribal food sovereignty, increase economic stability, and enhance long-term resilience. Investing in AI/AN agricultural enterprise development, local and traditional foods, tribal-owned and -operated processing facilities, and food sovereignty programs, especially in the realm of financing and marketing, are vital. Increasing resources and technical assistance to tribal communities through NRCS, FSA, and FRTEP are also important tribal-identified strategies to decentralize and create a more resilient food system rooted in self-governance. In 2018, 63 tribal specific provisions were included in the latest farm bill, some that addressed self-governance of food systems and security (Duren, 2020). Looking ahead to the 2023 farm bill, lessons learned from our study reflect many imperative needs, including agricultural support policies and set-asides for AI/AN producers for livelihood protection, as well as a continued utilization and expansion of opportunities for tribal

self-governance⁸ mechanisms across USDA programs and services. 

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⁸ Tribal self-governance has a specific meaning in the context of “638 Authority” derived from the 1975 Indian Self-Determination and Educational Assistance Act (PL 93-638) that allows tribes to assume responsibility for managing federal programs.

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