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VIEWPOINT

From fencerow to product: The potential of feral apple jelly and other products for farm gate sales

Desiree Archer,[a] Eric Sager,[b] Matt Porter,[c] and David V. Beresford [d] *
Trent University

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Feral or wild fruit such as apple, pear, and plum, are the offspring of domestic varieties that have escaped cultivation (Cronin et al., 2020). Such fruit is commonly found on farms across northeastern North America (Eppig, 2012) where older farm infrastructure such as field boundaries defined decades ago are still in place (Cronin et al., 2020). These feral trees are the hybrid offspring of heritage variety ancestors (Cronin et al., 2020; Gross et al., 2018; Volk & Henk, 2016) deposited by wildlife as seeds on stone piles, along woodland edges, in clearings, and on wooden rail fences (Fritz & Merriam, 1996). Rail fences on these farms were commonly built in a manner that did not require post holes, and were constructed from 60 to 200 years ago out of split cedar rails and installed on rocky ground (Bowley, 2015; McIlwraith, 1984) and stone field borders

[a] Desiree Archer, Master's Graduate Program, Sustainability Studies, Trent University; 1600 West Bank Drive; Peterborough, Ontario K9L 0G2 Canada; desireearcher@trentu.ca

[b] Eric Sager, Master's Graduate Program, Sustainability Studies, Trent University; 1600 West Bank Drive; Peterborough, Ontario K9L 0G2 Canada; esager@trentu.ca

[c] Matt Porter, Trent School of the Environment, Trent University; 1600 West Bank Drive; Peterborough, Ontario K9L 0G2 Canada; mporter@trentu.ca

[d] * *Corresponding author:* David Beresford, PhD, Associate Professor, Sustainability Studies, Trent University; 1600 West Bank Drive; Peterborough, Ontario K9L 0G2 Canada; +1-705-748-1011 x7540; davidberesford@trentu.ca; https://orcid.org/0000-0003-0682-6930

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composed of glacial till and glacial erratics (Chapman & Putnam, 1940; Putnam & Chapman, 1936).

On many farms, these stone field borders still define the field sizes set when farmers first tried to clear arable land of stones and stumps by carrying or dragging rocks to field edges (Gage, 2015; Ripley et al., 1946). This has created a landscape of small fields with almost permanent field boundaries that are characteristic of farms in regions of shallow topsoil, rocky ground, typical of many farms across northeastern North America, including central Ontario (McIlwraith, 1984). These small fields are bordered by hedges of mixed species of native and introduced plants, shrubs, and trees (Fritz & Merriam, 1996). The resulting adventive hedges (Figure 1) can be up to 20 feet (6 meters) wide and are effectively linear woodlands (Fritz & Merriam 1996; Rackham, 1994) where wildlife abound alongside cattle, sheep, crops, and hayfields (Mineau & McLaughlin, 1996). Characteristic fruit trees and shrubs of these field borders include both native and introduced species (Fritz & Merriam, 1996), such as feral apples (Figure 2), crab apples, feral and native plums, gooseberries, grapes, cherries, blackberries and raspberries, rowan berries, dogwoods, and viburnums, all of which provide food and habitat for birds, mammals, and insects (Mineau & McLaughlin, 1996).

These linear woodlands have commonly been perceived as land lost to production (Ripley et al., 1946), and both government and academic experts have historically recommended that these fences and hedges be removed to increase the amount of productive arable land (for example, see Bowley, 2015; Dawson & Fortier, 1954; Ripley et al., 1946), even suggesting that these fences be replaced with barbed wire (egg. Quinton, 1990; Skinner et al., 1980). Farmers generally have embraced this advice, and over the past 75 years many have removed hedges and wooden fences to enlarge their fields (Boutin et al., 1999), especially in regions with high-quality arable land. For example, in 1949, the Ontario County Crop Improvement Association (OCCIA) removed fences on farms north of Lake Ontario as part of a Conservation Day (Bowley, 2015). The idea behind this event was rooted in the agricultural and environmental practices of the time, focusing on improving the productivity and sustainability of farmland (Bowley, 2015).

In addition to advising that fences and hedges be removed to create larger fields, pest management experts in government and academia have also specifically advised that feral fruit trees, including apples, be removed to reduce insect pests and disease refuges (Davis, 1930; Racette et al., 1992). This historically consistent—if now discredited—expert advice, that feral trees and wide fencerows are sources of pests, disease, and lost productivity, has resulted in farmers having imbued these lessons from experts over several generations (Chambers, 1980; Kröbel et al., 2021). Not surprisingly, many farmers continue to see

Figure 1. Stone field border between two fields of pasture showing remnants of a cedar rail fence and mainly maple trees resulting in a linear woodland, Douro-Dummer Township, Ontario, Canada.

Photograph by D. V. Beresford.

Figure 2. Apple tree blossoms along the fencerows in Douro-Dummer Township, Ontario

Photograph taken from the road May 2022 by D. V. Beresford.

wooden rail fencerows and their associated feral fruit trees such as apples as liabilities and sources of vermin (Kröbel et al., 2021; Witmer, 2022). This view persists despite more recent ecological evidence that such linear woodland habitats benefit producers by increasing the number of native pollinators and pollination services (Morandin & Kremen, 2013), the number of parasitoids that attack insect pests (Morandin et al., 2014), reducing soil loss through wind erosion (Böhm et al., 2014; Burel, 1996), as well as providing habitat for wildlife (Shaw et al., 2021; Woodall et al., 2023). For example, even in apple orchards where feral apples would be expected to be the most problematic in terms of pest refuges, field fences and hedges provide habitat for a variety of insect predators that prey upon orchard pests (Shaw et al., 2021), as well as for native bees species (Sheffield et al., 2013). It is not just insects that are affected; fields with hedges and fences tend to have fewer rats and mice than fields with without such fences (Sellers et al., 2018).

It is on the more marginal farmland, where the high labor cost of removing fences commonly built on stone piles (Gage, 2015) as well as their resulting trees and hedges—commonly called fence-bottoms by producers—are still in place (McIlwraith, 1984). The has resulted in many farms of relatively poor-quality rocky soil having small fields with abundant feral fruit trees and shrubs (McIlwraith, 1984). As a result, such farms have effectively become refuges for many species of wildlife (Freemark & Kirk, 2001). Consequently, for wildlife biologists and ecologists dedicated to conservation, these wooden fences, stone piles, and the resulting linear woodlands are valued as remaining habitat where many endangered plant and animals species can still be found (Forman & Baudry, 1984; Martin et al., 2020; McInturff et al., 2020).

These different points of view have resulted in the seeming self-interest of farmers being opposed to the seeming self-interest of conservationists, with farmers often resenting any regulatory interference in their ability to efficiently manage their land for food production, and conservationists and wildlife managers resenting the removal of any tree or section of fence (see for example Collins, 2015, and Regional Municipality of Durham By-law 30-2020). This has resulted in a tension between wildlife biologists and ecologists who strive to optimize the amount of land dedicated to protecting biodiversity, and agronomists who advise producers to clear trees and fencerows to create more productive agricultural space.

Our view (our paradigm) is that the objectives of both farmers and wildlife conservationists coincide in a way that maximizes both conservation and productivity (Chambers, 1980). The difficulty is that the agricultural services provided by hedges and structural fences are rarely quantified in economic terms; it is not known how much money can be saved by having hedge-dwelling pollinators or predators of farm pests.

To address this, we think that some charismatic species such as feral apples have the potential to be a direct economic resource for producers, providing product for farm gate sales and thus a disincentive to removing those fences and hedges with their associated feral apple trees. This approach could position such linear forests and their feral fruit trees as both economic and community benefits in terms of family farm life and culture (Gasson et al., 1988), even if the monetary benefits were minimal.

We do not suggest that there is enough economic potential in selling apple jelly alone. We do think that farm gate sales from hedgerow products made at the family farm level should be added to a growing list of economic benefits that diverse habitats provide for producers (McNeely, 1988), especially for producers on marginal land typical of (but not exclusive to) many parts of northeastern North America (such as Ontario, Canada) (Smith, 2015). The trees and shrubs on fencerows and in hedges could also provide a harvestable abundance of apples for cider, wild grape products, and products from other regional fruit trees and shrubs (García & Miñarro, 2014).

Such products could command a higher price if marketed as *terroir* products (Leedon et al., 2021) tied to specific farms or regions. We expect that food made from feral apples might have unique tastes specific to individual trees or combination of trees on individual farms due to the mixed ancestry of these feral trees from extinct or rare heritage breeds (Cronin et al., 2020). We think that this could be used to pique consumer interest in unique farm-specific products (Diamond & Barham, 2011). Exploring the potential of agricultural products from these linear woodlands could provide an important tool for encouraging local producers to see the land occupied by these hedges and fences as economic, family, and community cultural benefits—not just as wasted land.

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