Ecological Farming in Ontario

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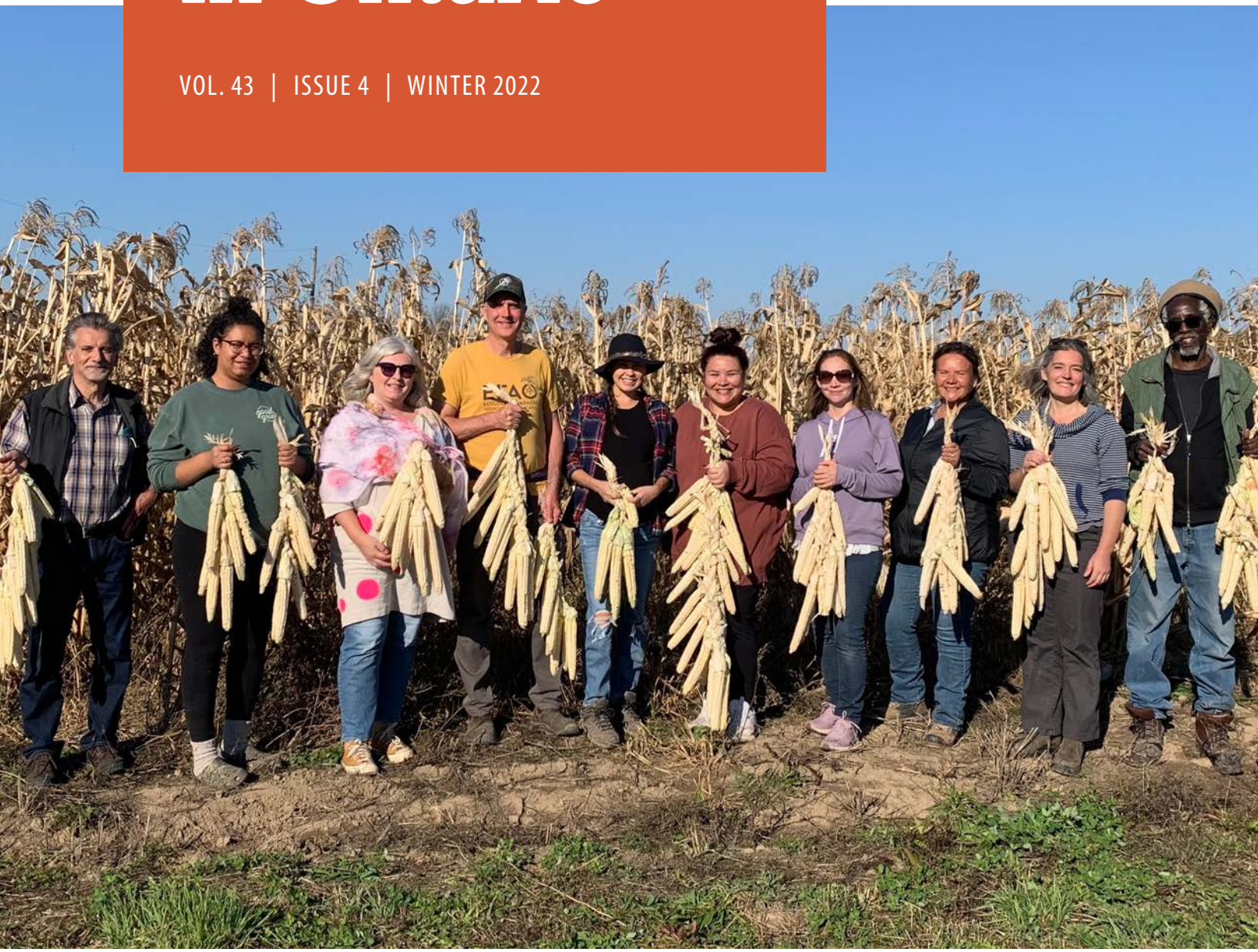
EFAO
ECOLOGICAL FARMERS ASSOCIATION OF ONTARIO



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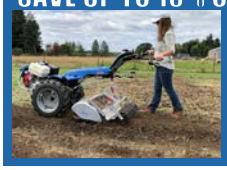
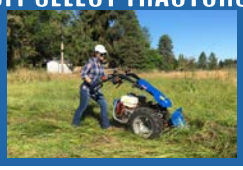
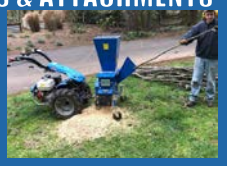

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On the cover
EFAO board members gathered at Six Nations on October 22nd to review EFAO's progress and look ahead to the year to come.

EFAO
ECOLOGICAL FARMERS ASSOCIATION OF ONTARIO

What We Do

Established in 1979 by farmers for farmers, the Ecological Farmers Association of Ontario (EFAO) is a membership organization that focuses on farmer-led education, research, and community building. EFAO brings farmers together so they can learn from each other and improve the health of their soils, crops, livestock, and the environment, while running profitable farm businesses.

Vision

We envision an Ontario where thriving ecological farms are the foundation of our food system, and where agriculture protects our resources, increases biodiversity, mitigates climate change, and cultivates resilient, diverse, equitable communities.

Mission

EFAO support farmers to build resilient ecological farms and grow a strong knowledge sharing community.

Ecological Farming In Ontario

Ecological Farming in Ontario is published quarterly by EFAO as a benefit of membership to help keep farmers and supporters informed and in touch with one another through articles on relevant farming topics, current farmer-led research, upcoming events, and other news of interest.

Ecological Farming in Ontario is printed on Rolland Enviro-100 paper, which contains FSC certified 100% post-consumer recycled fibres. Back issues can be found on EFAO's website (efao.ca) or are available upon request. Unless otherwise noted, articles may be reprinted or adapted if credit is given.

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Deadline for Spring 2023 issue: Jan. 15, 2023.

Help make *Ecological Farming in Ontario* a farmer's journal! Submit articles, photos, opinions and news to editor@efao.ca. We reserve the right to edit submissions for space and/or clarity.

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A Message From the Executive Director

In October, the EFAO Board held a retreat at Six Nations of the Grand River Territory. This was the first time that the board has gathered together in person since March 2020. The two-day get together was a wonderful opportunity for board members to get to know each other better, learn about Indigenous food systems and connect with some very inspiring folks at Six Nations.

Located on the banks of the Grand River, Six Nations is the most populous First Nation in Canada, with 25,660 registered members, and approximately 12,000 living on-reserve. Six Nations is the only reserve in North America where all six Haudenosaunee nations live together. This includes Seneca (Onondowahgah), Cayuga (Guyohkohnyoh), Onondaga (Onundagaono), Oneida (Onayotekaono), Mohawk (Kanienkahagen), and Tuscarora (Ska-Ruh-Reh).

In 1784, Captain General Frederick Haldimand, Governor in Chief of what is now Ontario and Quebec, signed a proclamation granting territories to the Six Nations of the Grand River peoples after their support for the British cause in the American Revolution. The Haldimand Treaty promised them a tract of land six miles deep on each side of the Grand River from the river's mouth to its source, covering roughly 950,000 acres. The land base of Six Nations today is approximately 46,500 acres, less than 5% of what was originally granted. Six Nations has been engaged in litigation against the Crowns of Canada and Ontario since 1995, to account for the lands promised in the 1784 Haldimand Treaty Lands.

Our time at Six Nations was made possible thanks to board member Denise Miller who is Wolf Clan from the Cayuga Nation. Denise leads Revitalizing Our Sustenance (ROS), an Indigenous youth-led program to offer Indigenous and non-Indigenous youth opportunities to learn about sustainable agriculture practices while feeding the community. Denise works with an amazing team who supports this project, including Deyo Morrow and Meaghan Oosterhoff, who we had the pleasure of meeting during our stay at Six Nations.

Deyo, who is also Wolf Clan from Cayuga Nation, is working as a registered dietitian at Six Nations, and Meaghan is a member of Sagkeeng First Nation in Fort Alexander Manitoba, and currently lives and farms in Brant County. Deyo welcomed us to her home at Six Nations where she has planted two acres of white corn, and led us in harvesting and braiding corn.

We learned that there are over 40 different varieties of corn grown at Six Nations, all for different purposes. Hominy is made by soaking and cooking the dried corn in a solution of water and wood ash or lime (from limestone), and is incredibly delicious! Corn silks are used in medicinal teas, and husks are used to make things like baskets and shoes.

As we worked, we reflected on how each of us was showing up to this experience, and what the corn could teach us. What does it mean to be an invited guest on this land? What value did we see in the different cobs — the smallest ones, the ones whose tips were eaten by crows, those speckled with purple kernels? What messages have we internalized that might get in the way of reciprocal relationship building? We carried these conversations back to Chiefswood Park, where we stayed in beautiful cabins nestled along the Grand River. We learned more about the opportunities and challenges that First Nations food and farming initiatives like ROS face, and explored how EFAO might be able to play a supportive role.

We also took some time during our retreat to check-in on our Strategic Plan, now that we are almost three years into the five-year plan. We celebrated the milestones EFAO has achieved, including being well on our way to reaching our goal of doubling the membership (from 522 in 2019 to 951 currently), our shift to online events these past couple years, and the impact of our policy work through Farmers for Climate Solutions. We also discussed how we can better support new farmers (who make up approximately half of our membership), and how we can most effectively address the differing needs and interests of the various communities of farmers we work with.

We all took home several cobs of corn, braided together, each looking different but holding a common intent to carry forward this experience and these conversations with us, in our work at EFAO. The EFAO board is incredibly grateful to Denise, Deyo and Meaghan for sharing their time, knowledge and generosity with our group. Nyaweh, Miigwech. It was a truly unforgettable experience that will impact our work in the days and years to come.

Join Us for the 2022 EFAO Conference Online Program

December 6, 7, and 8, 2022

Keynote Speakers:

Tiffany Traverse, 4th Sister Farm
Having grown up on her Great Grandparent's homestead, on her peoples' traditional Secwépemc territory in the Columbia Valley, Tiffany's love for growing food and stewarding the land comes as naturally as breathing.

Living now in northeastern BC, she continues to foster the belief that if you care for the land, it will give back to you in droves. The privilege of arable land access and a passion for community-led research have given Tiffany the ability to participate in variety trials through CANOVI and Seed Savers Exchange, as well as the Seed Seva Seasonal Mentorship program with Rowen White. Her path has also led her to help conduct a large grow-out and stewardship of rare Indigenous seed under the mentorship of Métis Seedkeeper Caroline Chartrand.

Tiffany's passion for feeding people, and firm belief in the right to healthy foods for all, is only increasing. She is excited to take on such projects as experimental plant breeding to adapt nutrient-dense cultivars to our changing climate and extending food storability. With her role as a volunteer Advisory Council Member with The Community Seed Network, her hope is to create better access to resources and increase our collective seed and food security.

Stefan Gailans, Practical Farmers of Iowa
Stefan Gailans joined Practical Farmers of Iowa in August 2013. Stefan leads the Cooperators' Program, Practical Farmers of Iowa's vehicle for empowering farmers to generate and share knowledge through timely and relevant farmer-led research. He takes satisfaction from conducting scientific inquiry with those who stand to benefit most from the results – farmers.

Stefan earned a doctorate in crop production and physiology and sustainable agriculture from Iowa State University. Since 2011, he has served on the board of directors at Wheatsfield Cooperative Grocery, a community-owned full-service grocery store in Ames, Iowa, offering food, services and education to cultivate a healthy environment and socially just community.

Panels, Workshops and Meet-Ups:

- Climate Change Adaptation in Grazing
- Landrace Breeding for Resilience
- 2022 Farmer-Led Research Symposium
- Coppice Agroforestry: Practical Applications for Regrowth
- Resilient Seed Systems: A Farmer and Seed Grower Consultation
- Seven Sisters: An Updated Take on Traditional Ecological Knowledge
- Small-Scale Poultry Production in Practice
- Soil Health as Community Builder
- Meet-Ups for Queer & BIPOC farmers, as well as those interested in No-Till, Silvopasture, Rotational Grazing, Small Grains, and Seed Production
- And much, much more!

Late Summer & Fall Field Days

1. Brenda Hsueh of Black Sheep Farm speaks about how she and her family have set about to farm for the long haul, Aug. 27. *Brenda will host two panels on Climate Change Adaptation for Grazing at the EFAO Conference Online Program!*

2. Tony McQuail describes the approach he, Fran, and now Katrina have taken to pasture management during a field day about Holistic Management Planned Grazing, Sept. 11 at Meeting Place Organic Farm. *Photo Credit: Katrina McQuail.*

3. Béatrice Lego, University of Toronto Scarborough Campus (UTSC) Farm Coordinator, speaks to a group of participants in "The Care in Carrots: Urban Agriculture and Crop Breeding," a field day and tour of the UTSC Farm, Sept. 22. The event featured red and orange carrots being grown as part of the Canadian Organic Vegetable Improvement (CANOVI) Program which EFAO coordinates in Ontario on behalf of the Bauta Family Initiative on Canadian Food Security, a program of SeedChange.

4. Cory Van Grongingen describes how he monitors the health of his whole farm ecosystem using Ecological Outcome Verification, at a field day held on the farm in Cayuga, September 26.

5. Bob Wildfong of Seeds of Diversity and EFAO's Rebecca Ivanoff show participants how to save seeds from some common garden vegetables on Sept. 28 at Fertile Ground Farm. Attendees also toured the Regional Seed Demonstration Gardens, which showcase 80 vegetable varieties suited for regional seed production and conservation. The event and the gardens were managed by EFAO in partnership with Seeds of Diversity. *Seed savers will find lots to learn at the EFAO Conference Online Program session on Landrace Breeding for Resilience, with Joseph Lofthouse and Marvin Gomez.*

MEMBER PROFILE

Anan Xola Lololi: 27 Years of Black Food Sovereignty, and Counting

EFAO Board Member Anan Lololi is Chair of the Black Food Sovereignty Working Group, an initiative of Afri-Can FoodBasket that emerged when the organization began working with the City of Toronto's Confronting Anti-Black Racism Unit (CABR) to create The Toronto Black Food Sovereignty Plan.

With 27 years of experience working in the non-profit sector as an Urban Farmer and Canadian Food Systems Analyst, Anan's passion is championing Black Food Sovereignty and advocating for low-income communities. In 1995 Anan co-founded Afri-Can FoodBasket (AFB) and was also a member of the Toronto Food Policy Council (TFPC) from 2001-2009.

Tell us a little about yourself as a grower and food justice leader. What led you to the current point in your career?

I was born in Georgetown, Guyana on the North coast of the Amazon. It was a wonderful food experience growing up with abundant vegetables like amaranth, cassava, bitter melon, fruits like sapodilla, all kinds of mangos, cashew pear, genip, awara, and sugar apple. When I came to Canada in the late 70s I got a gig with the band Truths and Rights at a non-profit organization called ImiCan in Regent Park, and we were the best reggae band in Canada for nearly a decade. My food justice career was born in that Afro-centric community with a sense that "you have to do for self." My work with youth is African-centred. Cultural roots are important for youth and some of that gets misplaced because of colonization. You have to know where you came from.

In the early 90s, after graduating from Centennial College in Toronto, I planned to open a vegan "ital" restaurant — I've been vegan for 45 years. The Rastafari Nyabinghi diet is a plant-based diet we refer to as ital livity, spiritually connected to the earth. Ital means to live naturally off the land: organic, free from additives. Ital is vital. I also received a small grant from the Ontario government to support food security in my community. That was the beginning of our consumer cooperative food buying club, Afri-Can Food Basket, which grew in partnership with FoodShare. We purchased culturally appropriate fresh food, packed it with help from volunteers, then distributed it to low income community members — for over 11 years. Black families remain 3.5 times more likely to be food insecure than white families; 37 percent of Black children live in food insecure households in Toronto. In the first year of the pandemic alone, we delivered over 200,000 pounds of food to low-income Black families in the greater Toronto Area.

By 2006 we had established Ujamaa Farm in partnership with the City of Toronto Community Garden Program, guided by my Urban Agriculture mentor, Solomon Boye. Due to budget cuts, the program disbanded and a new partnership was established in 2011, with Everdale Farm & FoodShare. This collective was now called Black Creek

Urban Farm. AFB Ujamaa Farm is an African-centred youth leadership food justice program combining urban ag training and tech support for community projects. Young people access their food by growing their food. Callaloo is one of the most popular crops with youth around Jane and Finch, Regent Park, Lawrence Heights, and Rexdale. Just the newness of the experience of farming is almost more important than the food itself. Some of the youth we work with were impacted by gang violence, sometimes from opposing gangs, like the Bloods and Crips. We brought them together safely and successfully, through urban agriculture. It is powerful healing to connect with the earth, grow something, connect with your history and your roots. Without those roots communities are more prone to strife.

Ujamaa farm grew for many years on a shoestring budget, but it has been an example to a lot of Black farmers.

What is Black Food Sovereignty Toronto, and what is your vision for the future?

Black Food Sovereignty Toronto was established by Afri-Can FoodBasket in partnership with the City of Toronto in 2019. Black food sovereignty is the right of people of African descent to access healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and define their own food and agriculture systems. The goal is to empower Black communities to farm, become more entrepreneurial and invest in businesses that produce affordable, nutritious food.

From 1999 I started attending The Community Food Security Coalition Conferences, a North American non-profit made up of 325 member organizations. At the first one I attended in Chicago I was the only Black person. Diversity was not on the agenda at all. It's nice to see that EFAO is committed to this and building relationships with Black, Indigenous and farmers of colour.

I'm inspired and motivated to see the current proliferation of Black farmers starting out, especially young Black women farmers — the resilience and perseverance is there despite all the odds against them. Cheyenne Sundance is doing a lot of great work and recently I feel proud of Nicole Austin, program coordinator at the Harvest Collective and Learning Circle, a Black Food Sovereignty initiative at Toronto Metropolitan University rooftop urban farm. She leads the dedicated space for growing and celebrating African diaspora crops. The Harvest Collective program promotes food literacy and justice, environmental stewardship and community healing. Nicole has been working miracles.

Retiring from AfriCan Food Basket, my current focus is on policy change and advocacy. I have a vision of a fully funded Black learning farm, with both urban and rural growing areas, teaching staff, equipment and infrastructure. For over 400 years, colonization and white supremacy has been a fully intentional system, so the work to undo that and rebuild needs to be intentional, committed and fully resourced. We have a lot of brilliant Black people from over 125 different countries in Ontario, skilled agronomists, horticulturists, and botanists. We could bring so much wealth to the province growing Black farm businesses, focussing on crops like pumpkin, okra, callaloo. I'd like to see support for a Black farmers co-op to buy compost together, mulch and seeds together, as a collective. New Black farmers need so many resources and I would like to see more of their stories widely represented in agricultural magazines and newsletters.

What do you wish more people understood about Black Food Sovereignty? What can farmers who wish to support your work do to help?

That it's not just about farming. It's everything to do with food and land and resources. We worked for 300 years for free — without Black people there would have been no industrial revolution. We were the farming machines. Learn the Black history of even one crop like cotton, sugar or rice. It will open your eyes.

Individuals and organizations like EFAO, NFU, OFA, and Regeneration Canada can work as intentional allies. If you have land and resources or social capital to support Black and Indigenous new and young farmers, step forward. Educate yourself, take anti-racism training, engage in conversation with new BIPOC farmers, share what you can, advocate for funding. I also admire the work being done by local First Nations, like Six Nations of the Grand River Denise Miller's Revitalizing Our Sustenance, among many others. We must work in solidarity and learn from each other. It's a long and intentional process to heal our agricultural system. We have a lot of work to do. ■

Choosing the Right Livestock for Your Farm

Part 1: Before you Buy

By Katrina McQuail

So, you're thinking about adding livestock to your life; whether diversifying a pre-existing operation, or starting a completely new venture. There are so many wonderful reasons to get livestock, and probably just as many less wonderful reasons not to. I will try and walk you through some of these considerations and different types of livestock that you might try.

In farming, ideally any enterprise is earning income, or is at minimum, cash neutral. There are a few reasons you might consider losing money on or subsidizing a livestock enterprise, but if you want to make money it is important to run realistic numbers when planning, and then run the numbers each year to make sure that you aren't losing money.

If you're adding livestock to your farm operation, you need to be prepared for it to affect your lifestyle because of the feeding and daily care requirements. Most livestock require someone to be there daily if not twice a day to feed and monitor them. There is an adage that the most valuable input a farmer has for their farm is their footprints, or their monitoring of the farm, and that is also true for livestock. Frequent monitoring of livestock allows you to catch issues, from the water trough not working to pest and disease, or other health issues that could have catastrophic impacts on your flerd (flock or herd).

Personally, I find working with livestock to be incredibly rewarding (and at times infuriating). Having a relationship with the animals, and an excuse to get outside no matter the elements, is incredibly special and good for my mental health. That being said, it can be heartbreaking and challenging when animals get sick or injured, and it can be hard to say goodbye when you sell or harvest one. As my father always says, if you've got livestock, you've got deadstock, so you need to be prepared for that. And, you need to have a back-up plan/person so that you can get away from the farm and get days off, which is also important for your mental health and wellbeing.

Important considerations for choosing livestock:

1. Amount of land available for pasture.
2. Existing infrastructure: buildings for shelter, fencing, water lines, etc...
3. Time available for care.
4. Plan to feed what you grow or purchase feed, as well as salt and minerals.
5. What is the purpose of livestock? I.e.: manure production, grazing, eating compost, recreation, meat to sell.
6. How are you at dealing with injured, sick or dead animals?
7. If you are planning to harvest them for meat, will you do it yourself for home use or are you able to access an abattoir for processing? How far will you have to travel for this and how will it affect your costs and timing?

Each type of livestock increases the management and complexity of an operation; most have unique feed, space, housing, and water requirements, and winter housing and feed storage are often different from summer. Be careful about mixing livestock types – horses and cattle are ok in a pasture together, whereas sheep and horses often don't work in small pastures. Chickens and turkeys are not good together due to disease issues but ducks and geese are okay.

You need to think about your feed plan. Are you wanting your feed to be certified organic? Uncertified organic, GMO free, corn and/or soy free? Organic feed is not always easily available, and you may have to travel a distance to get it or pay a substantial delivery fee. Do you have the storage and grinding or mixing facilities needed for feeding pigs and young poultry? Regardless of purchasing or growing your feed, you will also need to purchase mineral & salt supplements.

The space requirements for housing livestock can be significant. There may be different issues between summer and winter housing. In our climate, there are winterizing issues for water bowls, water lines, and the potential of frost heaving barn foundations. If you are following the Canadian Organic Standard, the pasture requirements for organic animals means you will need to fence pastures for your livestock. You can choose simple or more complex fencing systems and you'll need to decide between woven metal wire vs. electric, and between single strand electric, multi strand electric and electro netting, depending on the species you are fencing.

For smaller livestock there can often be predator issues (for all poultry, sheep, and in some places calves), and these can come from the sky or land. Think hawks, eagles, skunks, mink, cats, dogs, coyotes, etc.

If you want your livestock to be certified organic, you must become familiar with Canadian Organic Standard's requirements and pass an annual inspection as well as submit all of the required paperwork. If you want your meat to be certified organic, you must use a certified butchering facility or ensure your facility is approved for organic processing.

When buying in new livestock, think about where you are sourcing your livestock from. You want to purchase from a reputable source and someone whose livestock are in good health. More and more people are advertising livestock (and products) on Facebook Marketplace, Kijiji, etc... but it is harder to trust the source and/or quality of the animal. Generally you want to see an animal before committing to purchase it. Though the price may seem great, you often end up paying "unseen" costs in vet bills once you've gotten the livestock to your farm. This is just as important whether you are starting a new livestock enterprise on your farm, or you are buying in breeding stock to expand your pre-existing program.

Another consideration when adding livestock to your operation is whether you plan on breeding livestock, and if you do, what is your plan for the offspring? Are you raising them up and keeping them? Are you going to raise them and sell them live? Are you selling them as meat? Do you plan to market directly to customers? Or will you market into auctions or a wholesale situation? You need to plan the time and overhead that it will take to sell them in the way that you decide.

If you aren't breeding livestock on your farm, are you going to buy young in the spring and butcher them in the fall, not needing to overwinter anyone? That will change the infrastructure and time requirements. It can be challenging to find a secure source of livestock, so you'd want to cultivate those relationships and have a plan for if they fall through.

Who knew that adding livestock could be such a complicated process? In some ways it can be such a simple, spontaneous, "yes, I'll buy that!" but then you have to live with the consequences, like when I made an impulsive purchase of quail this summer...

In the second part of this article, I'll delve deeper into the different species of livestock that are often found in farming operations and some of the individual benefits and challenges that adding them to an operation might bring. ■

Part 2 of this article will be published in the Spring 2023 issue of Ecological Farming in Ontario.

Katrina McQuail *(she/her) leads the farming operation at Meeting Place Organic Farm which is on the traditional territory of the Anishinabek, Odawa and Mississauga. She is grateful for the opportunity to steward the land, build community and see the stars in such a beautiful place. Katrina grew up with draft horses, sheep, goats and chickens, and as an adult added cattle, pigs and ducks to her repertoire.*

Don't miss several exciting livestock sessions at the EFAO Conference Online Program, including Climate Change Adaptation in Grazing Practices and and Artisinal Poultry Panel! Register at conference.efao.ca.

A Field Day at Ironwood Organics

By Jackie Clark and Chris Wooding

On July 26th, Chris and Mary Wooding welcomed guests to their farm – Ironwood Organics – outside of Athens, Ontario for a small grains field day.

At Ironwood Organics, the Woodings produce many small grain species, including wheat, rye, oats and barley, with a focus on landrace or heritage varieties, soil building, biodiversity and ecological management practices.

➔ Chris spoke to the group about his experiences growing out and breeding heritage varieties. Modern dwarf cereals are very specialized for high inputs and stable environments. One of the main focuses of Ironwood is the restoration and bulking up of long straw heritage varieties. Each growing season, the varieties better adapt to local environmental factors, weather extremes and diseases. In addition, the straw is worked back into the field, increasing the soil organic matter, nutrient destination, and water holding ability.

↑ Chris obtains seeds from many sources, such as small seed houses, Plant Gene Resources of Canada (the Canadian genebank), and the UK's John Innis Centre. He grows them in plots on his farm for several seasons, to bulk seeds and select for desirable traits. In this way, he cultivates locally adapted varieties. When extreme weather events occur, such as dramatic flooding or severe drought, surviving plants are harvested as resilient representatives of the variety.

↓ Some of the traits that Chris selects for are straw length, flood tolerance, drought tolerance, and cuticular wax development. Each of these traits plays a key role in climate adapted seeds.

↑ The initial selection of which varieties to grow out begins in the literature. There are many variety classification guides from the 1800 and 1900s. The parent crosses, breeding history, geographic location, and disease susceptibility are considered. One characteristic that is ignored is the milling quality. Roller mills were in practice for much of the time period, but our cereals are all destined for cold stone ground flour. Therefore, they are selected for taste and nutrition, not so much for yield and ease of milling.

↓ The Woodings also cultivate biodiverse habitats on their farm. The ecotone along the hedgerow and field supports a rich biodiversity. Other examples include the addition of this field of Prairie Meadow, to help wildlife thrive.

↑ Chris has some unique varieties on his farm, such as this Utrecht Blue and early Dutch emmer, pictured above. Some other favorites include Hen Gymo, Orange Devon, Red Bobs and several on-farm selections; Iron Fife and Flood Fife.

↓ Chris has a diverse collection of equipment to grow small grains on a broad range of scales. For example, note the Earthway seeder in hand, which is used for small trials, and the plot seeder from the 1970s in the background, which is used for larger plots, when the Earthway becomes impractical.

↑ Innovation and customization, like the plastic jugs inside the seeder here, allow Chris to custom plant rows of different varieties for testing or seed bulking plots.

↑ Harvesting, threshing and winnowing of grains can be achieved with a range of tools and equipment, from scissors, scythes, and small pull-type combines (as seen here).

↑ Cleaning seed is achieved primarily by separating by size (sieving and scalping) and by wind/fans which are further separated by density. While combines achieve all these steps in one machine, manual harvest requires threshing and cleaning.

↑ Pictured here is a seed cleaner from the 1920s. There is a top screen that removes material larger than the desired seed. Beneath is a smaller screen that lets weed seed fall through. The resulting seed goes through a fan that separates light seed and other similar sized debris.

↑ Field day attendees got the special experience of tasting the end result of the Woodings' years of work and experience: tasty, farm-fresh bread! ■

Jackie Clark *is EFAO's Small Grains Program Manager, helping encourage farmers to realize the benefits of incorporating small grains in field crop rotations. She is also an accomplished writer and former journalist.*

Chris Wooding *and his wife Mary run Ironwood Organics, a 170 acre demonstration farm where he grows wheat (winter and spring), oats, rye and barley. A major focus of Chris's work is to understand and educate about the interconnectedness of the environment, food, health and diversity and sustainability and resiliency.*

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Notes from an Ontario Land Trust

Learning to Help Farmers & the Future of Agriculture

KAWARTHA LAND TRUST

by Thom Unrau, Director of Community Conservation, Kawartha Land Trust

For the past 15 years, I have been involved in the land trust and conservation sectors in a variety of roles, from a volunteer in the field planting trees and cleaning up garbage to the Director of Community Conservation at a steadily growing land trust in Ontario.

My work has taken me from King City outside of Toronto to Northern Ontario to South Africa. And now I find myself back home in the Kawarthas, where I grew up. My travels, work, and the people I have met along the way — people passionate about land protection — have led me to believe that land trusts are part of creating a more sustainable future in our province, including the sustainability of agricultural land.

Land trusts are in the business of solving problems with land. Many have focused on biodiversity loss as a top issue. If you're unfamiliar with land trusts, the Ontario Land Trust Alliance (OLTA), describes these organizations as "non-profit, charitable organizations that have as one of their core activities the acquisition of land or interests in land (like conservation easements) for the purpose of conservation."

The collective impact of OLTA members in the past twenty years, according to recent data shared by the organization, shows that more than 117,000 acres across 1,100 properties have been protected as a result of work by land trusts and the communities that support them. An incredible achievement, but there is more work to be done to meet the goals outlined by 30 by 30 — a global initiative to protect 30% of the Earth's natural areas by 2030.

Land trusts can be local in their focus, but they may also be provincial, regional, or national. While most Ontario land trusts have typically focused on protecting important wetlands, at-risk forests, and other natural land under development pressure, they also exist to protect agricultural land.

Agricultural land feeds our communities, supports local economies, and contributes to the overall biodiversity of regions when sustainable practices are used. Farmland matters deeply to our sense of place — our local identities, our families' legacies, and our collective future.

Despite the importance of farmland, statistics from the 2021 Census of Agriculture show that Ontario is losing an astounding 319 acres of farmland *every day*. To varying degrees, according to an Environment Canada Wildlife Habitat on Farmland Indicator, in-field biodiversity has also declined. According to data from the Ministry of Agriculture, Food and Rural Affairs, the number of farms in the City of Kawartha Lakes declined by 17% between 2006 and 2016 and a further 9% between 2016 and 2021.

At Kawartha Land Trust (KLT), a regional land trust in the Kawarthas that is currently celebrating its 20th year of protecting land in our region, we largely focus on creating nature reserves through land ownership. That's one way to protect land, especially natural spaces, but what about working land like agricultural fields and woodlots? Over the last few years, I've realized our organization must use the land trust's mechanisms and strengths to help solve problems on working land as well.

Agricultural land that is protected by a conservation easement agreement.

There are different mechanisms a land trust like KLT can use to protect land. Land can be donated by landowners, purchased through donations, or protected through Conservation Easement Agreements (CEAs).

KLT regularly works with local landowners to legally restrict environmentally damaging practices on their properties by registering CEAs on their land titles. CEAs ensure that landowners still get to own, use, and sell their properties as they wish, but they also limit the use of the land to protect its natural or agricultural features. What this means is that a CEA can ensure that agricultural land is not severed and developed, turned into a gravel pit, or even permanently restored to its natural habitat. A CEA can ensure that farmland is permanently available on our landscape.

Kawartha Land Trust, through its supporters, volunteers, and donors, has protected approximately 5,000 acres of land, including the largest undeveloped island in the Kawarthas, provincially significant wetlands, deep forests with old growth characteristics, and approximately 200 acres of farmland. KLT's overall protected acreage includes both donated land, purchased land, and land protected through CEAs.

Our successes are complementary to the everyday efforts of landowners across our region. There is a strong culture of conservation in the Kawarthas. Promoting and encouraging this culture is also an important part of protecting our landscape.

KLT has recently invested in a new program known as "Partners in Conservation." Through this program, we collaborate with landowners to provide them with detailed information about the natural heritage and agricultural values of their land, and describe how that land is connected to the larger landscape. Through the Partners in Conservation program, there is also the opportunity to collaborate on stewardship projects. Now, in its third year, KLT's Partners in Conservation Program team has worked with dozens of landowners on projects across thousands of acres of land in the Kawarthas.

In terms of providing support to farmers, our Partners in Conservation Program has helped farmers monitor soil health and access resources to implement best practices related to either their fields or the edges of those fields.

I think of our role as a general contractor for good on your land. Most landowners want to do the best they can for the land but do not always have the time or connections to act. We see it as our job to lower those barriers through one-on-one support and real hands-on knowledge of your land and learning about your interests related to your land.

Kawartha Land Trust is learning how we can help the landowners that we connect with. Land access for new farmers and long-term agreements on rented land are common difficulties shared across our landscape. We are working to develop tools with other organizations to solve these problems using the strength of the land trust to help.

For KLT, working on the permanent protection of a farm in the Kawarthas through a conservation easement agreement has catalyzed our progress with regards to working with agricultural land.

Bruce Kidd has lived on his farm in Douro for decades, and strongly believes in protecting nature as well as ensuring his farmland stays in production. The CEA we worked on together sought to protect those values.

With the CEA now registered on the title, KLT is responsible for ensuring the current landowner and any future owners of the land respects the land protection values enshrined in the CEA. Bruce wanted to work with a local organization and I'm glad he has. His passion for protecting both his agricultural land and natural land is inspiring and shows that it can be done.

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Bruce and Thom walk the land that they have worked together to protect.

Fortunately, land trusts do not need to reinvent the wheel when it comes to protecting agricultural land and supporting farmers. There are amazing land trusts in Ontario and abroad that are doing meaningful work. Local land trusts like KLT need to simply look at these models to see how we can support farmers' goals and add value, based on our regional expertise.

At home, the Ontario Farmland Trust (OFT) protects and preserves Ontario farmland associated with agricultural, natural, and cultural features of the countryside. Farmland easements were enabled by Ontario's Conservation Land Act in 2005. OFT was instrumental in this amendment to the Conservation Land Act. Since its incorporation as Canada's first province-wide agricultural land trust in 2004, OFT has protected over 2,300 acres on 20 farms. An incredible feat.

Regional land trusts also protect farmland across their respective service areas. Some farmland comes to land trusts incidentally — a parcel with a forest may also contain agricultural land. I can't speak for all land trusts across Ontario, but I know many protect farmland through conservation easements like KLT now does.

Abroad, the Vermont Land Trust (VLT) has protected nearly 150,000 acres of open farmland, ensuring that agriculture will forever remain a part of their state's landscape. They have also created soil health support programs for landowners and protect incubator farms and community farms.

Climate change, disconnection from nature, and biodiversity loss do not exclusively happen on natural land like forests and wetlands. They happen across our whole landscape, including on agricultural land. Likewise, food security and vibrant agro-economies rely on local communities rallying around farming. The biggest environmental problems facing our communities are complex and intersectional. To solve them we need to work together.

For my role, I commit to looking at the diversity of our landscape and to being bold in how we use land trusts' strengths to protect more land, including agricultural land. If you're concerned about the future of food and farming, look into what the Ontario Farmland Trust offers or contact a local land trust in your area to discuss farmland protection options in your region. For those already working with NGOs and organizations dedicated to the future of farming in Ontario, I hope the land trust sector can be a strong ally in your important work. ■

Thom Unrau *is the Director of Community Conservation at Kawartha Land Trust. He believes that "land is the answer" to many of the biggest challenges we face and that we can rise to this opportunity by making conservation relevant and inclusive to all. Thom can be reached at tunrau@kawarthalandtrust.org.*

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Watermelons in Thunder Bay?

A Landrace Breeding Project

By Sarah Larsen

It's a hot August day, you are in the field with sweat dripping down your face — you are drenched in it, and you need a pick-me-up. If you farm in southern Ontario, you'll make a beeline to the watermelon patch and break one open. Sweet and refreshing, watermelon is a staple summer treat.

However, for Evalisa McIllfaterick, a farmer in Thunder Bay, there's a good chance there are no ripe fruit in July to give her that thirst-quenching watermelon sugar high.

In fact, over the last decade, Evalisa has tried many different varieties of watermelon and hasn't been able to find a variety that is consistent with respect to ripening time and taste. Thinking back, she says "maybe out of 50 plants, I'd get three good melons."

So when Evalisa listened to a podcast with Joseph Lofthouse on landrace seed breeding, she immediately thought it held a lot of potential as a method to develop shorter-season crops for growing in northern Ontario.

"After learning about it, I wanted to try landrace breeding and thought 'what is the funnest thing we would want to grow up north really consistently?' Brought back to those hot summer days, Evalisa thought of watermelon.

Landrace breeding, explains Evalisa, involves planting a "bunch of different varieties of one crop together, so they all cross pollinate each other. You then save seed from the fruit that meets your needs, and continue to grow that seed out until you have a variety that has relatively stable criteria."

A key to landrace breeding is to "keep the genetics diverse by having only a few specific criteria for selection," says Evalisa. "And by keeping genetics diverse, the variety you develop is really adaptable."

In her case, she wants watermelon that can "grow fruit in northern Ontario with good taste and texture," which by default means watermelon that can also ripen enough in a short season.

To keep the genetics broad, she selected only on the basis of ripeness, taste and texture and ignored other traits like rind and flesh colour, fruit shape and size, and even yield in the selection process.

To help get this idea in the ground, Rebecca Ivanoff, EFAO's Seed Program Manager, connected Evalisa with Manish Kushwaha of Gaia Organic Seeds, who had done a crossing of 23 types of watermelon for a breeding project that he was doing. She got seed from him, and started growing it out in 2020.

In 2022, Evalisa, Manish, and the farmers at Roots to Harvest in Thunder Bay decided to collaborate more formally in cooperation with EFAO's Farmer-Led Research Program (FLRP).

Aaron Halcovitch, a visitor from Morning Moon Farm, cracks open a melon to check ripeness. This one was not a winner!

Evalisa had conducted a spinach trial with the FLRP before and wanted to work with the FLRP because "it provides a framework to bring others into these exciting experiments, which is something I couldn't do on my own."

Through her experience with spinach, Evalisa knew she wanted the protocol to be "simple, because things go wrong!"

Specifically, they designed the protocol "to meet the needs of the breeding methods and the needs of market gardeners who might want to participate but without a lot of space to grow a potentially unmarketable crop," says Evalisa.

Joseph Lofthouse will be contributing to a session about landrace breeding during the Online Program of the 2022 EFAO Conference! See session details and register at conference.efao.ca

The colour and shape of the melon seed is almost as variable as the melons themselves.

To do this, they decided that each farm would record "descriptive information about the fruit and save seed from the first 25 melons that met their criteria, and then track the total harvest from the patch," describes Evalisa. "This means farmers could sell the rest of their melons after the first 25, just keeping track of yield."

"We also decided to keep the 25 melon seeds separate — with general descriptions — so in years to come, if we want to go back to breed something more specific, we have seed to start with," explains Evalisa.

In the following years, until they have varieties that are relatively stable, they will grow out seed that they saved from their farm, but not share across farms. In the end, each farm will produce its own landrace, and the farmers will be able to "see how different or similar their varieties look."

And even though yield is not a major concern at the early stage, Evalisa explains that as they continually select tasty short season northern watermelon, they "inadvertently end up selecting for yield in that there will be more melons from high yielding plants contributing genetics to the pool."

Can you picture it now? A watermelon patch full of beautifully different looking but delicious tasting and perfectly ripe fruit — in northern Ontario! ■

Sarah Larsen *is EFAO's Research & Small Grains Program Director and also supports soil health components of EFAO's education programs. She holds a Ph.D. in Soil Microbial Ecology from Iowa State University, and along with her partner and their daughter, tends the land that they call Three Ridges Ecological Farm near Aylmer, Ontario.*

Evalisa will share more details about this exciting, Northern-focused farmer-led research project at EFAO's Research Symposium as part of the 2022 EFAO Conference Online Program. Visit conference.efao.ca for more details and to register!

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What Does Farming Have To Do With Leadership?

By Brent Klassen

Over the course of my career, I've had the privilege of occupying leadership roles, and of mentoring others to do so. These experiences have been enriching for me, and I hope I've enriched others along the way.

But here's the thing: ideas of organizational leadership are changing, and much of what I once knew is yielding to new ideas and new practices. Norah Bateson, in her book "Small Arcs of Larger Circles," argues that the conventional idea of leader as a powerful individual, on whom rests a disproportionate mantle of authority and responsibility, needs to make way for leadership, which she views as an emergent capacity of a living system[1].

Or take Frederic Laloux[2], who says that a leader in a contemporary "Teal" organization should have only two roles: one is to create a culture of autonomy and self-organization, and the second is to model the behaviours of that culture. Full stop.

I gravitate to these ideas. There's no question that business-as-usual has led to widespread organizational dysfunction — of the people inside them, and also of organizations themselves. By contrast, I think elements of justice, equality and democracy emerge as we dissolve traditional hierarchies, increase individual autonomy, and spread real decision-making power throughout the org chart.

But where can we look for models of this new leadership ethos? If we are dismantling the structures that have given leaders their identity, or, more significantly, if we are re-thinking leadership as a systemic capacity, what templates do we have to help us navigate this metamorphosis?

To explore this question, I'm drawn to the natural world, which effortlessly models much of what we strive to build in human organizations — productivity, resilience, and adaptability, not to mention joy and fulfillment. Bateson says: "When we look to nature for models, we find there is not an ecology that would accommodate the existing model of leadership." She says that our notions of leaders in the natural world — "the king of the jungle," the "alpha male" — are nothing more than anthropocentric ideas superimposed onto an ecosystem whose complexity defies such simple role definitions.

So then, what clues can we draw from ecosystems to help us think about new models of leadership? Enter the farmer. Beyond producing a lot of food, my wife Val's 18-year journey into farming has yielded a rich harvest of insights that speak directly to these questions. Finding the intersection between these domains has been an intriguing exercise as we've begun offering corporate and team retreats at the farm this year.

In what ways does a farmer exemplify emerging ideas of leadership?

The farmer works within a matrix of factors, almost all of which, in some sense, are beyond her direct control. Weather patterns, animal behaviour, the presence or absence of pests and disease are all things she must navigate not as "givens," but rather as realities that unfold unpredictably from day to day. To be sure, there is still goal-setting around yield, quality, and so on, but those outcomes are fundamentally dependent on factors that are simply outside the farmer's control.

1 Norah Bateson. *Small Arcs of Larger Circles: Framing Through Other Patterns.* (Triarchy Press Ltd., 2016).

2 Frédéric Laloux, *Reinventing Organizations.* (Nelson Parker, 2016).

Laloux talks about the "predict and control" mindset expressed in a typical strategic plan being replaced by a "sense and respond" mindset, which feels very apropos to the farmer, who, working with constant uncertainty, needs to develop a keen sensitivity to the clues and cues that arise on her farm. And beyond sensitivity — she needs the skill to respond to a complex series of variables unfolding independently, unpredictably, and often mysteriously.

Managing vs. Tending

In that sense, Val often talks about the distinction between managing and tending: whereas managing a system is all about setting goals and controlling as many variables as possible so as to produce those results, tending a system, by contrast, leads with observation and curiosity. Knowing that you can never control the complexity of a living system, you observe how it unfolds, and ask questions, not about how to better control the system, but rather, how to work with the system as it is unfolding.

Otto Scharmer, who codified "Theory U", a framework for ecosystem-inspired organizations, says that healthy organizations evolve through a cycle of observation, reflection, and experimentation[3]. Observation invites us to pay close attention to everything going on around us with open hearts and open minds. Reflection, then, considers those observations from the perspectives of what wants to be born and what wants to die. Finally, Experimentation activates the potential that arises from those questions, creating the future that wants to emerge by trying stuff out, seeing what works and what doesn't.

I'm actually hard-pressed to think of a clearer implementation of Theory U than Farmer-Led Research: both the formal version, funded and supported by EFAO, but also the informal version that every farmer does every day of the year — observing, reflecting, and experimenting.

All of which begs the question: how would organizational leadership be different if leaders were as sensitive and responsive to their environments as farmers are?

Boss vs. Steward

One difference might be in the fundamental posture of the leader. An organization that is tuned to observation, reflection and experimentation is, at its core, a "learning" entity. Bateson believes that our notions of leadership, rife with individualism and lopsided power, are "toxic to the ecology of communication and collaboration."

The ecological farmer, by contrast, is student more than teacher, curious more than convinced, vulnerable more than self-assured. Indeed, it is the humility of this posture, especially in community with other like-minded farmers, that leads to discovery, knowledge sharing, and ultimately, to the exploration of a new set of questions.

She's not the "boss" of the system she's tending, commanding allegiance and driving results. Rather, she is the steward of it, coaxing the system towards greater health and harmony, and producing food as a beneficial outcome of her care.

Can we transpose this idea of stewardship into organizational life? What if the boss were instead a steward of resources — people, talent, money, assets — all working toward common goals, sharing common values? What sorts of things might emerge from such a milieu that might never see the light of day in a traditional management pyramid?

For those of us who straddle the worlds of agriculture and contemporary organizational life, I want to encourage curiosity about how farming might seed and cultivate new ideas about leadership, and in so doing, transform static organizations into living systems. ■

Brent Klassen *and his wife Val Steinmann live on a diverse, ecological farm just outside of Guelph (www.heartwoodfarm.ca). When he's not tapping trees or making cider, Brent applies ecological systems thinking in his consulting practice. He and Val also facilitate unique Corporate Retreats on the farm where these ideas really come to life.*

3 Otto Scharmer & Katrin Kaufer. *Leading From the Emerging Future: From Ego-System to Eco-System Economies.* (Berrett-Koehler Publishers, 2013).

Can Forestry and Farming Mix?

Part Two: Possibilities for Silvopasture in Ontario

By Pam Jackson, RPF (Registered Professional Forester)

Continued from Ecological Farming in Ontario, Vol. 43, Issue 3: Fall 2022

The best forests to practice silvopasture in are those that are already degraded. These types of forests may have been historically mismanaged or undermanaged, for example, those that were planted through afforestation efforts and then left alone for many years, or those that are relatively young and could more quickly be moved forward with the help of animal or human intervention. One example is a conifer plantation that has not been managed appropriately, and therefore has undesirable or invasive species growing in the understory.

Perhaps an area was heavily cut and all the best trees removed leaving the genetically inferior, diseased, poorly formed trees behind. In a forest like this, choosing your next generation of healthy trees and then working to support those trees can result in a healthy, more resilient forest, faster.

Perhaps you actively remove diseased trees to make space for small healthy trees, but in the process you open things up too much and have an issue with raspberry, buckthorn, or other species that foresters would normally try to manage with herbicides or brush saws. Instead, that active management could be done by animals for free, as opposed to humans at great expense. This is exciting to think about. Growing nutrient dense food while also managing a woodlot? It's something that we need to learn more about and study further, but seems very promising.

Forests that Can Benefit from Silvopasture

In my opinion, the best forest types that may benefit from management via animals, and therefore the best opportunities for silvopasture, are:

1. conifer plantations that have been either neglected or have invasive species becoming established in the understory (livestock can eat down these unwanted species);
2. oak savannah-type ecosystems where you are trying to remove inappropriate species and open up the canopy to allow for the development of a tallgrass prairie ecosystem below mature oak (or other savannah trees);
3. hedgerows;
4. highly degraded (or high graded) forests where desirable trees are protected from animals, but non-desirable trees and shrubs are removed or eaten by the animals.
5. old, overgrown tree farms. These typically consist of a mix of species planted in rows and are often quite open, with grasses and forages in the understorey.

A neglected conifer plantation.

The green leafy matter at the bottom is mostly dog-strangling vine, a highly invasive species.

This pine stand is in need of thinning before anything will grow in the understory.

An oak savannah ecosystem where silvopasture could be beneficial. Photo credit: Pleasant Valley Conservancy.

Woodlot where all the large trees were removed at one point. Dead and dying ash make up the bulk of the overstorey and invasive European buckthorn makes up the understory. There was a small component of hickory and oak in the stand. Those desirable trees could be protected from grazing animals and would kick-start the future savanna ecosystem here.

A neglected tree farm with many rows of native and non-native trees. In places the trees are very crowded and would benefit from thinning. Grass is already abundant in the understory so this ecosystem is well on it's way to making a great silvopasture.

Silvopasture is hopeful

As a farmer working with natural processes, to me it's totally logical to expand our planning and thinking past the boundaries of our fenced paddocks and cultivated fields. There could be an untapped resource there. If we are smart about how we engage with these underutilized, under-managed zones, we can increase our farms' resilience. We will have fodder for our animals for drought times, firewood and sawlogs as a renewable fuel or revenue source, increased animal health from a more varied diet, and more protection from the elements.

My hope is that learning about silvopasture and implementing the practices will result in more healthy forests overall. Landowners who are engaged with their land will spend the time learning about it and will make good decisions that benefit not just the farmer, but the ecosystem as a whole.

As far as next steps go, I am very interested in learning more about coppicing, hedge laying, and tree & shrub species selection. Perhaps most importantly, I'm excited to be a part of a community that is as eager as I am to bring to light the environmental, economic and social benefits that the practice of Silvopasture can offer. ■

Pam Jackson *is a 5th generation farmer who farms on Treaty Lands and Territory of the Mississaugas of the Credit. Pam manages a grass-finished beef enterprise with her family. She has big plans for more tree planting, hedges and forest management and is very excited about silvopasture. She also helps others with forest management planning through her consulting work at Broken Gate Forestry: brokengatecaledon.com.*

For information about tree planting grants, speak to your local Conservation Authority or Forests Ontario: forestsontario.ca.

For information about forest management and to find out if your area has a Woodlot Association, visit the Ontario Woodlot Association: ontariowoodlot.com.

Interested in Woodland Ecology and Silvopasture? Attend the Coppice Agroforestry session and Silvopasture Meet-Up as part of the 2022 EFAO Conferece Online Program! You can also join EFAO's Silvopasture Network by emailing cassie@efao.ca.

Rodale Institute's Field Day 2022

By Ken Laing

The 333 acres of farmland that comprise the Rodale Institute are the home base for the wide range of activities Rodale has undertaken to develop and promote organic farming in the US and the world.

J.I. Rodale founded the organization, which was originally called the Soil and Health Foundation, in 1947 because he saw the connection between healthy soil and healthy people. After J.I.'s death, the farm was purchased in 1971 by his son Robert Rodale. Since then, the Rodale Institute has become a global leader in organic farming research.

In July of this year, I took a road trip to the Rodale Institute in Kutztown, Pennsylvania, for their annual field day.

The Rodale Institute now has nine campus sites and employs 14 Ph.D. scientists to explore various scientific aspects of organic food production. They have also expanded into extension, training young farmers and setting up the Regenerative Organic Certification program.

The Rodale farm is located in the rolling hills of rural Pennsylvania, not far from Allentown, in a countryside dotted with old stone farmhouses and big barns with stone walls at both ends. The soil here has been farmed for almost 300 years and looks a little tired and low in organic matter. The fields often follow the contour of the land and are rarely square.

The Field Day was held July 22, in the midst of a pretty severe drought. There were many stops on the tour route that were set up to explain Rodale's various scientific research activities: organic field crop no-till; vegetable system trial (described below); sweet corn mycorrhizal trial; ultraviolet light use in agriculture; compost production; field crop farming systems trial (described below); industrial hemp production; pastured hog production and organic apple orchard.

There were about 300 people in attendance, along with about 40 Rodale staff. The two long running farming systems trials that I was particularly interested to see firsthand were the Vegetable Systems Trial, and the Field Crop Farming Systems Trial.

Vegetable Systems Trial

This trial began in 2016 on 2.6 acres that had been managed organically for over 20 years, but had experienced a lot of tillage. The first harvest was in 2017.

This is a long term study that Rodale intends to continue running for 20 years and is ultimately designed to look at the relationship between soil management, the nutrient density of crops, and ultimately the impact on human health.

It is a very ambitious project under the guidance of Dr. Gladis Vinati, the lead scientist. The trial compares four growing systems: organic and conventional management with tillage and plastic mulch; and organic and conventional management with reduced tillage, cover crops and no-till techniques.

Experimental Design

The crops in the study are potatoes, winter squash followed by lettuce in the same season, sweet corn and green beans. Everything is set up with trickle irrigation.

For the tillage treatments they use a moldboard plough. For the reduced

tillage they use a chisel plough. For the organic system they use no-till rye and hairy vetch as the cover crops, which they roll in the spring. For the conventional system they use no-till rye alone, and terminate with glyphosate. For the areas with black plastic mulch, they till and then plant rye and hairy vetch for the organic system and only rye for conventional system, and then till again in the spring before laying the black plastic.

Measurements

The impact on soil health is being measured by permanganate oxidizable carbon, also known as POX-C or active carbon; and soil organic carbon, or SOC, which is comprised of 58% soil organic matter. POX-C changes relatively quickly (i.e. months) with a change in soil management, whereas SOC changes much more slowly (i.e. years).

In 2020, after four cropping years, *there was no significant difference in the SOC between the organic and the conventional* management for winter squash. The POX-C levels from 0-20 cm were significantly greater in the organic compared to the conventional. There was not a significant difference in POX-C between the reduced tillage and black plastic plots. POX-C levels in these plots also varied with soil depth and were higher at shallow depths 0-10 cm versus 20-30 cm.

On the Rodale website, you can find videos which go into much more detail regarding the measurement of nutritional quality of the vegetables from the different systems. There are also many resources available for farmers.

Having done on-farm research myself, I can appreciate the amount of work that goes into this kind of research. Long term studies especially present the challenge that you can not make big changes mid-term even if you run into unforeseen problems.

If there are many weeds between the rows of no-till beans, they use a high residue cultivator, which cuts through the residue without mixing it with the soil, and undercuts the weeds. There is a major addition of compost (60 tons/ac) before the organic potato crop. Their no-till winter squash planted into rye were obviously negatively impacted by the rye, an observation I have made here in Ontario as well. I requested their yield data but have not received it yet.

Overall, I was surprised at their use of plastic mulch. Maybe it is easier to get it recycled in the US.

Field Crop Farming Systems Trial

Started in 1981, the Field Crop Farming System Trial is Rodale's first and longest running systems trial. From 1981 to 1985 the yields were higher in the conventional system. After that date the yields were similar. In 2008 they introduced compost into the organic system. Along the way they introduced genetically modified crops into the conventional system. At some point they introduced no-till into both systems.

Presently there are three cropping systems, each divided into tilled and no-till: organic with manure (compost, really); organic, legume organic (low input); and conventional. The organic with manure is in a nine year rotation: corn, oat, wheat, soybean, corn silage, alfalfa, alfalfa, alfalfa. The organic with legumes is in a four year rotation: corn, oats/red clover, soybeans, alfalfa. The conventional rotation is two years: corn, soybeans.

After 30 years, they have made following conclusions:

- organic yields matched conventional yields after a few years of transition;
- organic outperforms conventional in years of drought;
- organic builds soil organic matter;
- organic uses 45% less energy;
- conventional produces 40% more greenhouse gases; and
- organic is more profitable.

Despite all of this experience, this year has proven to be a challenge because of drought. Most noticeably, the corn in the organic with legumes system was planted late, because it can only be planted after the hairy vetch is rolled. This late planting meant that the corn was short (~3 feet) when the drought hit.

They are also experiencing issues with giant ragweed in their organic oats. Oats are less competitive with weeds than winter cereals like wheat. It was also so dry that the high residue cultivator could not be used to control weeds in the organic no-till soybeans. Such is farming life; things do not always go as planned. This is still a very useful long term study, and Rodale is to be commended for having the foresight to initiate it and see it through.

All in all it is easy to see why Rodale is considered "World Class" in organic scientific research. ■

Ken Laing, *along with his wife Martha and now his daughter Ellen, has been farming at Orchard Hill Farm since 1979. More recently, Ken has been dedicating his time to Farmer-Led Research, and has been participating in the Living Lab – Ontario project, testing different organic no-till vegetable strategies for mid-sized farms.*

REVIEW

How to Save a Planet

Embracing intersectionality will help us fight climate change

What's on your podcast playlist these days? If you haven't listened to this yet, might I suggest you check out the show *How to Save a Planet,* hosted by journalist Alex Blumberg, about climate change and what we need to do to address it?

What I've really loved about this show is their intersectional approach when looking at the different ways that climate change impacts different communities. Conversations about race and racism are often present in their episodes and they make links to some of the wider systemic changes we need in order to fight the climate crisis. I also love how they end each episode with tangible calls-to-action, so you leave feeling energised and ready to act. And while they tackle a variety of topics, some of my favourite episodes are centered around food and farming. But before we go there, I'd like to start with the show's fifth episode: Black Lives Matter and the Climate. In this episode, you'll get to hear *How to Save a Planet's* original co-host Dr. Ayana Elizabeth Johnson. Dr. Johnson is a marine biologist, policy expert, and writer based in Brooklyn, NY. She co-created the show with Alex Blumberg and co-hosted for its first year. And, I have to say, my favourite episodes of *How to Save a Planet* are the ones she's co-hosted. Her insights as a Black woman working in climate change (with roots in farming too!) makes for episodes that get you thinking deeper and about all nuances that are often missed when talking about climate change.

Ok, back to the episode *Black Lives Matter and the Climate,* which I would recommend as a good starting point to this show. This episode aired in September 2020, six months after

the pandemic hit, four months after the murder of George Floyd, and asks the question: "what lessons can the climate movement learn from Black Lives Matter?" What comes out of this conversation are lessons in rooting the movement in community, and fostering creativity to allow us to imagine a future that is widely different.

Next, I would recommend scrolling up to an episode from January 2021 called "Soil: The Dirty Climate Solution". This episode was spurred by interest from lots of listeners who wanted to know more about regenerative agriculture and how soil health is connected to the wider health of our planet. This speaks to the growing interest in sustainable agriculture and the critical role that farming can, and should play, in finding solutions to the climate crisis.

If you enjoyed those two recommendations, *How to Save a Planet* has lots more episodes about food and farming, among so many great conversations that center intersectional experiences and solutions. These are cues I take in my work with Farmers for Climate Solutions, where my job is to tell the story about the incredibly smart and well-researched policies that are developed by our team. Let me take another cue from *How to Save a Planet* and share something you can do to amplify our work. Pledge your support and sign up for our newsletter! You'll get occasional updates about our policy and programs, and learn more about farmer-led solutions to climate change. ■

Gabriela Warrior Renaud *(she/her) is the Communications Manager with Farmers for Climate Solutions. Her focus is to amplify farmer voices and support the advancement of FCS' goals by efficiently communicating complex policies and ideas. Alongside her work, she has been producing a documentary project exploring mixed race identities and experiences.*

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