

# Ecological Farming in Ontario

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## *Farmer-led Research: Year in Review* page 22

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Linton Pastured Pork

Models of Community  
Supported Agriculture

Savory's Ecological  
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Aerial view of Ken Laing's research trial at Orchard Hill Farm in fall 2018. In cooperation with EFAO's Farmer-Led Research Program, Ken compared four cover crops to fall tillage with respect to yield, weed control, soil erosion and economics of no-till planted spring cereal grain. You can read the research report on page 13. Photo was taken with a Mavic Pro drone by Drake Larsen.





## 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 fosters healthy, vibrant 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 2020 Issue: March 6, 2020

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# Looking Ahead to 2020

Happy New Year! I hope all our EFAO members enjoyed some well-deserved rest and time with family and friends over the holidays. It's exciting to kick off the new year with a re-designed newsletter and a host of new initiatives.

By Brent Preston

2019 was an incredible year. The EFAO continued with our field days, kitchen table meetings and other activities that build knowledge and create community for our members. Our Farmer-led Research Program was recognized with the first Excellence in Agriculture Award from the Ontario Ministry of Agriculture, and we launched our Soil Health Benchmarking Study. We celebrated our 40th anniversary with on-farm events and a beautiful video that celebrates the vision and dedication of the farmers who started it all. To top it all off, we came together for our sixth annual conference in Belleville in early December. I attended a number of farming conferences this year, some with several thousand participants, and none of them came close to the quality and depth of programming we had at the EFAO conference. Our staff did an amazing job of planning and executing a top-quality conference. I feel very lucky to have had the opportunity to attend.

Looking forward, 2020 promises to be even more exciting. With new five-year funding from the Lawson Family Foundation we have been able to give our staff increased hours and better job security. The board and staff are working on a new strategic plan for the organization, and we are embarking on a collaboration with the NFU and other organizations to advocate for climate-friendly agricultural policy across Canada. The EFAO is better placed than ever to continue our research, education and community-building work with our members, and to work with partner organizations to spread ecological farming practices.

At the 40th anniversary celebration and the annual conference this year, I had the opportunity to talk to many of the farmers who founded the EFAO and nurtured it over the years. For most of the EFAO's existence, there was no staff, no money and



very few resources. The organization persisted and thrived only because of the hard work and dedication of our members. I think all of us feel a profound sense of gratitude to those early members and volunteers, and a heavy responsibility to continue their work. For forty years our members have been helping to create the conditions that make it possible for us to farm today — acting as teachers and mentors, and creating the community of farmers that sustains us.

I look forward to building on our solid foundation in 2020 and beyond. The EFAO has never been stronger, with dedicated, professional staff, stable funding sources and an engaged board. The wisdom and generosity of our founding members continue to be the defining characteristics of our members today. Together we can build a prosperous and regenerative future. ■

**Brent Preston** is the EFAO Board President. He and his wife Gillian Flies own and operate The New Farm, a certified organic vegetable operation near Creemore, Ontario, where they specialize in cut salads and cucumbers for wholesale markets.

# 10 Years of Growth at Linton Pasture Pork

Jeffrey Linton was a workshop presenter at this year's EFAO conference



By Allison Muckle

It's obvious that Jeffrey Linton is passionate about raising pigs. Growing up on a more conventional pork farm, he travelled to Scotland to experience pastured pig farming firsthand. Over the last 10 years, he has built Linton Pasture Pork into a successful farrow to finish business. He currently raises 75 sows of many different heritage breeds – both purebred and crossbred – in order to cater to the different preferences of his customers. However, he stressed that the breed of the pigs is really not the only factor in

the finished product you'll be getting – diet, health, and exercise all play a big role. Linton will only keep sows that have a calm, non-aggressive temperament and who can fit into a system where they are being moved and handled often. For example, he's found that Large Black pigs work well in his operation, and Tamworths do not.

Over time, Linton has moved away from direct market sales and currently sells only wholesale – to more than 10 butcher shops and more than five

restaurants. He does deliveries himself, which takes a significant amount of his time. However, it allows him to sell mostly whole pigs to his clients, eliminating the problems of having leftover cuts in the freezer, mix-ups at the abattoir and saving both his time and cut and wrap fees. He found that farmgate sales just didn't work for him because of the extra time and because of the distance between his farm and his customers. He credits social media (especially Instagram) for helping him secure his wholesale customers, as well

as his overall farming goal to produce a product that can speak for itself in terms of taste and quality.

Linton shared his belief that “there’s a new way of doing things the old way” ~ this includes protecting and improving the soil where his pigs graze, avoiding toxic mud wallows by providing shade for his pigs, feeding nutritionally balanced grains and high-quality, digestible forage in the right stage of growth, and developing silvopasture in his paddocks. Although silvopasture provides excellent shade for his pigs, this is the most sensitive ecosystem that he works with on his farm ~ having a wide variety of plant species in these areas, avoiding overstocking, and moving pigs before they can damage trees and soil is critical.

Linton doesn’t own the land where he grazes his pigs, but having a flexible system lets him adapt. His pasture fencing is single wire electric fence and

both your pigs and your land/soil (but if you see bare ground, move your pigs ASAP!). Being able to be flexible and adapt to what you see might be the key to successfully managing a pastured pork operation.

---

**“You have to watch your pigs, watch the plants, watch the weather, and watch the soil to make sure you’re benefiting both your pigs and your land/soil.”**

---

Linton uses a diverse mix of forage in his pastures that begins with frost seeding in the early spring. Sheep pasture mix can be a good forage seed mix to plant once the ground has warmed up, and he seeds a lot of kale and turnips in his pastures, as well as clover. He notes that purple turnip is a great crop to help with soil that has become compacted,

such as his winter sacrifice area. His pastures are divided up into gestating, farrowing, and weaning groups, and Linton brings sows indoors to farrow after the first snow flies (farrowing huts are not insulated).

One of Linton’s best time-saving innovations on-farm is his watering system,

which he has reinvented through trial and error over the years. He runs deeply buried water lines out to his winter barn shelter, where the pigs use automated waterers. In paddocks away from the barn, he uses bulk water tanks/totes, which he fills and then transports by tractor. Another trick he uses is to mix water in with the pig’s feed so that even

if the pigs dump their water buckets, he knows they are getting enough water in their feed.

Linton continues to grow his operation and envisions a future where humane, sustainable pastured pork is available in grocery stores and online across Canada. He would like to collaborate with other like-minded pig farmers to make that happen. ■

*Allison leads EFAO’s Northern programs, from Ontario’s northernmost District of Kenora all the way down to Muskoka. She also coordinates a pilot program to support and encourage new and young farmers in Northern Ontario through training, mentorship, and start-up grants.*



Jeffrey Linton

he moves pigs between pastures using a truck and trailer. He mentioned that although he’s often asked how many pigs you can pasture per acre, or how often you should move pigs between pastures, he said that there’s really no formula – you have to watch your pigs, watch the plants, watch the weather, and watch the soil to make sure you’re benefiting

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# Savory's Ecological Outcome Verification

Moving Beyond What We Do to What it Does



By Thorsten Arnold

**W**hat is better, certified grassfed beef or certified organic beef? If that question has kept your brain running, check out a totally new way to look at regenerative agriculture. What grassfed and organic certification have in common: they are based on the practices that a farmer uses or not uses. These practices were compiled with the belief that producers will use them for the intention of sustainable production and stay “true” to the intent of these labels. But do they? By farmer headcount, certainly – but less than 5% of producers supply more than 90% of the retail products, and many of the largest suppliers just care about the label, not the spirit behind the label. From a consumer perspective,

what these dominant 5% do – and the ecological outcomes – really matters! Investigators like Michael Pollan have shaken consumer confidence in “industrial organic” and “industrial grassfed” alike. So it’s about *how* producers manager their pasture, not just about what practices they use or not. It’s not the cow, it’s the how!

To measure whether farmers actually improve the land, the Savory Institute has developed the Ecological Outcome Verification (EOV) procedure and the Land to Market (L2M) label. During a two-week course in Colorado this September, a group of six Canadians set out to bring EOV and L2M to Canada – starting with Manitoba and Ontario.

EOV aims to monitor trends of four ecosystem processes: the water cycle, the mineral cycle, community dynamics or diversity, and the efficiency of energy flow. More importantly, the EOV is designed to empower ranchers, enable them to monitor this with their eyes only, by learning how to read their landscape. For that reason, monitoring indicators are simplified into a standard checklist.

To make these observations relevant for day-to-day management, EOV distinguishes two types of monitoring. *Leading* indicators describe rapid responses to day-to-day management decisions. These short-term indicators look at the species composition, the abundance of “contextually desirable”

and “contextually undesirable species”, the percentage of bare ground and some other aspects that are mostly relevant in desert-prone “brittle” environments, on the impacts of wind and water erosion on ground litter and on soil, and the way that litter decomposes. Together, these *leading* indicators mostly tell farmers how well their practices regenerate a pasture. Annually, these indicators also demonstrate whether the farm improves and deserves to carry the title “regenerative”.

Every five years, the EOV shifts to more comprehensive and quantitative monitoring of the state of the soil and ecosystem. In defined monitoring stations, a trained “EOV monitor” takes soil samples, measures infiltration, counts out species mix, and quantifies various other characteristics of ecological health. These quantitative indicators are called “lagging”, because their development lags behind changes in management style by several years. Lagging indicators are a good way to summarize what happened to the soil and good for consumer communication. But lagging indicators are not meant to provide feedback to fine-tune day-to-day decision making by reading the landscape.

The finer points of the EOV are its measurement scales. Every measurement is compared to a “desirable reference state” that is separately defined for each ecozone, using US-EPA’s Level III ecozone classification. In Ontario, that’s the mixed wood plains of (1) the Carolinian “Lake Erie Lowland” and (2) the “Eastern Great Lakes & Hudson Lowlands”, and further north (3) the “Algonquin/Southern Laurentians”. Naturally, desired and undesired species change with ecozone context – as does the overall mix of species and the “acceptable” ground cover! So, much of Savory Institute’s work around EOV has been around adjusting measurement scales to different areas in ways that give results which are “mostly objective and always useful”.

*“EOV is designed to empower ranchers, enable them to monitor this with their eyes only, by learning how to read their landscape”*

In Colorado, on most days our group practiced for two hours to monitor “leading indicators”. We learned to read the landscape, and then compared our ratings within the group. Most of us were unfamiliar with the dry, short-grass prairie ecosystem and initially distracted by avoiding rattle snakes and cacti, which in Colorado are noxious weeds - comparable to our Canada thistle. Within a few days, my average EOV rating for a station was consistently very close to the “consensus” that we achieved as a group – at times even for the right reason! This way, our group “calibrated” its collective eye and learned about observing a pasture as an evolving ecosystem.

In partnership with Manitoba’s emerging Prairie Hub, EFAO member Cory Van Groningen, a beef grazer and co-owner of the VG Meats family abattoir, and myself, would like to help get the EOV and L2M to Ontario. Both of us are participating in the formal qualification process from different angles. Cory and his family will try kick-starting marketing aspects. VG Meats does not aim at exclusivity for their company, but accepts the role as a pro-active leader who does the leg-work that others can follow. Meanwhile, my own role will be to figure out a governance system for the EOV in Ontario – a decision framework for how practitioners in Ontario define what is a desirable ecosystem state in our two ecozones (Carolinian and Eastern Great Lakes and Hudson Lowlands), how we can monitor the regeneration toward that state, and how we communicate coherently and consistently with consumers. Open questions require nuanced and contextual answers – there’s no right or wrong, there’s just useful, transparent and fair. Savory Institute is intentionally

taking time to let group learning emerge – because that’s what you do if you respect farmers as the real driving force behind a new way of reading and managing our landscape. Tony McQuail, a Holistic Management Certified Educator in Ontario, will work with us as we move this forward.

The initial EOV targets pasturing. Discussions have emerged around how to adapt EOV for market gardening, for cash cropping, for permaculture, and for integrated livestock-cropping systems. There’s room for emergent learning and for decentralised leadership. Is Ontario ready to play its part?

As the next step, I am looking for five (5) farmers who are interested in learning



about EOV and applying holistic management with its tools - planned grazing and/or financial planning. This

helps me to meet the educational requirements for bringing EOV to Ontario. Meeting Place Organic Farm has agreed to be a reference area during this process. Being self-funded, I am asking farmers to reimburse my travel costs and, if fully satisfied, to donate to the Savory Institute. If you are interested in being my guinea pig, please contact me at [Thorsten.r.arnold@gmail.com](mailto:Thorsten.r.arnold@gmail.com). ■

*In 2009, Thorsten Arnold moved from Germany to Grey County. With his wife Kristine Hammel, he co-owns Persephone Market Garden. As founding member of Grey Bruce Centre for Agroecology, he consults on local food systems, impacts and business planning.*

# Models of Community Supported Agriculture – A Comparison

We interviewed four Community Supported Agriculture (CSA) vegetable farmers, in order to highlight innovations and different perspectives surrounding the CSA model, for those who are considering offering a CSA or are looking for new ideas and inspiration.

## Leslie Moskovits of Cedar Down Farm

[cedardownfarm.ca](http://cedardownfarm.ca) | Facebook: @cedardownfarm

Leslie Moskovits and Jeff Boesch, along with their two young children, grow certified organic vegetables and herbs for spring, summer and winter farm shares on their farm in Neustadt.

## Elaine O’Sullivan of Grand River Gardens

[Grandrivergardens.ca](http://Grandrivergardens.ca) | Instagram & Facebook: @grandrivergardens

Elaine offers an organic vegetable and herb summer CSA on a family farm in Grand Valley.

Their farm also includes a dairy goat operation, an on-farm store and a pasture-raised pig and chicken operation.

## Amy Kitchen of Sideroad Farm

[Sideroadnaturalfarm.com](http://Sideroadnaturalfarm.com) | Instagram & Facebook: @sideroadfarm

Amy co-owns Sideroad Farm with her husband Patrick and their two children in Walters Falls. They grow certified organic veggies, flowers and pasture-raised chicken and eggs.

## Daniel Brisebois of Tourne-Sol Co-operative Farm

[Fermetournesol.qc.ca](http://Fermetournesol.qc.ca) | Instagram & Facebook: @fermetournesol

Daniel is a founding member of Tourne-Sol Co-operative Farm along with six other co-op members and seven additional employees. They grow organic vegetables as well as organic seeds for their online seed store and retail seed rack program. Tourne-Sol is located in Les Cèdres, QC.

## EFAO: How long have you been running your CSA? How many members did you start with and how many do you currently have?

**LESLIE:** We’ve been running it for 10 years. We began with 75 summer and 35 winter shares and now have 205 summer, 110 winter and 120 spring share members.

**ELAINE:** This is my 3rd year and I operate my CSA on a part-time basis. I began with 11 members and am now up to 20.



Leslie Moskovits and her family, Cedar Down Farm.

**AMY:** We started six years ago with 20 members and in 2019 we had 85 members.

**DANIEL:** We started with 110 shares 14 years ago and currently we have 500 shares.

**EFAO: How did you determine the proper scale/share number for your CSA and how has this evolved over the years?**

**LESLIE:** We have always had a vision of a CSA around the size we are at now (205 summer shares) but ultimately have made decisions on scale and numbers based on efficiently using our infrastructure, for example, starting the spring share to make the most use of our hoop houses, and how much labour we could effectively attract and manage as well as our required income. We also made the decision based on our ability to market and deliver the CSA using the same labour and infrastructure instead of having to hire additional help.

**ELAINE:** I was most nervous about this decision when I first started. I worried about not having enough for all my CSA members. For me, running the CSA part-time, I decided to start small and see what it took to grow enough for those 11 members in Year 1. I also kept in mind that for the first year I would need a lot of time and energy to get the garden and infrastructure set up for the longer term. I found it was important to think about what vegetables to offer for the first few spring shares when there are often limited options for fast-growing veggies and ensure I didn't "over-commit" to members. Year two I felt confident with the infrastructure set up and a rhythm to my work that I could serve double the number of members. Year three I kept the number around the same because I found I was running at max capacity. Next year I am looking to hire an intern and increase membership by another 50%.

**AMY:** We prefer a CSA that is a minor part of our [overall] operation so that we can be sure to always have enough product to fulfill our CSA requirements. We have grown slowly. We always sell out [of our CSA shares each year] so now

set a number that we feel our team can reasonably harvest and pack in one day.

**DANIEL:** We started based on our [collective] experience on other farms and expanded slowly year by year. Though we started with 110 baskets per week, I would not recommend this to most new CSA farmers. We were five people with solid farming experience.

**EFAO: Are your shares customizable or set? (i.e. what kind of choice do members have and how is this managed?)**

**LESLIE:** Our shares are customizable. We set up a market-style pick up where as many items as possible can be swapped. We aim to make everything tradeable so that people can take only what they want and only limit things that we need to because limited numbers or the value [of that vegetable] being too high to allow for swapping.

**ELAINE:** Shares are set but I do offer a swap bin at drop-off locations so members can exchange something they don't like for something they do.



Elaine O'Sullivan, Grand River Gardens.

**AMY:** We are fully customizable using a CSA software called Farmigo. We create a "Farmers' Choice Box" each week using the software and then invite our members to login to their accounts to customize their share for that week from the list of produce available.

**DANIEL:** Our shares are semi-customizable. We offer 9-12 items [per share] each week with two or three choices among the items. We also offer an exchange box to swap some items.

**EFAO: How and where do CSA members receive their shares?**

**LESLIE:** Our members come to a set location once per week. We deliver to three separate locations and set up for two hours at each location. We pay a rental fee at all locations.

**ELAINE:** Currently our shares are packed in baskets and members can pick up at our farm on Thursday evenings or we do a drop-off in Orangeville on Monday evenings in the lobby of a supportive business.

**AMY:** Members pick up [at designated off-farm] locations (members' homes or the Collingwood Farmers Market). In the winter we offer home delivery for a fee (\$5).

**DANIEL:** 200 of our members pick up directly on the farm. The remaining members are split over three off-farm locations. At the pickup, items are displayed in market-style bins with a list for folks to follow.

**EFAO: What is your farm's biggest challenge with the CSA model?**

**LESLIE:** Exhaustion. Not having enough labour to meet our needs which leads to stress.

**ELAINE:** Pleasing everyone. People are busy and it can be hard for them to commit to a regular pick up on a set day. We try to be flexible and accommodating but sometimes it just doesn't work.

**AMY:** Getting members to return their bins/follow the rules/read information clearly laid out in newsletters and on the website. It honestly runs pretty smoothly.



Dan Brisebois and the team at Tourne-Sol Co-operative Farm.

The changes we have made to make things super flexible are a big hit with our members.

**DANIEL:** We have a special order system for CSA members to order extra stuff. It is very popular with clients but a headache for us. There is a surprising amount of admin associated with tracking whether orders were picked up and dealing with different payment methods. We are trying to find ways to make this easier for us!

**EFAO: What has been your most successful CSA marketing strategy?**

**LESLIE:** Growing high-quality vegetables and having beautiful, abundant shares. Working to ensure customers are happy and fully satisfied through the aforementioned quality and quantity. Making sure customers can choose what they want and growing what they want ~ being observant about what they want and making sure that's what they get. Otherwise, we do essentially no marketing.

**ELAINE:** I think for us it's having a presence in the community. When I meet people at different workplaces or events and they get to know me I tell them about our CSA. People seem excited to learn about it and then it's more personal which is what I like. I want people to feel connected to their food and for that, it's important that they know their farmer.

**AMY:** Farmers markets are what initially seeded our CSA members ~ I think it

was important for people to meet us so that they could build that trust before investing in a membership. Now it's all word of mouth. I don't bother marketing or mentioning our CSA much because it seems to fill up quite quickly.

**DANIEL:** Word of mouth. Our current thrilled members are our best ambassadors.

**EFAO: Do you have any advice for a farmer looking to start or expand their own CSA?**

**LESLIE:** Make sure your vegetables are high quality, clean, beautiful and that you are growing what your customers want. Stop growing things they don't want and make sure they are never being forced to bring home something they don't want (i.e in a packed share that is not customizable).

**ELAINE:** Do what you love. Love what you do. Every day.

**AMY:** I'd recommend getting a few years growing under your belt

before offering a CSA. Once you have figured out production, then start small. Communication is key... people want to feel a connection with the farm via newsletters, personal contact etc. but you should also be asking your members what *they* want. Are they happy with the quality/amounts/diversity, etc? Don't overwhelm with too much of any one thing. Grow more "normal" veggies.

**DANIEL:** Start Small and develop strong relationships with your clients. Don't grow too fast. Get to know your clients! ■



Amy Kitchen and her family, Sideroad Farm.

1. New EFAO merchandise debuted at the conference including t-shirts, hats and lane signs!
2. 2019 Photo Contest Runner Up: Farmscapes by Beetbox Farmer, David Mazur.
3. Contra dancing with Teilhard Frost and the Husqvarna All Stars.



**MARCH**  
IS  
**MEMBER MONTH**

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4. EFAO Board Member Eric Blondin presents a Daisy Award to Dr. Ralph Martin.
5. Javan Bernakevitch offered a full day intensive on Whole Decision Making.
6. Workshop participants had the opportunity to practice soil demonstrations in Finian Makepeace's workshop 'Advocating for Regenerative Agriculture.'
7. Variety trial discussion at the Research Symposium.
8. Conference participants and exhibitors mingle in the Trade Show.

EFAO FIELD CROPS 2019: No-till planted spring cereals

# Is no-till planting spring cereal grain into winter-killed cover crops worth it?



COVER CROPS



SOIL HEALTH



WEED CONTROL

Farmer - Researcher

Ken Laing  
Orchard Hill Farm - West

Project timeline:  
Spring 2018 - Summer 2019



## IN A NUTSHELL

Spring cereals are integral to diverse rotations; however, it is often hard to get them planted early enough. One strategy to get into the field early is to no-till plant into cover crop residue, which provides soil cover in the winter and generally helps improve soil health.

To investigate this approach, Ken no-till planted oats and barley into replicated plots of four different cover crops and plots that received fall tillage.

## Key Findings

- Grain yield and relative net return were highest when no-till planted into daikon radish.
- Weed control was best with daikon radish and the fall tillage control.
- There was no soil erosion in the cover crop plots, and moderate rill erosion in the fall tillage plots.

## BACKGROUND

Currently in Ontario, spring cereal production accounts for around 320,000 acres (1). Most spring cereals are planted into soil that is tilled in the fall, which means fields are susceptible to erosion and nutrient runoff (2, 3).

In contrast, planting no-till into a winter-killed cover crop protects the soil and allows for earlier planting, which is critical to yield. No-till planting into a cover crop may also result in higher yields and relative return; however, other studies have shown no economic benefit (3).

## METHODS

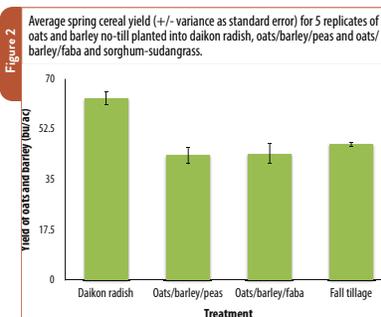
Ken established a randomized complete block design with five replicate blocks to test the difference among four winter-killed cover crops and fall tillage, as outlined in Figure 1 and Tables 1 and 2 (page 2 - visit [efao.ca/research-library](http://efao.ca/research-library)). Data was analyzed using analysis of variance (ANOVA).

Figure 1



## RESULTS

### Grain Yield and Weed Control



Grain yield varied dramatically by cover crop, with the highest and lowest yield observed in different species ( $P < 0.001$ ). Overall grain yield was lower than expected likely because Ken had to use his own seed after the seed supplier delivered treated seed.

Compared to the fall tillage control, grain yield was 33% higher when planted into daikon radish residue ( $P < 0.01$ ). This may be due to:

- Earlier planting and good fall weed control in daikon radish plots
- Increased phosphorus in daikon radish taproot holes, as reported in other studies (4)
- More lodging in the fall tillage plots

Even with an earlier planting date, yield from oats/barley/peas and oats/barley/faba cover crops was comparable to the fall tillage. This may be due to potential disease carry over from the oats and barley cover crop combined with better weed control in the fall tillage plots

Spring weed control in sorghum-sudangrass plots was very poor and grain from these plots was not harvestable. There were too many weeds to combine - they even plugged the swather!

### Soil Health: Erosion

In the fall tillage plots, Ken observed moderate erosion in the spring. There was no erosion in any of the cover crop plots.

Interestingly, the daikon radish plots were almost as bare in spring as the fall tillage plots. Although not measured in this study, daikon radish tubers probably contributed positively to water infiltration, which protected the soil from erosion.

### Profitability

The extra income and value over common expenses from oats and barley planted after daikon radish cover crop was \$47.90/acre compared to fall tillage (see Table 3 on page 2 - visit [efao.ca/research-library](http://efao.ca/research-library)).

The relative return for daikon radish is not directly accounting for the cost of erosion in the fall tillage plots, benefit of improved soil health in the cover crop plots or the cost of equipment to no-till plant.



Photos: Cover crop residue compared to fall tillage in March 2019. (Clockwise from top left) Daikon radish, oats/peas/barley, oats/barley/faba, sorghum-sudan grass, and fall tillage. See page 2 for more photos

## TAKE HOME MESSAGE

Diversity is a key principle of ecological farming; and small grains, including spring cereals, are an integral part of a diverse crop rotation. In this study, Ken experimented with no-till planting oats and barley into cover crop residue as a way to protect the soil over winter, provide weed control and get into the field earlier.

*No-till planting spring cereals into a cover crop is not only beneficial for the soil, but can also pay off for the pocket book.*

Grain yield, relative return (i.e. profit potential) and soil health were highest when planted into daikon radish residue. As soil health continues to improve over time with cover crop use, Ken expects an even greater yield bump, which should be taken into account when thinking about the cost to invest in the equipment needed to no-till plant.

[Continued on page 2. Read the full report at [efao.ca/research-library](http://efao.ca/research-library)]

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Read online: [efao.ca/research-library](http://efao.ca/research-library)

## THANKS TO OUR PROJECT FUNDERS

Ontario Trillium Foundation



Robert and Maira Sanson Young Foundation



# Do grafted tomatoes pay off in high tunnels in Ontario?



MULTI-FARM



DISEASE & PEST CONTROL



SEED PRODUCTION & BREEDING



Farmer-Researchers

Eric Barnhorst

Eva Mae Farm - East



Jenny Cook

Knuckle Down Farm - East



Sarah Judd

Meadow Lynn Market - West

Nathan Klassen

Nith Valley Organics - West

Project timeline:

Winter 2019 - Fall 2019

## IN A NUTSHELL

Grafting is a proven way to incorporate disease resistance into tomato transplants. However adoption of this practice to high tunnel production is relatively new, so these four growers were curious about the economic viability of grafting tomatoes for production in high tunnels in southern Ontario.

Key Findings

- Grafted tomatoes had greater total marketable yield regardless of scion variety.
- Grafted tomatoes had greater overall plant health.
- Grafted tomatoes had higher net returns on average but the degree of economic benefit varied by farm.
- Yield advantage for grafting likely depends on scion variety and scion and rootstock compatibility.

## BACKGROUND

Specialized tomato rootstock are used in greenhouses to confer resistance to soilborne disease and provide improved longevity and total marketable yield. Even when soilborne disease isn't a problem, specialized rootstock can provide a yield advantage - especially for heirlooms (1). Growing grafted tomatoes in high tunnels is relatively new but may also prove advantageous (2).

## METHODS

Grafting - See page 2 - visit [efao.ca/research-library](http://efao.ca/research-library)

Experimental Design - See page 2

Table 1

Experimental design for the multi-farm tomato grafting trial (G = grafted; U = ungrafted).					
Farmer, Farm	Design	Replicate	Scion Variety	Rootstock for grafted plants*	In-row or in-section arrangement and # plants per section
Eric, Eva Mae Farm	5 rows randomly assigned a scion; each half row randomly assigned to grafted rootstock or ungrafted control; transplanted April 29	Row 1	Margold (F1)	Estamino	12G + 12U
		Row 2	Tomimaru Muchoo (F1)	Estamino	12U + 12G
		Row 3	Moskvich (heirloom)	Estamino	8G + 8U
		Row 4	Black Prince (heirloom)	Estamino	8G + 8U
		Row 5	Marbonne (F1)	Estamino	2U + 12G
Jenny, Knuckle Down Farm	1 row with 3 blocks of 2 sections each; each block randomly assigned to grafted rootstock or ungrafted control; transplanted May 11	Block 1	Moskvich (heirloom)	Estamino	8G + 8U
		Block 2	Margold (F1)	Estamino	8G + 8U
		Block 3	Marbonne (F1)	Estamino	8U + 8G
Sarah, Meadow Lynn Market	2 rows; each half row randomly assigned to grafted rootstock or ungrafted control; transplanted June 4	Row 1	Arbason (F1)	Estamino	19G + 20U
		Row 2	Arbason (F1)	Estamino	22U + 20G
Nathan, Nith Valley Organics	2 greenhouses; greenhouse 1 transplanted on May 29 and greenhouse 2 transplanted on May 15	Greenhouse 1	Caiman (F1)	Maxifort	24G + 18U
		Greenhouse 2	Caiman (F1)	Estamino	32G + 12U
		Greenhouse 2	Caiman (F1)	Maxifort	88G + 12U

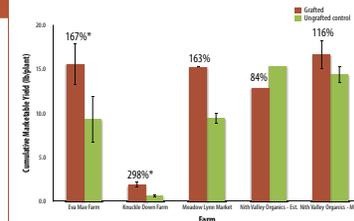
\*Estamino and Maxifort rootstock were sourced from Johnny's

## RESULTS

Yield

Figure 1

Total marketable yield of grafted and ungrafted tomatoes from each farm. Bars are means (+/- standard error). % yield advantage is above the grafted bars. Est. = Estamino; Max. = Maxifort.



\*P-values < 0.05 for individual farms; P < 0.002 for all farms combined.

Note that individual statistics for Meadow Lynn Market and Nith Valley Organics were not possible because of too few replicates.

For Sarah's trial, grafted seedlings (started at Nith Valley Organics) were ready to be transplanted 2 weeks before the ungrafted seedlings (started at Meadow Lynn Market). For this reason grafted plants were taller and a little greener, but more spindly and needed to be supported. However, grafted and ungrafted plants looked very similar a few weeks after transplanting.

Total marketable yield at Knuckle Down Farm was much lower than the other farms. The bed where the trial was planted had been used for several years and Jenny suspects it was not adequately amended prior to planting.

For each harvest day throughout the season, the growers weighed tomatoes from every section separately (!). They added up all weights from harvest dates for total marketable yield per plant.

Grafting did not necessarily extend production length (Table 2 on page 2), but grafted tomatoes produced more marketable tomatoes than the ungrafted control plants (P < 0.002). This yield advantage was seen across different scion varieties and farms (Figure 1).



Photo. Vigour difference between grafted (left) and ungrafted (right) Margold tomatoes at Eva Mae Farm on July 17, 2019.

Estamino performed well, and 10/11 comparisons on 6 scion varieties produced greater total marketable yield compared to ungrafted plants (P < 0.003). This is consistent with other studies (5, 6).

There was not enough data from Maxifort rootstock to draw conclusions but two comparisons suggest that it may also be a good choice for the region, which is also consistent with other studies (5).

Caiman (Nith Valley Organics) had the highest yield for ungrafted plants. It also showed the lowest yield advantage on Maxifort and no yield advantage on Estamino. This may be because Caiman, as a greenhouse variety, already has a good disease package and good overall vigour.

Plant Health - See page 2 - visit [efao.ca/research-library](http://efao.ca/research-library)

Net Return - See Table 3 on page 2

Because of a large yield advantage, it was economical for Eric and Sarah to graft tomatoes.

For example: Eric estimates his extra cost to produce grafted seedlings is \$4.47 / plant. His average yield advantage is 6.3 lb/plant, so the extra cost to produce the grafted seedling is (\$4.47/plant) / (6.3 lb/plant) = \$0.71.

Nathan was interested to see if Caiman, a greenhouse variety with good disease package and good overall vigour, would benefit enough from grafting to be economical. This data show that grafting Caiman on Maxifort was not economical at his retail price of \$2.08/lb but was economical at Eric's retail price of \$3.25/lb.

Because Jenny's yields were low in general (see note in Yield section), it was not economical for her to graft tomatoes.

## TAKE HOME MESSAGE

Multi-farm trials are a powerful way for growers to gain robust answers to their research questions. In this study, four farmer-researchers showed that grafting tomatoes for production in high tunnels in southern Ontario can be profitable.

Estamino rootstock performed well in the region and across different scions. Preliminary data suggest that the exception to Estamino's performance is with Caiman - an already vigorous greenhouse variety. There was an indication that Maxifort might be a good choice for Caimin.

This data shows that in order to take advantage of grafting tomatoes for high tunnel production you should have generally good yields, use a scion that will benefit enough to make grafting worthwhile, pair scion and rootstock for compatibility; and, finally, use cost of production to compare the advantage for your farm.

[Continued on page 2. Read the full report at [efao.ca/research-library](http://efao.ca/research-library)]

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Read online: [efao.ca/research-library](http://efao.ca/research-library)

## THANKS TO OUR PROJECT FUNDERS



Carrot Cache \$1,000 Innovation Prize Winner:

# Retrofitted Electric Tractor

Heart's Content Farm won the \$1,000 Carrot Cache Innovation Prize, offered annually at the EFAO Conference. Innovations are submitted and posted at the conference, then participants vote for the winner. Congratulations Heart's Content Farm! Stay tuned for information about how your innovation could win \$1,000 at next year's conference.

## By Heart's Content Farm

**A**fter our horses died I didn't feel up to breaking in a new team, but we still wanted to reduce our carbon footprint, so we decided to retrofit an old Allis Chalmers "G" tractor.

After some research and help from an electrical engineer neighbour and a welder, we managed to get the tractor up and working. It's a great tractor for cultivating as you can see what you are doing in front of you and we love it for a number of reasons:

1. It's quiet! Such a joy to still hear the birds when you're out working the fields.
2. Low maintenance; few moving parts, and not always having to troubleshoot engine problems.
3. Inexpensive to run, no oil or gas inputs, minimal electrical costs, (we charge ours on solar so that's an extra bonus).
4. Easy to vary the speed, can run it as slow as I want, and it's easy to stop and start if you have to get on and off it.
5. Can cultivate two acres on a charge, and recharges in four hours.
6. Also great for hauling a cart behind for harvesting.



It cost about \$6,000.00. I estimate that it took about 120 hours, as it was a steep learning curve for me, but if you have an electrical/mechanical background it should go faster. We bought the tractor for about \$2,000 and \$4,000 to do the conversion although the conversion rate was a bit better when I did it. I ordered kits from two different suppliers in the USA and sourced some local supplies. ■



## 2019 Annual Report

What a year it has been! Take a look at EFAO's 2019 Annual Report to see all that we have accomplished over the past year thanks to your engagement and support. You'll find the report at [efao.ca/about/](http://efao.ca/about/). A copy can also be mailed to you upon request, simply contact the office at 519.822.8606 or [admin@efao.ca](mailto:admin@efao.ca)

# Celebrating Another Fantastic Conference

Thank you to everyone who made the **6th Annual Ecological Farmers of Ontario Conference** such an incredible success.

**C**limate of Curiosity saw more than 350 people come together over four days in Belleville. Participants attended over 40 workshops, participated in a Farmer-led Research Symposium, visited a bustling Trade Show and shared meals together. We also marked EFAO's 40<sup>th</sup> Anniversary with a special evening of celebrations and danced the night away after a Banquet Dinner.

Thank you to everyone who attended this year's conference. Your enthusiasm, support and positivity is inspiring. We hope the conference provided some new ideas, new connections and new motivation for a great 2020 season.

Thank you to the supporting partners, sponsors, funders, Trade Show exhibitors, and food contributors for your continued support. This conference would not be possible without your generous financial and in-kind support. Thank you for believing in this work and for helping to build a stronger ecological farming movement.

To all of the speakers who joined us from across Ontario, Quebec, British Columbia and the United States, thank you for sharing your stories and expertise. And thank you to the farm tour hosts for opening your farms.



A big thank you from the conference organizing team. EFAO staff left to right: Martina Schaefer, Naomi Krucker, Ali English, Sarah Hargreaves, Ami Dehne, Katie Baikie, Rebecca Ivanoff, Allison Muckle.

With the generous support of the New Farmer Bursary Fund donors, we were able to offer 21 bursaries! Thank you to TSC, [SoilHealth.ca](http://SoilHealth.ca), Royal City Buying Club, The W. Garfield Weston Foundation, and NFU Locals 318, 320, 333, 344, 345, 347 for your contributions.

Thank you to all of the volunteers who helped to ensure the smooth-running of the conference. You can thank conference photographer Antonio Gomes for all of the conference photos you'll see throughout the year. And thank you, once again, to Garth Laidlaw for the artistic representation of the theme on our conference program cover and

promotional materials (as well as one of the t-shirt designs!)

This year's Silent Auction raised over \$1,600 to support EFAO's educational programs and services. Thank you to all involved ~ those who donated and those who bid on items.

We are already planning next year's conference and look forward to sharing these details with you as soon as we can. In the meantime, if you'd like to share specific feedback please feel free to reach out to us directly. ■

# Thank you to the 2019 Conference Supporting Partners and Sponsors!

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# Thank you Fiona!

The November/December issue of EFAO's print newsletter, *Ecological Farming in Ontario*, was the last one to be curated and designed by our longtime newsletter editor, Fiona Campbell. Fiona worked on 51 issues of EFAO's newsletter over the course of eight and a half years!

**O**n behalf of the entire EFAO community, we want to extend our heartfelt gratitude to Fiona for her dedication, hard work and passion for ecological agriculture and storytelling. Her work has helped connect EFAO members with each other and has strengthened this community through the sharing of stories, critical issues, and practical how-tos. We are going to miss her exuberance, thoughtfulness, inspiring editorial notes and her amazing laugh.



Fiona is a freelance writer, journalist and editor, and farmed for many years. She continues to write about food, farming, sustainability and the environment for a number of magazines and websites. In addition, she is a devoted mother, long distance runner and works as the Director of Communications and Outreach with the Quinte Arts Council in Belleville. She is currently writing a book called *Digging Deep* about her move to the farm and living an authentic life close to the land. We wish her the very best in all of her current and future endeavours! ■



## A Film to Honour 40 Years of EFAO

In 2019 we have had the honour of celebrating EFAO's 40th anniversary. This has been an opportunity to dig through the archives, reconnect with founding and early members, and reflect upon EFAO's rich and inspiring history. At this year's conference we presented a short (13 minute) film entitled *EFAO Origins - Walking Each Other's Farms* that tells the powerful story of how a small group of innovative and forward-looking farmers sparked an organization and a movement. It is now available online for all to watch at [efao.ca/history](http://efao.ca/history)

## Farmers Write

We are starting a new column in our newsletter called "Farmers Write". This is an opportunity for EFAO members to share real-life short stories on topics inspired by life as a farmer.

We have provided topics for the 2020 year and are asking you to share stories

from your own life as they relate to the topic.

The topics are broad - please feel free to express in a way that makes sense for you and your story. We aren't as concerned about style and perfect writing, as we are about great stories that others might find truth in as well. We suggest a word limit of 250 to 450 words, but are happy to help edit a story or post a longer version on the EFAO blog. We are able to publish stories anonymously, if that allows you to be more free in your writing.

## Spring - Farm Animals

Deadline March 9

## Fall - Long Days

Deadline June 8

## Winter - Breaking The Rules

Deadline September 7

Please send submissions to [admin@efao.ca](mailto:admin@efao.ca). You can also suggest future Farmers Write topics. ■

# Q&A with Ralph Martin

We were curious to hear Ralph's thoughts on organic research, EFAO's work and his guidance as we look to the future.

**D**r. Ralph Martin, longtime EFAO member, supporter and advisor to EFAO's Research Committee, retired from his position as Professor in the Department of Plant Agriculture at the University of Guelph last summer, where in 2016 he completed a five year term as the Loblaw Chair in Sustainable Food Production. In 2001, Ralph founded and was the Director of the Organic Agriculture Centre of Canada (OACC), which has since steered tens of millions to education and research in organic agriculture in Canada.

## EFAO: What have been some personal highlights of your work in organic and sustainable agriculture?

**RALPH:** I have always been fascinated by how organic farmers keep demonstrating what is possible in their complex farming systems. It is surprising how cost effectively organic pigs can be raised on pastures, how yields of organic soybean are often above provincial average yields and how organic greenhouse and high tunnel systems can recycle nutrients, control pests and provide local organic crops over extended seasons. There are also exciting developments to integrate service crops in cropping systems to improve soil cover, reduce erosion, improve pollination, break disease cycles, reduce nutrient losses and increase biodiversity.

## EFAO: How has growing up on your family farm in Wallenstein, Ontario, influenced your career?

**RALPH:** It was from my Grampa, as we did our chores on the farm, that I fundamentally learned about respect; respect for soil, respect for plants, respect for animals, both in the barn, and those outside, who walk, crawl, fly,

and swim. He didn't talk much and died when I was seven. The rest of my knowledge, mostly details about the systems of agriculture and ecology, was built on his foundational influence.

## EFAO: What is the most impactful research in organic and/or sustainable agriculture that you've seen in Canada?

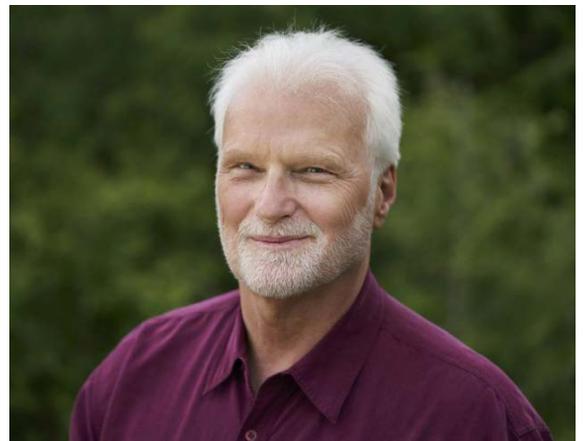
**RALPH:** For years organic farmers were criticized for too much tillage, perhaps justifiably. Many thought no-till was only possible with herbicides. Recently, farmers have initiated systems for organic no-till by terminating covers crops with roller crimpers and then planting into the mulch with a no-till planter or by using tarps to prevent weed growth and provide a clean seed bed. Researchers are now catching up and helping to advance these systems to perform with more consistency.

## EFAO: What research do you think is most needed to help grow organic/ecological/regenerative agriculture in Ontario?

**RALPH:** It is important to be able to measure soil health, and especially soil organic carbon (SOC), reliably, quickly, cost effectively and representatively across each field. I can well imagine a time when SOC will be measured on a fine grid in every field in Canada, every five years. By responding to the information and possibly with incentives, farmers will increase SOC and thus sequester carbon, improve soil health and stabilize yields as climate changes and weather becomes less predictable.

## EFAO: What needs to change in order for Canadian Universities to support more research and education into organics?

**RALPH:** Some of the change is proceeding with the Organic Science Cluster programs which were initiated by OACC, in 2009. However, more funding is needed that does not require high proportions of industry matching dollars. Organic agriculture provides fewer



options for input companies to increase sales and yet organic agriculture provides social and environmental goods and services to sustain the health of soil, plants, animals and people. Public money invested in university research and education to advance the public good of ecological and organic agriculture will pay dividends to society for years.

## EFAO: What do you find most exciting about EFAO's Farmer-Led Research Program?

**RALPH:** Farmers are consummate observers and because they recognize patterns and deviations from patterns, they are well positioned to help researchers develop pertinent

hypotheses. I have so much respect for the ingenuity and perseverance of farmers. They deserve support to check out their ‘what if’ questions. As Wendell Berry says “we need a high eyes to acres ratio.” Innovative questions, testing and unique adaptations then follow.

**EFAO: What do you feel are the most important things EFAO can do to help shift the way we farm in Ontario?**

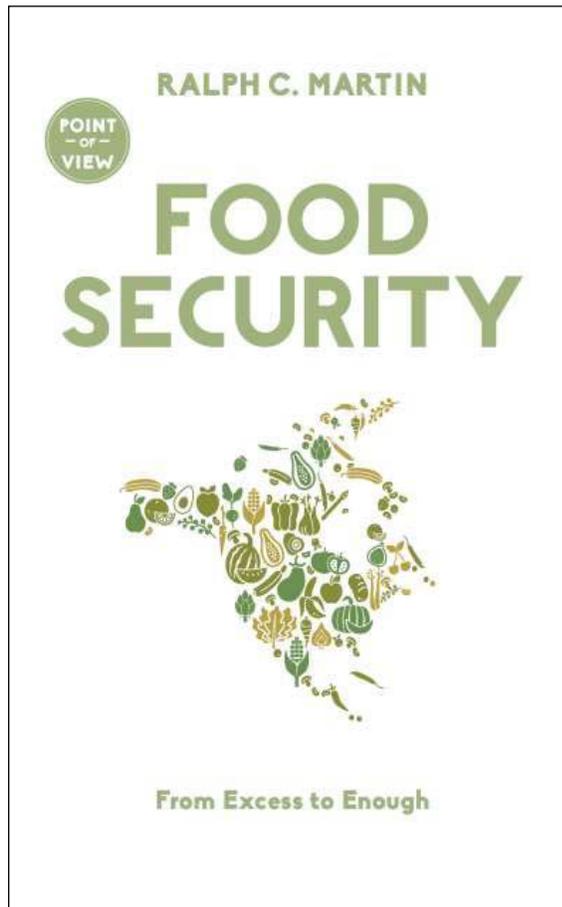
**RALPH:** EFAO quite rightly provides a consistent emphasis on soil health, with programs and farmer-led research. This is especially relevant in a period when SOC is declining on 82% of farms in Ontario. Healthy soil, clean air and water and biodiversity are integral to sustain agricultural capacity to provide adequate amounts of healthy food. Farming is also more fun and family friendly in the context of dynamic ecosystems.

**EFAO: What do you feel are the most important things that we as a society can do to improve the health of this planet for future generations?**

**RALPH:** Food is a gift from Earth to nourish our well-being. Eating too much food, with too much sugar and salt or other additives, deprives us of our human potential. Wasting food and creating demand for more production, just to waste more, violates ecological principles. Food is to be respected and eaten with gratitude.

**EFAO: You ran as the Green Party candidate for Wellington-Halton Hills in this fall election. Why did you decide to get into politics?**

**RALPH:** Decisions about how we agree to live together in society and how we interact with Earth are made in legislatures across Canada. As much as I love research and teaching, I also want to contribute to policy formation. This is a pivotal time in history and the crises of climate change, species loss and pollution must be addressed with practical and healing policies.



12 years or so. So often we hear that agriculture must produce more food, even as 40% of food is wasted in Canada. I argue that we need enough, not excess, healthy food. We have opportunities to produce sufficient food with production methods that restore soil health and agro-ecosystem health. Our ancestors would be perplexed about how many of today’s farmers rely on global companies and our descendants will wonder why we sacrificed ecological capacity with our fossil flame-out. It is possible to produce what we need within the generous biological Earth systems we have been granted. I was inspired to write by farmers who develop new ways to work with Nature and by others in the food system, who not only imagine, but implement solutions. ■

**EFAO: Can you please tell us about the book you have written, and what inspired it or how it came about? And how can people purchase it?**

**RALPH:** My new book, “Food Security: From Excess to Enough” is a compilation of thoughts and writings over the last

*You can buy the book from Ralph by asking him ([rcmartin@uoguelph.ca](mailto:rcmartin@uoguelph.ca)) to bring it along when you expect to see him or you can order it from the publisher by going to his website [ralphmartin.ca](http://ralphmartin.ca) and click on New Book.*

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# EFAO MERCHANDISE

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*EFAO hats, t-shirts and lane signs will be available for purchase at the Guelph Organic Conference and coming soon to [efao.ca](http://efao.ca)*

# Kiss the Ground

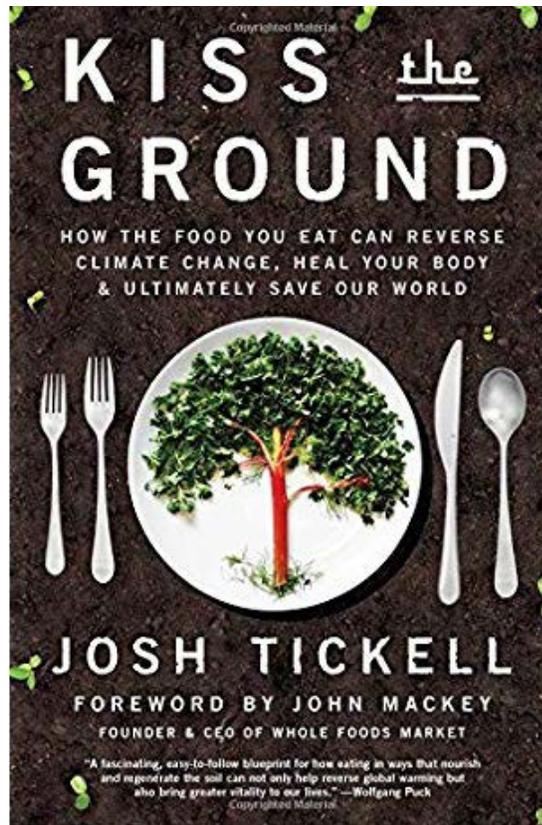
By Crista Thor

With soil as his protagonist, Josh Tickell takes his reader on an examination of the role that the earth beneath our feet can play in mitigating climate change in his book, *Kiss the Ground, How the Food You Eat Can Reverse Climate Change, Heal your Body and Ultimately Save our World*. As the title suggests, this book is full of gigantic hopes and dreams, a genuine manifesto for a better future.

Tickell shares his encounters with governments, farmers, ranchers, soil scientists and even chefs. Tickell goes back in time to give context to industrial agriculture, detailing the rise of chemical use on farms and drawing the link between hunger, violence and desertification around the world. He goes on to explain how tillage and chemical inputs have degraded soils, resulting in the release of large amounts of CO<sub>2</sub> into the atmosphere. He also discusses practices for improving soil health such as no till cropping, use of cover crops and managed grazing.

Though he interviews some important voices, Gabe Brown and Kristine Nichols included, he misses many others. This is a relatively short book for an incredibly complex subject. That said, Tickell does offer, out of his interviews, many great insights about how and why agriculture is broken, as well as ideas about fixing it.

My wish for this book is that Tickell would have stopped there. Instead, he takes a deep dive into nutrition, even going as far as to prescribe eating habits around meat consumption. The argument to eat less meat needs to be made with a strong qualification that illustrates the distinction between factory raised meat and that raised in an ecologically sound fashion. Tickell shows throughout the book that he understands the interconnectedness that exists within the food web. My expectation, then, is that he be able to convey to his reader that ALL of their food choices matter. Whether a meat or plant based diet is followed and irregardless of the ratio of meat to plant on your plate, we must say no to ALL foods that come from a destructive agriculture.



Sadly, this book reinforces a dichotomy that others, including chef Dan Barber (who was also interviewed here) peddle. If we zoom out, we see that factors like suitability of landscape, climate and growing method matter more than “meat” or “plant” in the soil regeneration game. I wonder how Tickell could have presented this differently? If we keep our focus on soil health, what matters to human nutrition is that plants grown in healthy soil AND animals that eat healthy plants have higher nutritional value.

The impact of this book surely lies in the audience receiving it. A strong writer, Tickell presents a narrative that is at once terrifying and full of hope, compelling

his reader to the end. For the uninitiated, *Kiss the Ground* will be revelatory: yes, living soil provides the foundation for all life (and we can build it, eureka!). For those working

in regenerative agriculture, Tickell’s book may feel like a latecomer to the game (doesn’t everyone know this stuff?).

*“We must say no to ALL foods that come from a destructive agriculture.”*

Either way, the time is ripe to urgently change the way we grow food and to accept that everyone has a role to play. *Kiss the Ground* serves as a timely plea for people to wake up to the notion that human and environmental health cannot be separated from each other nor from the health of our soils. ■

**Crista Thor**, along with her partner Mike and son Kjell, operate a farmstead east of Kingston, Ontario, where they have been no till vegetable gardening, rotationally grazing cows, sheep and goats, chasing chickens and geese, and developing a small agroforestry project. Crista is on the EFAO Board of Directors.

# 2019 Research Highlights

Over 60 people attended the Farmer-Led Research Symposium in Belleville on December 2, 2019. It was an exciting event, where farmer-researchers shared slide presentations of their findings with enlightening Q&As.

To get the sap flowing for next year – so to speak – the group also brainstormed in two breakout sessions on no-till vegetable production and vegetable variety trials. The day ended in a casual pizza social. It was a fabulous way to kick off the EFAO Conference!

If you missed it, here are the highlights from the 2019 Farmer-Led Research Program. You can read the full reports in the Research Library, [efao.ca/research-library](http://efao.ca/research-library).

## Is no-till planting spring cereals into winter-killed cover crops worth it?

**Ken Laing,**  
**Orchard Hill Farm**

See full report on page 13.



SOIL HEALTH

## Does rock mineralizer increase yield of heritage wheat?

**Shelley and Tony Spruit,**  
**Against the Grain Farms**

Basalt rock dust is a remineralizer that is used in other parts of the world but there is limited information on its effectiveness to supply crops with nutrients in neutral and alkaline soils. To test the efficacy of basalt as a mineralizer for grain, Shelley and Tony grew Heritage Amber Spring Wheat in replicated plots with and without basalt amendments.

### Key Findings

- Basalt rock dust had no detectable effect on Heritage Amber Spring Wheat yield, and benefits may take years to detect.



Farmer-researchers who have conducted trials in cooperation with EFAO's Farmer-Led Research Program at the 2019 Research Symposium.

- There were also no other observable differences in growth, seed quality or disease resistance between treatment and control.
- It was a bad year for wheat production but, overall, Heritage Amber Spring Wheat – a landrace variety – performed well against lodging and *Fusarium*.

## Do different soil covers differ in their efficacy for production of organic greens?

**Chris Bocz and Jon Gagnon, Earth to Table Farm; Matt Jones, Jones Family Greens; Brent Preston and Gillian Flies, The New Farm**

As a follow-up to Brent and Gillian's tarp trial last year, these growers evaluated the difference among tarp, landscape fabric and clear plastic for greens production.

### Key Findings

- Occultation worked consistently for weed and residue management.

Between tarp and landscape fabric, landscape fabric is much easier to manage.

- Clear plastic was not effective during shoulder seasons, when temperatures aren't warm enough.
- The soil covers did not affect crop yield differently.
- Soil moisture retention was better with occultation, and soil moisture was highest under landscape fabric.
- Depending on farm and time of year, soil temperature peaked under all covers and uncovered soil, suggesting that occultation does not increase soil temperatures to a point that negatively affects soil biology.

## Does comfrey promote growth and fruit production of saskatoon berry and black currant? (Continuation from 2017 and 2018)

**Pat Kozowyk, Baba Link Farm; Ivan Chan, Eden in Season**

Perennial cover crops have many ecological benefits. However, they may

compete with the crop or not provide sufficient weed control.

### Key Findings

- After three years at Pat's and two years at Ivan's, they detected no effect from comfrey on saskatoon and currant health or fruit production.
- Comfrey was a vigorous living mulch without causing detectable negative effects on fruit production.

### Do grafted tomatoes pay off in high tunnels in Ontario?

**Eric Barnhorst, Eva Mae Farm; Jenny Cook, Knuckle Down Farm; Sarah Judd, Meadow Lynn Market; Nathan Klassen, Nith Valley Organics**



SEED PRODUCTION & BREEDING

See full report on page 14.

### What are the best fall lettuce varieties for southern Ontario?

**Angie Koch, Fertile Ground Farm; Joanna Kowalczyk, Table Community Food Centre; Lise-Anne Léveillé and David Mazur-Goulet, BeetBox Cooperative Farm; Hilary Moore, Maplelane Farm; Leslie Moskovits, Cedar Down Farm; Harold Saunders, Saunders Family Farm; Ann Slater, Ann Slater Organics**

The fall slot for lettuce is challenging because lettuce has to handle both the heat and dryness of summer and the cold and wet of fall. To compare different varieties for fall growing, these farmers - in consultation with Johnny's, High Mowing and Fedco seed companies - selected 11 lettuce varieties of interest. Each grower chose a subset and everyone committed to planting two replicates of each variety in their last two plantings of lettuce.

### Key findings

- Magenta, a red/green batavian, and Ruby Star, a red leaf, were the top performers with respect to overall vigor, flavour and germination.
- Adriana was the growers' least favourite.
- They plan to continue the trial in 2020 with fewer varieties, in order to collect more information such as germination and frost tolerance.
- Get in touch with Sarah, [sarah@efao.ca](mailto:sarah@efao.ca), if you are interested in participating!

### In search of short season northern sweet potato varieties: Selection and evaluation of new sweet potato crosses

#### Kate Garvie, Heartbeet Farm

As demand for sweet potatoes grows in Canada, breeders are working to create sweet potatoes that are adapted to eastern Ontario. In the first year of the project, Kate selected sweet potatoes that are best suited for low input, organic systems in eastern Ontario.

### Progress to Date

- Kate evaluated nearly 60 genetically unique and diverse sweet potato tubers.
- After final evaluations of taste and storability, Kate will choose 15 varieties and trial them in 2020.
- Kate collected seeds from the vines that produced seed, which is germplasm for future breeding.

### Southern Ontario Participatory Pepper Breeding Project

**Annie Richard, Kim Delaney, Greta Kryger, Rebecca Ivanoff and Kathy Rothermel SeedWorks Breeding Club**

Five members of SeedWorks Plant Breeding Club continued to select and stabilize a genetically diverse red pepper population, as well as uniform progeny lines of red and yellow peppers. Progress was made towards stabilizing the developing varieties, despite a hard season for peppers.

### Progress to date

- Growers made progress towards stabilizing the progeny lines of yellow peppers.
- Growers made progress towards a releasable, diverse red pepper population.
- Growers will formalize the stabilization and aim to send new varieties to market in 2020.

### Read EFAO's E-news for the latest research updates and reports on these trials:

**Reduced protein for heritage chickens**, Heather Newman, D&H Newman Farm

**Basalt for organic carrot production**, Brad Wright, Bluegrass Farm

**Does biochar improve tree growth in a newly established apple orchard?** Val Steinmann and Brent Klassen, Heartwood Farm and Cidery

**Do organic sprays differ in their efficacy against disease in black walnut?** Joseph Imre and Jazmin Bansagi, Seven Fields Farm & Orchard



Funding for these projects was made possible by the Ontario Trillium Foundation, an Agency of the Government of Ontario, and the Robert and Moira Sansom Ideas Foundation, a fund within London Community Foundation.

## CLASSIFIEDS

### Land for sale near London

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### Request for Proposals – Farm land Acreage Rentals

Ignatius Farm seeks innovative entrepreneurs, researchers, and organizations to rent fields for complementary regenerative agriculture at the Ignatius Jesuit Centre, Guelph. Numerous fields; up to 158 acres available. **Deadline: February 3, 2020.** Full application: <https://ignatiusguelph.ca/ignatius-farm/acreage-rentals/>

### Seeking Experienced Farmer

Organic farm community looking to collaborate with an experienced farmer using regenerative principles on a mixed, permaculture designed, 191 acre farm in Caledon. Contact Brenda at [bdolling@hotmail.com](mailto:bdolling@hotmail.com) for more details or see [www.wholevillage.org](http://www.wholevillage.org)

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#### Membership Type:

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- \$65/yr Full Membership with auto-renewal (credit card payment)
- \$1,200 Lifetime Membership

#### Payment Options:

For credit card payments please visit [efao.ca](http://efao.ca)  
Please make cheques payable to EFAO and mail, along with your application, to:  
Ecological Farmers Association of Ontario,  
5420 Hwy 6 North, Guelph, ON, N1H 6J2

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## Did you know that EFAO has a research library where you can access all of the reports from farmer-led research trials?

[efao.ca/research-library](http://efao.ca/research-library)

RESEARCH LIBRARY

An open access source where you can find research protocols and reports from EFAO's Farmer-led Research Program, and more.

2018 Research Reports and 2019 Research Protocols are available now. A full archive coming this fall! Contact Sarah Hargreaves, [sarah@efao.ca](mailto:sarah@efao.ca), for past reports and protocols. Click + for entry details; use the filter function to find entries on a specific topic, farmer, region, etc.

Title	Year	Article Type	Research Priority
Is the old planting spring wheel plan still worth it?	2018	Research Report	
Do grafted tomatoes pay off in high tunnels in Ontario?	2019	Research Report	
A Guide to On-Farm Demonstration Research	2018		