British Columbia Organic Grower

ORGANIC FARMING + CLIMATE CHANGE

air

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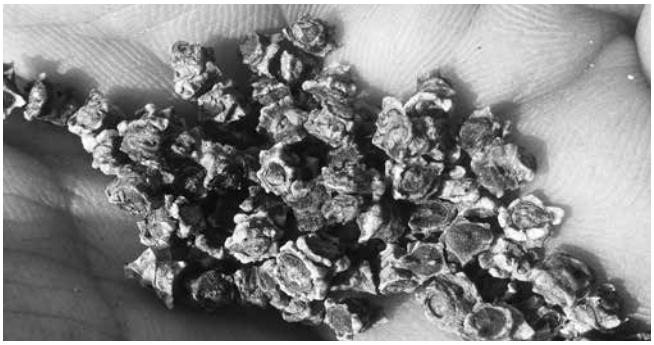
In This Issue



Scaling Up Organic Seed Production

Emma Holmes outlines new government partnerships that will bring more regionally-adapted seed to farmers. *Read more on Page 4.*

Features

Local Seeds, Local Food

Michael Marrapese tells the story of the FarmFolk CityFolk's BC Seed security Program. *Read more on Page 12.*

BC Organic Grower

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On the Cover: BC Seed Trials. Credit: Chris Thoreau

Editor's Note

Credit: FarmFolk CityFolk

One morning in early October, the world woke up to alarming headlines: "We have 12 years to limit climate change catastrophe, warns UN," "Climate change impacts worse than expected, global report warns," "Major Climate Report Describes a Strong Risk of Crisis as Early as 2040." The message in the report referenced, from the Intergovernmental Panel on Climate Change (IPCC) was clear and urgent: the world is not doing enough to halt climate change and mitigate the global impacts. Feeling a little despair yet?

As an antidote to climate anxiety, over the next year the BC Organic Grower will focus on climate change – both the challenges we face and the solutions offered by regenerative, organic agriculture. Each upcoming issue looking through the lens of a different element: air, earth, fire, and water. In this kick-off climate issue, we're looking at everything air, so get ready to explore seed, emissions, pesticides, and more.

As always, seed features heavily in our winter issue. We hope the magazine is good company for days spent by the fire planning the upcoming season! On page 6, Emma Holmes showcases the Ministry of Agriculture's latest boost to the organic seed sector, and on page 12 Michael Marrapese profiles BC Seeds Program Director Chris Thoreau. Seed sneaks into our Organic Story as well, as Constance Wylie takes us on a visit to UBC Farm, a "living laboratory" for research into climate adaptation, seeds, and organic agriculture (page 8).

On page 16, Shauna MacKinnon looks at emissions and carbon sequestration in California, and the essential role farmers and ranchers play in climate solutions. In Footnotes from the Field, Marjorie Harris explores the impacts of climate change on agriculture in BC (page 24), and on page 26 Lucy Sharratt of CBAN highlights why technology alone isn't the climate change solution we need.

Big picture aside, we can't forget to focus on the day to day work of farming. On page 28, Lennea Durant of AgSafe profiles OriginO's experience developing a health and safety program, and on page 23 Anna Helmer dispels any myth that farmers escape for long, lazy post-harvest season vacations with an entertaining look at her winter to-do list.

And, of course, it wouldn't be a winter edition of the Grower without the anticipation of #COABC2019 just around the corner! This year, we're celebrating everything organic—head over to page 20 for a peak at what's in store, and stay tuned for more updates!

If you have a story to tell about organic food and farming, please get in touch. Reach out with your thoughts, letters, and story ideas to editor@certifiedorganic.bc.ca—and be sure to visit us online at:

bcorganicgrower.ca


Credit: Thomas Buchan

Apply for Water Licences by March 1, 2019!

In 2016, the provincial government made changes to the Water Sustainability Act, the rules that govern the use of surface water and groundwater in BC. The Water Sustainability Act is designed to protect our water supply, ensure it can be managed and protected as one interconnected resource now and into the future, and clarify the rights of groundwater users.

The new rules came into effect on February 29, 2016, and require anyone using groundwater for anything other than domestic use to apply for a water licence or use approval and pay fees and rentals. It is a legal requirement that anyone using groundwater for agriculture must apply for a groundwater licence by the deadline of March 1, 2019.

If you submit by the deadline government will consider when you first used the water to establish your first-in-time, first-in-right (FITFIR) priority date. It is essential that organic farmers who are using groundwater apply for groundwater licences to ensure the security of the organic sector in times of drought.

"I feel that it is important to get your wells registered before March 1, 2019. The process takes a bit of time but the people at the Front Counter are very helpful so make sure you ask for support. We did it earlier and we now have the security of knowing we will have priority access to the water we need to run our farming business. Although we have only paid for one year to date the cost was very reasonable," says COABC President Carmen Wakeling.

Existing groundwater users who apply for a water licence on or before March 1, 2019 will have the one time water licence application fee (minimum $250) waived. Annual rentals accrue starting March 1, 2016, regardless of when an application is submitted during the three-year transition period that ends March 1, 2019. Fees vary based on how much water you are using and for what purpose(s).

Groundwater Licence Application:

portal.nrs.gov.bc.ca/web/client/-/existing-use-groundwater-licence-application

More information:

gov.bc.ca/gov/content/environment/air-land-water/water/water-licensing-rights/water-licences-approvals/new-requirements-for-groundwater-users

Water Rent and Application Fee Estimator:

env.gov.bc.ca/wsd/water_rights/water_rental_rates/calculator/index.html

Save the Date: #COABC2019

#COABC2019 is just around the corner! Mark your calendars for February 22-24, 2019. We love kicking off the season (and saying goodbye to winter!) with our annual conference—and this year we'll be celebrating everything organic! Join your organic community to learn together, share meals, and network.

For more details on workshops, keynotes, and more, check out our conference insert in this issue! To contact our Conference Coordinator, please reach out to conference@certifiedorganic.bc.ca.

Keep an eye on the COABC website for more conference info:

certifiedorganic.bc.ca/infonews/conference2019/

Bill 52 Moves to Protect Farmland

From Minister of Agriculture Lana Popham: "Well, it finally happened: this afternoon, the last day the Legislature sits before Winter Break, Bill 52: Agriculture Land Commission Amendment Act, 2018 passed and received Royal Assent!

Today is a huge victory not only for farmers and those involved in our agriculture sector, but for every British Columbian who cares about protecting our beautiful agricultural land for farming!
One of the things I heard most during debate on this bill from the members who spoke was just how important protecting our Province's food security is. By cracking down on illegal fill dumping, addressing mega mansions and farmland speculation and by reinstating one zone for all ALR land Bill 52 delivers on this in a big way.

I also want to thank the thousands of British Columbians who helped contribute to this success. Whether you participated in the public consultation process, sent me an email with feedback, or even just followed the progress of this Bill along from home I want you to know that we heard you, and we listened.

As I write this I'm about to board a flight to Vancouver for a series of meetings at the First Nations Leadership Gathering tomorrow. The work definitely continues but I truly believe we accomplished something significant tonight that will benefit our province for decades to come. Thanks to everyone who helped make Bill 52 law!!"

Organic Price List

The Organic Price List for fruits and vegetables is updated weekly on the COABC website. The Organic Price List is an important market pricing reference to help growers sell without overcharging and losing sales, or worse, undercharging and eroding the market price for other growers.

Check out the Organic Price List here:

certifiedorganic.bc.ca/services/organicpricelist.php

COG: Join National, Support Local

A strong and sustainable organic sector in Canada depends on dedicated involvement in local organic food systems—and a strong national organization made up of farmers and consumers devoted to organics. For more than 40 years, Canadian Organic Growers (COG) has been building and transferring knowledge on organic farming so that our sector grows and becomes stronger. COG creates awareness within our sector and to the public about issues that directly affect organic farmers and farming.

By becoming a member of this national organization, you add your voice to our national voice—while also supporting COABC! Canadian Organic Growers (COG) allows members and supporters to direct a portion of their membership contribution to their regional organic organizations, including COABC.

By joining COG for $25, you can choose for $15 of your membership to go directly to COABC, and you will be supporting our projects and programs that take place at the provincial and local level.

cog.ca/cog_news/cog-launches-join-national-support-local-membership-campaign/

BC Land Matching Program

The BC Land Matching Program (BCLMP) delivered by Young Agrarians provides land matching and business support services to new farmers looking for land to farm as well as landowners interested in finding someone to farm their land. Offered since 2016 in Metro Vancouver, the program is now available in four regions: Vancouver Island, Metro Vancouver, Okanagan, and Columbia Basin. If you're looking for land to lease, or interested in leasing your land to a farmer, reach out to find out how a Land Matcher can support you.

For more information, email land@youngagrarians.org and visit

youngagrarians.org/land

SCALING UP
Organic Vegetable Seed Production in BC

Examining carrots as part of the BC Seed Trials. Credit: Chris Thoreau

By Emma Holmes, P.Ag

The organic seed sector will be getting a boost through a comprehensive project that includes seed production, business, and market supports.

FarmFolk CityFolk, which has been working to cultivate local, sustainable food systems since 1993, will be leading the project with funding provided from the Governments of Canada and B.C. through the Canadian Agriculture Partnership. The five year, $3 billion Canadian Agricultural Partnership launched on April 1, 2018, and includes $2 billion in cost-shared strategic initiatives delivered by the provinces and territories, plus $1 billion for federal programs and services.

FarmFolk CityFolk will specifically be working on:

- Developing a mobile seed processing unit to help small and mid-scale seed farmers efficiently and affordably process seed
- Expanding seed production skills training in the Lower Mainland, Okanagan, Kootenays and North through focused in-person training and webinars
- Supporting new entrants and small seed businesses with "Seed Enterprise Budgets" to help farmers plan and prepare for expenses, revenues and inventory management
- Supporting Seedy Saturday events around the province by developing shared event planning resources

This project builds off of FarmFolk CityFolk's previous work with the Bauta Family Initiative on Canadian Seed Security, as well as Dan Jason's Seed Resiliency report commissioned by the Ministry of Agriculture this past winter. Jason's report included an inventory of seed assets in the province as well as recommendations for increasing seed resiliency in BC.

British Columbia has the greatest diversity of crops and growing conditions of any province or territory in Canada. This provides a great opportunity to work with a wide range of ecosystems to create regionally tested and locally

Beet seeds. Credit: Chris Thoreau

adapted seeds that support our local foodsheds in uncertain climates and that can also thrive in diverse climates around the world.

Seed production provides BC organic farmers with an opportunity to diversify their farm production and increase revenue. The market for certified organic seed is expected to continue to grow in the coming decades as the consumer demand for organic products increases and certifiers are adopting stricter enforcement around purchasing certified organic seed when available.

FarmFolk CityFolk will be collaborating with other organizations in BC focused on seed, such as the UBC Farm Seed Hub, KPU's new lab for seed testing and cleaning (a major new asset for the province), and the BC Eco Seed Co-op. The strengths of these organizations, combined with the incredible passion and energy of local seed savers, farmers, and growers, will go a long way in supporting the development B.C.'s organic seed sector, the base of resilient communities and thriving food systems.

bcseeds.org

Emma Holmes has a BSc in Sustainable Agriculture and an MSc in Soil Science, both from UBC. She farmed on Orcas Island and Salt Spring Island and is now the Organics Industry Specialist at the BC Ministry of Agriculture. She can be reached at: Emma.Holmes@gov.bc.ca

CULTVATING CLIMATE RESILIENCE IN A LIVING LABORATORY

UBC Farm fields. Credit: Sara Dent (@saradentfarmlove)

By Constance Wylie

Surrounded by forest and sea, the University of British Columbia is a quick 30 minute bus ride west of downtown Vancouver. A city unto itself, more than 55,800 students and close to 15,000 faculty and staff study, work, live, and play there. A small but growing number also farms. Countless hands-on educational opportunities are offered at the UBC Farm: from internships and research placements for university students, to day camps and field trips for school children, to workshops and lectures for interested community members. There is something for everyone, including bountiful amounts of fresh organic produce.

Globally, agriculture accounts for 25% of the world's greenhouse gas emissions. Half of that is from land use changes such as deforestation, while the other half is attributed to on-farm management practices and livestock. Moreover, our food systems are contributing massive amounts to our ecological footprint. Food accounts for about 50% of Vancouver's footprint, according to UBC Professor Emeritus William Rees. Evidently, food can, and must, be an agent of change. In our rapidly changing world where the future of yesterday is uncertain, farmers are on the front line.

The folk at UBC's Centre for Sustainable Food Systems are digging into these challenges using their very own "living laboratory," aka UBC Farm, as a testing ground. It is a hotbed of leading agricultural research with "aims to understand and transform local and global food systems towards a more sustainable food secure future," according to the farm website. It is also a green oasis where everyone is welcome to find a quiet moment to connect with nature; the hustle and bustle of campus dissipates on the wings of beneficial insects and chirping birds.

At 24 hectares, this certified organic production farm makes for a unique academic environment. As Melanie Sylvestre, the Perennial, Biodiversity, and Seed Hub Co-

UBC Farm fields. Credit: Sara Dent (@saradentfarmlove)

ordinator, puts it, “having a farm that does research in organic production is unique in BC and vital for the future of organic agriculture” in the province.

We can all whet our farming practices by reviewing some of the 30 ongoing research projects at UBC Farm. It should come as no surprise that many of the projects relate coping with the effects climactic changes have on agriculture, locally and globally.

Organic Soil Amendments

One such project is Organic Systems Nutrient Dynamics led by Dr. Sean Smukler and Dr. Gabriel Maltais-Landy. Their research compares the performance of typical organic soil amendments: chicken and horse manure, blood meal, and municipal compost. Depending on the type and amounts of organic soil amendment applied, crop yield will vary, and so too will the environmental impact. They found that often the highest yields result from over fertilization of Nitrogen and Phosphorus, which leads to greater GHG emissions. For example, chicken manure releases potent levels of GHG emissions.

It is a challenging trade-off to negotiate. This information is critically important for the organic grower trying to de-

crease their environmental impact. Another topic of study was the value of rain protection for on-farm manure storage: for long-term storage, it is always best to cover your manure pile!

Climate Smart

Were you aware that the application of black or clear plastic mulch with low longwave transmissivity can increase soil temperatures by about 40%? Conversely, a high reflective plastic mulch can reduce soil temperatures by about 20%. These are some of the findings of the Climate Smart Agriculture research team, composed of Dr. Andrew Black, Dr. Paul Jassal, and PhD student and research assistant Hughie Jones. In an interview for his researcher profile, Hughie explains that through his work he is "trying to get direct measurements … so that people have access to hard, reliable data" for enhancing crop productivity with mulches and low tunnels for season extension. "By increasing the amount of knowledge available we can reduce the amount of guessing involved for farmers, increasing their predictive power." When it comes to getting the most out of a growing season, less time spent with trial and error can make a huge difference to your yields and income.

Seed Savers

With the fall frost of 2018, the first phase of the BC Seed Trials drew to a close. The collaboration between UBC Farm, FarmFolk CityFolk, and The Bauta Family Initiative on Canadian Seed Security kicked off in 2016 to run these trials. Lead scientist and project manager Dr. Alexandra Lyon explained that the first phase asked, "What are the most hardy, resilient, well adapted varieties that we already have access to?"

More than 20 farms from across the province were involved in trialing seeds including kale, beets, leeks, and spinach. These varieties were chosen as crops that are already known to perform well in BC. The seeds in question are all open-pollinated varieties which boast "higher resilience then hybrid varieties in the face of climate change," says Sylvestre, who has also been a leading figure in the seed trials.

While farmers may choose hybrid seed for their higher yields and other selected traits, Sylvestre explains that they lack "horizontal resistance, the concept of having diversity within a population allowing it to withstand various climatic changes. Through our selection process, we try to achieve horizontal resistance and therefore offer new varieties that would be better suited in various growing scenarios. It is important to understand that goal of horizontal resistance is among multiple other goals to reach varieties with agronomic traits that will be desirable to farmers and customers."

"Community building around our local seed systems has been significant through this research project," Sylvestre

Young strawberry plants get ahead of the weeds with black plastic mulch. Credit: Sara Dent (@saradentfarmlove)

adds. The seed trials are also contributing to community building at UBC Farm itself. Rather than compost the crops grown for the seed trials, they are harvested and sold at the weekly farmers market.

With new funding secured from the federal government, the BC Seed trials will continue for at least another five years. Going ahead, the "role of UBC Farm is to train and connect farmers for farmer led plant breeding" says Lyon. While institutional academic research will play a significant role in seed selection and adaptation, "lots of types of seed trialing will be really important." This means that farmers across the province "supported with tools and knowledge for selecting and saving seed" can contribute significantly to our collective seed and food security. Lyon encourages farmers to reach out with their experiences with regards to climate change and seed. She and members from the team will also be at the COABC conference February 22-24, 2019 with the intention to connect with BC farmers.

Ultimately, at UBC farm, "all the issues people are working on play into what we will need to adapt to climate change" says Lyon. The formal and informal networks made at UBC Farm are really starting to take root across the province. This is an amazing resource for us all to profit from. Take advantage of these slower winter months to dig in and digest the information available to us—it may

very well change the way you approach your next growing season.

Dr. Alexandra Lyon can be contacted at alexandra.lyon@ubc.ca

Constance Wylie left her family farm on Vancouver Island to study Political Science and the Middle East at Sciences Po University in France, only to return to BC where she took up farming, moonlighted as a market manager, and got a PDC in Cuba and Organic Master Gardener certificate with Gaia College. She now lives, writes, and grows food in Squamish with her dog Salal.

FOR MORE INFO

UBC Farm. Credit: Sara Dent (@saradentfarmlove)

Check out UBC Farm online at:

- **ubcfarm.ca**

More on Organic Systems Nutrient Dynamics:

- **ubcfarm.ubc.ca/2017/06/01/organic-soil-amendments**

More on UBC's Climate Smart Agriculture research:

- **ubcfarm.ubc.ca/climate-smart-agriculture**

For BC Seed trial results and updates:

- **bcseedtrials.ca**

Seed grown at UBC farm is now available through the BC Eco-Seed Coop. Keep an eye out for two new varieties: Melaton leek and Purple Striped tomatillo.

LOCAL SEEDS FOR LOCAL FOOD

Karma Peppers
Credit: Chris Thoreau

By Michael Marrapese

Agriculture as we define it today has existed for roughly 12,000 years. Though the practices have been refined over millennia, modern farmers would still recognize the intent and the activity as 'farming.' We can find examples of plants we recognize as cereal grains, peas, barley, wheat, rice, and squash dating back 10,000 years. What makes this possible is that all these food plants produce seed.

Chris Thoreau, BC Seed Security Program Director at FarmFolk CityFolk, notes that seed is also the most efficient way to move food. "Growing seed allows you to ship food in its simplest form," he says. "Moving lettuce seed across the border is different from moving lettuce across the border. Many of BC's seed companies are already doing this through online sales."

Thoreau started farming in 2001 knowing very little about seed. "My introduction to farming was the small scale organic vegetable production that is very prevalent on Southern Vancouver Island," he says. "Which is also how I got introduced to seeds. It really was by default.There was a lot of local seed production happening in the region. We still had a good dozen seed companies in BC. Seedy Saturdays had been around for 20 years so it was a very active community."

In 2006 Thoreau worked on a survey of organic growers to get a sense of what seeds they were buying and from whom. He observed that "growers sourced their seed from places you'd expect like Johnny's and High Mowing but were also sourcing from some local seed companies like Salt Spring Seeds and Stellar Seeds."

Thoreau returned to Vancouver to study Agroecology at UBC. Still wanting to grow food while at university, he started Food Pedalers, a microgreens operation in East Vancouver. "It was very paradoxical to be attending the agroecology program but leaving the farm to do that," he recalls. "I thought growing microgreens was the only way to make enough money for a viable urban farming business in Vancouver. The return per square foot from micro-greens was much higher than any ground crop I could grow. We were doing about 10,000 pounds of microgreens a year. During that time we were buying seed by the pallet load. I draw a lot from my time growing microgreens to help inform my seed work now."

Thoreau joined FarmFolk CityFolk in 2015 to coordinate the Bauta Family Initiative on Canadian Seed Security

> “A century ago farmers may have grown as many as 80,000 different plant species. As more seed is controlled by a few large corporations, the bulk of our food comes from only about 150 different crops.”

Chris Thoreau and Shauna MacKinnon from FarmFolk CityFolk, and Alex Lyon from UBC, inspect a golden beet seed crop at Local Harvest Market in Chilliwack (2016). Credit: Michael Marrapese

(BFICSS). He’s extended his interest in seed production and education, coordinating seed workshops, public events and seed trials throughout BC. The BFICSS project is focusing on locally adapted organic seed to meet the needs of organic farmers. Thoreau notes that “seed optimized for organic production must be bred and produced in organic systems.”

Today, a vast array of seeds are owned, patented, and marketed by a few large corporations. With less than two percent of our population actively farming, our connection to seed and its critical role in our lives is increasingly tenuous. Thoreau points out that seed can play many roles. “Seed production can be a profession or a community building activity or even a therapeutic activity. All are quite different. Small-scale seed growers in BC have great community reach, a pretty good diversity of seeds, but what they don’t have is bulk seeds to sell to farmers.” When he first started farming most of the local seed companies were just doing packet sales. Packets were fine if a farmer was interested in trying a new variety. If they wanted to do a couple of thousand row feet of something, no BC seed grower could accommodate that. “And that is still very much the case today,” he notes.

With a predominately corporate controlled seed system, there are many issues that undermine our food security. Chief

Seed Trial participants explore a kale crop.
Credit: Michael Marrapese

among them are irregular seed availability and degraded biodiversity. A century ago farmers may have grown as many as 80,000 different plant species. As more seed is controlled by a few large corporations, the bulk of our food comes from only about 150 different crops. Corporate ownership, patenting, and gene licensing limit the genetic diversity available to farmers. Any biologist will tell you that this is a perilous enterprise.

Farmers are often at the mercy of big seed producers who may be growing for large commercial markets. Specific varieties regularly disappear from catalogues. "That's one of the reasons people start growing seed themselves," Thoreau observes. "If they want to have a particular seed that works well in their environment and their operation, the only reliable way to do that is to grow it themselves. A big benefit to this is that evolving a seed crop on your farm year after year, you are going to come up with a new variety uniquely suited to your environment."

One of the goals of the BFICSS program is to get more BC farmers growing and saving seed, to scale up production in the region, not only for themselves but to share, trade, and sell to other farmers. This process will ensure the genetic diversity and adaptability of seed in our region.

But there are political issues that hinder a regional and more diverse seed economy. Not all seed is available or appropriate to grow for sale. Hybrid seeds do not breed true; the next generation of plants will have a lot of off-types. Many seeds have plant variety protections on them which means farmers can't grow and market them. Thoreau notes that this actually encourages seed breeding. "In fairness, if I spend 10 years developing and growing 'Chris's Super Sweet Carrot' and I start selling it, I do need to recoup the cost of breeding that seed." Genetically modified (GM) seeds are generally licensed; farmers never actually own

Graceful carrot seed umbel
Credit: Chris Thoreau

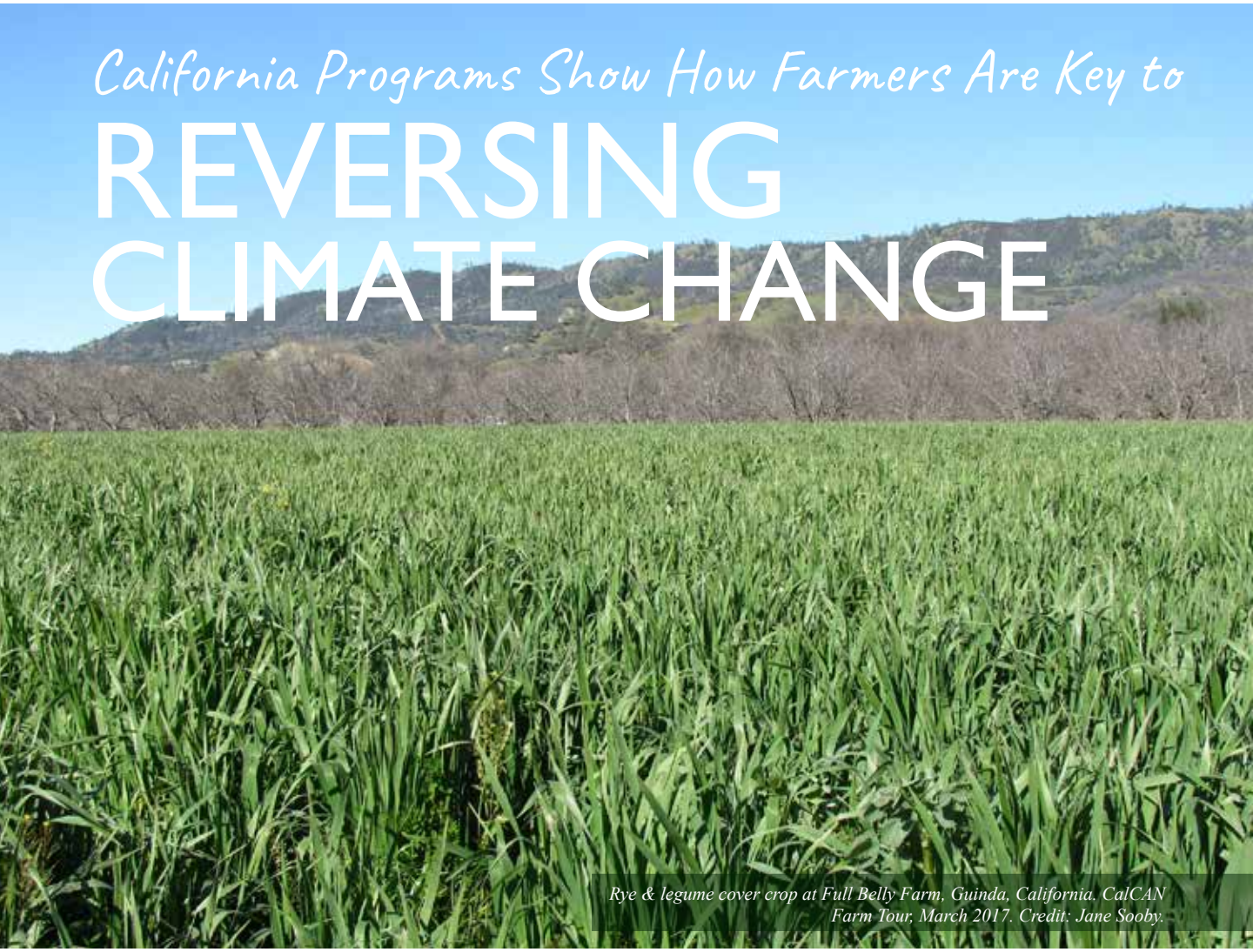
that seed so they can't use it for seed saving. Most BC seed growers are growing heirloom varieties or rare varieties that aren't protected by intellectual property laws.

Thoreau believes there are enormous possibilities for more seed production in BC. Oregon and Washington State are major global seed producers for crops like beets, carrots, spinach, and a lot of the brassicas. Southwestern British Columbia has similar climate conditions so he sees potential for some of that sector to be developed here. He also believes there is an enormous opportunity to produce more organic seed.

Growing trays of microgreens taught Thoreau the most important lesson about seed. Doing a hundred crop cycles a year, he began to notice differences in how temperature, watering, and daylight hours affected the plants. However, he notes that the biggest determining factor is seed quality. He's convinced that "you cannot override the poor quality of the seed with good growing practices."

bcseeds.org

Michael Marrapese is the IT and Communications Manager at FarmFolk CityFolk. He lives and works at Fraser Common Farm Cooperative, one of BC's longest running cooperative farms, and is an avid photographer, singer and cook.



California Programs Show How Farmers Are Key to REVERSING CLIMATE CHANGE

Rye & legume cover crop at Full Belly Farm, Guinda, California. CalCAN Farm Tour, March 2017. Credit: Jane Sooby.

By Shauna MacKinnon

From extreme flooding to drought and previously unheard of temperature variability, climate change is a serious matter for BC organic growers. While agriculture is feeling more than its share of climate change impacts, a set of solutions exist where farmers and ranchers play a key role. Land-based climate solutions can avoid and absorb enough greenhouse gas (GHG) emissions to be equivalent to a complete stop of burning oil worldwide.

This contribution is too important to ignore. An article in the journal Proceedings of the National Academy of Sciences assessed 20 cost effective land-based climate solutions applied globally to forests, wetlands, grasslands, and agricultural lands. These conservation, restoration, and land management actions can increase carbon storage and reduce GHG emissions to achieve over a third of the GHG reductions required to prevent dangerous levels of global warming. The Intergovernmental Panel on Climate Change (IPCC) has stated emissions reductions are not enough to avoid catastrophic climate change impacts: we need to remove existing carbon from the atmosphere. Farmers and ranchers can help do this through practices that sink carbon in soil and vegetative cover.

In California, the fifth largest exporter of food and agriculture products in the world, climate change poses a major threat—drought, wildfire, and a reduction in the winter chill hours needed for many of the state's fruit and nut crops are already taking a toll on production. California is a leader in climate change policy with ambitious GHG reduction goals, but the state is also recognizing that reductions alone are not enough. California is implementing programs and policies that put the state's natural and working lands, including wetlands, forests, and agricultural lands, to work sinking carbon.

Carbon Farming: Agriculture as Carbon Sink

Dr. Jeffrey Creque, Director of Rangeland and Agroecosystem Management at the Carbon Cycle Institute in California, is a carbon farming pioneer. It all started with a conversation between himself and a landowner in Marin

Implementation of a rotational grazing program on a Marin Carbon Farm. Credit: Dr. Jeff Creque, Carbon Cycle Institute.

County. "We were talking about the centrality of carbon to management and restoration of their ranch and watershed," explains Creque. "That led to a larger conversation about carbon as something they could market and then how exactly we could make that happen."

The carbon farming concept was founded on early research in Marin County that showed land under management for dairy had much higher carbon concentrations than neighbouring land. This led to research trials by University of California, Berkeley in partnership with local ranches that showed a single year of compost application yielded higher annual carbon concentrations for at least 10 years. In the initial year the compost itself was responsible for some of those carbon additions, but additional annual increases in soil carbon came from carbon being pulled from the atmosphere. The one time, half inch application of compost stimulated the forage grasses to increase carbon capture for a decade or more.

This was enough for researchers to take notice. Producer partners were happy to see the increased yields in forage

Preparation for planting of a one mile windbreak on a Carbon Farm in NE CA. Credit: Dr. Jeff Creque, Carbon Cycle Institute

production that resulted from the compost application. Those first results led to the development of a carbon farm planning tool. "After seeing those results everyone was excited about compost. But we wanted to see what else we could do," states Creque.

Using the existing USDA-Natural Resources Conservation Service farm planning process as their template (the US equivalent of Canada's Environmental Farm Plan), Creque and his colleagues re-formulated the approach by putting the goal of maximizing carbon sequestration at the centre of the process. The carbon farm planning tool was the result. The first farm in Marin County completed a Carbon Farm Plan in 2014; today, 47 farms across California have completed plans and about 60 more are waiting to begin.

Along with compost applications, other carbon farming practices include riparian restoration, silvopasture (the intentional combination of trees, forage plants, and livestock together as an integrated, intensively-managed system), windbreaks, hedgerows, and improving grazing practices. Over 35 practices are considered in carbon farm planning. For high impact, riparian restoration is one of the best performers. The high productivity of riparian ecosystems means a large amount of carbon can be sunk in a relatively small part of farmers' and ranchers' total land area.

Impact and the Potential for Scaling Up

The adoption of carbon farming practices on one California ranch is equivalent to taking 850 cars worth of carbon dioxide out of the air and putting it into the ground. This ranch has also tapped into new markets for their wool by being eligible for the Climate Beneficial program offered by Fibershed, a network that develops regional and regenerative fiber systems on behalf of independent working producers. A win-win at the farm-scale. But collective impact holds the most potential. "No one farm can ameliorate climate change, but collectively with many farms involved they can have a big impact," Creque emphasizes.

The implementation of carbon farming practices in California is greatly helped by numerous federal, state, and county level programs that offer cost share contributions. Farmers and ranchers can receive direct grants to implement carbon farming practices from programs such as the national Environmental Quality Improvements Program and California State's Healthy Soils program. But it has been challenging to convince the government agencies involved in managing climate change of the valuable role agriculture can play.

More and more local climate action plans are being developed, but most fail to consider what natural or working lands can offer to GHG mitigation strategies. "The beauty of agriculture land is that since we are already managing them, not as big of a change is required to manage them differently," Creque concludes.

The Role of Organic Producers

Under their Climate Smart Agriculture initiative, California offers programs on irrigation efficiency (SWEEP), farmland conservation, manure management, and incentivizing farm practices that store carbon in soil and woody plants (Healthy Soils). Each of these programs, funded in

part by the State's cap and trade program, plays a role in either decreasing the amount of GHG emitted from the agriculture sector or increasing the amount of carbon stored in soil and woody plants.

The Healthy Soils program has been particularly popular among organic growers. In the first year of funding over 25% of applicants were organic producers, when they make up just 3% of the state's total producers. Jane Sooby, Senior Policy Specialist at CCOF, a non-profit supported by an organic family of farmers, ranchers, processors, retailers, consumers, and policymakers that was founded in California, explains why: "Organic farmers have a special role to play because they are already required to use practices such as crop rotation that contribute to carbon sequestration, and they are rewarded in the marketplace with a premium for organic products."

State programs like Healthy Soils and SWEEP are a start, but more can be done, suggests Sooby. These programs are competitive, and they can be complicated and time consuming to apply to which makes it difficult for smaller scale producers to access the available resources. Sooby would like to see California provide financial incentives to all farmers who are taking steps to conserve water and reduce GHG emissions.

CCOF has engaged directly with government to make their programs more accessible to organic farmers and ranchers at all scales. What more is needed?

Sooby likens the current climate change crisis to the all-hands-on-deck approach of the World War II effort: "Climate change is of similar, if not more, urgency. Governments need to draw up plans for how to support farmers and ranchers in sequestering as much carbon as possible and helping them transition to clean energy solutions."

Learn more:

California Dept. of Food and Agriculture - Climate Smart Agriculture programs:

cdfa.ca.gov/oefi

Carbon Cycle Institute:

carboncycle.org

Climate Beneficial Wool:

Fibershed.com

CalCan - California Climate & Agriculture Network:

calclimateag.org/climatesmartag

Shauna MacKinnon has been working on food and agriculture issues for well over a decade. From social and economic research to supporting research and extension she has been honoured to work with many great food and farming organizations. She currently coordinates the Farm Adaptation Innovator Program for the BC Food & Agriculture Climate Action Initiative, but has contributed this piece as an independent writer.

Celebrating Organics!

#COABC2019 THE 2019 COABC CONFERENCE

Register to attend the #COABC2019 Conference at the Prestige Hotel in Vernon while early bird tickets are still available! This year we are celebrating the 26th Anniversary of the COABC and we are pleased to have a plenary keynote to present to you. Attending our conference provides educational and networking opportunities for new and established farmers, as well as for the general public. We feature educational topics presented by knowledgeable speakers who are experts in their field.

Our theme this year, Celebrating Organics, is inspired by the stories and experiences of BC's organic farmers and the history of the organic sector. We will celebrate the hard work that has been done by farmers, researchers, and retailers, and everyone in between, to build a resilient future for organics in BC. When we stand together, our message is stronger: organic agriculture, based on soil health and care for the environment, is the path to building a better food system.

Join us for our official kick-off to the weekend: Friday evening is our conference reception at 6:30 pm. We are very pleased to host the return of the Open Space after a hiatus last year. This idea generating session will have us breaking off into free flowing groups and holding discussions around all things organic. This is a great opportunity to mingle and exchange ideas with like minded organic folk.

The rest of the reception is an event that you won't want to miss: welcoming remarks paired with organic hors d'oeuvres made from locally sourced ingredients donated by our amazing community of growers. We'll be washing those down with organic wine and our annual Organic Ale Tasting hosted by Crannóg Ales. Friday night kicks off a busy weekend that never seems to leave enough time for visiting, so we hope to see you there!

Saturday morning will start with our keynote address. This year, we're approaching our keynote presentation in a new and exciting way by hosting a plenary session. This will be a moderated panel of three speakers displaying a variety of experiences and backgrounds. In this presentation, our plenary will each introduce our theme of Celebrating Organics in a different way based on each of their own backgrounds. Specific challenges, developments, and opportunities will be identified and discussed.

Register

To register and to stay up-to-date on new conference information as it emerges, visit https://www.certifiedorganic.bc.ca/infonews/conference2019/

Accommodation

The Prestige Hotel in Vernon (4411 32 Street) is holding a block of rooms. To reserve, please call the hotel at (250) 558-5991 or 1-877-737-8443 (be sure to specify Vernon location) and ask for the COABC rate.

Silent Auction

Every year our creative community provides an amazing range of items to to raise funds for the organic sector, including: clothing, books, art, food, wine, tools, seeds, and much, much more. If you would like to donate an auction item, please do! You can indicate this upon registering; alternatively you may contact our conference coordinator. Bring items with you to the conference. Auction items will be displayed Saturday afternoon until bidding closes on Saturday at 9 PM.

Trade Show

The COABC Trade Shows is a great way to showcase your products. We welcome suppliers of approved inputs, seeds, appropriate technology, marketing tools, resource materials and more! Producers, distributors, retailers, processors – please book your Trade Show tables online at

- https://www.eventbrite.ca/e/coabc-2019-conference-trade-show-tickets-52021364301

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Poster Session

We are pleased to offer free space for poster presentations related to innovative organic production. Contact the conference organizer with your poster idea and to book space. conference@certifiedorganic.bc.ca

Young Agrarians Mixer

Join us for a YA social mixer on Saturday evening! Meet and network with other awesome agrarians, who value food, farmers, nature, and community. All ages welcome! This event is for the young and the young-at-heart.

Saturday Feast

We will enjoy locally sourced, certified organic ingredients, followed by music! One of the ways we keep the conference costs affordable is by featuring food donated by local growers and producers. Please contact conference@coordinator.bc.ca if you are able to donate. You can also indicate this on your order form and Samantha, our coordinator, will be in touch.

Presentations & Workshops

Dive into our diverse selection of presentations and workshops. A variety of sessions are offered, covering a wide range of interests pertinent to the dynamic functioning of farm operations. Learn and connect with others who share your passion for organics at these engaging sessions. Here are our presentations & speakers at-a-glance, with a few more TBA.

Management-Intensive Grazing for Your Bioregion
With Tristan Banwell

Join organic grass farmer Tristan Banwell as he explains the principles behind Management-intensive Grazing (MiG) and shares the tools and techniques you need to implement this grazing system in your bioregion. Wherever you farm, you will see healthier animals, healthier pastures, more productivity, and lower costs when changing from a continuous grazing system.

Organic Standards Bootcamp
With DeLisa Lewis & Renee Prasad

This session will be an organic certification boot camp / marathon for the uninitiated. Dr. Lewis and Dr. Prasad will outline the certification process and give an orientation to the do's and don'ts of organic standards. This interactive session will include the examination of different scenarios that require examination of the standards and a (fun!) quiz. This session is designed to empower the participants to take ownership of the interpretation of the standard.

Guacamole: A Cooking Lesson for Justice
With the Migrant Workers' Dignity Association

What is the real story behind how fruit and vegetables get from the farm to our tables? How can we ensure that the people who grow these ingredients for us are treated fairly, with respect and with dignity? Join the Migrant Workers' Dignity Association (MWDA) to have fun, food, and learn with foreign farm workers who grow our BC produce in an interactive, theatrical cooking lesson and discussion.

Update on the Standards Review Process
With Rochelle Eisen & Anne Macey

The Canadian Organic Standards are under review again, in preparation for their 2020 renewal. This process is managed by the Canadian General Standards Board (CGSB), but the organic sector is responsible for generating their content. The review begins with industry consultation and the creation of working groups to review proposed modifications and make recommendations to the CGSB's Committee on Organic Agriculture. Rochelle and Anne will update us on this current review process.

Climate Panel
With Shauna Mackinnon

Shauna works for the BC Agriculture & Food Climate Action Initiative which has conducted several research projects that relate to organic production in the Okanagan. Shauna's climate panel will highlight this research on climate change adaptation strategies for the organic sector as well as engage organic producers in articulating their research priorities in this area.

Digging better carrots, picking better peppers: Info & discussion session on Canadian Organic Vegetable Improvement (CANOVI)
With Dr. Alexandra Lyon

In this is session Dr. Alex Lyon (UBC Centre for Sustainable Food Systems) will discuss new participatory plant breeding initiatives focused on organic vegetable crops. These projects include farmer-led breeding of an early-maturing blocky red bell pepper in Ontario, and a new project in BC to breed an open-pollinated orange storage carrot with excellent flavour and early season vigour. Carrot growers are especially encouraged to attend as we will be seeking feedback on breeding priorities and discussing opportunities to get involved through on-farm trials, on-farm selection, and plant breeding workshops.

The public perception of dairy farming
With Anne-Marieke Smid

More info to come!

Stay tuned for updates updates on the remaining speakers and Saturday night musicians via the COABC website and our Facebook Event Page!

certifiedorganic.bc.ca

Facebook: Certified Organic Associations BC

We look forward to seeing you in February!

WINTER WORK:
The Mexico Myth

Definitely not Mexico: Helmer's Organic Farm in the winter sunlight is beautiful, but it sure is a lot of work! Credit: Anna Helmer

By Anna Helmer

Here's a question I hear a lot: So, what are you going to do now that winter is here and there is no more farming? Leaving aside the irony that I most often hear it while selling potatoes at farmers' market, not to mention its (alarming?) assumption that farming is not a full year occupation, why do I struggle to find a good answer? I start with an earnest assertion that there is plenty of farm work to do and as I move on to mumbling something about markets, a ripple of uneasiness passes through the thought process and I begin to lose the thread of my theme, which as always has to do with me being a hard-working farmer. My answer becomes yet more bumbly and borderline indignant as I try to cling to and insist upon this image. A little tension develops in the space between my eyes.

The tension tells a truth and the truth is that for certain there are farm related tasks that I ought to be doing right now, and I have not been doing them. In the process of answering the question eventually I am going to get to the part where I have to explain that I have been choosing baking, reading, and in fact a whole bunch of things over farming. It will become clear that farm work is coming second, or perhaps even dead last, on my list of things to do. I resist telling people about that, however, because I don't want them to think they are right, that there is no farming in the winter.

It's not like there's nothing to do. Oh my, no. It just means that most of the farm work is not due until spring. The weekly mandatory work consists of attending the winter market and servicing a few restaurant orders. This I can do in my sleep, having done around 1,000 markets lately and perfected the art of weighing out 50lb boxes of potatoes. It's the only work with any immediate urgency and even that has been reduced to a whimper.

This long deadline is a problem. Spring is so far distant as to be ephemeral. As a deadline it seems ignorable. It is, however, firm. Anything not done by spring will not get done at all. I will be behind before I even get started. I am aware of the consequences yet struggle to produce.

It may be just a function of this particular week, which is featuring deliciously short, slushy, and dusky days. The wood shed is full, prompting lavish firewood usage which in turn demands I read in front of it. Then there is the

Continued at the top of page 30...

Mother Earth is Heating Up

BC Crop Adaptation & Diversification in Climate Change

Barbara Odegard at Ironwood Farm, Fanny Bay, BC
Credit: Thomas Buchan

By Marjorie Harris BSc, IOIA V.O. P.Ag

I have stood on my back porch trying to imagine what a three kilometer high Cordilleran Ice sheet would have looked like here 12,000 years before the last big melt. It is estimated that people arrived in BC's virgin landscape only 9,000 years ago.

Climate change on a geological time scale is undeniable. Long term climate change trends are difficult to observe from year to year and climate change over a lifetime may be imperceptible especially with a variety of shorter and longer climate cycles that can bring on their own periodic dramatic weather events.

Here in BC our usual climate patterns are regularly perturbed by El Nino, La Nina, and the Pacific Decadal Oscillation. The El Nino cycle fluctuates over three to seven years. During El Nino years inland temperatures tend to be warmer and drier with warmer coastal waters that push salmon stocks further north to colder water. La Nina years are characterized with colder inland temperatures with heavier winter snow packs and colder coastal waters. The Pacific Decadal Oscillation pattern shifts temperatures and precipitation over 20 to 30 year periods that correspond with dramatic shifts in salmon production.

We have now entered a new epoch of human induced climate change. Analysis of global climate data provides unequivocal evidence that worldwide average temperatures have risen significantly and at a more rapid pace then usually observed in geologic time frames. The effects of climate change are region specific and variable across the world. The effects are most pronounced in high latitude and high-altitude areas.

What are the predicted impacts of climate change on BC crop production, pest and disease burden, weed control, and water resources?

There has already been a measurable shift to warmer average temperatures year round throughout the province generally speaking. However, climate change impacts vary region to region. Warmer winter temperatures have been more pronounced in the far north. In the southern part of the province the growing season has lengthened. There will be more very hot days in summer and extended droughts with higher risks of fire with drier conditions.

Crop production: Key cash crops will lose viability to grow under new climate conditions. Growers will need to diversify in crop production to meet the new growing con-

ditions. In the Okanagan region, longer warmer growing seasons favor red wine grape varieties over cooler temperature white and ice wine grape varieties. In the Okanagan wine producers are replacing grapevines for varietals that prefer more warmth.

Pest and disease burden: Milder winter temperatures allow a greater number of pests to survive overwintering, increasing the pest burden for the following season. Timing of pest control will need to be adjusted as pest life cycles respond to temperature increases. For strategic pest management increased pest surveillance will be crucial to prevention and management.

Pests will extend range to higher altitudes with warming trends. One example is the spread of the mountain pine beetle from north to south across the province under the influence of milder winters. Many invasive insects and disease vectors such as mosquitoes, ticks, and rodents, will be able to extend their geographical ranges.

For BC, a rare anthrax outbreak occurred in Fort St. John in October 2018, killing 13 bison. Rainy weather and warmer soil temperatures allowed the bacteria deep underground to migrate to the soil surface and become an infective agent.

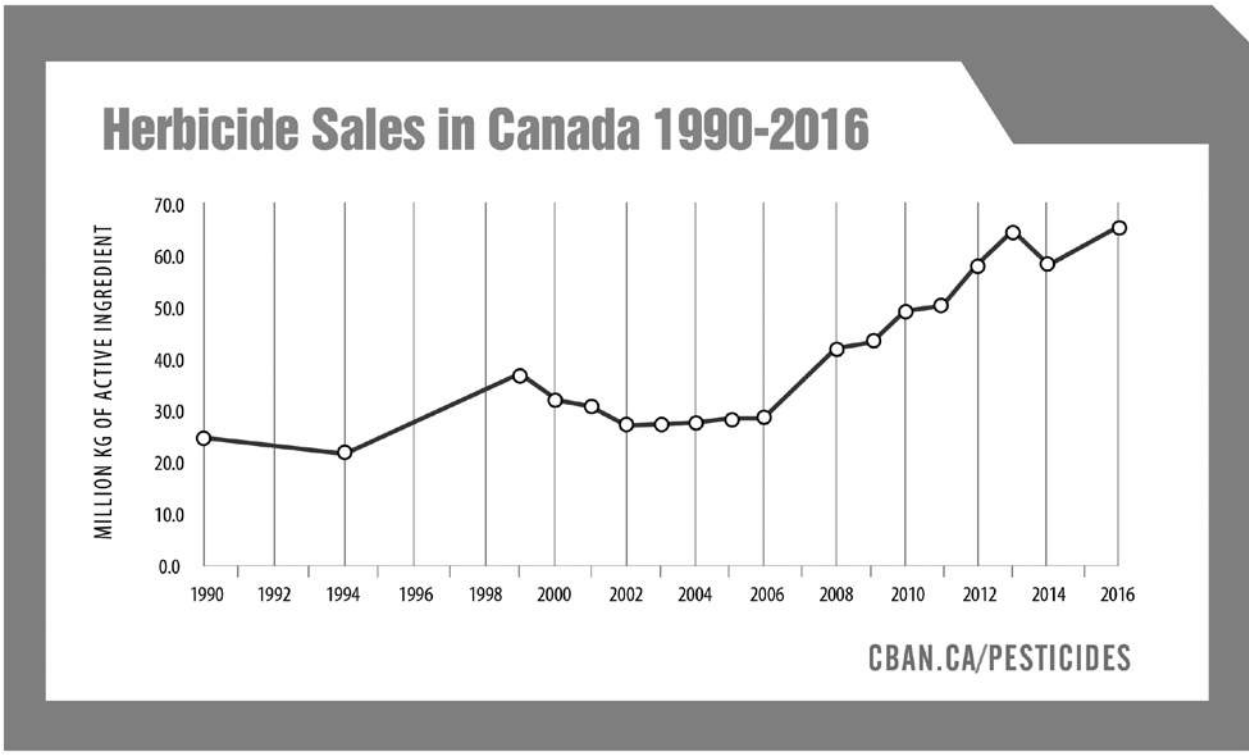
Weed Control: It is predicted that invasive plant and weed species will expand their ranges with climate change impacts. Weeds with efficient seed dispersal systems will invade faster than weeds that rely on vegetative dispersal. Higher carbon dioxide levels may cause some weeds to grow more vigorously. Disturbed habitats and fields after drought will be more easily colonized; therefore, cover cropping will become more imperative.

Water management: Climate change is predicted to bring substantial changes to water resources. The type of precipitation is already observably shifting to more rain, intense

Continued on page 29...

PULLING SOLUTIONS OUT OF THIN AIR

THE DANGERS OF INVESTING IN THE PROMISE OF THE TECHNO-FIX



By Lucy Sharratt

For 20 years, the world's biggest seed and pesticide companies have profited from selling genetically modified (GM, also called genetically engineered) seeds that are tied to their brand name herbicide formulations. In fact, almost 100% of the GM crops now grown in Canada are genetically modified to be herbicide-tolerant; 88% globally. This reality is far from the promises that were made for this powerful new technology.

Canadians are still being asked to throw their support behind genetic engineering in the name of innovation and progress, to solve the biggest problems of our time. We are being asked to forgo precautionary regulations and mandatory GM food labelling to clear the way, and to direct significant resources away from seed systems that serve organic farmers. Our experience with genetic engineering provides some important lessons about the impacts of focusing on the potential of techno-fixes.

GM's Solution is More Pesticides

Five GM crops are grown in Canada: corn, canola, soy, white sugar beet, and a very small amount of alfalfa. All are herbicide-tolerant except for a few GM sweet corn varieties that are only insect-resistant. GM herbicide-tolerant crops are grown on 409.7 million acres around the world and most of this is GM glyphosate-tolerant soy grown for animal feed, processed food ingredients and fuel or other industrial uses. Seventy seven percent of the world's soy crop is now herbicide-tolerant. This GM soy cultivation relies on pesticides derived from petrochemicals and it is literally eating into the Amazon.

Instead of reducing pesticide use, GM crops have protected the market share for brand name herbicide formulations such as Monsanto's Roundup. In Canada, herbicides sales have increased by 199% since the introduction of GM crops (1994-2016).

GM crops have facilitated a recommitment to herbicide use, and the overuse of glyphosate in particular. At first, some herbicide-tolerant crops helped farmers more efficiently apply herbicides but ultimately their use sped up and entrenched the existing pesticide treadmill, with more chemicals and more GM traits stacked together. It is not enough anymore to sell glyphosate-tolerant seeds—now GM seeds are marketed with tolerance to multiple herbicides at once, to deal with glyphosate-resistant weeds.

The evolution and spread of glyphosate-resistant weeds since 1996 is now rendering glyphosate herbicides redundant. In 2010, Monsanto began offering rebates to farmers when its herbicide failed to kill all their weeds. Now DowDupont (Corteva) is warning that weeds with resistance to multiple herbicides may prevent some farmers from growing certain crops altogether.

The corporate response to the failure of GM herbicide-tolerant cropping systems is to sell more products to into that same system. In 2017, Monsanto launched its Roundup Ready™ Xtend™ dicamba-tolerant plus glyphosate-tolerant GM soy and, in 2018, DowDupont sold its GM corn Enlist™ that is tolerant to 2,4-D plus glyphosate. Such stacking of GM traits for tolerance to multiple herbicides is now the norm and is a doubling down on chemical agriculture.

The contrast between this reality and the grand vision for genetic engineering warns that even the most exciting science can have serious limitations in real world application. The science of genetic engineering itself has limitations but the promise is also limited by who owns and controls the technology.

Corporate Techno-Solutions to the Rescue

Rather than provide innovative solutions, GM has, so far, propped up an existing production model that relies on expensive farm inputs sold by the biggest seed and pesticide companies in the world. Until 2016, the global market for GM crops was dominated by six companies, Monsanto, Dupont, Syngenta, Dow, Bayer and BASF, that, together, controlled around 75% of the global pesticide market and 62% of the commercial seed market. After a wave of mergers, these markets are now controlled by just four companies: Bayer bought Monsanto, Dow and Dupont merged, ChemChina bought Syngenta, and some of Bayer's and Monsanto's business was sold to BASF. This corporate concentration has also eliminated or constrained non-GM seed options for some farmers.

It is important to evaluate the promises that were made because they are still being used to argue for removing regulations and because these same promises are being repeated with the advent of new genetic engineering techniques. The techniques of gene editing, such as CRISPR, are being hyped with the promise of achieving everything that the earlier techniques could not. However, promoting a new technology relies on looking to the promise around the corner and overpromising is often also used to build investment interest. The danger is that we are building a vision for our future based on corporate investment strategies that often pull solutions out of thin air, instead of looking to the ground where farmers are already innovating.

The GM solution continues to fail. At the end of 2018, the Government of South Africa rejected Monsanto's request to approve GM drought-tolerant corn because the company's data was insufficient to demonstrate that the corn was actually drought tolerant. Also, while the famed Vitamin-A enriched GM "Golden Rice" is getting closer to market, it still contains less than 10% of an equivalent amount of beta-carotene in carrots. Meanwhile, groups in the Philippines argue that, "securing small farmers' control over resources such as seed, appropriate technologies, water, and land is the real key to improving food production and eradicating hunger and malnutrition."(1) Such complicated solutions do not, however, provide the opportunity to sell new products.

Companies are promising technological solutions to "feed the world" and halt climate change. Such techno-fix silver-bullets are compelling—they appear simple and elegant—but if we rely on corporations to develop the solutions to our problems, we will be buying our solutions, if they ever materialize. We can also ill afford to wait for the perfect technology to solve our problems. This approach invites dependence and inertia.

In the meantime, organic solutions are already in the ground. Further agroecological progress is hindered by a system that is set up to facilitate and promote the GM techno-fix rather than support locally adapted seed and farmer control. Faced with the moral imperative to take urgent action to stop climate change, we need to support the nimble and diverse solutions already available to us—solutions in the hands of farmers in Canada and around the world.

cban.ca

Lucy Sharratt is the Coordinator of the Canadian Biotechnology Action Network (CBAN). CBAN brings together 16 groups to research, monitor and raise awareness about issues relating to genetic engineering in food and farming. CBAN members include farmer associations, environmental and social justice organizations, and regional coalitions of grassroots groups. CBAN is a project on the shared platform of Tides Canada, a registered charity.

References:

1) GRAIN, MASIPAG, & Stop Golden Rice! Network. (2018). Don't get fooled again! Unmasking two decades of lies about Golden Rice. grain.org/article/entries/6067-don-t-get-fooled-again-unmasking-two-decades-of-lies-about-golden-rice

WORKPLACE SAFETY *Doesn't come Naturally*

(L-R) Emily Kerr, AgSafe Safety Advisor; Justin Hochstrasser, OriginO Administrator; Christee Ho, OriginO Director of Human Resources; TJ Garcha, AgSafe Safety Advisor. Credit: AgSafe BC

By Lennea Durant

A solid health and safety program is important for any agriculture business, but workplace safety doesn't always come naturally. Often safety practices are implemented after the fact, once a worker has been injured. There are over 26,000 agricultural workers in British Columbia and 550 organic farms operating in the province.[1] Between 2013 and 2017, 641 agricultural workers were seriously injured and seven killed in work-related incidents.[2]

AgSafe is BC's agriculture industry health and safety association and works with farmers and ranchers to improve workplace health and safety practices. Wendy Bennett, AgSafe's executive director says that the most common causes of injury are falls from ladders, musculoskeletal injuries (MSI) caused by repetitive tasks and poorly designed ergonomic work spaces, injuries from slips, trips and falls, injuries involving tractors, and injuries involving animal handling.

"Organic farming is not exempt from common farm work hazards," says Bennett. "While organic agriculture workers may not be at risk of exposure to synthetic fertilizers and agri-chemicals like other farm workers might be, there are still many other hazards that all agricultural workers face."

Bennett explains that the role of AgSafe is to help employers in BC's agriculture industry develop strong health and safety programs. AgSafe consultants and advisors work with employers to create and review their health and safety plans, protocols and procedures, and identify and address issues.

"Our office is in Langley, but our consultants and advisors work in all regions of the province. Our services include site-specific safety program development and safety education. We also have a wealth of resources available on our website."

AgSafe is a Certificate of Recognition Certifying Partner and offers a Certificate of Recognition program for large and small employers. The Certificate of Recognition is a voluntary incentive program that recognizes and rewards employers for implementing an effective safety management system. Employers who participate in the program could receive a WorkSafeBC incentive payment of up to 10% of the assessment premiums paid in the prior year.

Origin Organic Farms, also known as OriginO was the first organic vegetable grower in B.C. to be receive a Certificate of Recognition. The employer worked closely with AgSafe, making use of their safety advisors and other resources moving through the process.

With operations in Delta and Langley, OriginO is an organic vegetable greenhouse employing over 100 workers to produce red, yellow, and orange peppers, long English cucumbers, and numerous varieties of tomatoes.

Justin Hochstrasser, administrator for OriginO, believes it is important to have a health and safety program, especially for a large workforce, in order to have structure. "With a large number of workers, health and safety matters cannot be coordinated and resolved effectively without a dedicated worker safety program," says Hochstrasser.

At OriginO all levels of staff are encouraged to report any activity or condition which is unsafe, or has the potential to become a safety hazard. The staff works hard to ensure that all equipment is properly maintained and that workers follow safe work procedures.

This is a company policy which has strengthened the company's safety culture and Hochstrasser says it conveys to everyone that safety is top priority at the workplace. Completing the Certificate of Recognition program in 2016 "validated everyone's hard work and gave us a sense of recognition for achieving a higher standard of occupational safety," said Hochstrasser. Participating "was an easy decision—our company already had the framework in place and fulfilling requirements meant following Occupational Health & Safety Regulations which we are supposed to do anyway!"

"Organic operations are not allowed to use any harmful chemical inputs for our product. Organic certified pesticides have lower hazard ratings and pose less health risks to our staff. Therefore, organics is not only good for the consumer, it is safer for our workers as well," stated Hochstrasser.

Wendy Bennett says that OriginO is a leader in work place safety, not only for the organic farm community, but for all of B.C. agriculture employers.

AgSafe recently launched the Safety Ready website, a free self-assessment web tool designed to assist organizations with the development and review of their health and safety program, and determine their readiness for a Certificate of Recognition program audit: safetyready.agsafebc.ca

For more information about AgSafe services or agriculture workplace safety call 1-877-533-1789 or visit:

agsafebc.ca

AgSafe (formerly FARSHA) is the non-profit health and safety association for agricultural producers in British Columbia. For over 25 years AgSafe has provided site-specific education, consultation and resources to agricultural employers and associated industries in B.C. AgSafe also offers a Certificate of Recognition program for large and small employers.

References

[1]2016 Census of Agriculture for B.C.

[2]2016 WorkSafe BC Annual Report: Work-related death claims by subsector 2007–2016

... Winter Work, continued from page 23

seasonal requirement to bake cookies. I am not the least interested in: pruning raspberries, clearing a fence line, re-lining the drum washer, washing and sorting 10 tons of potatoes outside…

That work can wait. Or so I tell myself.

In two days, I will be at market again, and someone is going to ask me the question, and that flicker of irritation is going to betray my uneasiness about a lack of productivity. I really need to heed the warning. I need to do some of the farm work on that long deadline list.

My advice to myself is to do a farm job every day. We farmers get to measure work-life balance over the course of a year, rather than a day. It's a privilege and the steep price is that you need to muster some motivation when it is hard to come by.

So I started small today and ordered next year's carrot seed. Some would think this is early, but obviously I am partial to a variety and will need to know as soon as possible if it is not available. I ordered 300,000 seeds, which is mathematically more than we need, but allows for the fact that I have been planting carrots for several years now and made a whole variety of mistakes that have resulted in needing more seed.

And wouldn't you know it, that led to some other jobs getting done that I hadn't even listed yet. Because I had the farm binder open to compare last year's order, I noticed that the field notes were not up to date, which led me to check field sizes—a source of on-going angst at our organic inspections. For some reason, although the actual farm boundaries have not changed in 125 years, when we list the fields on the organic application, we can't settle on their actual size. Dad's notes say one thing and mine say something slightly else. Drives inspectors crazy and causes an embarrassing amount of confusion.

"Get the field size sorted out" is an absolutely essential job that might not have been done before our spring inspection. Thank goodness I ordered the carrot seed today.

Anna Helmer farms in Pemberton with her parents and other family and has finally eaten more cookies than potatoes.

... Mother Earth is Heating Up, continued from page 25

rain events, and less winter snowpacks. Persistent droughts are becoming more common during the summer months.

Most of BC's alpine glaciers are predicted to continue to retreat and disappear within the next 100 years. Warming spring temperatures coupled with reduced snowpacks will result in earlier springs freshets, reduced summer flows, and increased peak flows for many of BC's watersheds.

What can we learn from the past: BC's prehistoric climate records demonstrate that in previous centuries the province has experience more frequent severe droughts than have occurred in the past few decades, irrespective of climate change.

For the last 4,000 years the planet has actually been in a long cooling period. When key crops failed repeatedly, causing food shortages, people migrated to new locations and diversified crop production. Moving away to new lands is not a current option on our fully explored planet.
Anthropological Archaeologist Dr. Jade d'Alpoim Guedes conducted research into the rapid cooling periods of the last 5000 years and made some correlations to climate warming:

"The impacts of warming going forward are going to be quicker and greater, [than global cooling], and humanity has had 4,000 years to adjust to a cooler world," d'Alpoim Guedes said. "With global warming these long-lasting patterns of adaptation will begin to change in ways that are unpredictable," she said. "And there might not be the behavioral flexibility for this, given current politics around the world."
Also mechanized, industrialized agriculture and global agricultural policy are pushing us toward mono-culture of crops, said d'Alpoim Guedes. "We need to move in the opposite direction instead. "Studies like ours show that bet-hedging and investing in diversity have been our best bets for adapting to climate change," she said. "That is what allowed us to adapt in past, and we need to be mindful of that for our future, too."[1]

So, the question of the 11th hour is, can we as human beings cooperate together to manage ecosystems and agricultural food systems to adapt and diversify quickly enough to prevent ecosystem collapses and famines?

Marjorie Harris is an organophyte, agrologist, consultant, and verification officer in BC. She offers organic nutrient consulting and verification services supporting natural systems.

References:

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COABC
Certified Organic Associations of BC

ORDER FORM

202-3002 32nd Avenue, Vernon, BC V1T 2L7; p: 250 .260.4429; f: 250.260.4436; office@certifiedorganic.bc.ca

Enterprise Name: _____

Contact Name: _____

Address: _____

City/Province: _____

Postal Code: _____ **Phone Number:** (___)_____

Certification Body & No.: _____

Date Ordered: _____ **Date Required:** _____

PST Exemption (for packaging materials)

☐ Option 1:
BCAC Farmer ID # :_____ Expiry:_____

☐ Option 2: PST Number: _____

☐ Option 3: Certificate of Exemption
Farmer exemption: 0458FILL.pdf
Other enterprises exemption: 0490FILL.pdf
or request the appropriate exemption form from the office.

Item	Units	Unit Price	Quantity Discount	Quantity	Total
Stickers 1" round	1000 pc roll	$13.50	10 rolls $120.00		
Stickers 1 1/4" square	1000 pc roll	$13.50	10 rolls $120.00		
Twist Ties 10" (15,000 per case)	1000 pc	$13.00	Full Case-$165.00		

The packaging materials above are only available to COABC Certified Organic members and are PST exempt for qualifying enterprises (see above).
Have you signed a Consent to use Official Marks Declaration Form (July 2006 revision)? Y/N Are you Certified? Y/N
With which products will you be using the packaging materials?_____
_____

Promo Materials: available to everyone	Member $	Non-member $	Tax		
Bucket Hats size M or L *	$15.75	$15.75	PST taxable		
Ball Caps	$13.10	$13.10	PST taxable		
Natural T-shirts (Plain) S * or XXL	$5.00	$5.00	PST taxable		
NEW!! COABC T-shirts Designed by Brian MacIsaac Men's size S-XXL & Ladies sizes S-L	$17.85	$17.85	PST taxable		
Organic Tree Fruit Management	$19.95	$25.95	No PST		
Western Canada Organic Directory	$6.00	$6.00	No PST		
			Sub-total (before taxes and shipping):		

*Limited quantities available - please contact the COABC office for availability

GST # 887782431

Postage Rates
Minimum charge of $10.00 per order for any promo and/or packaging materials
GST will be added to postage amounts
Rates vary and will be calculated at the office

An invoice will be sent with your order. Postage and applicable taxes will be added to your invoice.
Please do not send payment before receiving invoice.

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