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union farmer newsletter

Seed for Food System Resilience:
Private versus Public Interest

–by Cathy Holtslander, NFU Director of Research and Policy

Our food system is facing serious challenges – including climate change, the pandemic, biodiversity loss, rising inequality and loss of democratic control. A robust public plant breeding system with strong farmer decision-making, and supported by generous public funding is a key strategy to build upon our common heritage to develop the resilience we need for a successful future. However, our public interest seed system is under attack by private seed companies that seek to increase their market share and profitability by getting the rules changed in their interest. Farmer resistance is critical, not just for the sake of access to seed at fair prices, but because of the many ways seed affects the food system, community economics and agro-ecosystems.

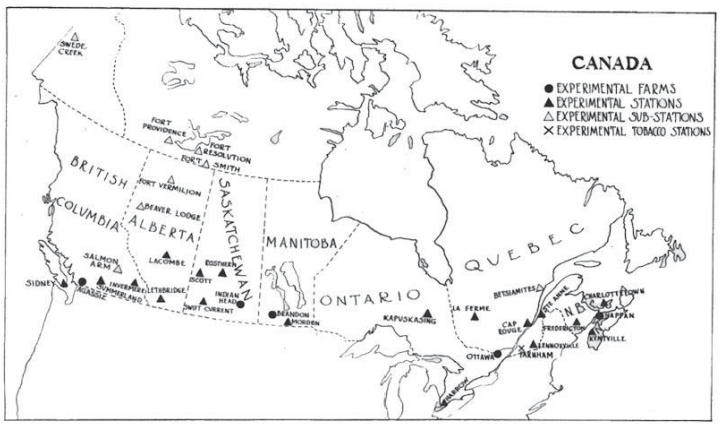
Seed saving and selection goes back to the earliest days of agriculture: farmers were the world's plant breeders for millennia. Seed was adapted to local conditions and reflected the farming communities' traditions, food needs, tastes and aesthetics. These ancient seed exchange and cultivation practices are embedded in the seed we have inherited, and form the foundation our food systems. Seed is a world heritage recognized by the UN *International treaty on plant genetic resources for food and agriculture*, which Canada has signed.

In the 20th Century our society's relationship with seed began to change. Plant breeding become more institutionalized. This was due both to new knowledge from Gregor Mendel's study of trait inheritance along with a change in how governments viewed their role in regard to agriculture and farmers.

Just before the turn of the 20th Century, the Canadian government asked William Saunders to recommend a framework for agriculture research in Canada. He proposed a network of experimental farms, each focussed on a geographic region, to study its crops, conditions and farming challenges. Many became involved in plant breeding. Most of these experimental farms are still in operation as Agriculture and Agri-Food Canada research stations. When Universities were established, their agriculture colleges got involved in plant breeding as well. Farmers continued to improve crops by diligently observing and selecting seed from plants with desired qualities.

In the 1920s, the technique to create hybrid corn was developed in the USA. By crossing two different parent lines the progeny could produce a vigorous crop with desirable qualities from each parent. However, seed saved from hybrid crops produced plants with the less desirable characteristics of the parent lines. Thus, it made sense for farmers to buy new hybrid seed every year. This created an annual market for corn seed. Hi-Bred Corn Company, established in 1926, was the beginning of the private seed sector.

Later, when genetic engineering was developed, patenting the genetic sequences gave private seed companies a legal mechanism to prevent farmers from saving seed, and also allowed them to charge royalties. The necessity of buying seed every year allows companies to raise the price of GE seed, particularly when non-GE alternatives are not available. In Canada the first GE crops were corn and canola sold by Bayer and Monsanto, which came onto the market in 1996. Varieties produced through gene editing technology are patentable, even though the companies are lobbying hard to get governments to regulate them as if they were traditionally bred.



Canada's Experimental Farm network in the early 1900s

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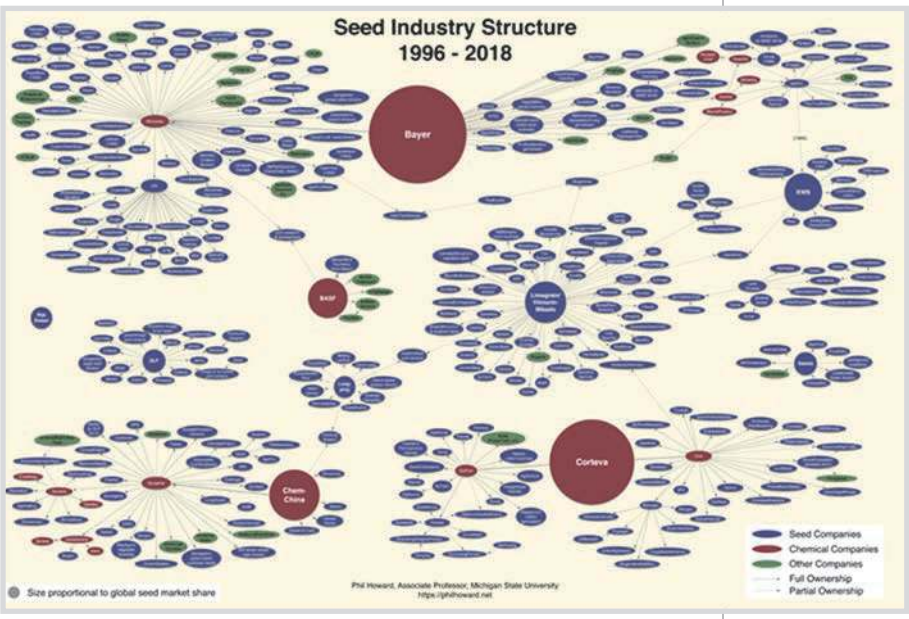
In the early 2000s biotech companies proposed a system to prevent farmers from using farm saved seed by making seeds from their crops sterile unless treated with a spray to reverse the sterilization process. The companies would control access to the reversal treatment of course. This became known as "terminator technology". There was massive farmer and public opposition to this technology. The campaign succeed in getting a world-wide moratorium on the technology.

Patents and hybridization have become strategies to reduce or eliminate the age-old practice of seed saving, creating an annual market for seed. In crops without unpatented or open-pollinated options, companies have been able to raise the price of seed, and to link seed sales to the sales of other inputs, such as herbicides, pesticides and fertilizers, which they sell as packages. The largest companies have consolidated through mergers and acquisitions. What started out as Hi-Bred in 1926 has become Corteva; Bayer bought up Monsanto in 2018. Today just six corporations control over 60% of the global seed market as well as 75% of the pesticide market.



Infographic by Dr. Phil Howard – see https://www.cornucopia.org/seed-industry-structure-dr-phil-howard/ for details

Vegetable seed development is almost exclusively private now, but very little breeding or production is done in Canada anymore.

Crops that are not easy to hybridize such as wheat, or that have smaller markets such as forage crops, are primarily bred through the public plant breeding system. However, the seed corporations are tightening their grip on these crop kinds through Plant Breeders Rights (PBR) laws and regulations, allowing seed developers to obtain patent-like control over non-hybrid and non-GMO crop kinds. Tightening PBR restrictions, and preventing access to non-PBR-protected seed would create the conditions for private companies to become profitable enough to replace the public plant breeding sector by gaining monopolistic control over the seed.

Farmers and Public Plant Breeding

For most commodities, farmers pay a "check-off" when selling the crop. This is a small levy that goes to provincial crop development commissions that can then invest the pooled monies in plant breeding and other activities related to their crop kind. Their boards are elected by the farmers who grow the crop and pay the levy. Most of the check-off dollars go into research, including public plant breeding projects and institutions.

The Western Grains Research Foundation is another important farmer-directed funding body that supports public plant breeding as well as agronomic research. It was established in 1981 with a multi-million dollar endowment from a discontinued farm support program. Other funding sources, including penalties the railways pay when exceeding the MRE revenue cap, have grown the endowment fund to over $100 million. The NFU has a seat on the 12-member WGRF board, and thus has a voice in deciding how the research dollars will be spent.

Several AAFC research stations are involved in plant breeding, as are a number of universities and provincial governments. The Crop Development Center at the U of S is one of the most important institutions for cereal crop breeding.

Another farmer-directed plant breeding initiative is the University of Manitoba's Participatory Plant Breeding project. Several farmers across the prairies work with accredited breeders to develop cultivars that work well on their own farms. Some farmer-breeders aim to develop registered varieties for commercial distribution.

One of the goals of is to select lines that work well with low-input production systems such as certified organic farming.

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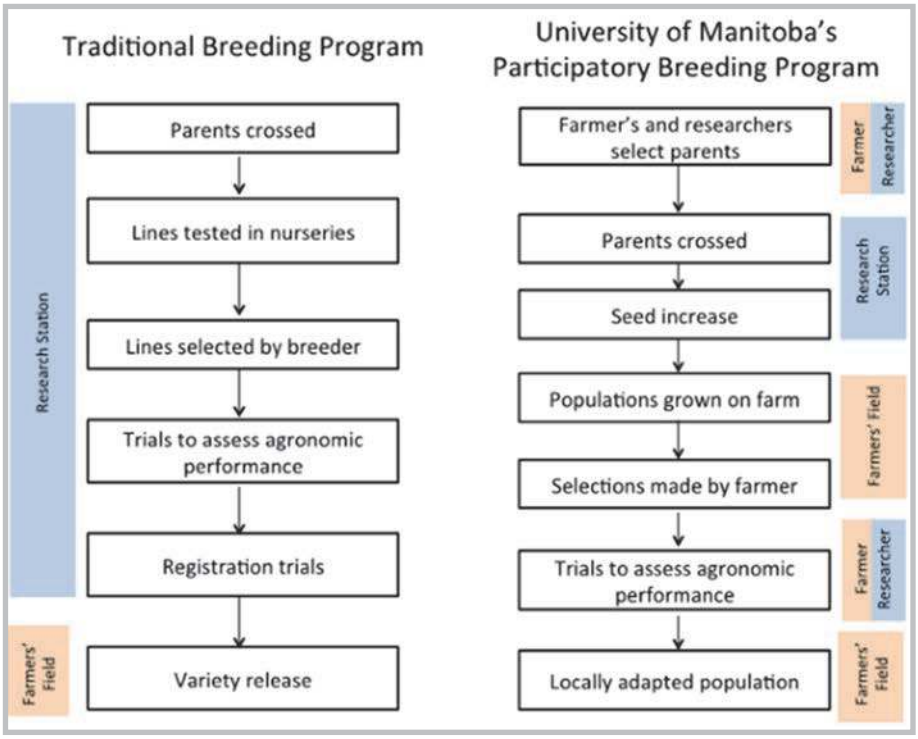
The Bauta Seed Initiative is working on both field crops and vegetable seed development through Participatory Plant Breeding, aiming to make Canada more self-sufficient in vegetable seed, and to develop crops that are better able to adapt to more uncertain growing conditions due to climate change.

Most of Canada's vegetable seed is imported. This is partly due to our short growing season, making it hard to get mature seeds before frost, and partly due to our small market, making it a less profitable business. AAFC no longer does any public plant breeding for vegetable varieties other than potatoes, and there is a tiny vegetable breeding programs at Guelph University.



Adapted from Participatory plant breeding with diverse wheat populations by N. Fradgley, 2014. Organic Research Centre Elm Farm. 2014 Organic Producers Conference. For more information, see https://www.umanitoba.ca/outreach/naturalagriculture/articles/ppb_project.html

Wheat Midge resistant wheat—a farmer funded public plant breeding success story

Wheat midge is a pest of wheat that can cause a lot of damage. The larvae feed on immature wheat kernels, with significant yield loss in heavy infestations. In 1996 AAFC researchers discovered a variety of soft white winter wheat that was resistant to midge, and began to study it. They found it had one gene that would cause the plant to produce a chemical that was toxic to the midge larvae when attacked -- the midge would then stop feeding and die. Once the midges were gone, the plant stopped producing the chemical, so there is no impact on the quality of the wheat when the kernels are mature.

Through traditional breeding techniques, AAFC scientists were able to breed a hard red spring wheat – the kind used to make bread, and most widely grown on the prairies – that has midge resistance. It was commercially released in 2010. Seed is sold in bags that contain 10% midge-susceptible varieties to ensure that susceptible midges can still survive in small populations and avoids creating conditions for them to evolve resistance. Canadian wheat breeders at AAFC in Winnipeg and Swift Current, and at the CDC at the U of S have since developed 37 midge resistant wheat varieties, encompassing all Western wheat classes.

From 1997 to 2019, $16.3 million in public and farmer funding has been invested to develop midge tolerant wheat, with an estimated a 37:1 dollar return on value. In addition, farmers who use wheat midge varieties no longer have to spray for wheat midge, obvious environmental and health benefits. Midge populations are falling as a result of these varieties, so even farmers who don't buy wheat midge resistant seed are protected as a result of their neighbours using it.

The contrast between wheat midge resistant wheat's success and the frustration of hairy canola's promise (Union Farmer Newsletter: October 2020) shows how who funds and makes decisions about plant breeding, and who controls the commercialization of new varieties affects the land, livelihoods, economy, community, biodiversity and future prospects of farmers. As a society, and as farmers, we are facing really big challenges. We need a food system that works for us, not one that just works for the big companies that make money by selling expensive seed and inputs to farmers.

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Participatory Plant Breeding project - Anne Kirk, project coordinator, and Jake Drozda, participating farmer, making selections in Jake's oat plots near Valleyview, Alberta in 2014. (Copyright University of Manitoba)

The 2018 Seed Synergy (the groups that recently amalgamated to form Seeds Canada plus CropLife Canada) published a White Paper that set out their goals, including to "Amend the Seeds Regulations to streamline requirements and enable modernization of the seed regulatory framework, including incorporation by reference." Incorporation by reference is a mechanism to remove standards and processes from the official regulations that are attached to legislation and replace them with a reference to industry-developed documents which then have the force of law but can be changed by industry without government or public involvement. This is in contrast to the normal regulatory change process that requires the proposed text to be published, a public consultation and final approval by the Minister or Cabinet. Seed Synergy wants "industry" to be given the authority to set the standards for germination, presence of weed seeds and disease requirements for seed being sold to farmers, as well as for seed certification rules, including the power to define eligibility for seed varietal certification, seed crop certification, seed standards and testing. Delegating this power to the corporate seed lobby would have a huge impact on plant breeding and seed quality and access to seed.

The federal Seed Regulatory Modernization process which is currently in progress will have an impact on how much control the seed corporations will have over our food and agriculture system. Rules that favour corporate interests would threaten the future viability of our public plant breeding system and would put farmers into the role of mere consumers, instead of being the decision-makers who shape the public seed research agenda by funding public plant breeding work. The NFU is involved in these regulatory discussions, bringing the public interest and farmers' interests to the forefront as always. Stay tuned for public participation opportunities. ▪

Public interest goals

Varieties that …

- Grow well in Canadian conditions
- Produce high quality seed, fruit
- Resist disease and pests
- Are nutritious/flavourful
- Have high-value end uses
- Improve farmer incomes
- Have useful agronomic characteristics

Private interest goals

Varieties that …

- Require royalty payments to the breeder
- Require annual purchase of seed by farmers
- Can be sold in large market areas
- Promote or require inputs sold by seed companies
- Must be sold back to the seed company for further processing

Canada's seed variety system is in US trade crosshairs

–by Cathy Holtslander, NFU Director of Research and Policy

On March 31, United States Trade Representative Katherine Tai released the *2021 National Trade Estimate (NTE) Report*, which provides an overview of what the US government considers significant trade barriers for American exports of goods and services. The lengthy report includes 11 pages on Canada, outlining existing or proposed regulations, laws, and policies the US government is attempting to influence on behalf of American companies. These include their objection to Canada's regulation of window coverings to prevent babies from being strangled by dangling cords, monitoring Canada's plans to ban single-use plastics, serious concern about Canada considering taxation of digital services, and on-going American involvement in Canada's initiative to prominently label foods with high salt, fat and/or sugar content.

The language and tone of the document express clearly that trade agreements such as the Canada-United States-Mexico Agreement (CUSMA) are not about trading "partners" working together, but rather a tool powerful corporate lobbies use to discipline, constrain and roll back national regulations that interfere with their interests.

We can see multinational companies' interests playing out very clearly in the CUSMA clauses regarding grain. Canada implemented CUSMA by hurriedly passing Bill C-4 in Parliament the day Parliament closed at the beginning of the pandemic. Bill C-4 amended the *Canada Grain Act* to allow US-grown grain into our grain handling system where it can be comingled with our grain and exported as if it was grown in Canada. The US wheat lobby was then able to tick that box off its to-do list.

The NFU objected to allowing US grown grain to be treated as if it were Canadian. When we raised our concerns, government officials tried to reassure us by saying it would make little difference to the quality, prices or international reputation of our exports, because only varieties registered in Canada would be allowed into the system.

Now, it appears the US lobby has started acting on another clause in CUSMA, which requires Canada to discuss "*issues related to the operation of a domestic grain grading or grain class system, including issues related to the seed regulatory system associated with the operation of any such system, through existing mechanisms"* if the US so requests.

The *2021 National Trade Estimate Report* has a paragraph in its Canada section headed **Restrictions on U.S. Seeds Exports**, which says:

> *For many major field crops, Canada's Seeds Act generally prohibits the sale or advertising for sale in Canada, or import into Canada, of any variety of seed that is not registered with Canada's Food Inspection Agency (CFIA). Canada's variety registration gives CFIA an oversight role in maintaining and improving quality standards for grains in Canada. The registration is designed to facilitate and support seed certification and the international trade of seed; verify claims made, which contributes to a fair and accurate representation of varieties in the marketplace; and to facilitate varietal identity, trait identity, and traceability in the marketplace to ensure standards are met.* ***However, there are concerns that the variety registration system is slow and cumbersome, and disadvantages U.S. seed and grain exports to Canada.*** *Under the Canada Grain Act, only grain of varieties produced from seed of varieties registered under the Seeds Act may receive a grade higher than the lowest grade allowable in each class. The USMCA includes a commitment to discuss issues related to seed regulatory systems.* ***The United States will continue to discuss with Canada steps to modernize and streamline Canada's variety registration system.***

This paragraph shows that our trading "partner" is now attacking the walls of our castle: our variety registration system is what we were assured would protect our system from being degraded by inferior wheat varieties coming in from the States. The multinational grain companies, the American wheat lobby and their friends within Canada must not be allowed to destroy our variety registration system, or we will have a continental market for grain, with no possibility of differentiating Canadian grain in international markets. ▪

US farm groups and unions ask Biden to end CUSMA attack on Canada's supply management systems

–by Cathy Holtslander, NFU Director of Research and Policy

On February 1, American farm, labour and civil society organizations formally asked the Biden-Harris administration to withdraw the attack on Canada's dairy sector initiated by the United States Trade Representative (USTR) in the dying days of the Trump administration.

In the first dispute launched under the Canada–United States–Mexico Agreement (CUSMA), the U.S. is challenging how Canada has allocated additional market access, or tariff-rate quotas (TRQs), for American dairy products as agreed to during the CUSMA negotiations.

"By setting aside and reserving a percentage of each dairy TRQ exclusively for processors, Canada has undermined the ability of American dairy farmers and producers to utilize the agreed-upon TRQs and sell a wide range of dairy products to Canadian consumers," says a USTR press release announcing the dispute in December.

Many U.S. farmers, on the other hand, see the trade challenge as an unwarranted attack on Canadian farmers and a supply management system that is increasingly coveted south of the border.

"Dairy farmers and farm workers are fighting for their survival, literally and figuratively, while U.S. trade and agriculture policy is being leveraged against them for the benefit of corporate interests," said the U.S. farmers and civil society groups in their letter to the USTR. "This action, if implemented, would imperil the livelihoods of Canadian farmers and unionized dairy processing workers, pitting U.S. dairy farmers against working families across the border."

When CUSMA was being negotiated, Canada's dairy sector had already lost a significant share of our domestic dairy market to Europe via the Comprehensive Economic and Trade Agreement (CETA) and to Pacific region countries via the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP).

Under CUSMA, Canada maintained our supply management system but conceded an increase in tariff-free dairy imports (TRQs) from the U.S.: an additional 50,000 metric tonnes of fluid milk and 12,500 metric tonnes of cheese are to enter Canada duty-free by year six year of the agreement (the summer of 2026). Canada is implementing the CUSMA agreement by issuing permits to Canadian dairy processors, allowing them to import the agreed-upon volumes of U.S.-origin milk ingredients for processing in Canada.

This is not enough for the aggressive corporate dairy lobby in the United States. The U.S. dairy lobby believes "the spirit" of the new NAFTA agreement would be for Canada to allow them to maximize potential benefits from CUSMA by importing their highest value processed products.

"We agree with the Canadian position on the merits but, more than that, and in solidarity with Canadian dairy farmers and dairy workers, we urge the Biden administration to withdraw the complaint," the American allies countered in their letter.

Smaller American dairy farms are in a severe crisis as a result of prolonged low farm-gate prices that are below the cost of production. Paradoxically, as prices fall production increases, as farms try to make up in volume what they are losing in price. This favours the largest farms and drives smaller farms out of business.

There are fewer and larger dairy farms—some milk as many as 36,000 cows—while one-third of U.S. dairy farms disappeared in the last decade. The rapidly escalating debt and despair has created a suicide crisis in farming communities. American farmers are taking their own lives at rate 3.5 times higher than the general population.

Meanwhile, large dairy processors responded to the Covid-19 disruption by unilaterally ending contracts, leaving small farmers with no access to market at all and no way to earn a livelihood or repay their loans. If the corporate dairy lobby's interpretation of the CUSMA agreement prevails, these companies will have even greater ability to force farm-gate prices down and impose misery on more farm families and their communities.

"My heart breaks every time I hear about yet another family dairy farm disappearing as a result of a market that is guided by corporate interests," says Ontario National Farmers Union member and dairy farmer Arwa de Groot. "I think we should do all we can to help create a supply-managed system for our friends to the south so they too can enjoy the fruits of their labour while producing sustainable, quality milk."

(continued on page 7...)

(CUSMA attack on Canada's supply management, from page 6)

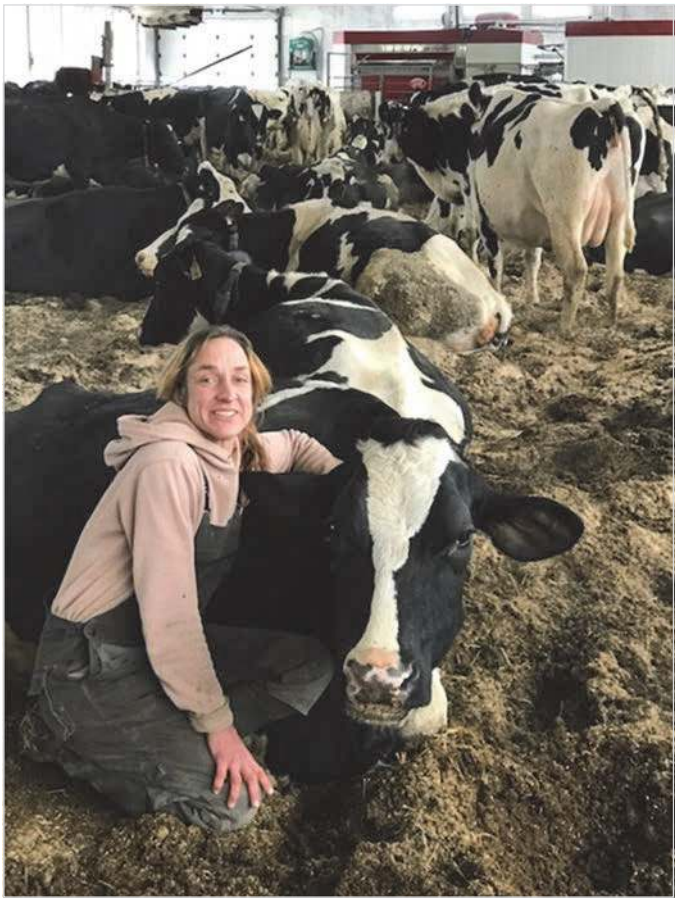
In Canada, the NFU has been supporting American farmers in their efforts to bring about a fair dairy marketing system modelled after Canada's supply management system. In 2017, the NFU sent a letter to the previous U.S. administration explaining the benefits of the Canadian model. It said that supply management:

> *has worked well for over 50 years…and it protects the interests of dairy farmers, processors, and consumers without drawing upon the public purse. Farmers receive a fair return for their labour, management and investment in return for controlling their volume of production; dairy processors receive a reliable supply of milk at predictable prices; consumers receive high quality, wholesome dairy products at reasonable prices and are never faced with shortages. The whole system runs without a penny of government subsidy payments.*

When Covid-19 hit, there was an abrupt change in consumer demand as people shifted to home cooking. Our supply management system was able to respond quickly and fairly, by sharing the burden of re-aligning production and processing needs. In contrast to the American experience, no Canadian dairy farmer lost their access to market as a result of the pandemic.

The supply management system also promotes environmentally friendly practices, in part due to reliable incomes that allow farmers to invest in soil-building, energy efficiency and on-farm renewable energy. With an average herd size of 89 cows, Canadian dairy farmers can integrate forage and feed production and manure management to build healthy soils, avoiding air and water pollution and high feed transportation costs. Economically stable family farms with smaller herds also go hand in hand with high animal welfare standards.

Each province has its own supply-managed quota allocation, so processing plants required to serve local farmers also provide good jobs all across the country. Looking to the future, farmers elected as dairy board directors set up new entrant programs to help young farmers get started in dairy, often giving priority to those starting certified organic farms. Canada's dairy sector is also responding to local food system initiatives by creating opportunities for innovative on-farm processing and direct marketing approaches.



NFU member and Ontario dairy farmer Arwa de Groot with her cows

We are encouraged by our American friends' solidarity in calling for the withdrawal of the recent trade challenge, and we hope that President Biden will resist the pressure from "big dairy" with the same courage and imagination shown in his initiative to tackle climate change. We also hope that ending this trade challenge will be the Biden-Harris administration's first step toward implementing supply management in the United States. ▪

Cathy Holtslander is a participant in the Canadian Centre for Policy Alternative's Trade and Investment Research Project. This article was first published on the CCPA's blog, Behind the Numbers.

Vegetable Seed Snapshot

Canada is heavily dependent on imported vegetable seed. Canada has 3,487 pedigreed seed growers, 1800 forage seed farms, 400 hybrid seed corn growers, and 370 potato seed growers. The Canadian Food Inspection Agency also reports "a small number of vegetable seed producers."

The vegetable seed sector is dominated by the same global agribusiness companies that control over 60% of the world's total seed market, including Bayer, Syngenta/Chemchina, BASF, Limagrain and KWS as well as a number of multinationals that specialize in vegetable seed: Rujk Zwaann, Bejo, Sakata, Enza Zaden and American Takii.

We import 85% of our vegetable seed from seven countries: USA, Peru, Netherlands, China, Chile, Tanzania and France.

The vegetable seed market has three main segments: commercial fresh vegetable producers, processing vegetable producers, and home gardeners.

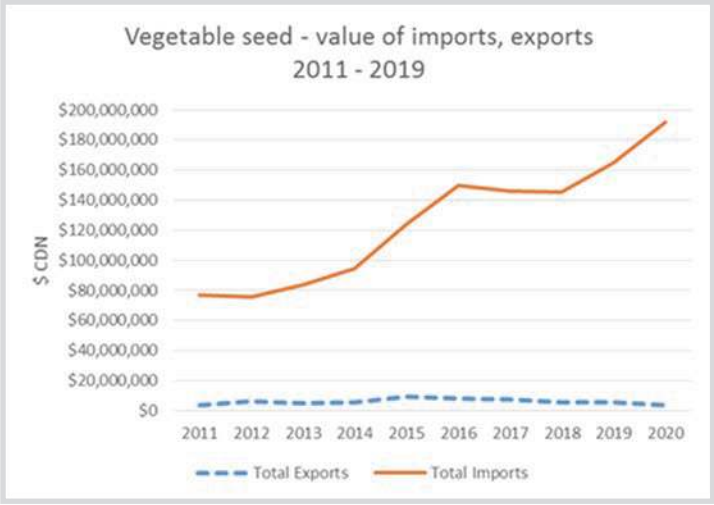
The 2016 Census of Agriculture reports just under 10,000 vegetable farms (excluding greenhouses), producing on 270,294 acres.

There is a tiny amount of vegetable seed breeding in Canada.

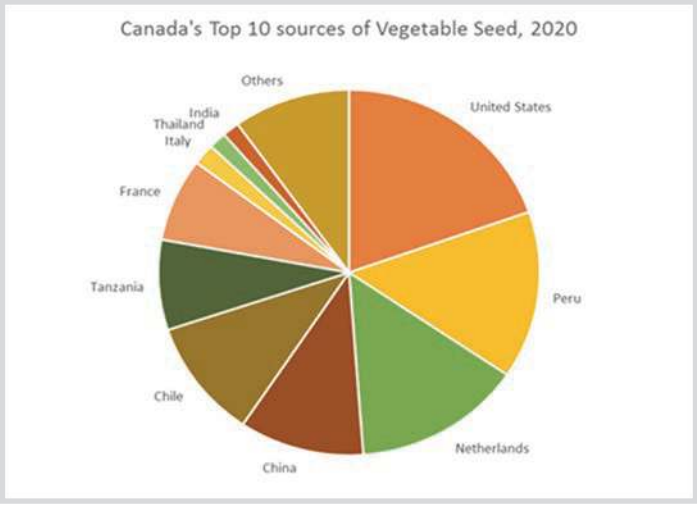
The University of Guelph operates a small publicly funded vegetable plant breeding program. It has released new varieties of asparagus.

The Vineland Research Station, established in 1906 as a public research facility to serve Niagara region fruit and horticulture producers, and privatized a century later, does vegetable breeding work funded by government grants and the Plant Breeders Rights royalties it collects. Vineland develops greenhouse tomato varieties as well as some fruits and ornamentals.

The Bauta Seed Initiative, a project of the non-profit organization SeedChange, is working with a network of farmers, researchers, and industry stakeholders to build farmer capacity for on-farm trialing and breeding, and has identified tomatoes, peppers, carrots, lettuce, winter squash, onions/leeks, and broccoli/cauliflower as most in need of improvement, with a focus on flavour/eating quality, productivity/yield, earliness, and disease resistance, and for some crop kinds, pest resistance and transport/storage quality. ▪



Source: Trade Data Online



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