



Farmers Wanted:

The labour renewal Canada needs to build
the Next Green Revolution



Key Findings



By 2033, 40% of Canadian farm operators will retire, placing agriculture on the cusp of one of the biggest labour and leadership transitions in the country's history.

-24K

Over the same period, a shortfall of 24,000 general farm, nursery and greenhouse workers is expected to emerge.ⁱ

66 %

66% of producers do not have a succession plan in place, leaving the future of farmland in doubt.ⁱⁱ



These gaps loom at a time when Canada's agricultural workforce needs to evolve to include skills like data analytics and climate-smart practices that enable us to grow more food with fewer emissions.



Through short-, medium-, and long-term policies, Canada can establish the digitally-savvy agricultural workforce needed to make our country a global leader in low carbon, sustainable food production.

+30K

To offset a short-term skills crisis, we'll need to accept 30,000 permanent immigrants over the next decade to establish their own farms and greenhouses or take over existing ones.

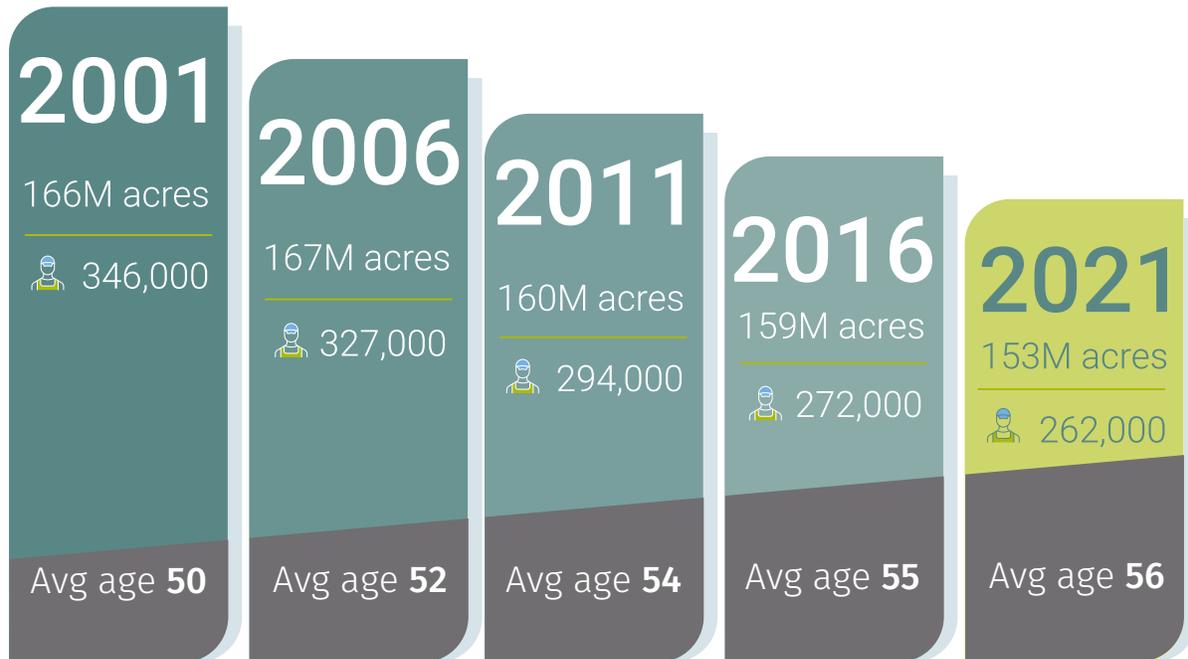


To meet our medium and long-term goals, we'll need to build a new pipeline of domestic operators and workers by bolstering education and increasing the R&D spending behind productivity-enhancing automation.



Other nations, like Japan and New Zealand are rapidly deploying national strategies to tackle similar challenges. They are offering incentives to farm operators who become more autonomous or unlocking pathways for foreign skilled workers and new farmers to enter their industries. Canada needs to act fast.

Canadian farmers are getting older and fewer



*all bars are illustrative

Source: RBC Economics and Statistics Canadaⁱⁱⁱ

A 3-point plan for growth

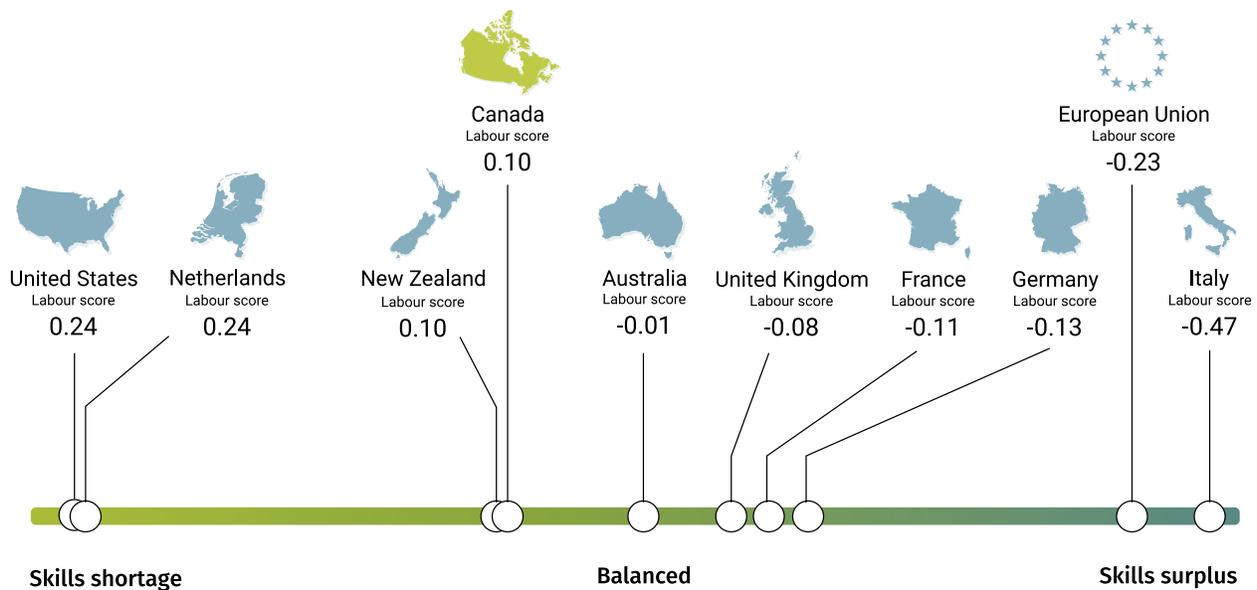
1. Increase immigration of farm operators by 30,000 over the next decade.
2. Promote agricultural education across colleges and universities to attract new students.
3. Accelerate the adoption of autonomous and mechanized solutions on farms.

Short Term:

Opening the border to new producers

Canada's agricultural skills crisis is already one of the world's worst. The country has one of the highest skills shortages in food production compared to other major food exporting nations—trailing only the U.S. and the Netherlands.

Canada's shortage of agricultural workers is among the most severe



Sources: OECD Skills for Jobs Database^{iv}

A rapidly approaching demographics crisis is set to make the problem worse. In 10 years, 60% of today's farm operators will be over the age of 65. Never have so many Canadian farmers been so close to retirement. In addition, the number of operators below the age of 55 has declined by 54% since 2001.^v The most immediate solution to this challenge rests at our borders. Providing permanent immigration status to over 24,000 general farm workers and 30,000 operators can assist in bridging retirement and staffing gaps, help the sector fulfill its productivity potential and meet domestic and foreign food demands.

Many farms and greenhouses are already looking to other countries to address the need for low-skilled labour. Indeed, Canada's agricultural sector is among the most diverse in the world though the degree of demand for foreign workers differs significantly by province and operation.

The Temporary Foreign Workers program remains a critical source of low-skilled labour. But it has its disadvantages. First, it's a provisional solution to a chronic issue. Second, many of these temporary foreign workers (TFWs) who develop skills essential to Canadian seeding and harvests, must return to their home countries for short periods. If they are unable to return to Canada (for reasons that can include their government barring the shift due to its own food security fears) then Canada's on-farm workforce is dramatically reduced. Better policies are needed to enable the immigration of low-skilled labourers. For instance, a pathway to permanent residency for experienced TFWs will immediately address this type of shortage.

When it comes to more highly-skilled farm operators, Canada has always welcomed these types of immigrants from the Netherlands, China, United States, United Kingdom and India. But there are now valuable untapped opportunities to attract operators who have lost their farms because of regulatory policies in other nations.

In the Netherlands for instance, the government set aside €24.3 billion to buy out the 3,000 Dutch farms with the biggest emissions. Producers that do not accept the offer will be forced to close. And farms permitted to stay in operation will need to significantly reduce their nitrogen application. The country will also have to reduce its livestock population to a third of its current size over eight years. In New Zealand, a 2019 law that requires producers to reduce their emissions by 10% in the next three years is already forcing farms to scale back.

Hundreds of thousands of skilled farmers worldwide are being forced to downsize or are facing closures. In the EU alone there has been a loss of over four million farms since 2005. This is creating a labour pool of qualified farmers around the world that can help Canada grow its food exports while also adapting to stringent sustainability regulations.

The immigration of scientists, data engineers, and entrepreneurs has been recognized as critical to Canada's growth. A similar approach needs to be adopted to attract farmers.

Medium Term:

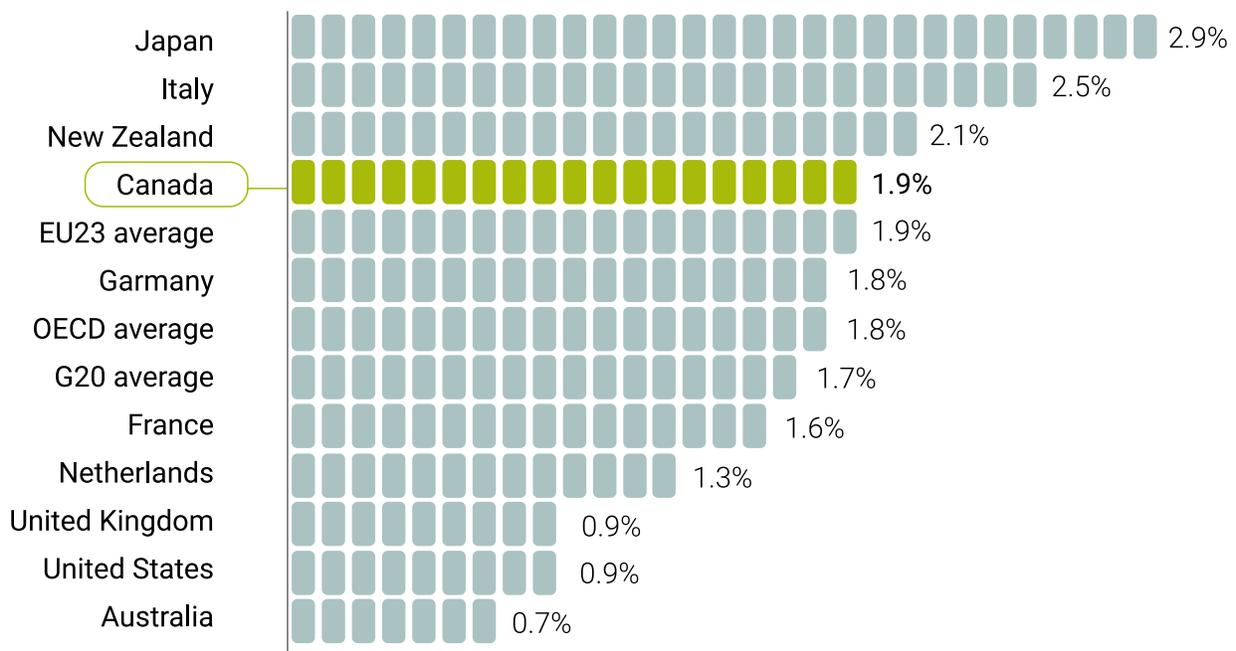
Agricultural schools must evolve to meet today's demands

There has been a fundamental shift in agricultural schools across Canada. As enrolment declined in the 1990s, many schools reassessed their curricula. To boost enrolment, they began to offer cross-disciplinary courses that might attract urban students less interested in working on a farm. This meant focusing on topics outside agricultural science, from food security to international development.

The approach worked. Since bottoming out in 2003, admissions have grown by more than 40%—a sign of shifting attitudes toward agricultural studies.^{vi} Currently, Canada's rate of post-secondary education enrolment in agricultural, forestry, fishing, and veterinary education is among the highest in the OECD, EU, and G20. Despite this, demand for graduates continues to exceed supply.^{vii}

Canadian enrolment in agricultural education is strong

Percentage of total enrolment



Source: OECD Education at a Glance Database and RBC Economics^{viii}

To boost enrolment further, more needs to be done to integrate agriculture into mainstream programs. For instance, no full-time MBA program among Canada's top 10 business schools currently offers elective courses in agribusiness. Similarly, agricultural schools don't do enough to promote a cross-disciplinary approach that integrates students in fields ranging from engineering

to social science. These innovations will be critical to increasing enrolment and developing a stronger, better-resourced agriculture ecosystem.

On the other hand, some agricultural schools and colleges are transforming into the most cross-disciplinary centres in the country as they take on topics ranging from the financial incentives to promote carbon sequestration in soil to clean energy. The Controlled Environment Systems Research Facility at the University of Guelph even works with NASA and the Canadian Space Agency to research methods of growing food on Mars.

While raising enrolment numbers, agricultural schools must also keep an eye on equipping students with the tools to put their skills to work. For example, engineering, business and computer science schools could develop more ag-related coops, case studies, and special project courses that would provide experiential education opportunities focused on food production.

Advisory services for producers

Education doesn't stop at the school gate. Producers have historically been among the first adopters of new technology. To put even more digital skills to work they'll need access to advisory services that can educate them on the best solutions, the most effective production practices, and the best ways to reduce costs and promote sustainability on their farms. Just as the challenges facing each farm are unique, so too are the solutions for them. Advisory services help farmers design those bespoke solutions. They also offer formal and informal workshops to farm operators and their employees. Advisory services, similar to those provided to farmers in the United States, ought to be made more publicly available to new Canadian farmers.

Long Term:

Introducing more mechanized and autonomous solutions on the farm

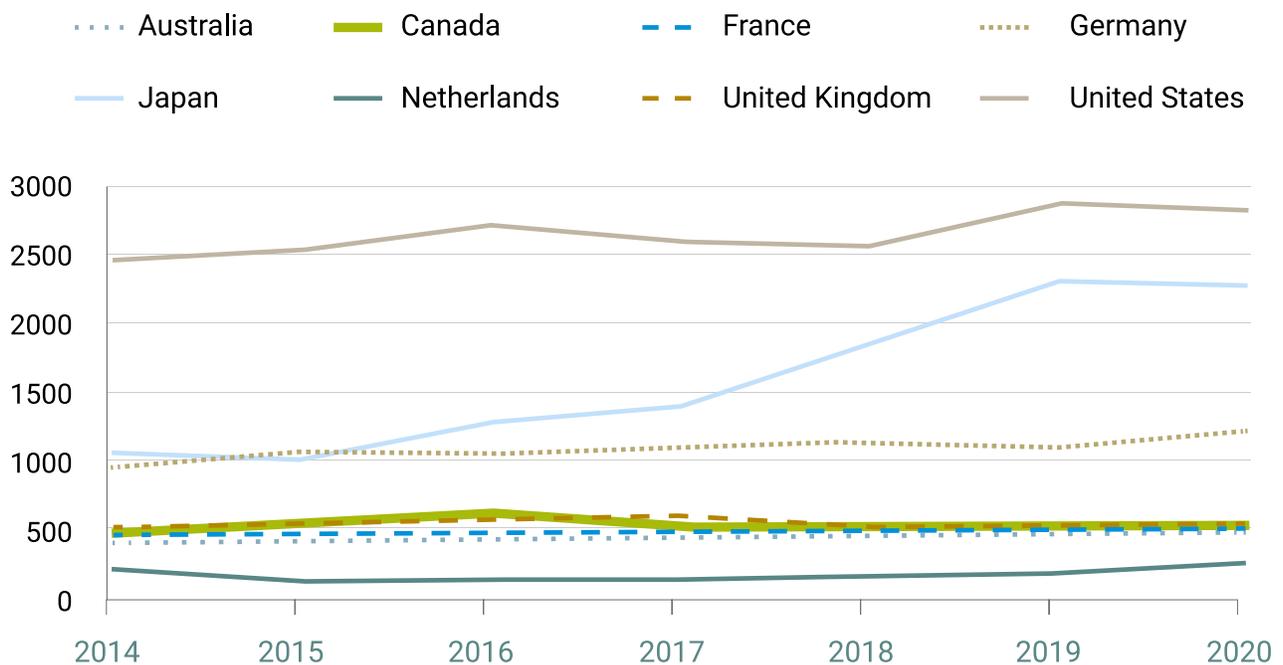
Automation has been a core theme in agriculture for centuries. Most machinery and tools today are equipped with technologies that increase efficiencies on every acre. And producers that invest in technology tend to be more profitable. In 2020, over 50% of farms investing in new technology noted a decrease in costs. And while automation reduces the need for on-farm labour it also creates new jobs for highly skilled workers. The introduction of the tractor, self-propelled combine, and auto-steer are among the milestones in on-farm innovation and productivity.

Smart agriculture technology and practices will promote higher levels of efficiency, increase productivity, limit environmental impact, and promote sustainability. Just as important, these innovative solutions can reduce the need for low-skilled labour.

A lot of this innovative technology is already being developed in Canada. But more ambitious research and development is critical to cutting staffing needs and improving production rates and sustainability. This begins with funding. In Canada, agricultural R&D dollars predominantly originate from public sources. We should strive to be more ambitious with funding as every dollar invested in R&D generates \$10 to \$20 in GDP.^{ix} As production intensifies on farms, more tools to decrease emissions autonomously will be needed.

Canadian public funding for agricultural R&D lags global peers

Millions \$USD



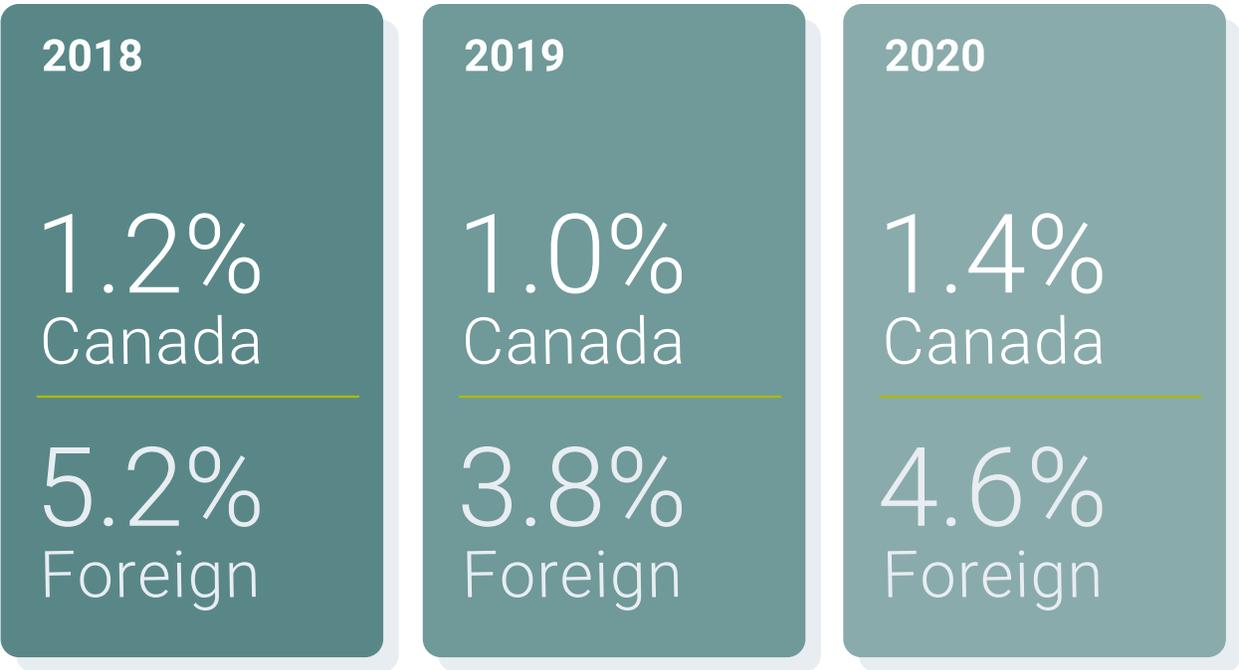
RBC Economics, OECD, and Stats Canada

Public investments represent the largest source of funding for Canada’s agriculture R&D at CAD \$450 million in 2020, but private in-house R&D lags by comparison at CAD \$108 million.^{xxi} And Canadian firms invest less on average in R&D than foreign firms. Corporations have contributed significantly to past innovations that ease labour shortages while making agricultural production more resilient to extreme weather events and improving quality and sustainability. However, for Canada to become the world’s most reliable and sustainable food exporter, further investments will be needed.

R&D can spur growth in the sector, but distribution among producers will be critical. Though capital expenditure in agriculture has risen faster than in other Canadian industries over the last 15 years the largest investments have been among crop producers.

Canadian agricultural firms trail global competitors in R&D spending

Expenditures as a percentage of revenues



RBC Economics, Statistics Canada^{xii}

World Comparison

Canada is not the only nation facing a labour and skills gap in its agriculture sector. These countries have already taken action to address shortages through unique policy programs:



The average age of a Japanese farmer is 68, making it the country with the biggest agricultural leadership challenge in the OECD. To ensure young farm operators enter the sector, the government provides them with income support for five years upon establishing their own farms. In addition, the launch of the Smart Agriculture program provides free advisory services for how to implement autonomous and mechanized solutions. The country has also established “pilot villages” that can demonstrate the effectiveness of new technologies.^{xiii}



New Zealand is struggling to get young people and new producers to enter the sector. In 2014, the Primary Industry Alliance was formed among producers, universities, colleges, and public officials.^{xiv} The agriculture component of the program focuses on attracting new farmers through education and immigration. In addition, the government has engaged with the Māori community to increase its participation in the industry.



Over 530,000 migrant workers are employed across the Dutch agriculture sector.^{xv} While the Netherlands is increasingly reliant on these migrant labourers, it wants to increase its share of highly-skilled workers. To confront this challenge, the government established the Strategy for Green Education to attract students to the industry and coordinate education institutes to meet the labour needs of the sector.



Like Canada, the U.S. relies heavily on temporary labourers. However, as the rate of farm operators has declined, the demand for labour has only grown. There is funding for agricultural education programs in secondary schools and support for land-grant universities that offer advisory services to farmers. But the labour crunch is nevertheless forcing the average wage higher and has prompted many producers to invest in autonomous solutions.

Conclusion

The agriculture sector is facing a transformational skills and labour crisis. However, with the right approach, this acute disadvantage can become a generational advantage. By increasing the immigration of skilled farmers, encouraging colleges and universities to bring students of all backgrounds into the sector, and investing in innovative solutions to automate and reduce on-farm labour, Canada can lead the world into a new era of low carbon farming.

Budget 2023 was an opportunity to set ambitious goals that capitalize on Canada's natural advantages in agriculture. While many of the measures unveiled provide temporary relief to various issues, the budget lacked a comprehensive vision for the sector's future and the climate challenges it is encountering. The opportunity is there for farmers, governments and the broader agricultural supply chain to work together on this issue.

Meeting these challenges will demand a whole new approach that includes the participation of all of these stakeholders.

Success Factors



Government

Pursue immigration of qualified farm operators. Canada is a nation of immigrants with a reputation for welcoming newcomers. This gives it a core advantage over other major food exporters. Using existing immigration structures that have bolstered other Canadian industries, we can replace over 63,000 retiring farm operators. A new approach, akin to the Global Talent Stream, can encourage farmers with a specific amount of capital, to come to Canada and help facilitate the leadership transition on farms. And by expanding current programs and recognizing farming skills as a priority, Canada can bring in at least 3,000 skilled farm operators per year for the next decade.

Establish a tax credit program for farmers investing in novel technologies. Producers have among the highest capital expenditures in Canada—but are often not as well-rewarded for their spending on innovative technologies as other industries. Through a program like the Scientific Research and Experimental Development tax, farm operators ought to be rewarded for investing in autonomous or mechanized solutions that increase efficiencies and reduce emissions.



Private sector

Encourage agricultural companies to boost in-house R&D spending. There is little agreement about why Canadian companies don't spend as much on R&D as their foreign counterparts. Businesses and organizations that represent the agriculture sector should identify the barriers to greater investment and the steps needed to overcome them. Additionally, foreign agriculture companies operating in Canada should be incentivized to conduct further research in Canada rather than just deploying innovations here.

Establish a producer, researcher, and corporate innovation network. For technological advancements to grow, dedicated communities of producers, researchers, and corporations need to collaborate to develop and test innovative products in the field. By building such an approach (similar to the Clean Resource Innovation Network) new ideas can be quickly executed. And the industry can evaluate new technologies' effectiveness based on actual use in the field. Corporations that invest in new developments can reap the financial rewards of these collaborations.



Farmers

Succession planning should be a priority. Without clear transition plans, valuable farmland may sit idle and unproductive. By contrast, clear and established plans make the process of transferring land, knowledge, labour, and ownership easier for new generations taking over. Of course, every farm is different. However, by effectively implementing a succession plan, the legacy and story of farms can continue onto the next generation in families. Talking to a financial advisor will help tailor solutions to individual situations. Should farm operators want to sell their farmland, considering the sale to eager new producers entering the industry, productive operators, or farmers new to Canada can help ensure the farm's productivity does not slow.



Colleges and universities

Break down silos between faculties. Enrolment in Canada's agricultural schools would be improved by agriculture being included within other curricula of other faculties. Many STEM and business programs don't highlight agriculture. And the sector not only needs new graduates from agricultural programs to stem the labour and skills gap, it needs graduates from other fields in the broader ecosystem. From producing the engineers that can help farms become more operationally efficient to the technologists that provide data analytics to make farmers more sustainable, Canadian colleges and universities have an important role to play in transforming the industry.

Make sustainability a requirement in agricultural education. Many agricultural programs offer courses in sustainability as electives. If we are to build a sustainable agricultural system, this topic must be central. A productive and resilient system depends not just on our ability to grow more food, but to do it sustainably.

Launch a smart town program to showcase agricultural innovations. Universities can work with corporations to establish "smart towns". Like Japanese pilot villages, these towns would adopt novel technologies in agriculture and encourage students, farmers, and innovators from across Canada to visit and learn more about them. These towns could accelerate adoption of agricultural technologies and potentially serve as sites for co-op programs for students new to the agriculture sector.

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Appendix

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- iv. RBC Economics and OECD Skills for Jobs Database,
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