

Farm Credit Canada



Reigniting agricultural productivity in Canada

Sustainable growth to help feed the world



About FCC

Farm Credit Canada (FCC) is a Canadian Crown corporation dedicated to supporting the agriculture and food industry. As a lender 100% invested in Canadian agriculture, FCC provides financing and services to primary producers, agribusinesses and food logistics companies. Our mission is to enhance rural Canada by offering specialized financial services tailored to farming operations, including family farms. FCC builds strong relationships with thousands of customers across the country, sharing knowledge and expertise to help them succeed. We are committed to the future of agriculture and food, acting as a partner, catalyst and champion for the industry.

About Thought Leadership

Established in 2024, the FCC Thought Leadership team develops and shares insightful content on key industry challenges and opportunities, driving important conversations about the future of Canadian agriculture and food. We're committed to providing comprehensive research, expert analysis and forward-thinking insights that anticipate future trends and empower the industry to navigate the complex, changing landscape of agriculture and food. Through our publications and initiatives, we aim to elevate discourse and drive meaningful progress.

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Message from the EVP

Canada's agriculture sector is entering an era of extraordinary possibility. By reigniting productivity growth, we can unlock \$30 billion in new income for producers in the current decade and create nearly 23,000 jobs nationwide.

The benefits of a prosperous agricultural sector extend far beyond the farm gate. Productivity growth strengthens our entire economy, supports food security and enhances the well-being of every Canadian. It means more affordable food, prosperous rural communities and a food system that can weather global challenges.

This report shows that while productivity growth has slowed, Canada remains a global leader. By setting ambitious goals, investing in innovation and supporting the adoption of new technologies, we can reclaim our momentum.

FCC's strategy is built on partnership, innovation and resilience. We're investing in cutting-edge technologies, expanding advisory services and supporting producers with tools such as [AgExpert^{\(1\)}](#) to drive efficiency and growth. Our commitment extends to fostering collaboration across the industry, supporting Indigenous agriculture and strengthening food security in communities across Canada.

Key pathways to success include improving technical efficiency, capturing scale economies and fostering innovation. By working together, embracing new ideas and investing in our people, we can transform today's challenges into tomorrow's successes – for farmers, for families and for all Canadians.

Let's seize this moment, together!

Jean-Philippe Gervais
Executive Vice-President
Strategy and Impact





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Agricultural productivity in Canada

Over the past 60 years, Canadian agriculture has seen remarkable productivity growth due to improvements in farm management, efficiency and technology. But since hitting a peak of about 2% per year in the 1990s and early 2000s, growth has stagnated, challenging Canada's leadership in the global food system.

Revitalizing Canada's agricultural productivity growth and restoring it to past levels is a [\\$30-billion revenue opportunity for Canadian farmers](#)⁽²⁾ – one that could [grow national GDP by \\$31 billion](#)⁽³⁾ and create thousands of new jobs. This report examines the drivers of agricultural productivity growth, explores how Canada compares to other countries and offers concrete suggestions for how the industry can seize the opportunity before it.

Why has productivity growth in Canadian agriculture slowed?

Many factors are contributing to the slowdown in productivity growth. But we focus on two key factors:

1. **We've seen insufficient investment in the development and commercialization of new tools and technologies.**

Canadian private investment in agricultural research and development lags behind other sectors of the national economy and the rest of the world. Venture capital investments in Canadian agricultural technologies (ag tech) are also falling behind, hindering their commercialization and marketing. In 2024, U.S. venture capital ag tech deal values outpaced Canadian values 23-to-1.

2. **The industry's adoption of new innovations and technologies is lagging.** The agriculture industry in Canada is slow to adopt new technologies compared with other Canadian industries. The one-cycle-per-year nature of production means farmers face substantial risk in testing new production methods or tools, and returns on investment are slow. Further barriers to technology adoption include a shortage of skilled labour, lack of cash flow, and limitations in digital and physical infrastructure. Challenges such as new trade barriers and trade uncertainty, fluctuating commodity prices and rising input costs are driving producer concerns, further dampening incentives to invest.



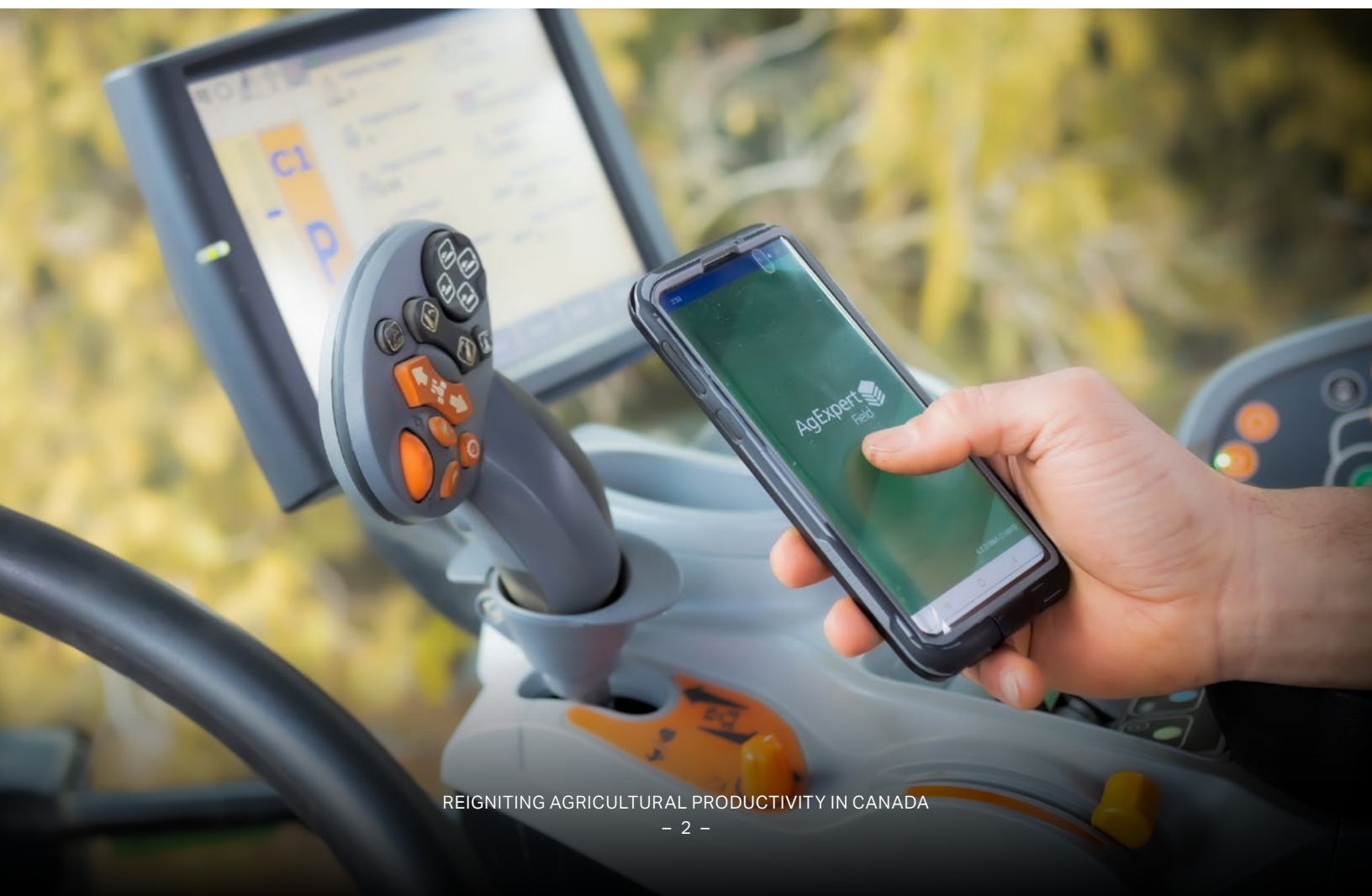
How can we improve productivity growth in Canadian agriculture?

Returning to past productivity growth of 2% per year will require a portfolio of strategies. We see three pivotal pathways:

1. **Improve technical efficiency through better management.** Strategies include using accounting and farm management software such as [AgExpert](#),⁽⁴⁾ leveraging data analysis for decision-making, hiring advisors to enhance operations, investing in training and education for operators and employees, and networking with producer organizations and experienced farmers to share knowledge.
2. **Capture economies of scale through strategic investment.** Informed management decisions can help to identify promising opportunities. Tailored solutions should involve targeting investment at technologies that are appropriate for the size and scale of the farm. Investing in skilled labour alongside equipment is also crucial for leveraging strategic investments.
3. **Foster innovation.** Producers are encouraged to actively seek innovation opportunities and build strategic partnerships to catalyze knowledge sharing, especially cross-sector partnerships that can infuse farming with groundbreaking technologies from other industries. We can also add a greater focus on innovations that reduce waste – for example, regenerative agriculture practices – as these will improve both productivity and profitability.

An industry call to action

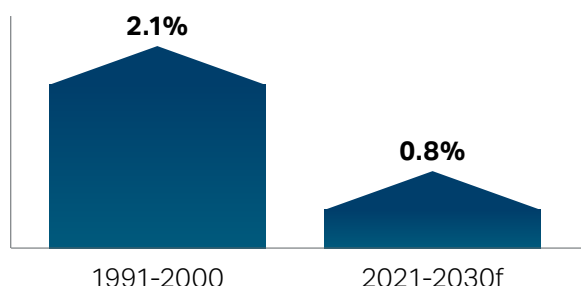
This report is intended to launch a dialogue. But the true power to effect change lies in the hands of farmers and industry leaders. Productivity growth must become a strategic objective from boardrooms to farms. We believe that now is the time for a collaborative, industry-wide effort to embrace innovation and strategic investment to secure a brighter future for Canadian agriculture and the country as a whole.



Report highlights

Productivity growth in Canadian agriculture is on the decline

Annual productivity growth in Canadian agriculture
1990s vs. 2020s (forecasted)



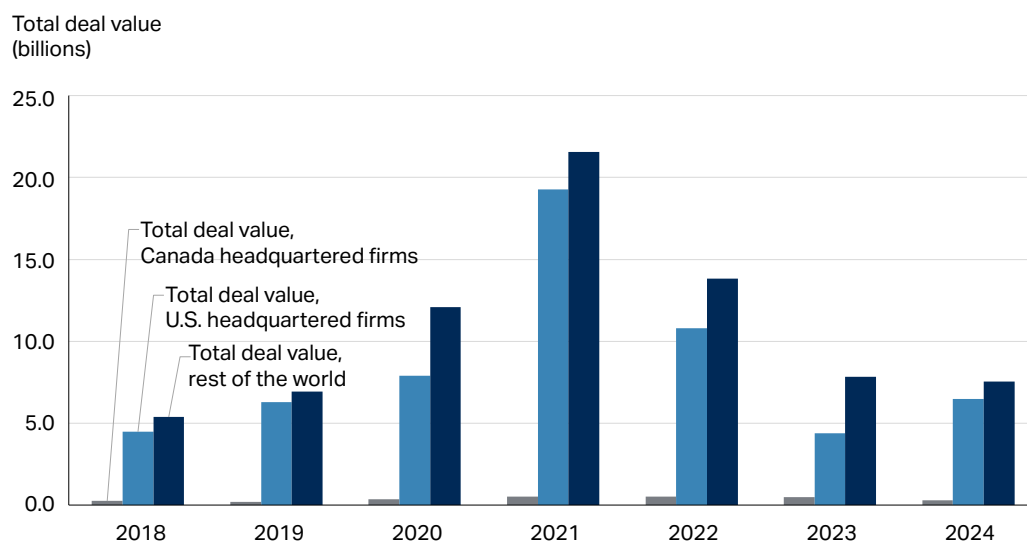
Source: [USDA ERS – International Agricultural Productivity](#),⁽⁵⁾ FCC calculations

- Productivity measures how efficiently inputs – like land, equipment and workers – are transformed into outputs.
- Productivity growth in Canadian agriculture has slowed since its peak in the 1990s.
- This slowdown has implications for the long-term sustainability, profitability and trade competitiveness of Canada's agriculture sector.

Why is productivity growth slowing?

- Lack of investment, especially in the emerging ag tech sector
- Slow uptake of new and advanced technologies

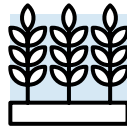
Total ag tech venture capital deal values* for firms headquartered in Canada, the U.S., and the rest of the world – 2018-2024



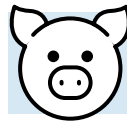
Source: [PitchBook Data, Inc.](#)⁽⁶⁾ The cited data has not been reviewed by PitchBook analysts and may be inconsistent with PitchBook methodology. *Deal values based on limited data.

There is a \$30-billion opportunity in Canadian agriculture

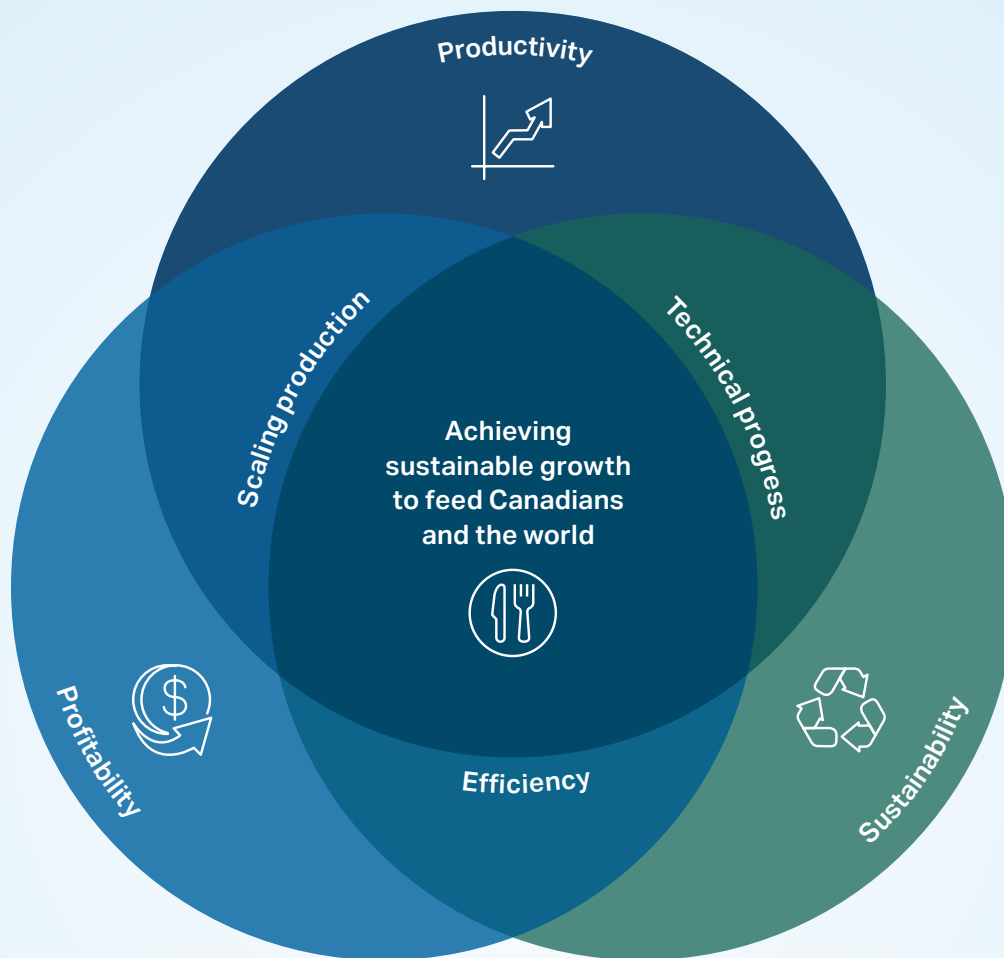
- Returning to 2% annual productivity growth seen in past decades could increase farmer incomes by \$30 billion over the course of a decade.
- This would increase GDP by \$31 billion and create thousands of new jobs.



**\$18.5-billion opportunity
for crop producers**



**\$11.5-billion opportunity
for animal producers**



There are three key pathways to promoting future productivity growth:

1. Improving technical efficiency through better management.
2. Capturing scale economies through strategic investment.
3. Driving innovation to boost technical progress.

Introduction

Thanks to the adoption of innovative management practices and the implementation of cutting-edge technology, Canadian agriculture has been a beacon of productivity for more than 60 years. Yet, [productivity growth has slowed since peaking at 2% per year between 1990 and 2010](#).⁽⁷⁾ We're now at a pivotal moment in the effort to reignite this momentum. We face both tremendous opportunities and a significant challenge: to increase production to feed an expanding global population, while preserving natural resources for future generations.

[Revitalizing Canada's agricultural productivity growth to 2% per year represents a \\$30-billion income opportunity for Canadian farmers](#).⁽⁸⁾ [And it could unlock GDP growth of \\$31 billion, creating nearly 23,000 jobs for Canadians](#).⁽⁹⁾ It's within our grasp to ensure Canadian farmers remain competitive within the global food system so the sector can thrive now and into the future. This report aims to explore current trends in Canada's agricultural productivity, compare Canada's performance with that of other leading agricultural regions, evaluate recent growth drivers and establish a clear path for the industry to maximize its potential.

Now is the moment for Canadian agriculture to seize this generational opportunity and transform itself into an even greater powerhouse.

What is productivity?

Productivity is a measure of economic performance that goes beyond simply producing more. On the farm, it means using every resource – workers, equipment, land and materials such as feed and fertilizer – in the most efficient and sustainable way possible. It's about producing more while reducing waste, improving quality and using all resources wisely. It also means integrating innovative technologies to expand production possibilities. Productivity can be measured at both the farm level and across the entire agriculture industry.

Why is productivity important?

Simply put, productivity growth is crucial for a strong agricultural economy. It lowers the cost of production, makes businesses more profitable, helps create higher-value jobs, expands trade and keeps food affordable. Productivity growth indicates a farm's ability to adapt to changing production conditions and is a key indicator of long-term financial viability.

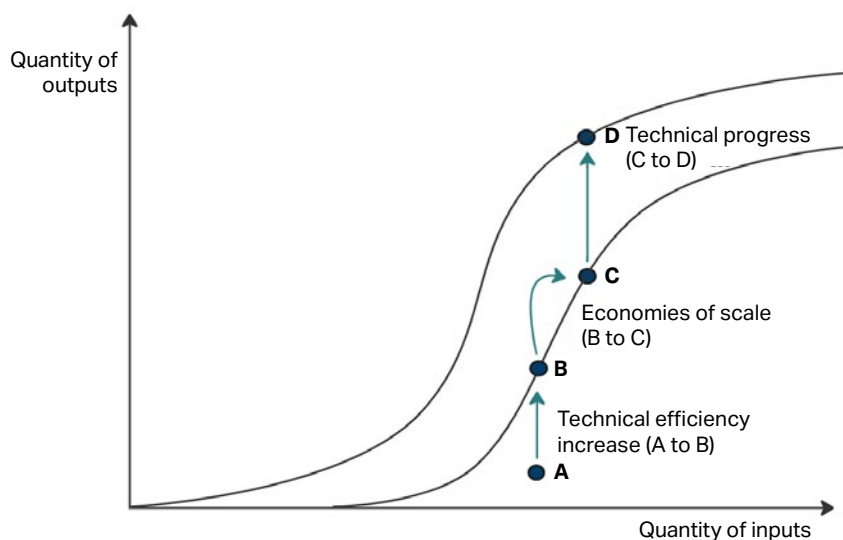
Revitalizing Canada's agricultural productivity is a \$30-billion opportunity waiting to be unlocked.

How is productivity measured?

Total factor productivity is a comprehensive measure that represents the overall picture of how the agriculture industry in Canada is faring in terms of productivity growth. It looks at all outputs – such as crops and animals – against all inputs, such as land, labour, machinery and more. What’s remarkable about this measure is how it captures more than the individual contributions. Technological changes can make inputs work more efficiently together, and total factor productivity captures this.

Productivity grows over time through three key pathways: greater input efficiency, increasing the scale of production, and adopting new and innovative technologies (Figure 1).

Figure 1: Drivers of productivity growth over time



Source: Authors.

Incorporating new management practices – moving from point A to point B on Figure 1 – means getting more output for the same level of inputs by using resources more efficiently. For example, implementing software-assisted decision-making on the farm, introducing precision farm management tools or leveraging advisory services to optimize yields can all lead to more efficient input use.

Moving from point B to point C on Figure 1 means expanding the farm’s production scale. In some instances, this can involve purchasing land and using more inputs. In other instances, it can involve lowering per unit production costs by introducing a new technology (for example, advanced milking technologies and feed management systems in dairy). Economies of scale lead to lower costs and increase productivity.

Finally, the shift from point C to point D in Figure 1 represents new technology adoption resulting from research and development, and the commercialization of innovations. For example, gene editing can accelerate the development of new crop varieties that are more resistant to climate stress or disease. New technologies can expand the production possibilities of all farms.

Productivity is closely intertwined with technology, sustainability and economic growth. It’s a dynamic and essential aspect of agriculture that shapes our future.

Productivity growth in Canadian agriculture is slowing

Over the past six decades, Canadian farms have doubled in both size⁽¹⁰⁾ and productivity.⁽¹¹⁾ During this time, we've seen several waves of change, each bringing its own innovations. Think of the Green Revolution in the 1960s and 1970s, when the use of synthetic fertilizers, chemical pest control and mass mechanization led to significant increases in food production. Or consider the rise of precision agriculture – specifically tillage practices – in the 1980s and 1990s, and the explosion of advanced agriculture technology (ag tech) and data-driven digital farming advancements since the 2000s.

Crop production in Canada more than doubled from the 1960s to the 2010s – from an average of 59 million metric tonnes (MMT) per year to a staggering 125 MMT per year.⁽¹²⁾ All of this growth was achieved with only a 10% increase in seeded acres, which expanded from 86 million acres in 1961 to just 94 million acres in 2016, as the adoption of continuous cropping and improved management allowed for reduced summer fallow acres. At the same time, improvements in breeding and feeding techniques have dramatically transformed animal farming.⁽¹³⁾ Today, Holstein cows produce twice as much milk as they did half a century ago and chickens raised for meat grow four times as large.⁽¹⁴⁾ Modern technology is reshaping the farming landscape. Innovations such as remote monitoring enable farmers to detect diseases early and gather data to make smarter decisions. Robotics and automation are revolutionizing farm work, making it more efficient and reducing the need for manual labour.

Driven by these advances, agricultural productivity growth in Canada peaked in the 1990s and early 2000s, with average annual productivity growth rates soaring to an impressive 2% per year in both decades ([Figure 2](#)). Animal productivity growth peaked at an average of 2.6% per year in the 1990s and crop productivity growth peaked at an average of 2.9% per year in the early 2000s ([Figure 3](#)). The adoption of precision agriculture technologies and methods, and the passing of the North American Free Trade Agreement (NAFTA) – and subsequent increase in trade flows and investments, facilitating the spread of productivity-enhancing tools and technologies – helped to promote growth in these two decades.

Since then, productivity growth has steadily declined, dropping to an average of 1.3% per year in the 2010s. If the status quo continues, the growth rate over the next decade is projected to dip back to a level reminiscent of the 1970s.

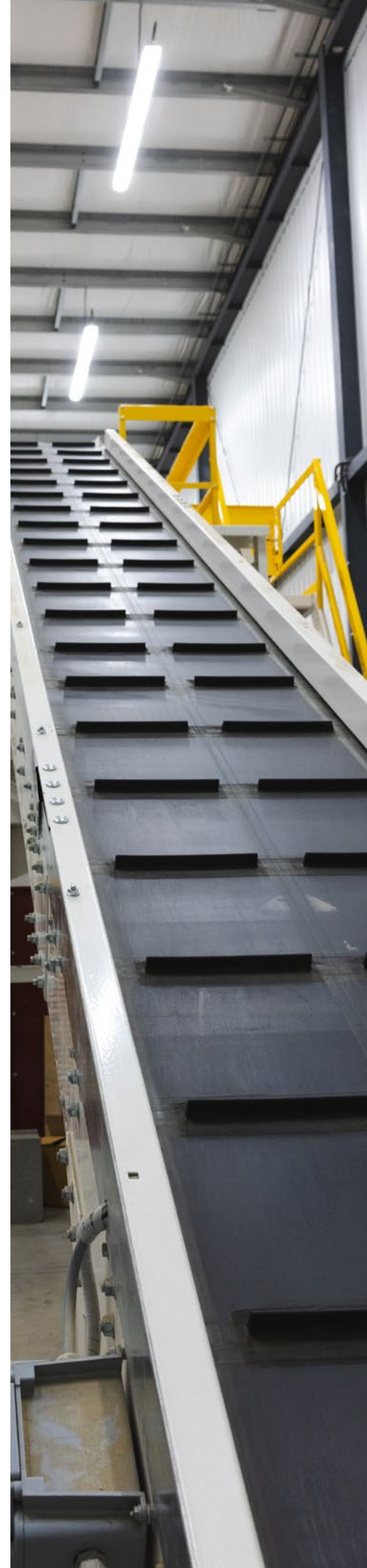
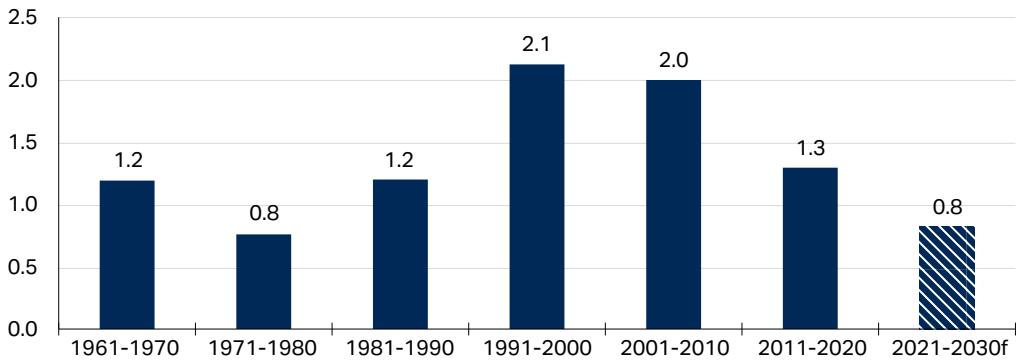


Figure 2: Average annual total factor productivity growth per decade in Canadian primary agriculture – 1960s to 2020s (forecasted)

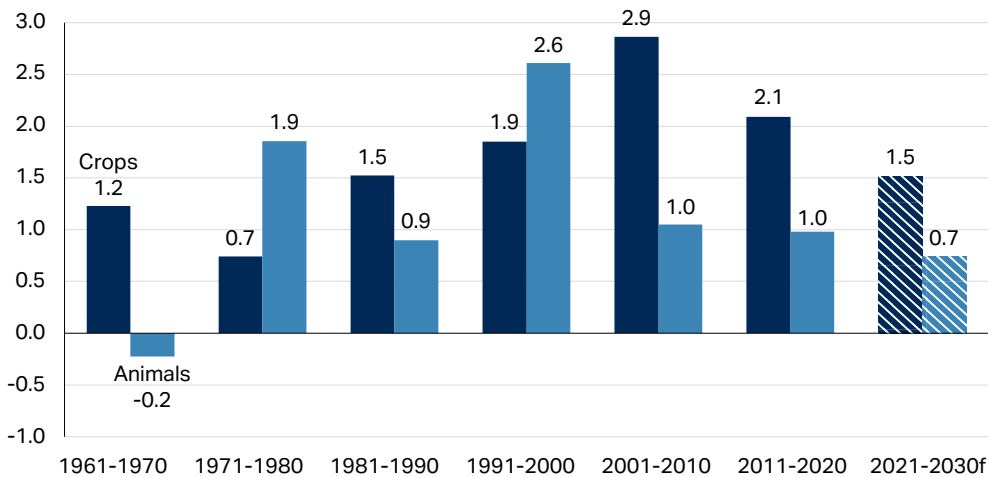
Average annual productivity growth (percentage)



Source: [USDA ERS – International Agricultural Productivity](#),⁽¹⁵⁾ FCC calculations.

Figure 3: Average annual total factor productivity growth per decade in Canadian crop and animal production – 1960s to 2020s (forecasted)

Average annual productivity growth (percentage)



Source: [USDA ERS – International Agricultural Productivity](#),⁽¹⁶⁾ FCC calculations.



In the current decade, average annual productivity growth for crop production is expected to be half the growth rate seen in the 2000s, at 1.5%. The grains and oilseeds sector is a key driver of this slowdown, having experienced increasing year-over-year variability and reduced overall output in the face of progressively more challenging weather conditions, which are expected to continue. [According to the Climate Institute of Canada, droughts will become more frequent and severe in many parts of the country.](#)⁽¹⁷⁾

Animal productivity growth has also stagnated at around 1% average growth per year for the past two decades. That rate is expected to decline even further should current trends continue as we approach 2030, in part due to the impacts of weather on feed supply.

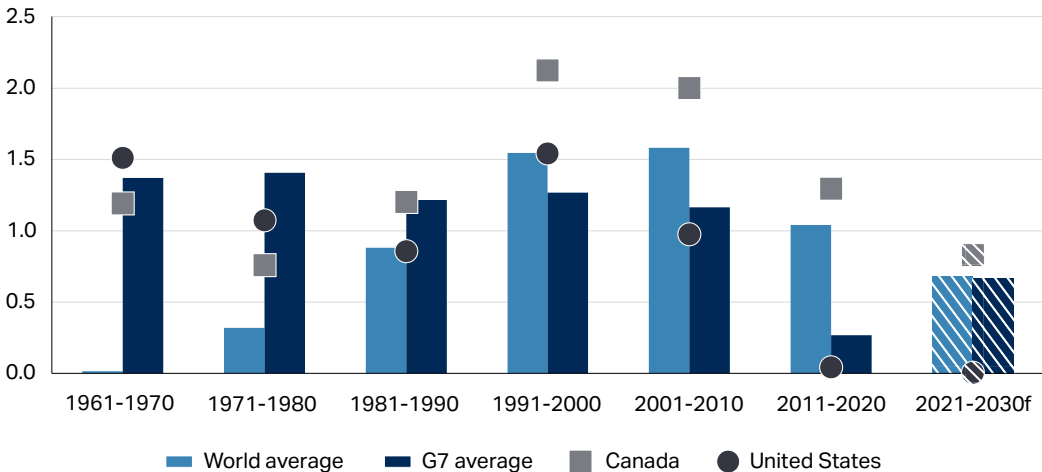
But there is a significant opportunity here: boosting productivity growth in Canada’s crop and animal production sectors to peak levels seen in past decades has the potential to increase returns to crop farmers by \$18.5 billion and increase returns to animal producers by \$11.5 billion. The question is: How? This report seeks to highlight key pathways to productivity growth, and to drive industry conversation around this opportunity.

Boosting annual agricultural productivity growth to historic peak levels represents a \$18.5-billion opportunity for crop producers and an \$11.5-billion opportunity for animal producers.

[As of 2024, Canada was the ninth-largest net exporter of agriculture and food products in the world, and fifth among G7 countries.](#)⁽¹⁸⁾ While slowing productivity growth certainly threatens our global trade competitiveness, Canada’s average annual agricultural productivity growth has, nevertheless, outpaced G7 and global averages since the 1990s (Figure 4), and also outpaced a number of our top trade competitors (for example, the U.S., Netherlands, Germany, France and Spain). Canada is, therefore, well-positioned to improve its agriculture and food trade ranking if we rekindle productivity growth.

Figure 4: Average annual total factor productivity growth per decade: Canada, United States, G7 and World – 1960s to 2020s (forecasted)

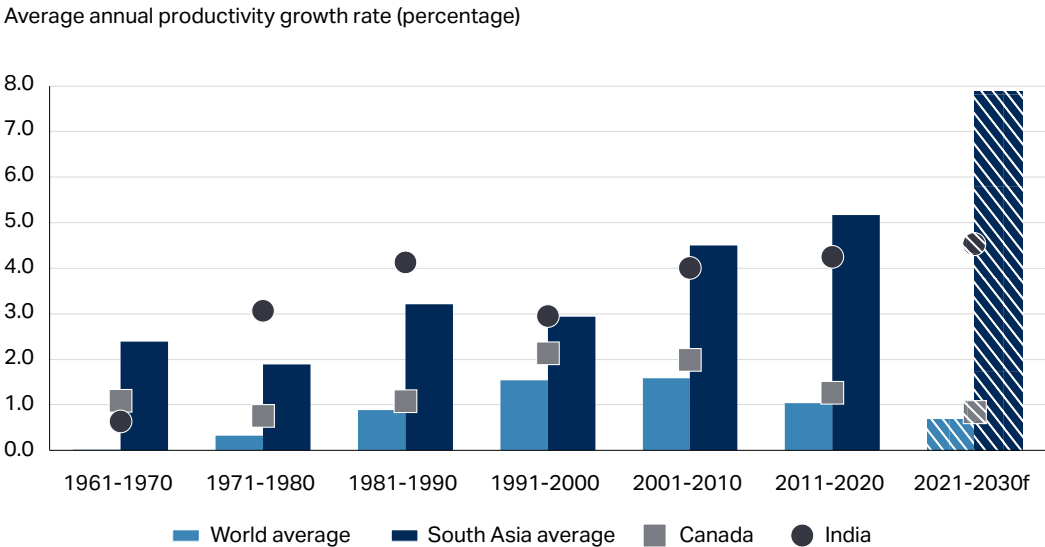
Average annual productivity growth rate (percentage)



Source: [USDA ERS – International Agricultural Productivity](#),⁽¹⁹⁾ FCC calculations.

The importance of Canada’s leadership in the global food system is illustrated by looking to productivity growth trends in developing regions, where substantial investments in research, technological advancements and educational services have been driving agricultural productivity gains. This, in combination with better market access, is allowing these countries to capitalize on productivity growth rates seen in developed regions in past decades. For example, India saw 4.3% average annual agricultural productivity growth between 2011 and 2020, with the overall South Asia average annual rate being 5.2% (Figure 5). This global shift in agricultural productivity highlights the dynamic nature of innovation and growth, and the positive spillover effects of innovations from countries with more advanced food systems as those innovations spread to the rest of the world. As developing nations continue to modernize their agricultural tools and practices, Canada and other western economies must strive to continue pioneering new innovations.

Figure 5: Average annual total factor productivity growth per decade: Canada, India, South Asia average and World – 1960s to 2020s (forecasted)



Source: [USDA ERS – International Agricultural Productivity](#),⁽²⁰⁾ FCC calculations.



Why has productivity growth in Canadian agriculture slowed?

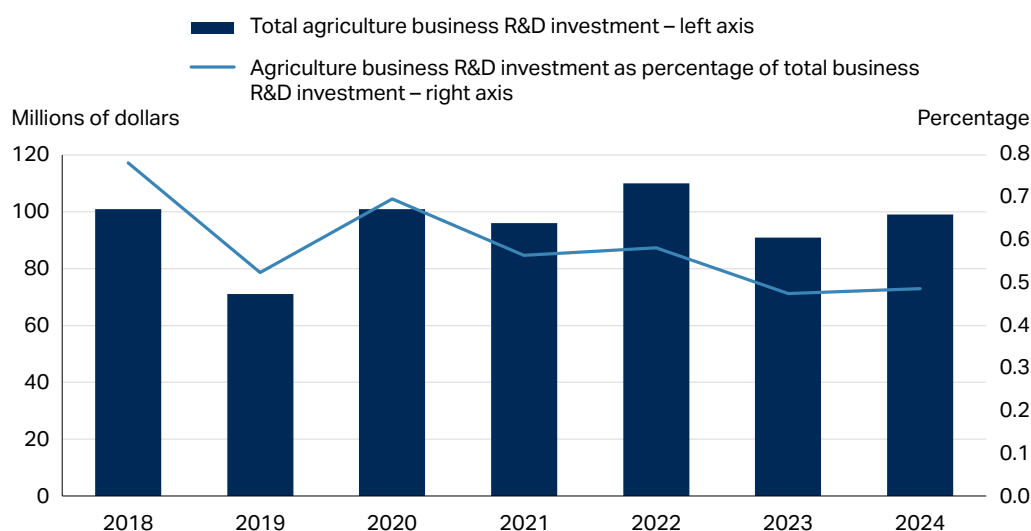
The decline in productivity growth in Canadian agriculture can be attributed to two key factors: 1) insufficient investment by all players in the agriculture innovation system in the development and commercialization of new tools and technologies; and 2) the significant barriers and risks associated with technology adoption at the farm level, leading to slow adoption of new innovations.

Lagging investment in Canadian agriculture

Insufficient investment at all levels of Canada's agriculture innovation system is playing a key role in slowed productivity growth. Declining investment in agriculture innovation mirrors national trends. [As of 2021, Canada ranked second-lowest among G7 countries in terms of private R&D spending relative to GDP, and 19th among OECD countries in terms of overall R&D spending.](#)⁽²¹⁾ [In fact, Canada is one of the few OECD countries showing declining R&D spending as a share of GDP in the past two decades.](#)⁽²²⁾ Considering that R&D plays a critical role in fostering innovation, stimulating economic growth and maintaining Canada's global competitiveness, this trend is alarming.

[Most agricultural R&D in Canada is funded publicly,](#)⁽²³⁾ but private capital also has a major role to play. Unfortunately, Canada's private investment in agricultural R&D lags behind other sectors of the economy and the rest of the world. [In 2020, Canadian agricultural businesses spent 1.4% of their revenues on R&D, compared to 4.6% for their global counterparts.](#)⁽²⁴⁾ From 2018 to 2024, agriculture's share of in-house R&D expenditures by Canadian-controlled businesses dropped to 0.5% from 0.8% (see Figure 6).

Figure 6: In-house R&D investment by Canadian-owned agricultural businesses: total, and percentage of total for all Canadian-owned businesses – 2018 to 2024

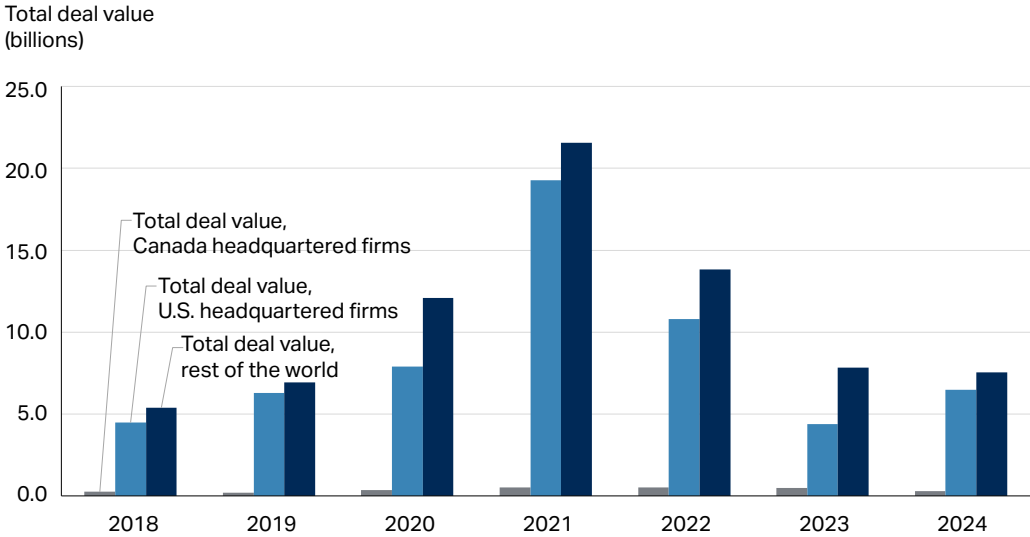


Source: [Statistics Canada](#);⁽²⁵⁾ FCC calculations.

This underinvestment in R&D represents a significant risk for the sector: [every dollar invested in agricultural R&D yields an estimated return of \\$10 to \\$20.](#)⁽²⁶⁾ [Globally from 1962 to 2011, a mere 1% uptick in R&D expenditures spurred a 0.2% productivity boost,](#)⁽²⁷⁾ with an even more pronounced impact in wealthier nations, at 0.7%. Compared with other sectors, the benefits of agricultural R&D often take years to manifest, as a yearly crop cycle means that investments in innovations take longer to bear fruit. This slow realization of returns may dampen enthusiasm for investment. Taken together, these factors mean that prolonged underinvestment has a major impact.

Venture capital investments in ag tech businesses are vital for driving innovation and supporting commercialization. In Canada, these investments are lagging. [A recent FCC report found that in 2024, U.S. venture capital ag tech deal values outpaced Canadian deal values by a ratio of 23:1.](#)⁽²⁸⁾ The U.S. captured \$6.5 billion, representing 45% of global deal values, while Canada captured just \$276 million, representing 2% of global deal values (Figure 7). The annual number of venture capital investment deals with Canada-based ag tech firms has also decreased since 2022, returning to pre-pandemic levels. [And Canada's global share of ag tech venture capital deals has been relatively stagnant in recent years, hovering around 5%.](#)⁽²⁹⁾

Figure 7: Total ag tech venture capital deal values* for firms headquartered in Canada, the U.S., and the rest of the world (2018 to 2024)



Source: [PitchBook Data, Inc.](#),⁽³⁰⁾ FCC calculations. The cited data has not been reviewed by PitchBook analysts and may be inconsistent with PitchBook methodology. *Deal values are based on limited data.



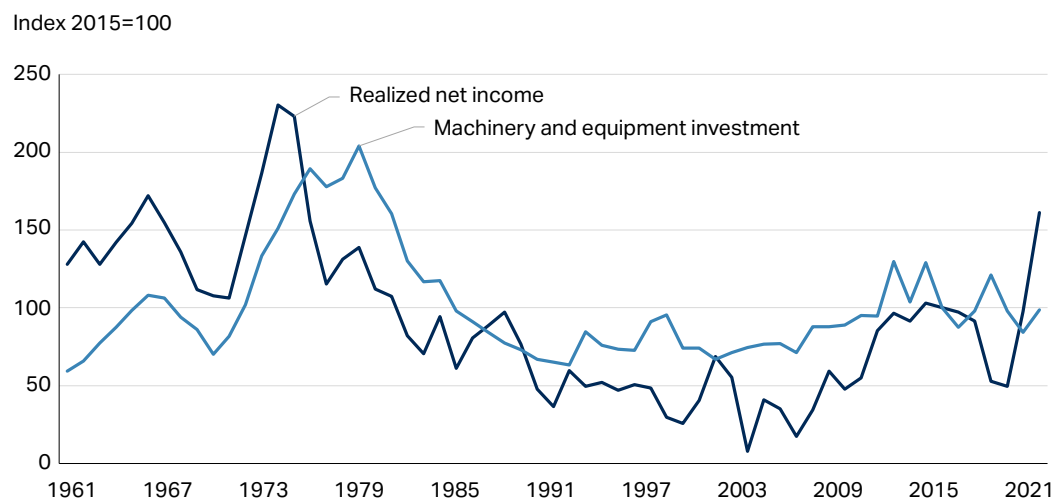
This lack of venture capital funding hinders the commercialization and marketing of Canadian ag tech innovations. [Canada ranks 27th out of 38 OECD countries in overall product market regulation](#),⁽³¹⁾ which may affect innovation investment. To boost the commercialization of key innovations, Canada must better position itself to secure a larger share of global ag tech investments, especially for emerging innovators.

Slow adoption of agriculture innovations

Adoption of new innovations and technologies isn't always done at optimal speed in Canadian agriculture. This is evident in the history of on-farm investments in machinery and equipment (Figure 8): a boom in the 1970s during the mass-mechanization era, a notable dip in the 1980s, a slight uptick in the 2000s with the emergence of precision agriculture, and another notable dip in the 2010s. [In 2022, agriculture ranked ninth out of 12 industries in advanced technology adoption](#).⁽³²⁾

This slow uptake of new technologies isn't just a challenge in Canadian agriculture, but globally as well. [The 2025 GAP report out of Virginia Tech labels this widening global rift between innovation and adoption as the "valley of death."](#)⁽³³⁾

Figure 8: Realized net income and machinery and equipment investment in Canadian agriculture – 1961 to 2021



Source: [Statistics Canada](#),⁽³⁴⁾ [USDA ERS – International Agricultural Productivity](#),⁽³⁵⁾ FCC calculations.

Note: Investment and income data in constant 2017 dollars.



There is a cyclical relationship between on-farm investment and long-term net income. Robust income trends encourage more investment, which then leads to further income growth. If on-farm investment continues to stagnate, so too might farm incomes in the long run, challenging the viability of farm businesses.

Farm income stagnation could contribute to increased farm consolidation. In the absence of adequate investment, a growing number of farms may have trouble staying profitable and exit the industry. [In 15 of the last 20 years, farm closures outpaced start-ups.](#)⁽³⁶⁾ In 2021, the number of new farms (9.5%) barely edged out those shutting down (8.8%). Future investment isn't just critical for productivity growth; it's also essential for farm profitability and long-term sustainability.

[One significant contributor to the slow technology adoption on farms is the one-cycle-per-year nature of production.](#)⁽³⁷⁾

With a single growth season each year, farmers face substantial risk in testing out new production technologies or methods, and returns on these investments take a long time to be fully realized. This could be dampening investment in on-farm innovation. [A growing skills gap in Canadian agriculture is another barrier to technology adoption on farms.](#)⁽³⁸⁾

A shortage of researchers, extension specialists and other highly skilled labour is hampering both the development and deployment of groundbreaking technologies. And while investments in labour-saving technologies, and the training of workers in these new technologies, are more critical than ever, the data paints a cautionary tale: [industry investment per worker and labour productivity in Canadian agriculture have seen only modest growth over the past few decades.](#)⁽³⁹⁾

Internal FCC research identified a number of key barriers that producers face in adopting new technologies in addition to risk and skilled labour shortages, including lengthy project timelines and payback periods, lack of cash flow, and digital and physical infrastructure limitations. These challenges come at a time when trade disruptions, fluctuating commodity prices and rising input costs are at the forefront of producer concerns.

This lack of investment poses a huge challenge for Canadian farmers, who must adapt to evolving threats such as new pests, growing disease pressure and unpredictable weather. These challenges ultimately impact everyone, as increased production in the absence of productivity gains pushes producers to cultivate more marginal lands and expend increasingly scarce resources, leading to higher food costs and a greater strain on the environment.

Today's challenges present an opportunity for growth

There's a positive flipside to this outlook: What if these present challenges were to spark a revolution in farming practices, leading to new pathways to sustainability that also boost profitability? In the long run, sustainability and profitability go hand in hand.

What steps can be taken to rejuvenate investment and unlock the full potential of Canadian agriculture?

We believe a multifaceted approach is needed – one that explores new funding avenues, encourages more business-driven R&D investments and fosters a culture of innovation.

Setting ambitious goals for productivity growth

We've chronicled some of the main obstacles to boosting productivity growth. Now, let's talk about the opportunity and how Canada can capitalize on it.

To begin, it's critical that we set ambitious goals for Canada's agricultural productivity growth. [The 2025 Gap Report out of Virginia Tech argues that global agricultural productivity growth must hit at least 2% annually to meet future food demand.](#)⁽⁴⁰⁾ [For Canada, this means getting back to growth rates seen in the 1990s and early 2000s, when productivity growth was at its historic peak.](#)⁽⁴¹⁾ [We at FCC estimate that rekindling annual productivity growth to 2% could add a staggering \\$30 billion in net cash income for producers over the course of a decade.](#)⁽⁴²⁾ [The spillover effects of this growth in the overall Canadian economy would be substantial, with an estimated \\$31-billion increase in GDP, and an additional 22,920 jobs and \\$12 billion in labour income for Canadians.](#)⁽⁴³⁾ But this goal presents a formidable challenge, as arable land and resources become increasingly scarce, and growing and trade conditions more volatile.

The incremental productivity gains we've witnessed lately are insufficient to overcome the challenges facing the industry. We need an industry-wide paradigm shift. Productivity growth must be a strategic objective, not only in boardrooms but at the farm level too. Farmers are the best equipped to oversee this transition. We need to transform how we connect productivity, profitability and sustainability within our food system. These three factors are deeply interlinked. (Figure 9).

Figure 9: Critical components of long-term agricultural productivity growth and key areas to implement change



Productivity must be a strategic objective, not only in boardrooms but at the farm level too. Farmers are best equipped to oversee this transition.

Source: Authors.



The \$30-billion productivity challenge

How do we meet these ambitious goals for productivity growth and seize the \$30-billion opportunity? We see three pivotal pathways to enhancing productivity growth on the farm: 1) improving technical efficiency through better management, 2) capturing scale economies through strategic investment, and 3) fostering innovation. Through these pathways, farmers can take concrete steps to achieve productivity goals while also ensuring the long-term profitability and sustainability of their farms and the Canadian agriculture industry as a whole. There's no one-size-fits-all solution that will work for all farms. Each farm will need to consider the most appropriate path for them based on their situation. But we can explore some opportunities for producers to consider and highlight the positive impacts that FCC has observed.

1. Improve technical efficiency through better management

How can farmers shift to a new paradigm of farm management that places productivity growth at the forefront?

- **Identify quick wins.** Accounting and farm management software such as FCC's [AgExpert](#)⁽⁴⁴⁾ can provide insights into farm performance and identify areas where inputs can be used more efficiently. FCC has observed a 6% productivity advantage in the year following adoption of this technology for crop producers. [Hiring farm advisors can also provide value.](#)⁽⁴⁵⁾ We've observed an 18% productivity advantage for farm operations in the year following access to advisory services. Audits or solution-focused recommendations can improve the efficiency of labour and equipment use, overall farm management processes and strategic asset investment.
- **Invest in yourself and employees.** Invest in staff who are implementing management decisions on the farm through job training, up-skilling and higher-education. Seek out local opportunities through universities, colleges and extension services. For example, [FCC offers courses on managing farm finances](#),⁽⁴⁶⁾ and [the University of Guelph in partnership with FCC and RBC offers a free course on foundations of agriculture management](#).⁽⁴⁷⁾ Producer meetings and other events can also provide valuable learning opportunities.
- **Network and knowledge share with other producers.** Support connections through producer organizations, [industry events](#)⁽⁴⁸⁾ and virtual networks to encourage sharing knowledge around improved management practices. For young farmers and new entrants, seeking mentorship from more established farmers can be especially valuable.

- **Harness the power of data.** In this era of [digital agriculture](#),⁽⁴⁹⁾ farm managers are increasingly turning to data to drive their decision-making. [CAPI reports that digital agriculture has the potential to unlock up to \\$1.5 billion in annual net new revenue for farmers over the next decade.](#)⁽⁵⁰⁾ Expanding data collection and analysis can help identify opportunities to increase output or save money on inputs. Data can assist with developing management plans tailored to specific farm needs, such as harnessing soil testing or remote weather monitoring to develop custom nutrient management or irrigation plans. Data is valuable, so working with trusted partners is important.
- **Focus on quality, in addition to quantity.** Productivity growth is also about output quality. Producing higher-value products – such as heirloom vegetables, specialty fruits (like cotton candy grapes) or high-value meat products (like wagyu beef or heritage pork) – can boost revenues. Contract design can also add value through the inclusion of contract specifications that are desired by buyers (for example, identity preserved, organic or niche production outputs). Leveraging digital platforms for marketing and sales can help to signal product value and open up new markets.

2. Capture scale economies through strategic investment

Expanding the farm operation and employing cutting-edge, scale-efficient processes and equipment is one of the most straightforward ways farmers can boost productivity.

- **Better management decisions (pathway 1) make it easier to identify investment opportunities.** Improved management practices make it easier to identify the best investment opportunities to scale up the farm operation, whether that be through purchasing or renting additional land, expanding storage or value-added facilities (for example, on-farm processing), or growing staff. On-farm investments that enhance market access – like storage, transportation, packaging or branding – can lower costs of getting products to market. A strong business plan and solid relationships with financial partners can help to identify funding opportunities and facilitate access to credit when needed. It can also help to identify where an operation may be overinvested and opportunities to scale down equipment to reduce operating costs.
- **Develop tailored solutions that make sense for your operation.** Bigger isn't always better. Investments in equipment and technology are best when tailored to the appropriate size and scale of the operation. For example, the use of swarm technologies (the coordination of multiple drones or robots) for weeding, harvesting and soil analysis allows for ease of scaling up or down depending on shifting needs of the operation.
- **It's not just about equipment and technology; investment in labour is needed.**⁽⁵¹⁾ [Farm operators with more formal education are more likely to use technology when farming.](#)⁽⁵²⁾ Implementing new scale-efficient technologies and management practices requires a new set of skills. Staff recruitment, retention, training and upskilling require investment. Investing in human capital (the skills, knowledge and attributes that contribute to the overall value of labour) on the farm will help to ensure you're well-positioned to take advantage of strategic opportunities when they arise.



3. Foster innovation adoption

Innovation is a critical driver of productivity growth. We need to increase investment in Canada's agriculture innovation system to support the development and commercialization of new tools and technologies. How can farmers, as key players in the agriculture innovation system, actively contribute to the next wave of agricultural advancements?

- **Actively seek out innovation opportunities.** [Various organizations have established an innovation farm network across the country to test and showcase new technologies.](#)⁽⁵³⁾ Taking the time to learn about new technologies can help to identify which will yield the best return on investment for your operation.
- **Focus on innovations that reduce waste to improve both productivity and profitability.** [Increasing output doesn't always translate to higher profits.](#)⁽⁵⁴⁾ given the unpredictable nature of market prices and supply-demand dynamics. An uncertain return on investment can slow technology adoption. Innovations that enhance productivity by cutting down on input use or minimizing waste offer clear and compelling profit incentives.
- **Build strategic partnerships.** Partnerships with other producers and industry stakeholders can help facilitate knowledge sharing to drive innovation. Regenerative agriculture, a farming approach that focuses on restoring and enhancing the health of the environment in which farming takes place, is one field brimming with promise. [Indigenous farmers have long practiced regenerative agriculture and sustainable land stewardship.](#)⁽⁵⁵⁾ and are key stakeholders in expanding this innovative domain across Canada. [It's estimated that breaking down barriers to Indigenous participation in Canadian agriculture and achieving fair representation of Indigenous farmers could inject an additional \\$1.5 billion into the economy.](#)⁽⁵⁶⁾ [Cross-sector partnerships also support innovation by infusing farming with groundbreaking technologies from other industries](#)⁽⁵⁷⁾ (for example, robotics, computer science, artificial intelligence and more).



An industry call to action

Canadian agriculture faces a critical moment. Beyond the advice offered above, there's an urgent need to pivot collectively as an industry towards a future where enhanced efficiency and strategic growth are fuelled by groundbreaking innovations. Achieving this demands a bold, sector-wide shift. Innovation is the key.

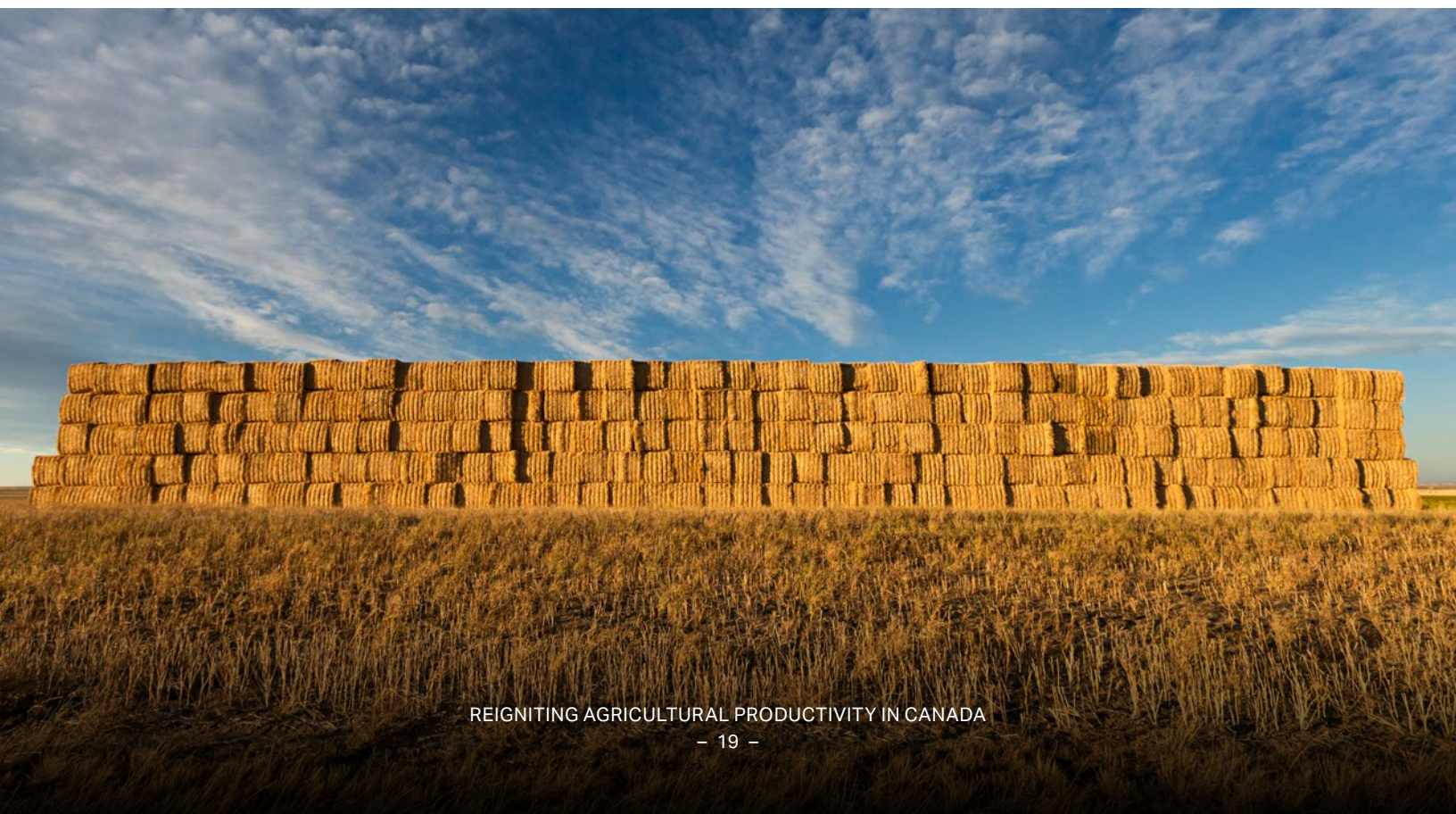
To ramp up agricultural R&D and innovation, Canada should draw on global best practices and successful agriculture innovation ecosystems in other regions. For example, the [NL Food Valley](#)⁽⁵⁸⁾ in the Netherlands catalyzes innovation by connecting companies, researchers and entrepreneurs through collaborative programs to support initiatives in areas like plant-based proteins, regenerative agriculture and food waste upcycling. This is a model we can adapt and emulate.

Building a culture of innovation means engaging farmers and industry leaders in research and knowledge sharing, and supporting innovation hubs, incubators and accelerators to bring cutting-edge ag tech to Canadian farms.

There are a variety of opportunities to attract more capital to the industry, such as targeted investment matching, public-private partnerships and pooled funding (for example, through programs administered by the [Sustainable Canadian Agriculture Partnership](#)⁽⁵⁹⁾), and check-off fund support. Prioritizing early-stage innovators will help to drive innovation competition. And investing in physical and digital infrastructure will help close the technology adoption gap and make innovation accessible for more producers.

[Expanding trade is also key to unlocking productivity growth](#).⁽⁶⁰⁾ Strengthening regional and global agricultural trade relationships and expanding global market access for producers is important for future productivity growth. Trade makes it easier to spread knowledge, tools and technologies.

This report is the beginning of an important dialogue about the future trajectory of the agriculture industry in Canada and the steps necessary to reignite productivity growth. But the greatest capacity to effect change lies in the hands of farmers and industry leaders. This is a generational opportunity to demonstrate leadership on the global stage and to show the world what Canadian agriculture can achieve.



Appendix A

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- (2) FCC – Rekindling agriculture productivity growth – a \$30B opportunity over ten years
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- (8) FCC – Rekindling agriculture productivity growth – a \$30B opportunity over ten years
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