FEEDING THE FUTURE WITH CANADIAN TECHNOLOGY

Briefing Note for Government

The Opportunity: Advancing Canadian Ag-tech

Canada stands at a critical juncture where innovation in agriculture and food technology (ag-tech) is not just an opportunity but a necessity. As we face mounting pressures to reduce carbon emissions, bolster supply chain resilience, and enhance productivity, ag-tech emerges as a key solution.

> *By accelerating innovation and adoption of advanced agricultural technologies, Canada can unlock up to $30 billion in economic opportunities,[1] driving further advances and securing a sustainable, competitive, and resilient agri-food system.*

This potential for economic growth positions Canada to become a global leader in ag-tech, with benefits that resonate across government priorities and national interests.

Canada's unique position, with its vast arable land, diverse climate zones, and advanced farming practices, gives it a strong foundation for ag-tech innovation. However, to realize this potential, we must address critical barriers that hinder scaling, adoption, training, and recruitment in the sector.

How can ag-tech support Canada's environment, economy and society?

Technologies like livestock feed additives, precision agriculture, and biodigesters are already showing promise in reducing greenhouse gas emissions.

Advanced sensing, imaging, and analytical techniques are improving our ability to measure and predict changes in soil carbon.

Robotics, automation, autonomous equipment, and artificial intelligence (AI) can all contribute to solving agri-food labour shortages.

Evolving AI-powered precision agriculture and controlled environment production technologies are making it possible to increase marketable output per acre, sparing land for biodiversity.

More efficient production coupled with technologies to improve logistics and reduce food waste can contribute to reducing food costs and improving global food security.

As our agricultural productivity is projected to decline through 2030,[1] and as businesses in the Canadian agri-food sector grapple with cybersecurity challenges, disruptive technologies, and evolving environmental and business conditions,[2] it is imperative that we support our agri-food system through investments in infrastructure, human resources, and the development of advanced technologies. Ag-tech innovation not only drives economic growth and prosperity but also enhances environmentally transparent practices, particularly in carbon measurement and accounting with clear standards.[3] As one of Canada's largest economic sectors - a sector with vast potential for helping the country meet our climate commitments and grow our economy -coordinated government efforts focused on agri-food growth and innovation will pay dividends and enhance our global standing.

To harness the full potential of ag-tech and secure Canada's position as a global leader, we recommend federal and provincial governments take strategic actions to remove barriers, foster innovation, and support the development of value-added businesses in a sustainable agri-food system.

1. Remove regulatory barriers.

To foster innovation in ag-tech, regulations and policy must be thoughtfully designed and reviewed to ensure they do not add unnecessary or unforeseen burdens to small and medium enterprises (SMEs) and early-stage innovators. Canada has one of the most trusted and stable regulatory environments on the planet, leading to a well-regarded, high-quality, and safe global Canadian agri-food brand that investors can be confident in. However, the stringent nature of our regulatory environment also leads to greater entry requirements and exit times for new and emerging SMEs.

Removing unnecessary regulatory and policy barriers—such as long approval processes for products developed for human consumption and land use policies that restrict some agriculture-related businesses on land zoned for agriculture or restrict vertical agriculture on non-agriculturally zoned land—would help reduce the length of the runway to commercial viability. This would also support new and emerging SMEs through regulatory processes to increase the amount of new technologies reaching new markets from Canadian businesses.

Government should continue to build on the work of the Treasury Board's External Advisory Committee on Regulatory Competitiveness and Agriculture and Agri-food Canada's Sector Engagement Tables, ensuring that Canada's regulatory system is positioned for continual improvement and outcome-driven results. It is important to ensure that efforts are cross-sectoral and include representation from the aquatic food sector. Efforts are needed at all levels of government and across jurisdictions, to minimize interprovincial barriers.

2. Invest in infrastructure and applied research.

A national strategy for funding ag-tech should be developed, emphasizing investments in infrastructure and applied research. This strategy should support sustainable, value-added processes both on-farm and off-site and should include investment in strong agricultural advisory systems.

At the provincial level, focus should be placed on enhancing infrastructure at universities and colleges (e.g., facilities, equipment, and human resources) to sustain ag-tech research and development capabilities in a fast-changing, high-tech environment.

Incentive programs that increase access to capital and remove regulatory burdens will further drive investment in value-added opportunities. Provincial governments in Canada should continue exploring grants,[4] tax rebate programs,[5] as well as working with municipalities to support zoning policies[6] that will allow value-added businesses to thrive in Canada.

Federally, investments in ag-tech R&D infrastructure should align with those in other critical sectors, such as energy and automotive, to maintain Canada's competitive edge. Government could learn from successful examples in these sectors and create innovative applied research incentives through assessment of research impact, challenge-based prizes, and demonstration projects.

Resources for advancing applied ag-tech research are spread across Canada; however, they are unevenly distributed and are mostly concentrated in a handful of urban centres. Creating flexible, interdisciplinary, and applied training programs that cater to regional agri-food strengths will help reinforce the collective push to drive Canada's ag-tech innovation ecosystem forward.

Building on this, federal and provincial governments should rebuild and equip publicly-funded agricultural and rural advisory services. Beyond their role in supporting applied research and ag-tech development and adoption, providing regional context along with connections to a wide network of contacts, they also play an increasingly important role in strengthening biosecurity, cybersecurity, and combating misinformation in Canada's agri-food system.

3. Develop growth-oriented IP policy and training.

To protect and manage innovations, new policies supporting intellectual property (IP) and comprehensive training programs for students and business professionals are necessary. These measures will ensure effective IP management and facilitate the commercialization of new technologies, while instilling a wide range of competencies – from resiliency and design-thinking to financial planning and commercialization – among trainees.

In addition to supporting entrepreneurship training, governments must also ensure that their IP and patenting policies increase patenting activity and keep innovations (and innovators) in Canada. Further consideration and support is needed regarding the recently proposed "patent box" regime to offer tax breaks on revenues derived from Canadian IP.[7]

4. Enhance agri-food data policy.

Data governance is especially important in ag-tech, where adopters are often asked to expand their expertise in new areas where national standards and tools are not yet clearly defined. To overcome these obstacles, governments should support the FAIR principles for data management, which state that digital research outputs, including data sets, should be findable, accessible, interoperable and reusable for both people and machines.[8] National prioritization of FAIR principles will reduce risks for producers experimenting with new technologies and support ethical data governance.

Alongside IP policy and training supports, government should consider the importance of open-source technologies as a tool for advancing sustainable ag-tech more broadly and efficiently ensure that good ideas are scaled out and not siloed. A robust agri-food data policy must also ensure transparency in carbon measurement and accounting. This policy should include well-defined and standardized protocols to facilitate accurate and consistent data reporting.

5. Recruit future innovators to agri-food.

A national strategy is needed to attract and recruit emerging talents into the agri-food sector. By cultivating the next generation of innovators, Canada can maintain its leadership position in agricultural technology on the global stage. Securing Canada's leadership position in agricultural technology on the global stage must involve focusing not only on increasing the quantity, but also on the quality and diversity of the talent pool. This means actively promoting the inclusion of underrepresented groups.

To support and enhance these future innovators, provincial governments should work with academic institutions to highlight the relationships between social and environmental benefits and business growth. Increasing awareness of business cases for new technology through amplification and policy frameworks will increase adoption and create stronger pathways for those interested in pursuing ag-tech innovation.

6. Connect investors to agri-food.

To bridge the gap between innovation and commercialization, we recommend creating an ag-tech liaison office or network. This initiative would connect ag-tech SMEs with investors and markets, facilitating the commercialization of new technologies. Additionally, a liaison of this capacity would help to effectively measure the impact of research being carried out, thus allowing for review and adjustment to best align with challenges faced in society.

Conclusion

Canada has the potential to lead the world in ag-tech innovations, but we need to act now to realize this potential. What we need most is a coordinated effort from all sectors, all working together to set priorities and goals, and develop the programs, policy, human resources, and infrastructure that will accelerate Canada's agri-food innovation ecosystem.

> *To ensure Canada's leadership in agricultural technology, environmental sustainability, productivity, and food security, it is crucial to remove barriers, invest in critical infrastructure, and implement policies that support innovation and sustainability. By adopting these recommendations, federal and provincial governments can drive growth in the agri-food sector, reinforcing its role as a vital component of Canada's economy, environment, and society.*

For more information:

Feeding the Future with Canadian Technology Final Report

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UNIVERSITY OF THE FRASER VALLEY
FOOD AND AGRICULTURE INSTITUTE

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