

# FEEDING THE FUTURE WITH CANADIAN TECHNOLOGY

## Case Study Summary - Japan

Japan is highly regarded as a provider of high-quality agriculture products, but several factors threaten its agri-food system – a high dependence on food imports, climate change influences on production, and a labour shortage that is growing worse due to an aging workforce.

These challenges have led the Ministry of Agriculture, Forestry and Fisheries in Japan to investigate technology solutions – especially automation and sustainable intensification of crop production – as potential alternatives to support local agri-food production. This Ministry acts as a key broker between academia, the private sector and government in setting innovation agendas, while the country also benefits from high levels of private investment in research and from national agricultural research centres.

Key areas where Japan is investing significant support include smart agriculture, data interoperability, and controlled environment agriculture.

### ***Smart Agriculture***

Smart agriculture, or the on-farm application of digital technologies, is a priority for the Japanese government. Their Smart Agriculture Demonstration project began in 2019 and has been rolled out in over 200 contexts, with the goal of introducing technologies such as robotics and automation across a range of crops and agricultural systems, demonstrating the return on investment for farmers. Results are publicly accessible to farmers, and in the future, the demonstrations will be paired with strengthened extension services in the form of Smart Support Teams that connect early-adopter farmers with government and industry to facilitate adoption.

### ***Data Interoperability***

The Ministry of Agriculture, Forestry and Fisheries is also invested in leveraging agricultural data from smart farmers. The Agricultural Data Collaboration Platform (WAGRI) is a technical solution to issues of lack of data interoperability and lack of coordination across technology providers. It aggregates and analyzes data from many sources (weather, market predictions, soil data, etc) to provide farmers with recommendations such as fertilization, pest management, irrigation, planting, etc. This decision-support system seamlessly integrates high quality data from many sources, allowing farmers to make informed decisions.

### ***Controlled Environment Agriculture***

Japan is also a global leader in the development of vertical agriculture or controlled environment systems – referred to as “plant factories” in Japan. These technologies grow crops indoors at large scales - often using hydroponic, aeroponic or aquaponic sources of nutrients – and minimize land use while protecting crops from adverse weather. Japan has been supporting these technologies since 2010, with the creation of the Japan Plant Factory Association to support controlled environment systems in Japan. The approach has been successful, with over 380 plant factories in operation as of 2021.

## **Conclusion**

Many of the challenges that Japan faces in agriculture and food systems are similar in Canada. Our agri-food system must manage the impacts of a changing climate, labour force shortages, demonstrate the return on investment for farmers, and reduce carbon emissions from our food system. Lessons to be learned from Japan include:

- Technology demonstrations and communication of research results are an exciting opportunity for knowledge exchange with farmers that can help to de-risk innovations and encourage adoption.
- Data interoperability is an important issue, and Canada faces similar challenges with competing technology providers. Investment in a similar data infrastructure system could help to create a more fair and efficient data governance system.

## **Relevant Policies**

Smart Agriculture

Agricultural Data Collaboration Platform

For more information:

[Feeding the Future with Canadian Technology Final Report](#)

