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What's Inside?

This special edition of *FARE Share* takes a critical look at the coronavirus disease-2019 (COVID-19) impact on Canada's agriculture and food sectors through an economic lens one year into the pandemic. In our first COVID-19 Special Issue last spring, contributors made predictions in their respective areas of expertise. One year later, they're back with their findings. You'll find five summary articles in this edition of *FARE Share*. For the complete papers, scan this QR code:



COVID-19 & Canada's ag sector: one year into the pandemic

By: Alan Ker, Managing Editor, Canadian Journal of Agricultural Economics; OAC Research Chair in Agricultural Risk and Policy; Professor, FARE; Director, Institute for the Advanced Study of Food and Agricultural Policy; and Ryan Cardwell, Professor, Department of Agribusiness and Agricultural Economics, University of Manitoba

The COVID-19 pandemic continues to cause significant economic hardship and death throughout the world. While governments have many concerns, an affordable and secure food supply remains a top priority. Based on years of a consumer-driven food system, Canadians have come to expect any food when and where they want it at a reasonable cost. Although COVID-19 caused immediate and pronounced changes in market conditions, Canadians were still able to consume food in the form, time, and location desired (excluding full-service restaurants) at reasonable prices. While we view this, albeit unwanted, pandemic experiment as providing overwhelming empirical evidence of the resiliency and adaptability of the current global food system, calls for structural economic change persist.

With respect to Canada's agri-food system and COVID-19, federal and provincial governments moved quickly to ensure adequate farm labour supply, processing capacity, and consumer demand. Relatively constant consumer prices and only very short-lived stock-outs (which proved inconsequential given the vast number of substitutes) is strong empirical evidence for dealing with Black Swan events in real-time as they arise. It is also worth noting that early calls for new, and increased, government spending programs to support farm incomes seem to be unwarranted. The ad-hoc programs targeted at short-term obstacles faced by some producers were accessible through existing business risk management programs, and Canadian farm incomes in 2020 are expected to be the highest on record.

Continued on page 2



Contact:
Getu Hailu
Editor, FARE Share
ghailu@uoguelph.ca

The FARE Share Newsletter features research and analysis from faculty and students in the Institute for the Advanced Study of Food and Agricultural Policy in the Department of Food, Agricultural and Resource Economics (FARE).



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One year in

This special issue of *FARE Share* is an attempt to add content, from experts in their highly specialized area, to the discussions of many of the issues regarding COVID-19 and the Canadian agricultural and food sectors. The contributors weigh in on if and why their predictions from the pandemic onset materialized. In the pages ahead, you'll read about the effects of COVID-19 on Canadian food insecurity, food processing, the dairy, poultry and pork sectors, as well as business risk management (BRM) programs.

Summarizing the articles, key themes emerge: (i) the current agri-food system and its supply chains were resilient and adaptable; (ii) the non-thickening of borders to trade of agri-food products and labour enabled much of that resiliency; (iii) the Canadian government response to farm sector issues (i.e., labour) was financially prudent, targeted, and swift; (iv) COVID-19 exposed no vulnerabilities in the BRM programming despite significant calls to the contrary by the farm sector; (v) capital intensity will accelerate throughout the supply chain; (vi) consumers did not face significant price increases or food shortages; (vii) the farm sector as a whole was minimally affected and experienced a very strong year; and (viii) food insecurity is not tantamount to a failure of our food supply system and such arguments ignore the importance of household income as the most important determinant of food security.

Full article: Ker, A.P. and Cardwell, R., 2021. Introduction to the special issue on COVID-19 and the Canadian agriculture and food sectors: Thoughts one year into the pandemic. *Canadian Journal of Agricultural Economics* <https://doi.org/10.1111/cjag.12289>



Effects of COVID-19 on food security

By: B. James Deaton Jr., Professor and McCain Family Chair in Food Security, FARE and Brady J. Deaton, former Chancellor of the University of Missouri, Department of Agricultural Economics, University of Missouri

In March 2020, in the early stages of the pandemic, we addressed the following question: What are the likely effects of COVID-19 on Canadian food security? We distilled this broad question into two more focused components: (1) the likely effects of COVID-19 on the prevalence of food insecurity as measured by Statistics Canada over the next year; and (2) an assessment of whether COVID-19 would likely pose a short-term threat to an ample and reasonably priced food supply. At the time, both of these components were in question and speculation abounded, especially in the popular press. Dire warnings about the fundamental resilience of our food system were advanced, raising serious concern among researchers and policy makers. Accordingly, we sought to analyze the component parts of the general question about COVID-19's impacts on Canadian food security. We examined Canada's measure of food insecurity and its relation to household income, and, in addition we discussed the way in which present food price information reveals information about food scarcity in the near future.

Positive response

Our conclusion at this time is that our food system – which includes farm labourers, farmers, firms along the marketing supply chain (both domestic and international), institutions, and government action – successfully adapted to the awesome challenge of COVID-19 from the perspective of avoiding a rapid escalation of food prices. This success by no means diminishes the significant challenges to labour, health, and production that occurred over the last year. Nor does it mean that all areas in Canada experienced the issue similarly, and/or that all food prices were equally maintained. Nor, as discussed in our last *FARE Share* article (Issue #26), does the response to COVID-19 diminish the ongoing challenge to our food system to reduce food prices in remote food insecure communities. That said, our general assessment of the food system's response to COVID-19 is a positive one.

Despite this success, we provide evidence that food insecurity increased in the early months of

COVID-19 compared to results from 2017/18. Indeed, as discussed in our earlier article, we expected this result because of COVID-19's deleterious effect on employment and other factors critical to assuring economic access to food. Taken together, these observations highlight an important consideration: the success of our food supply system is a necessary, but not sufficient, condition for addressing food insecurity. The latter issue requires economic access to food which is, importantly, a function of income generation (as well as food prices). Hence, past and present concerns about food insecurity are not tantamount to a failure of our food supply system. The converse is also true: the success of our food supply system measured by its capacity to secure an ample supply of food at reasonable prices, while necessary and (in our opinion) critical, will not eliminate food insecurity in Canada.

Policy reform

Our observation is that the public can be confused by much of the rhetoric observed in popular discussion that conflates food insecurity with a failure of our food system. Indeed, our review of the last year suggests that the relative effectiveness of our food system's response to COVID-19 did not eliminate the threat of COVID-19 to food insecurity. We fear that some potential policy responses – e.g., protectionism and an orientation away from the international competitiveness of the food system (which supports jobs and low food prices) – potentially aggravates efforts to advance key drivers of the food supply system's success and its capacity to contribute to efforts to improve food security in Canada through low food prices and economic growth. That said, we recognize that policy reform is an evolving aspect of the food system, and issues like food security, environmental quality, and climate change will continue to be important components of our policy dialogue. Moving forward in response to COVID-19, food insecurity and other efforts, we suggest the need for specific measures of the end objectives, and the need for in-depth discussions of the pathways by which these objectives are expected to be achieved.

Full article: Deaton Jr., B.J. and Deaton, B.J., 2021. Food security and Canada's agricultural system challenged by COVID-19: One year later. *Canadian Journal of Agricultural Economics* <https://doi.org/10.1111/cjag.12275>



Food processing sector stability

By: *Getu Hailu, Professor, FARE and Associate Editor, Journal of Agribusiness in Developing & Emerging Economies*

At the outset of the COVID-19 pandemic, I provided economic thoughts on the likely effects of the virus on Canada's food processing sector. Now, I offer a descriptive assessment of the sector's actual performance.

My research finds that disruptions in the production activities for the food processing sector have not been as severe as those operating in the other manufacturing and service sectors. The food manufacturing sector has largely been insulated from the dire consequences of the pandemic observed in some non-essential sectors for a number of reasons. First, food is a necessity, as individuals need to eat to survive. Second, policies targeting the industry (e.g., deemed essential, change in packaging rules, open border, fiscal policy) enhanced the quick recovery of the food industry. Third, food and beverage processors with more capital- and knowledge-intensive production activities have seen fewer outbreaks.

Shift from foodservice to retail

However, the sector has seen considerable reallocation of resources from foodservice shipments to food retailers. This change as well as measures to contain COVID-19 are expected to increase adjustment costs to food processors. Costs associated with the reorganization of production lines include setup or shutdown costs incurred in adjusting workforce, equipment, and raw materials between production lines. Further, as the new production reorganization may not be maintained permanently post the pandemic, a continuous adjustment cost may occur when food processors gradually revert to the pre-pandemic operations. Meanwhile, job reallocation during the pandemic may lead to productivity-accelerating activities such as technological upgrades (e.g., automation), reorganizations, and skill training. To reduce the risk of firm failures, some firm managers may shift their attention from growth to efficiency gains through an increase in automation during the economic crisis, in particular, in the labour-intensive subsector. The overall effect of the actions taken by food processing firms depends on whether the restructuring of production activities is productivity-accelerating or productivity-decelerating.

The effects of the pandemic on the economic activities of the food processing sector are quite heterogeneous – varying across food processing subsectors or product categories. Yet, for those food processing plants that have been significantly affected, the impacts were mitigated quickly. This heterogeneity is visible in extensive popular media coverage about outbreaks in certain food processing subsectors. For example, there have been several major COVID-19 outbreaks with hundreds of workers testing positive for coronavirus in beef, pork, and poultry and other labour-intensive processing plants in Canada and elsewhere.

Stable supply and prices

Despite the widespread global shocks, food supply chains have demonstrated notable resilience as evidenced by the overall relatively steady supply of processed food and stable processed food prices, strong processed food exports and imports, limited cost-push inflation, and stronger food firms' stock market performance. Moving forward with recovery planning, the global nature of the outbreaks, however, underscores the importance of coordinated actions (e.g., maintaining open trade and equal access to the vaccine, supporting low- and low-middle-income countries) and targeted policy responses to mitigate tail events like the COVID-19 shocks.

In conclusion, one of the key lessons from food processing and related industries is that without being designated as an essential service and targeted stimulus packages, the food industry could have fallen victim to the COVID-19 crisis. Although the social and economic impacts of the interventions are not clear, being designated as an essential service was likely far more important to the food industry than the targeted stimulus packages.

As anticipated in Hailu (2020), the food processing sector has experienced significant reductions in sales to the foodservice and restaurant and a significant increase in shipments to food retailers. COVID-19 has also resulted in supply-side disruptions – as some processors temporarily halted production, operated at reduced capacity – with a negative impact on food supply chains, labour demand and supply, and employment. The effects are strongest in labour-intensive industries with high densities of workers though disruptions in food processing are not as severe as in non-essential businesses.

Overall, the food processing industry has proven to be relatively stable during the pandemic – food was processed and delivered to consumers, food price increases were minimal in most cases given the scale of the COVID-19 shock, and those food processors that closed or reduced their capacity did so temporarily for a limited number of days.

“Overall, the food processing industry has proven to be relatively stable during the pandemic.”

Moving forward, because COVID-19 is a global crisis, internationally targeted and coordinated efforts to tackle the virus could place the industry on a strong trajectory towards economic recovery and growth.



Dairy and poultry sectors quick to respond

By: Mike von Massow, Assoc. Professor, FARE and OAC Chair in Food Systems Leadership; Alfons Weersink, Professor, FARE; Brendan McDougall, Former Graduate Student; and Nick Bannon, Undergraduate Student, FARE

The impact of COVID-19 on the whole agri-food supply chain in Canada stems largely from the significant curtailment of hospitality services imposed by government restrictions and from the availability and health of labour, particularly for temporary foreign workers employed by the fruit and vegetable sector and for employees of large, meat packing facilities. The structure of the agri-food sector has evolved to provide food in the form desired by end users at the least cost, but the focus on efficiency has left the system with little reserve capacity. Thus, the shift in the form and nature of food demanded compounded by the temporary closure of processing facilities caused short-term disruptions as highlighted by events such as the dumping of milk. But the specialization and efficiency focus of the food supply chains associated with the initial disruptions may have also been responsible for its rapid rebound.

This article looks back at the impacts of the COVID-19 pandemic on the Canadian dairy and poultry sectors and assesses the longer-term implications for these sectors. The initial impacts on these two sectors were less than others due to the stability and coordination provided by the supply management marketing systems. As with most commodities, dairy and poultry quickly rebounded to market conditions typically observed prior to COVID-19. The article discusses the transitions that have occurred along the channels for dairy and poultry. In addition, it compares the impacts to these sectors in the United States to assess differences in adjusting to COVID-19 with and without supply management.

Retail level

The decline in foodservice expenditure affected demand for food at the retail level. As discussed in last year's *FARE Share* article (Issue #26), there were short-term shortages of several products in the immediate aftermath of the initial lockdown in March 2020 due to a combination of disruptions in the supply chain, demand shifts among food items (e.g., more butter for baking), and hoarding behaviour. These periods of shortages were quickly resolved but there have been shifts in consumption patterns for dairy and poultry products that have required adjustments for the associated supply chains.

Processor level

Dairy and poultry processors have weathered the direct effects of the pandemic on worker availability relatively well. While there were some outbreaks in processing plants, the problems were less significant than those experienced by the red meat processing sectors. The lack of significant outbreaks reported by dairy processors in Canada is likely due to greater automation and lower worker densities in these plants. Some processors have reported challenges with increased absenteeism due to concerns about infection, but this is not universal as others have not noticed any change. There were increased costs due to the pandemic with process changes happening in plants and the provision of PPE to staff.

Farm level

The dumping of milk and disposal of eggs that occurred during the initial lockdown period in 2020 was one of the high-profile events that gave rise to concerns surrounding the resiliency of the agri-food supply chain. The sudden and dramatic shift in consumption from the hospitality to the food retail sector required processors and distributors to adjust the volume and nature of their product lines.

Comparison to U.S.

COVID-19's timeline and the policy responses over the last year in Canada and the United States are similar. The hospitality sector was shuttered for extended periods resulting in comparable changes in the volume and form of dairy and poultry products demanded by consumers. While the changes downstream in the supply chain are similar between the two countries, there are differences in the impacts on farms and processors due to the supply-managed marketing system for dairy and poultry in Canada.

In conclusion, the dairy and poultry sectors responded quickly to the initial adjustments in the quantity and nature of food products forced by hospitality sector closures and the subsequent switch to buying food from grocery stores. In addition, these sectors were less affected by the labour availability and health issues from COVID-19 that plagued others, such as red meat processors. While the overall impacts were less than most other parts of the agri-food system, some elements of supply managed products, particularly poultry processors, have experienced a reduction in returns and are still adjusting to the new demand and supply situation. The extent of the impact is correlated with the degree to which the supply chain further upstream was connected to the downstream hospitality sector.

Rather than the minor adjustments and volatility related to COVID-19, the more significant longer-term impacts on these sectors moving forward are likely associated with trade agreements and consumer concerns about production processes. The Canada-United States-Mexico Agreement (CUSMA), the Comprehensive and Progressive Trans-Pacific Partnership (CPTPP), and the Canada-EU Comprehensive and Economic Trade Agreement (CETA) implemented in 2020, 2018 and 2017 respectively, allow for greater imports of dairy and poultry products into Canada. The "Buttergate" affair in the winter of 2021 stemming from concerns about the spreadability of butter and linkage to the use of palm products to dairy cows highlighted the growing interest by consumers in how their food is grown and the increasing role of social media in determining consumption choices.



Canadian swine sector resilience

By: Ken McEwan, Campus Professor; Lynn Marchand and Max Shang, Research Associates; University of Guelph, Ridgetown Campus

COVID-19 continues to cause tremendous upheaval in the world in terms of human health, market uncertainty, higher levels of unemployment, and restricting the movement of people. While many non-agricultural firms were mandated to close at times, the pork supply chain in Canada was deemed an essential service and allowed to continue operating throughout the pandemic.

This article describes the resiliency and adjustments made within the Canadian pork sector because of COVID-19 and poses questions for the future. It is an update to McEwan et al. (2020), which correctly identified the critical challenges for the industry as keeping the Canada/U.S. border open for trade, maintaining global exports, and labour shortages causing temporary processing plant closures. The focus of this paper is on the resilience of the pork supply chain to overcome these challenges.

Evidence of this resiliency is seen in three main ways. Firstly, market access to the U.S. was maintained for both live pigs and pork exports. Secondly, Canada not only maintained market share in global pork exports, it actually increased shipments because of strong demand from China caused by African Swine Fever. Thirdly, the challenges of processing plant closures and labour shortages were overcome in a variety of ways including increasing interprovincial shipments and increasing live pig exports to the U.S. Pork consumption on a per capita basis continued the historical downward trend and it is expected that consumers will return to their normal consumption patterns (e.g., dining at restaurants) despite job losses. At the meat processing level, it is anticipated that there will be an acceleration in the process to automate.

Flexibility ensures continuation

The Canadian swine sector displayed flexibility, resiliency and adjusted to the critical challenges posed by COVID-19 to ensure industry continuation. The supply chain shared information between stakeholders to adjust to provincial, national and international marketing challenges caused by the pandemic in order to meet shifting market demand. This resiliency was exhibited by keeping the Canada/U.S. border open for trade, maintaining global market shares, and overcoming labour challenges.

“The Canadian swine sector displayed flexibility, resiliency and adjusted to the critical challenges posed by COVID-19 to ensure industry continuation.”

However, there were some difficulties experienced in the pork supply chain that can be directly attributed to the challenges arising from COVID-19. These adversities included lower producer prices, labour shortages causing temporary processing plant closures, and strict export protocols from China. Still, the Canadian supply chain adapted quickly and worked together to prevent animal flow bottlenecks by moving pigs across Canada and to the U.S.

Questions for the future

The question remains as to what the new ‘normal’ will be once businesses, including full-service restaurants, return. By then the volume and demand for meat may be altered permanently or at least become slow to adjust to income effects associated with job losses. In addition, it is expected the process of automation will likely accelerate throughout the supply chain but mainly at the processor level. The implementation of labour-saving technology (e.g., meat sorters, offal removers, loin removers, etc.) will be spurred by the costs associated with having to slow down line speeds, shut individual plants, have longer breaks between line shifts, increased cleaning costs, and lost market opportunities. Robotics that use central control technology (i.e., cameras, flow monitors, etc.) offer the greatest potential to limit virus spread between employees while maintaining plant efficiencies and ensuring a consistent, safe product.

“The question remains as to what the new ‘normal’ will be once businesses, including full-service restaurants, return.”

Further, despite public interest in smaller processing plants to reduce employee concentration in one location and lower COVID-19 transmission, this approach seems problematic given Canada’s heavy dependency on foreign markets and the need for the pork to be federally inspected. North American processing plants are driven by economies of scale and typically run at line speeds of 1,000 hogs per hour or more with several operating 16 hours per day. Also, it is unclear how small provincial plants would reduce the transmission of the virus that causes COVID-19 since workers would still be in close proximity to each other even though there are fewer of them. Still, reinvesting in provincial plants to supply local demand does seem reasonable. The historical imbalance between Canadian pig production and slaughter capacity continues, but it is unlikely to be resolved with many small provincial processing plants.



Risk management program review

By: Alan Ker, Managing Editor, *Canadian Journal of Agricultural Economics*; OAC Research Chair in Agricultural Risk and Policy; Professor, FARE; Director, Institute for the Advanced Study of Food and Agricultural Policy; and Scott Biden, Senior Research Associate, FARE

The unexpected introduction and spread of COVID-19 has presented significant risks for every aspect of Canadian society, including the food and agricultural sector. The suite of Business Risk Management (BRM) programs, developed decades ago and without any thought to the possibility of a global pandemic, are meant to assist farmers in managing risks. This article discusses to what extent these BRM programs, and more broadly government programs, assisted farmers in managing risks brought on by the pandemic.

Calls for financial aid

The COVID-19 pandemic presented many uncertainties for farmers: farmer sickness; farm labour and specifically the supply of out-of-country seasonal farm workers; delivery of inputs (seed, fertilizer, chicks, etc.); planting and harvesting; transportation of livestock and crops; temporary or extended closure of processing and packing facilities; border thickening or closures; exchange rate volatility; and, finally, changes in consumer demand. In response, there were a multitude of calls by industry for significant public financial aid. For example, the Canadian Federation of Agriculture asked the federal government to provide \$2.6 billion in response to COVID-19 as a *first phase* of support and above any existing programs. Similarly, Grain Farmers of Ontario ran ads stating, “the food supply chain is breaking,” “prices are unstable and collapsing,” “facing another dreadful year,” and “will Canada lose its farms?”

Such calls suggest that farmers believed the existing suite of BRM programs would fall far short of providing sufficient risk mitigation during COVID-19. However, from a farm sector perspective the following came to be during 2020: (i) AgriInvest farm savings accounts increased to over \$2.4 billion; (ii) participation in AgriStability decreased by 4% despite sign-up being extended from April to July; (iii) farm income is projected to increase by 22%; and (iv) household farm income is projected to increase by 9%. Note, as a backdrop to these numbers, the ratio of both farm to non-farm household income and farm to non-farm household wealth has been steadily increasing over the past three

decades and is roughly 2 and 4, respectively. That is, the farm sector is certainly in a far better position than the general public to self-insure and financially absorb income downfalls caused by COVID-19 as opposed to requiring additional financial support from the public. Churchill’s quote of “never let a good crisis go to waste” appears to be the *modus operandi* for Canadian farms with respect to lobbying efforts for more public funds.

No significant gaps

Despite calls by industry for significant additional public funds, we find that COVID-19 exposed no significant gaps in BRM programming and therefore we see no reason for more funding to be funnelled to the farm sector through BRM programming. Moreover, BRM programs have not hindered the competitive position of Canadian farmers. A cursory look at agricultural trade numbers clearly suggests that Canadian farmers are competitive internationally in almost all products; Canada continually exports in excess of 50% of the agricultural products produced. This has become even more true during COVID-19.

Furthermore, farm households have significantly greater income than non-farm households and four times greater assets. Simply put, it is very difficult to make an argument for greater funds to be added to BRM programming. Finally, as noted in Ker (2020), we still suggest that introducing additional BRM programs to deal with Black Swan events like COVID-19, *a priori*, are generally not efficient and almost always miss the mark. Governments are more efficient, as Black Swan events cannot be predicted as to their specific form nor their timing, to react *ex-post* as they arise with targeted policies (i.e., such as those dealing with temporary foreign worker problems).

Moreover, the cost associated with preparing for Black Swan events can be very pronounced, quite distortionary, often miss their mark, and reduce efficient allocation of resources during normal times.

Full article: Ker, A.P. and Biden, S., 2021. Risk management in Canada’s agricultural sector in light of COVID-19: Considerations one year later. *Canadian Journal of Agricultural Economics* <https://doi.org/10.1111/cjag.12287>



Food, Agricultural
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Economics



Food
Agriculture
Communities
Environment

University of Guelph
Department of Food, Agricultural
and Resource Economics (FARE)
J.D. MacLachlan Building
Guelph, Ontario, Canada N1G 2W1
Telephone: 519-824-4120 x53625

<https://www.uoguelph.ca/fare/>