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Diverse adaptation strategies helped local food producers cope with initial challenges of the Covid-19 pandemic: Lessons from Québec, Canada

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ABSTRACT

The Covid-19 pandemic has demonstrated the vulnerability of food systems to disturbances. Advocates have promoted short food supply chains as more resilient and adaptable thanks to their embeddedness in local economic and ecological networks. As part of a broader case study on challenges facing farmers in local food supply chains in Québec, Canada, we asked farmers about the pandemic’s impacts on food production and marketing in the province, including how food producers coped with these challenges. We sent an online questionnaire to 1,046 farmers who distribute food through direct marketing in Québec, identified through consumer-facing online platforms. We conducted follow-up interviews with 15 of the 133 farmers that completed the questionnaire to gain a better understanding of their pandemic-related challenges and opportunities, as well as their adaptation needs and strategies. We identified four main types of challenges among farmers: workforce shortages, balancing food demand and supply, changes in sales outlets and marketing channels, and other operational and development issues. In turn, six key adaptation strategies helped farmers reorganize their marketing and sales, which we categorize as: redistribution, streamlining, replacement, collaboration, farm adjustment, and outlet adjustment. Most surveyed local farmers felt well-prepared to adapt to the four major challenges that the Covid-19 pandemic forged or escalated, and our findings suggest that they demonstrated remarkable resilience to additional challenges posed by the pandemic. Our study therefore contributes important insights about how flexibility and redundancy among local farmers stabilized the local food system during the onset of a global pandemic.

1. Introduction

The onset of the Covid-19 pandemic and associated public health measures unveiled weaknesses and strengths in our food supply chains. Globally, nearly all food production sectors and operation sizes felt the impacts of public safety measures, including the milk and dairy industry (Wang et al., 2020), small-scale fisheries (Bennett et al., 2020), fruit and vegetable growers (Campbell and McAvoy, 2020), and family farms (Cavalli et al., 2020; de la Peña García et al., 2020). In between food security and livelihood concerns, paradoxical situations emerged, especially in agricultural sectors that relied heavily on high-volume foodservice markets like tourism and institutions (Campbell and McAvoy, 2020; Wang et al., 2020). For instance, 70–80% of fruits and vegetables from the largest producers in Florida are sold to the foodservice sector, so farmers responded to closures and lack of demand by terminating fields or dumping produce during the peak season (Campbell and McAvoy, 2020).

Initial studies and reports on how the pandemic impacted food systems suggest that numerous coping strategies at the local scale helped to address some of the most pressing issues. For example, online markets were used in Ohio, United States and in the Canadian North to ensure the continuation of local food sales (Radcliffe et al., 2021; Raison and Jones, 2020). Community Supported Agriculture (CSA), a popular management system in local food systems built on direct marketing relationships between food consumers and producers, has seen a surge in demand over the pandemic (Westervelt, 2020). In response to the breakdown of the tourism industry in Florida, many producers used social media to distribute food through alternative, local food networks, while new partnerships between packing houses and farmers helped to facilitate direct sales opportunities (Campbell and McAvoy, 2020). Organizations and farmers in the US and Europe built new connections between food insecure urban consumers and local producers and processors, donating surpluses to food banks, healthcare centers, and churches instead of dumping the food (Campbell and McAvoy, 2020;
The Covid-19 pandemic has bolstered the interest in and awareness for “eating local” (Zollet et al., 2021), picking up a trend that has grown in North America over the past decades (Thilmany et al., 2021). The literature around local food and direct marketing has emphasized their capacity to build resilience to shocks, largely due to their dependence on relationships rather than on physical infrastructure (Clapp, 2017; Darnhofer et al., 2016; Vieira et al., 2018). Food systems that create and foster more direct interactions between food producers and consumers are often described as more sustainable and resilient to shocks due to their ability to draw on nearby social support actors and local resources (Chiffoleau and Dourian, 2020; Yacamí Ochoa et al., 2019). Blattel-Mink et al. (2017) argue that the resilience of CSA springs from the intentional distancing from competitive and volatile global commodity markets. Going further, resilience within food systems is relational and dynamic, rather than a stable state (Darnhofer, 2021; Darnhofer et al., 2016). A resilient food system must balance the ability to be efficient in the current context with the ability to re-organize, and to adapt in response to unforeseen (or unforeseeable) change (Schipanski et al., 2016; Tendall et al., 2015). While food systems literature has begun to engage with how to build adaptive capacity to climate change (Soubry et al., 2020; Soubry and Sherren, 2022), there remains a gap in understanding how local food systems respond to more sudden crises.

In the Canadian province of Quebec, local food initiatives have steadily expanded over the last few decades, manifesting in food origin labels, markets, agritourism, and sales initiatives. But how have local farmers coped and adapted with the challenges brought on by the Covid-19 pandemic? In this study, which is part of a broader case study of challenges that farmers face and their capacity to cope, we surveyed farmers who sell through short and direct food supply chains (“local farmers”) in the province of Quebec to understand their coping and adaptation strategies at the onset of the pandemic. Using a mixed-methods approach, we found that local farmers encountered new challenges related to farm production and marketing due to public safety measures or faced the compounding of previous pre-pandemic problems regarding workforce. Respondents indicated the use of various adaptation mechanisms and strategies to cope with new challenges arising during the early part of the pandemic. Our findings suggest that flexibility and redundancy among local farmers stabilized the local food system during the onset of a global pandemic, and that government measures to address recovery had unintended impacts on farmers’ capacity to adapt. These results largely corroborate existing theory around food systems and resilience, but also contribute to a new avenue of inquiry regarding how certain high-level responses can compound challenges for local producers.

2. Methods

We employed a mixed-methods approach, combining an online questionnaire with semi-structured follow-up interviews with local farmers conducted via video or phone calls. Responses were collected from mid-February to mid-April 2021. We intended to capture the perspectives of farmers in Quebec that already participated in direct marketing. We sent the questionnaire in French and English via e-mail to 1,046 business addresses collected from online marketing databases intended to help consumers connect with local farmers from key producer organizations: two smaller organizations and grassroots farmer cooperative networks representing organic family farmers (Coopérative pour l’Agriculture de Proximité Écologique which manages the Le Réseau des Fermiers [ères de famille], as well as Mangeons Local, which is managed by the Union des Producteurs Agricoles [UPA] and Manges Québec, initiated by the Association des Producteurs Marcheurs du Québec [APMQ]. In addition, the UPA communications team posted a link to the questionnaire on their social media platforms. We received 133 full questionnaire submissions as of April 2021 (12% response rate). The survey was hosted on ‘LimeSurvey’, and we used spreadsheets to clean and organize the results.

The semi-standardized questionnaire combined short open-ended questions, multiple choice questions, and Likert-style responses. Those questions were part of a larger questionnaire about farmer challenges, resources, and support systems which can be found in the Supplementary Information (SI), Appendix A. Initial questions asked about farmer demographics and farm characteristics (e.g., municipality in which the farm is located, farmer age, farmer gender, year of farm establishment, production methods, distribution outlets and geography). The main emphasis of questions related to challenges faced by farmers in terms of food production and distribution, which were asked separately for two time periods ‘pre-pandemic’ (2017–2019) and ‘during the pandemic’ (from March 2020). We also asked whether the local farmers changed their distribution strategy due to the pandemic and how well they felt prepared for the challenges they encountered in the pre-pandemic and pandemic season. Each standardized response option provided a comment box where respondents could explain or elaborate on their responses.

At the end of the questionnaire, respondents were invited to participate in a follow-up interview in French or English, conducted by the first author. 15 respondents were interviewed. The interviews’ objective was to understand how local farmers responded to the challenges they encountered and how they perceive the future of their farm and local food supply chains. Farmers were asked about each challenge they selected in the questionnaire (and, where applicable, elaborated on), the impact it had on their operation, and the strategies they applied to overcome this challenge (SI, Appendix B). This set of questions was repeated for each challenge from the questionnaire. The interviews lasted between 25 and 75 minutes and were recorded after interviewees consented. The interview recordings were fully transcribed and coded with the data management software MAXQDA. We applied inductive coding to capture the challenges and adaptation strategies in the interviews and conducted thematic analysis on the coded interview transcriptions and the responses to the open-ended questions in the questionnaire. Codes that emerged from the analysis revolved around workforce challenges, changes in food demand, sales outlets, and sales procedures, as well as other challenges.

3. Results

3.1. Respondent demographics

The majority of farms were located in municipalities in Southern Québec along the Saint-Lawrence River (Fig. 1) and had, on average, 112 ha of cultivated area (SI, Appendix C). 82% of our survey respondents and 80% of the interviewees were between 30 and 64 years old, which is below the average age of farmers in Québec (SI, Appendix D). In the survey, 42% of the respondents identified as female (57% as male), which differs from the gender balance among farmers in Québec (29% female, 71% male; Statistics Canada, 2021). Of our 15 interviewees, four identified as female and eleven as male (SI, Appendix E). Half of the survey respondents (57%) grew or produced more than five types of food, while 42% specialized in five or fewer crops. Among the 15 interviewees, nine produced more than five types of food and the rest grew less than five. Farms with lower crop diversity mainly focused on cranberries, blueberries and other kinds of berries, or meat, eggs, ground cherries and squash (SI, Appendices F-G).

Farmers in our study mainly marketed their produce in the province. Besides the local market, 16% of survey respondents and one interviewee sold their products and produce to other Canadian provinces, while 8% of survey respondents marketed food to the US and 2% internationally (one of the interviewed farmers sold to either destination). Before Covid-19, the most commonly used sale outlets among survey respondents were farm stores (62%), independent grocery stores (44%), restaurants (42%), and public and farmers markets (41%). We interviewed farmers who run the farm as their main business, those that
undertake the farm as a side-business, and others who view the farm as a hobby.

3.2. Overview of impacts of the Covid-19 pandemic on local farmers

Our survey showed that the number of farmers dealing with workforce, marketing, and logistics related challenges increased during the pandemic while financial concerns decreased (Table 1). Although the restrictions posed new and reinforced existing challenges for farmers, environmental conditions (e.g., variable precipitation, hot weather, and pest infestations) remained overall the most common concern.

From our interviews and the numerical as well as open answer boxes in the questionnaire, we identified four major impact areas: (1) workforce challenges, (2) food supply and demand variability, (3) challenges concerning the distribution strategy and marketing channels, and (4) other operational and development issues (see Table 2). Farmers also reported various coping and adaptation measures in response to these main impact fields. In the following sections, we outline in more detail each of these four main impact fields, including specific challenges and adaptation strategies of local farmers in Quebec during the first year of the Covid-19 pandemic. We then provide an overview of how farmers perceived their preparedness to address challenges, both before and after the onset of the pandemic.

3.2.1. Workforce

Most participants said that the pandemic impacted their capacity to

Table 1

| Challenge                     | Examples            | Pre Covid-19 | Covid-19 | Change |
|-------------------------------|---------------------|--------------|----------|--------|
| Workforce                     | Farm labour, health and safety | 43%          | 56%      | +13    |
| Sales & marketing             | Unpredictable demand, facilities | 38%          | 50%      | +12    |
| Logistics                     | Vehicles, transportation | 17%          | 26%      | +9     |
| Customer relationships        | Interactions, trust, help | 25%          | 33%      | +8     |
| Technical                     | Equipment, supplies | 30%          | 31%      | +1     |
| Environmental                 | Weather/climate, soils, pests | 68%          | 65%      | −3     |
| Financial                     | Costs, insurance, investments | 45%          | 38%      | −7     |

Table 2

| Impact field              | Challenges | Adaptation strategies                      |
|---------------------------|------------|-------------------------------------------|
| Workforce                 | Acquisition and retention of farm labour | Help by volunteers, family members, and friends |
| Food supply and demand    | Changes in demand for specific commodities (including increase, decrease or variability) | Increase of production capacity; change of distribution strategy |
| Distribution strategy and marketing channels | Temporary and permanent closure of sales outlets; safety concerns for customers, farmers, and farm workers | Focus on, add or pause sales at marketing outlets; implementation of safety measures |
| Other operational and development issues | Developmental barriers of business or sector; resource shortages; new expenses | Virtual meetings; passing projects; better planning; higher prices |
find farm workers, both due to entrenched systemic difficulties and government responses to the health crisis. This challenge was often addressed through temporary help from family members and friends. In contrast, few farmers, primarily those participating in CSAs, reported that they received more offer of support than needed due to more time that volunteers could dedicate to farm work.

A total of 56% of survey respondents and 13 interviewees indicated that they had problems with getting farm workers. Although a lack of workforce is not uncommon and existed prior to the pandemic, many local farmers explained in the questionnaire and interviews that the reasons for a shortage in farm workers were more varied as a result of the pandemic. Travel restrictions were put in place in March 2020 to limit the risk of virus transmission, which coincided with the start of the growing season for vegetables and fruits in Québec. Local farmers therefore dealt with uncertainty around whether, when, and how temporary foreign workers (TFW) could enter Canada at a key time. The Ministry of Agriculture and Fisheries Québec (MAPAQ) and Immigration, Refugees and Citizenship Canada (IRCC) announced that TFW were considered essential workers and allowed to enter and work in Canada after a 2-week quarantine (CBC, 2020 Mar 18). Even once TFW were in Canada, one farmer explained, rapid turnover led to a workforce shortage during the peak season and a surplus during the lean season. Three farmers compensated temporary workforce gaps by hiring locals, which, as they explained, was often not an adequate replacement due to the lack of training. A local farmer who did not manage to fill the gap sufficiently reported the loss of several ten thousand pounds of high-value vegetables that could not be harvested. Some farmers also had to replace their usual international volunteers, so called “Wwoofers” (from “World Wide Opportunities on Organic Farms”), due to international travel restrictions.

Counterintuitively, an unemployment benefit had unintended negative side-effects for some local farmers. The Canadian Emergency Response Benefit (CERB) was implemented by the Canadian federal government in April 2020 and paid $2000 CAD for four weeks to every Canadian that lost their employment due to Covid-19, and particularly intended to support employees in the hard-hit entertainment and hospitality sectors. A relatively small share of our respondents (6 survey respondents and 3 interviewees) reported that the CERB made temporary farm jobs unappealing or unnecessary for people who, besides their farm job, were employed as part-time workers in other sectors. As people were laid off from their part-time jobs and received the CERB, the motivation to continue working in the often less well-paid and physically strenuous jobs on the farm declined. One farmer explained:

“I made job offers, but several wanted to stay on CERB. They would tell me, ‘I want to work, but not longer than 3pm because I don’t want to give up my CERB.’ It is impossible in an orchard. In the high season I needed people” [I-02].

In one case, a worker had to quit their farm job when schools and daycare centers closed temporarily to take over childcare responsibilities. One farmer who relied on the help of students during spring and fall could not fill the positions due to schedule mismatches. Some farmers also addressed the lack of workforce by changing their distribution approach. For instance, one farmer explained that they reduced their sales at farmers markets and focused on their U-Pick operation in order to balance the lack of farm workers during the season.

However, not all farmers reported negative consequences with regard to their workforce. According to one farmer, there was newfound interest in participating in farm labour:

“Because a lot of people weren’t working during Covid, there was a booming interest in working on farms. People who may be otherwise be in the city, working in restaurants or something. We felt like we had a really good quality of employees and people who were interested in working with us. And that was a big boon for us in our first year on the farm. There was a lot of support. Having these positively engaged employees was great. It was interesting because there were a lot of stories in the news about the temporary farm workers and challenges for people finding and getting their labour force. But because we hired local people, it wasn’t the same challenge for us. It was also a nice opportunity for us to be able to explain that sort of thing to customers and talk a little bit about how things work on small farms” [I-14].

3.2.2. Food supply and demand

The impacts on food quantity and demand varied considerably. While many farmers reported massive increases in demand, others, especially those producing niche products, experienced a drop in sales due to the lack of direct connection with customers at markets and other in-person events that were cancelled. Half of our survey respondents (50%) mentioned that the pandemic had no negative impact on food sales. Some local farmers experienced a spike in demand early in the season, although one farmer explained that the heightened demand was short-lived and only lasted until mid-summer, when many customers were able to harvest fruits and vegetables from their home gardens. In this case, the demand surpassed the supply in the beginning of the vegetable and fruit season and ebbed off towards the end of the season. One way to cater to high demands was to increase the production capacity, lower or fluctuating demands were often addressed by changing the distribution and marketing strategy (i.e., switch to different sales outlets).

Some farmers experienced a demand above that of previous years throughout the entire season. For instance, one CSA farmer explained that the number of subscriptions at each of the delivery points more than doubled. Although the 2021 growing season was not part of our study, several local farmers emphasized that the high demand in 2020 appeared to be carried over to the next growing season. A CSA farmer mentioned that, at the time of the interview in early March 2021, most of the capacity at several drop-off locations was already reached for the season. Another farmer highlighted that the retention rate of customers buying vegetable baskets from his farm was at around 75%, which they considered high. Several respondents linked the spike in demand with the consumers’ concern about a potential lack of access to fresh vegetables due to import restrictions, since countries that export fresh food to Canada may have terminated shipments to ensure food security in their own countries. Farmers considered an increase in food demand as both an opportunity and a challenge, which often required some adaptation (see 3.2.3 Changes in distribution strategy and marketing channels). For instance, sudden spikes in demand posed logistical and planning challenges (e.g., temporal disaggregation of pick-ups). Some respondents also mentioned an insufficient capacity to meet the customers’ demands for local food and the pressure to take advantage of this demand. One farmer highlighted the fear of negative effects on their well-being:

“We have seen an enormous demand for local food since Covid hit last spring. We are in a good place to be able to ramp up production so we will this year. But I fear growing too much and too fast and burning out.” [Q-95]

A few farmers also dealt with lower demands due to a lack of consumer interest or the inability to interact directly with consumers which many niche products require. Finally, temporary restrictions that disrupted inter-regional travel within Québec were responsible for sudden sales losses among farms participating in agritourism or with roadside stands. For example, an apple producer with customers from Montréal explained that, when the city became a ‘red zone’ (with travel restrictions to and from the designated region), residents from this zone were not allowed to leave or enter the zone for non-essential purposes.

3.2.3. Changes in sales outlets and marketing channels

The temporary or permanent closure of outlets as well as strict public safety measures forced many producers to adapt. A total of 40% of the survey respondents changed their distribution strategy due to the
pandemic (Fig. 2). The adaptation measures ranged from streamlining and adjusting existing outlets to adding or setting up new sales outlets, including online shops. In parts of the US, sudden closures of entire sectors and the lack of adaptation capacity forced farmers to plow under entire fields of produce, leading to food loss (Yaffe-Bellany and Corkery, 2020). None of the surveyed and interviewed farmers reported food losses due to outlet closures (although one farmer experienced produce losses due to the lack of workforce to harvest). This outcome may have been avoided due to flexible and adaptable food distribution systems in which each producer adapted according to their capacity and consumer demands. Based on the themes emerging from interviews and the questionnaire, we grouped farmer adaptations related to distribution into 6 strategies: redistribution, streamlining, replacement, collaboration, farm adjustment, and outlet adjustment (Fig. 3).

The surveyed farmers responded to planning uncertainties in different ways, for instance, by redistributing food dedicated to restaurants to other outlets. Others decided to abandon outlets that they previously sold to in order to focus on the distribution of subscription vegetable baskets. One farmer explained that they set up a collaboration with other producers:

“At the start of the pandemic the shops took very few cheeses from us, and we did not know if the farmers’ markets were going to open, so we created a home basket delivery service with other producers” [Q-152].

In one case, the increased demand combined with changes in sales outlets posed a challenge for a farmer due to diverging expectations in terms of supply and capacity between producers, retailers, and end customers:

“Merchants don’t understand the business model “small sustainable farming”. We can’t adapt as quickly as multinationals. We had to adjust within 2 weeks, which is difficult. […] Everyone made orders at the same time, and now I had to be like a Walmart with stock for when they deign to want products” [Q-40].

The closure of important institutional buyers led one farmer to change their crop plan to respond to new customers:

“It also meant that we had to change our crop plan part way through because, you know, there are things that we had planned. For example, for the workplace kitchen that weren’t necessarily the same things that we would grow for a CSA. There was just a need to adapt our production” [I-14].

Agritourism is a vital part of many local food businesses. While some farmers completely shut down this branch of their business, others adjusted to the safety restrictions. One farmer responded to restaurant closures by offering picnic baskets that attracted tourists to the farm.

In cases when respondents reported not changing their distribution strategy due to the pandemic (60%; n = 78), farmers mostly only adjusted their existing ways of marketing (e.g., implementation of pick-up schedules and social distancing measures). One farmer explained that they built an additional kiosk to avoid crowding of people on his farm. Farmers that did not change their strategy often mentioned that they benefited from an increase in demand for their food and focused on meeting this demand by streamlining their operations to benefit from more efficient processes. Some farmers, especially those using a CSA model, could continue their operation similarly to pre-pandemic conditions or augment production to serve more customers. Some farmers described that they did not have to change their distribution strategy since their outlets were not affected by the public safety measures or that they were considered essential business and did not experience a disruption.

In total, 14% of respondents (which accounts for about one-third of those that changed their marketing strategy in 2020), used an online store to adapt to Covid-19 related challenges, a doubling compared to the pre-Covid time. Information and Communications Technology (ICT) solutions enabled contactless deliveries and were a widespread tool to facilitate communication (Garcia et al., 2020; Mittal and Grimm, 2020; Thilmany et al., 2021). Some local farmers complemented their online sales with a delivery service or a self-service station. One farmer participated in a ‘virtual farmers market’ that allowed consumers to order from several local producers online and to pick up products or get them delivered. For many farmers that were new to online marketing, the transition from offline to online sales required additional effort, time, and costs. An unstable and expensive internet connection in rural areas and home schooling limited the opportunity to build online shops quickly in some cases. Especially the emergency and pace at which this distribution system had to be implemented was challenging for farmers.

For local farmers that produce and sell specialty products in our study, moving sales online was often not an appropriate alternative for in-person marketing. While some local farmers responded to this challenge by focusing on their existing customers, finding new customers is an essential step for young farming enterprises, especially with high-value products or farmers operating in niche markets that require a lot of explanation and communication. For those farms, the physical disconnection from their (potential) customers exasperated the struggles that are common to new farms:

“It is not easy to be an emergent farm in an emergent field. We must simultaneously advance a sector, educate the public, develop the land… Before COVID, we had already adjusted our business plan in order to”
develop our field of action. As COVID arrived, it destroyed the work that was already done ... back to square one, we [had to] revise the business plan” [Q-40].

In cases where direct interaction was possible, local farmers protected themselves and their customers from potential infections by investing time and money into safety strategies and equipment (e.g., sinks, sanitizers, masks, additional scales). Other adaptation strategies, such as the implementation of a U-pick system with reserved timeslots, setting up additional kiosks, and providing longer opening hours, helped to decrease the amount of people present at the farm at any time while continuing the farming business. Finally, complying to public safety measures was not only crucial in terms of reducing the risk for farmers and customers to transmit Covid-19 but also, as one farmer explained, to show responsibility to authorities that distribute farmer and public market licenses, such as the municipal/town government:

“We wanted to be the safest possible for [the customers] and also for the city. Because we have a special authorization to put the kiosk up in this beautiful spot in town. Not all people are allowed to do that there. To be allowed to do that, we really wanted to be on top” [I-12].

3.2.4. Other operational and development issues

Finally, minor issues also arose with regard to a lack of access to resources, such as seeds and feed, and the ability to develop the farming operation or advance sectoral associations. Operational adjustments helped farmers to cope with the often uncertain and quickly changing circumstances. Local farmers in our sample found it difficult to adapt to the sanitary rules, especially quarantine requirements that reduced the workforce and added challenges to planning. High cost of personal protective equipment and other infrastructure, and poor support from the government, were criticized as well as the restrictions on farms that were like those in supermarkets. One farmer reported high investments that had to be made for toilets to ensure safety for the farmer, their family, and the farm workers. Other farmers minimized the amount of farm workers present at the farm to protect themselves and each other at the cost of productivity.

Although the survey and interviews indicated that producers could adapt to Covid-19 related challenges, some respondents pointed out that provincial regulations followed a “watering can” approach (e.g., posing the same measures for sales at outdoor farms as for supermarkets). This somewhat mirrors initial findings, such as by Zollet et al. (2021), who identify concerns about preferential treatment of big players in Italy. Not only does this show insufficient agricultural emergency and insurance programs that were not designed for pandemics (Ker, 2020) but also the lack of nuanced regulations for different types of operations. Although the government provided some financial aid, one local farmer criticized the lack of support:

“The inconsistency of some subsidy programs, such as the one to compensate for investments necessary for security due to Covid-19, excluded any expenses made before July 1. Yet health and safety requirements were made long before, from the start of the pandemic, in March” [Q-37].

Another farmer explained that, due to the size of their enterprise, governmental aid did not apply:

“(There was] no way to set up installations for Covid-19; we couldn’t afford it and our farm was too small for the governmental budget” [Q-100].

Some participants reported resource access and developmental problems. Two interviewed farmers explained their struggles with access to resources like seeds or feed for small livestock, for example, due to demand and supply shifts and variabilities:

“People decided to do more gardening at their own place. Last year, and even this year in the beginning, everybody has thrown themselves onto the seed market and seeds are disappearing like crazy. We ordered our seeds even this year in the beginning, everybody has thrown themselves onto the seed market and seeds are disappearing like crazy. This year, it’s because of Covid. All the local stuff went crazy. We know that the grain this year [2021] is going to sell for a lot higher price than it sold the past year. I guess it’s going to affect the price of the feed. So, it’s not only going to be hard for us to find [organic feed], but it’s going
to be more expensive. We’re having trouble getting organic feed because we’re far from big cities. Our region doesn’t really grow a lot of organic, compared to, let’s say, Quebec City or Montreal” [I-12].

Several farmers also reported limitations regarding the physical and organizational development of their business since many projects had to be put on hold or took longer to realize. For instance, the construction of a farm store was delayed due to the pandemic. Another farmer explained that an export project was cancelled. Furthermore, essential work in associations and organizations that represent the interests of different agricultural sectors was delayed due to social distancing measures. In a few cases, farmers report that those measures also inhibited the communication with intermediaries, including suppliers and sellers.

3.3. Perceived preparedness to address challenges

Overall, many local farmers assessed their operations as being well-prepared for the challenges that they encountered in 2020, compared to their recall of the 2017–2019 seasons. On a scale from 1 to 5, with 1 representing a low degree of preparedness (‘not prepared’) and 5 a high degree of preparedness (‘very well prepared’), 58% of the local farmers rated their perceived preparedness as 4 (‘well prepared’). A total of 75% rated their preparedness as 4 or 5. Only 10% of the respondents indicated that their perceived preparedness dropped from a 4 or 5 (pre-Covid) to a 3 (‘prepared’) in 2020, meaning that 90% of the respondents rated their perceived preparedness as similar or better (Fig. 4).

4. Discussion

Our study sought to understand the implications of the Covid-19 pandemic on food producers engaged in or focused on local food distribution and short food supply chains in Quebec. The Covid-19 pandemic has led to disruptions in food systems around the world and magnified systemic issues and shortcomings. Overall, we find that local food producers with a range of different contexts (i.e., modes of production and distribution) in Quebec relied on a diverse portfolio of adaptation strategies to effectively adjust their operations. Below, we highlight three key points that arose from our results, provide an outlook to remaining questions for future work, and discuss the limitations of our study.

4.1. Short-term adaptation capacity of local farmers

From the beginning of the pandemic, researchers have tried to estimate the potential short- and long-term implications on the Canadian food system (Gray, 2020). Around the world, the closure of businesses deemed non-essential, rising unemployment, social distancing measures, and border closures intensified existing or even created new perceived and real food security concerns. In Canada, fears of consumers about potential food shortages early in the pandemic (i.e., around March–May 2020) led to panic buying and food hoarding. Yet, growing evidence suggests that the Canadian and, broadly speaking, the North American food supply chains have shown a high resiliency and adaptation capacity in terms of food availability at large. Especially the bilateral trade between Canada and the US enabled the food systems in both countries to benefit from each other’s redundancies (Chenarides et al., 2021; Deaton and Deaton, 2020; Hobbs, 2020).

Some researchers have questioned whether food hoarding would impair the growth potentials of direct marketing and local food during
the pandemic. For instance, Richards and Rickard (2020) observed that people in North America stockpiled frozen fruits and vegetables when the pandemic began, which may have decreased the amount of food bought later (Thilmany et al., 2021). Although mainly qualitative in nature, our findings show that the sales losses were not as severe as anticipated for local farmers in Québec. In fact, our results indicate that a concern around food supply shortages may have encouraged more people to buy food from local farmers, especially CSAs. We found that, in case of disruptions, producers often expressed being able to adapt due to an increased demand for local food, flexibility that allowed farmers to switch sales outlets, and online tools (social media, online stores, and virtual markets) served this adaptation process.

4.3. System redundancies, adaptation, and digital divide

Whether consumers’ enthusiasm about local food in Québec will stay intact over a longer period and will translate into tangible outcomes (e.g., sales, revenue, support) for farmers is uncertain. Several farmers pointed out that the longevity of this demand hinges on farmer-producer relationships and the nurturing of newly developed and intensifying existing relationships post-pandemic. Further, the government of Québec has explicitly taken measures to encourage the purchase of local products, including but not limited to food, and put into place initiatives such as ‘La Panier Bleu,’ a website listing local businesses. It is not clear, however, whether consumer demand alone will or can drive local food systems and where Québec will hit physical, social, economic, and political boundaries. According to O’Hara and Low (2016), local food sales are more tied to income fluctuations compared to non-local products, raising questions about willingness or ability to spend money on local food if economic concerns arise in the wake of Covid-19 (Zollet et al., 2020). Switching from one sales outlet to another or temporarily replacing a farm worker indicates a degree of redundancy that may not have been feasible for those households due to financial unavailability, disposable incomes. CSA can involve seasonal upfront payments which may be at greater risk of potential exposure to Covid-19 (Parks et al., 2020). TFW workers may be at greater risk of potential exposure to Covid-19 (Ker, 2020). Federal programs like the CERB which describes the lack of physical hardware for or proficiency in using web technology to access information or undertake financial transactions (Raison and Jones, 2020). As Torry (2020) explains, Covid-19 deepened “a national digital divide, amplifying gains for business that cater to customers online, while business reliant on more traditional models fight for survival”. As useful as online tools were for the management of contact-less sales and customer relationships, not all farmers - and perhaps many consumers - could use those tools or access the necessary resources at the right time, leaving questions about equality. Although the percentage of local farmers using the internet doubled during the onset of the pandemic 2020, web illiteracy, expensive services to run online shops, or the lack of a stable internet connection may have limited which producers and consumers benefit from online sales. Although not the focus of our investigation, local farmers lacking access to the resources necessary to set up and run an online store or engage in social media and online communication may have been at a disadvantage.

4.4. Limitations and future research

Our choice of scope and methods enabled us to shed light on this sector of the food system in Québec but presented some limitations. We focused on self-identified local farmers that were listed in consumer-facing databases and platforms accessible to the public, which may not have captured experiences from all farmers in Québec engaged in less direct producer-consumer supply chains. Hence, our sample of farmers and findings should be considered relatively small in scope and may be biased towards farmers who are more inclined to respond to inquiries via e-mail and have the capacity and infrastructure to participate in video or phone interviews. Additionally, our focus on the farmer’s perspective overlooks other food systems actors like processors, other intermediaries, and consumers although Thilmany et al. (2021) and Béné (2020) call attention to the need for the adaptation of regulations and policies that foster the resilience of the entire food system and supply chains to shocks.

Second, we did not assess the repercussions on farmer and farm worker well-being although this issue existed even before the pandemic (Daghagh Yazd et al., 2019; Hagen et al., 2020). At least one interview farmer stated fear of burn-out due to pressure to take advantage of the rising demand for local food. Some farmers also reported that momentary constraints for employing temporary foreign workers (TFW) led to stress. Despite the dependence of some of our respondents on TFW, the experiences and concerns of TFW working for local farmers in Québec has yet to be studied. Advocacy groups and the media have called out unsafe lodging and work conditions that put TFW at risk at the beginning and even one year into the pandemic (Mehler Paperny, 2021). TFW may be at greater risk of potential exposure to Covid-19 (Parks et al., 2020), compounding farm labour shortages and meaning that these workers must work harder to compensate for lost income. Future research should assess the impact these pandemic-related concerns and stress factors have compounded existing or added new pressure on farmers and farm workers.

Finally, our study did not assess farmer support systems in-depth, although social capital, or the relationships between multiple people or groups (Woolcock and Narayan, 2000), can contribute to the adaptation process of farmers through knowledge exchange, information sharing, as well as mental and financial support (Paul et al., 2016; Saptutyningsih et al., 2020). Canada’s federal, provincial, and territorial government support programs have helped to prevent overall food shortages. However, such programs were developed without a global pandemic in mind and may not have reduced farm stress related to income, labour, transportation, and border closures, leaving it to farmers to compensate for losses (Ker, 2020). Federal programs like the CERB which intended to support Canadians that lost their jobs due to Covid-19 affected local farmers employing local workforce in unintentionally negative ways, leading to new challenges for those farmers. In many
instances, the farmers’ family and friends helped to cope with workforce shortages, infrastructural adaptation, and other concerns. Future studies could delve into whether and how social capital helped in navigating transition processes during the pandemic because of, or despite, governmental and provincial programs.

5. Conclusions

Our study contributes important insights that show how flexibility and redundancy among local farmers stabilized the local food system during the onset of a global pandemic. Using a mixed-method approach, our findings demonstrate that local farmers in Quebec generally managed to address the diverse challenges (e.g., safety protocols, travel restrictions, and other public health measures) that they encountered in the first year of the pandemic (March 2020–March 2021). While many local farmers struggled due to the pandemic, others reported overall positive impacts on their sales and operations. For instance, many farmers benefited from the increased awareness of and demand for local food. Furthermore, we investigated how those farmers navigated new and compounded challenges (e.g., losses of sales due to workforce shortages), and how they adapted their businesses, if necessary, to rapidly changing regulations and demands. According to most of our respondents, various adaptation mechanisms helped them to adjust their operations, including the implementation of online shops and infrastructure to ensure safe work and sales environments for consumers, farmers, and workers. At this stage, predictions about long-term impacts of the Covid-19 pandemic on local food systems are not possible. Yet, our results demonstrate that many local farmers were able to withstand most disruptions of a global pandemic in the short-term.

Author statement

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Declaration of competing interest

None.

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Appendix A. Supplementary data

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