A qualitative investigation of resilience among small farms in western Washington: experiences during the first growing season of COVID-19

Dani Ladyka

A thesis

submitted in partial fulfillment of the

requirements for the degree of

Master of Science

University of Washington

2021

Committee:

Sarah Collier

Yona Sipos

Marie Spiker

Program Authorized to Offer Degree:

Nutritional Sciences

University of Washington

Abstract

Examining the experiences of Washington State small farms during the COVID-19 pandemic

Dani Ladyka

Chair of Supervisory Committee:

Dr. Sarah Collier

Abstract: The 2020 growing season presented new and significant challenges for farmers and farms across the United States as they navigated the COVID-19 pandemic. Washington State has rich and diverse agriculture and as such serves as a microcosm to explore the experiences of farms in the US during the pandemic. The purpose of this study was to qualitatively assess the impacts of the COVID-19 pandemic on directly marketing small farms in western Washington State, with a focus on farmers' experiences with resilience. I conducted in-depth, semi-structured interviews with 15 farmers and used thematic analysis to explore impacts of the pandemic, responses to the pandemic, and values and perceptions related to small farms. Interviewees provided insights on the impacts of the pandemic on their daily farm operations, marketing channels, demand, and revenue. Farmers also reported shifting personal and public attitudes towards small farms during the pandemic. Product diversity, flexibility, support, values, and

access to resources emerged as themes related to drivers of COVID-19 impacts and farm adaptations. In analyzing interview data, farmers' experiences during COVID-19 were compared to existing frameworks on farm resilience. Farms in this study demonstrated resilience via buffer and adaptive capabilities. Farmers discussed resilience via transformative capability in the context of the collective power of small farms to shape future food systems. Future research on the resilience of small farms should focus on ways to both promote resilience attributes and facilitate the ability of farmers to act on resilience capabilities.

Table of Contents

1. Introduction 1

2. Methods 6

2.1 Recruitment 6

2.2 Participant characteristics 7

2.3 Data collection and analysis 9

3. Results 10

3.1 Impacts of COVID-19 on farm businesses 10

3.1.1. Farm operations 11

3.1.1.1. Production 11

3.1.1.2. Labor 12

3.1.1.3. Business costs and prices 13

3.1.2 Market channels 14

3.1.3. Demand and revenue 17

3.1.4. Shifted attitudes and feelings 18

3.2 Drivers of impacts and adaptations 22

3.2.1 Product Diversity 22

3.2.2. Flexibility 22

3.2.3 Support 24

3.2.4 Values 26

3.2.5. Access to additional resources 30

3.3 Support for farmers 31

4. Discussion 33

4.1. Farmer Experiences 34

4.1.1. Labor, safety, and mental health 34
4.1.1.1. Safety regulations and scale 34
4.1.1.2. Labor shortages and mental health 35
4.1.3. Market channels, autonomy, and personal relationships 36
4.1.4. Stifled growth and off-farm income 38
4.1.5. Increased appreciation for farmers 39
4.2 Resilience in action 40
4.2.1 Buffer capability 41
4.2.2 Adaptive capability 44
4.2.3. Transformative Capability 45
4.3 Values and resilience 47
4.4 Study limitations 48
5. Conclusion 49
References: 51
Appendix A. 55
Interview Guide: 55
Appendix B. 60
Focused codes, categories, and themes 60

1. Introduction

The 2020 growing season presented new and significant challenges for farmers and farms across the United States as they navigated the COVID-19 pandemic. Experiences at the farm level were shaped by the broader context of the US food system, where impacts of the pandemic were not uniform and varied by sector and scale. Well-publicized disruptions painted a picture of a food system in crisis and included events such as closures of restaurants, schools, hotels, and other institutions; shortages at grocery stores and food banks; skyrocketing food insecurity; produce being plowed back into fields; milk products being dumped; bottlenecks in meat processing facilities; and health crises among employees leading to labor shortages (Hobbs, 2020; Inslee, 2020; Klassen & Murphy, 2020; Kulish, 2020; Lewis, 2020; Lusk & Chandra, 2021; Reiley, 2020; Reiley & Reinhard, 2020; Ridley & Devadoss, 2021; Thilmany et al., 2020; Weersink et al., 2020). However, the national narrative of a struggling food system did not always align with realities experienced within local and regional food systems (Thilmany et al., 2021). Some businesses operating at smaller scales were able to make dynamic shifts between partners and market channels, allowing for swift and targeted responses to disruptions (Thilmany et al., 2021).

Emerging data indicates that experiences of farm businesses during the COVID-19 pandemic were highly varied (California Farm Bureau Federation, 2020; Dennis et al., 2020; Lemos & Ackoff, 2020; Moore, 2020; Stabiner & Barber, 2020). Here too, while many farms faced disruptions, some were able to nimbly adapt to the changing business environment. For example, a survey from the National Young Farmers Coalition highlighted challenges associated with reduced sales resulting from closed restaurants and farmers markets, yet noted that many farmers were able to transition to selling via community supported agriculture (CSA) models

(Lemos & Ackoff, 2020). A 2020 survey conducted by the Local Food Research Center focusing on producers in North Carolina, Georgia, South Carolina, Tennessee, and Virginia indicated that small farms were able to make operational shifts. Despite facing a range of disruptions, almost 50% of farmers in the study reported increased sales in 2020 and most were able to pivot to new market channels including selling via farm stand, online, or CSA (Local Food Research Center, 2021). Impacts on revenue also varied. For example, in a survey of 69 Maine farmers, 46% reported a decrease in revenue, 30% reported an increase in revenue, and 18% reported no change in revenue as of August 31, 2020 compared to the same time the previous year (Dennis et al., 2020). In a national survey of 240 small farms, 35% reported decreased revenue in March and April 2020 compared to the same time the previous year (Stabiner & Barber, 2020). The varied impacts on farm operations and revenue reported thus far suggest that a more in-depth exploration via qualitative research is necessary to more fully understand experiences of farm businesses during COVID-19; for this reason, qualitative research is particularly useful.

Washington State has a rich and diverse agriculture and as such serves as an excellent microcosm to explore the experiences of farms during the pandemic; recent and ongoing research is already providing important insight. For example, a survey examining the impacts of COVID-19 and adaptations of local farm businesses provides a snapshot of how farms in Washington State fared during the pandemic. Survey respondents reported diverse experiences that were influenced by factors including farm size, marketing scale, and type of production (Collier et al., 2021). Many survey respondents experienced challenges including lost market channels, and 65% of producers experienced increased operation costs. Some farmers were able to pivot operations, with about one-third of respondents adding at least one new marketing channel to their business. Respondents also reported an overall greater proportion of farm

revenue coming from direct to consumer and food hub channels in 2020 compared to 2019. A different survey of 331 Washington State farmers gathered information on the economic impacts of the pandemic between January 1, 2020 and April 15, 2020. Results indicated that nearly 70% of farmers experienced a decrease in revenue during that period, with much of that loss resulting from decreased access to institutional markets like schools (Moore, 2020). However, given that the survey took place in the early months of the pandemic and saw variable participation from different sectors, results should not be interpreted as strictly representative of the economic impact of COVID-19 on Washington State farm businesses.

A recently published case study on small Washington State farms highlights additional nuance (White, 2021). Specifically, the two farms studied demonstrated flexibility and resilience during the pandemic. While these farms experienced a loss of their typical market channels, they also experienced a surge of demand for directly purchased products. One farm transitioned successfully from wholesale to CSA model and emphasized the importance of flexibility in their business. The other farm saw a huge increase in demand for their beef and pork shares while their wedding venue demand dropped drastically. This farmer spoke to the challenges associated with the many unknowns of COVID-19 yet acknowledged that uncertainty is inherent to agriculture.

Understanding the experiences of Washington State farms during the COVID-19 pandemic is an important undertaking. First, many agencies and organizations that respond directly to farmer needs operate at the state level, so having appropriately focused data can guide stakeholder priorities and support. Further, agriculture is one of the state's largest industries; Washington State is a top US producer of apples, potatoes, onions, and aquaculture (Washington State Department of Agriculture, 2017, 2021; Washington State Department of Commerce,

2017). Understanding how farms responded to the shock and ongoing disruptions of the pandemic also provides useful information when preparing to adapt in the face of climate change or other unknown shocks. As a highly productive and diverse agricultural region, there is pressure on Washington State to adapt nimbly and appropriately to future challenges (Yorgey et al., 2017).

A key part of understanding the experiences of Washington State agriculture is understanding the experiences of small farms. The United States Department of Agriculture (USDA) defines small farms as those with annual gross cash farm income less than $350,000, however much available data on small farms in Washington State uses an older definition of small farms: those reporting annual sales of less than $250,000 (Ostrom & Donovan, 2015; USDA National Commission on Small Farms, 1998; Whitt, 2020). Notably, data from the 2017 Census of Agriculture indicates that while farms earning less than $250,000 account for roughly 5% of the state's $9.63 billion agricultural production value (USDA National Agricultural Statistics Service, 2017e), they constitute nearly 90% of all farm businesses (USDA National Agricultural Statistics Service, 2017c). Further, approximately 13% of small farms engage in direct-to-consumer marketing (USDA National Agricultural Statistics Service, 2017d). The Washington State Department of Agriculture (WSDA) defines direct marketing farms as those who sell their product directly to consumers (e.g., CSA, farm stands, U-pick, farmers markets); through culinary tourism and agritourism; through food hubs; directly to restaurants, grocery stores, or co-ops; and directly to institutions like schools (Washington State Department of Agriculture, n.d.). However, despite the large numbers and vibrant community, small farms tend to be an underserved and underrepresented segment of the agricultural industry, particularly as

they are not represented by commodity commissions or other regulatory bodies (M. Moore, email communication, June 29, 2020).

As the world continues to move through the pandemic the concept of resilience is receiving significant attention, particularly as it relates to food systems. Resilience, therefore, can serve as a useful conceptual framework to understand dynamic systems, including individual farms, in the wake of shocks and ongoing disruptions like the COVID-19 pandemic. The concept of resilience was popularized in the field of ecology and described by Holling in 1973 as the persistence of relationships within a system. A resilient system is therefore able to absorb disturbances and still persist in its functions, even if it fluctuates away from its equilibrium (Holling, 1973). In 2015, a formal definition of food system resilience was introduced by Tendall et al. that strove to capture the size, spatial, and temporal complexities that are inherent to food systems as a whole:

Food system resilience: *capacity over time of a food system and its units at multiple levels, to provide sufficient, appropriate and accessible food to all, in the face of various and even unforeseen disturbances (Tendall et al., 2015).*

Resilience at the level of the whole food system and resilience at the level of an individual farm business are related yet distinct subjects. Resilience at the farm level has been conceptualized by Darnhofer (2014) as including buffer capability, adaptive capability, and transformative capability. These capabilities can be understood as active processes that allow farms to absorb shocks without major changes, adapt to shocks, and make significant changes in response to shocks, essentially creating new systems (Darnhofer, 2014). Understanding farm level resilience is useful, as there is growing sentiment that small farms have an increasingly important role to

play in the national food system, especially in creating a system that is resilient, sustainable, and just (The Civil Eats Editors, 2021).

The purpose of this study is to qualitatively assess the impact of the COVID-19 pandemic on directly marketing small farms in Washington State, with a focus on farmers' experiences with resilience. In-depth, semi-structured qualitative interviews with farmers were used to explore farmers' experiences in a way that complements quantitative data collection among this population (Collier et al., 2021; Moore 2020). Given the variation in impacts indicated by currently available data, a qualitative approach serves to provide depth of understanding about the ways farms were impacted by the pandemic. By hearing directly from farmers, this study explores the nuances of specific impacts. Further, by examining impacts through a resilience lens this study contributes to the body of literature on farm-level resilience. Understanding what contributes to the resilience of small farms in Washington State can guide state regulatory bodies and policy makers in taking actions designed to foster a more resilient state and national food system.

2. Methods

2.1 Recruitment

Fifteen farmers were recruited to participate in semi-structured qualitative interviews to share the experiences of their farm businesses during COVID-19. Farmers were included if they were over 18 years of age, had been a farm owner or operator in Washington State for at least 1 year prior to COVID-19, had a farm income of $250,000 or less, and participated in some form of direct marketing to consumers (e.g., on farm, farmers markets, CSA, agritourism, food hubs, direct-to-restaurant, direct-to-institution, or other forms of direct marketing).

Participants were recruited beginning in August 2020 and interviews were conducted via Zoom (Zoom, Version: 5.7.4 (804)) through October 2020. Initial recruitment occurred via email, primarily directed towards agricultural professionals who interact with a large number of farmers in their region. Recruitment emails were distributed via the Washington State University (WSU) Food Systems listserv and also sent directly to county conservation districts, farmers market managers, and WSU extension offices across the state. Recruitment materials explained inclusion criteria, interview logistics – including the Zoom format and estimated duration of interviews, and that participants had the opportunity to win one of three $100 e-gift cards if they chose to participate. The recruitment email asked recipients to share details of the study directly with farmers in their networks and have farmers contact a member of the study team to be scheduled for an interview. Indirect recruitment was supplemented with direct outreach via email to farmers in late September. The study team identified potential farmers via emails and phone calls to farmers market managers, farmers market vendor lists, as well as by using the WA Food & Farm Finder online tool (Eat Local First, n.d.).

The University of Washington Institutional Review Board Human Subjects Division determined this research qualified for exempt status.

2.2 Participant characteristics

Interviewees operated farms in King (n = 5), Whatcom (n = 4), Pierce (n = 1), Lewis (n = 1), Pacific (n = 1), Skagit (n = 1), Clark (n = 1), and Island (n = 1) counties, all of which are on the west side of the state. Two thirds of farmers were considered new farmers, or those who have farmed for less than ten years (USDA, n.d.). However, the amount of time farming at current operations ranged in total from 1.5 to 45 years (Table 1). Interviewees were given the option to self-report their gender and racial/ethnic identities at the end of interviews. Fourteen out of

fifteen farmers identified as White and one as Native American. Nine interviewees identified as female, four identified as male, and one identified as transgender. Ten interviewees (66%) reported producing more than one agricultural product; the most commonly produced items included vegetables (80%), tree fruit (40%), meat including beef, pork, and lamb (40%), poultry meat (27%), and eggs (20%). Other production items included berries, cut flowers, dairy, grains, hay or silage, honey, and nursery items (e.g., vegetable starts). Three interviewees reported that agritourism or educational activities were a key part of their farming business. All interviews were conducted in English; while Spanish interpretation was available, recruitment information sharing this detail was only available in English.

Table 1. Interviewee Characteristics

Characteristic	Number of Respondents (%)
Gender identity (self-reported)	
Female	9 (60.0)
Male	5 (33.3)
Transgender	1 (6.7)
Racial/Ethnic background (self-reported)	
White	14 (93.3)
Native American	1 (6.7)
First-generation farmer?	
Yes	13 (86.7)
No	2 (13.3)
Is farming your full-time occupation?	
Yes	8 (53.3)
No	4 (26.7)
For me but not my partner	3 (20.0)
How long have you been farming at this operation?	
< 5 years	5 (33.3)
5 - 10 years	5 (33.3)
> 10 years	5 (33.3)
Age (years)	
32 - 42 years	6 (40.0)
43 - 53 years	3 (20.0)

54 - 64 years	4 (26.7)
65 - 75 years	1 (6.7)
> 75 years	1 (6.7)

2.3 Data collection and analysis

The semi-structured interview guide explored five major topics: (i) basic information about the farmer, (ii) basic information and characteristics of the farming operation, (iii) how farmers were impacted by and responded to the pandemic, (iv) farmers' ability and/or need to respond to the pandemic, and (v) values and perceptions related to small farms and farming (Appendix A). The semi-structured format allows the interviewer to tailor the conversation to each participant, so the interviews did not all proceed through the interview guide identically. At the end of each interview, all farmers had the option to opt into a drawing to receive one of three $100 e-gift cards, which were distributed in December 2020. The interviews were recorded and transcribed using Zoom software and uploaded to a secure server. Each interview was reviewed, and transcripts corrected for accuracy by one member of the study team.

The data were organized and analyzed using Atlas.ti software (Atlas.ti, Version 8.4.25.0). Two members of the study team completed a first pass of line-by-line coding of three interviews (20% of total interviews) to ensure codebook validity. In total, three passes of line-by-line coding were completed, and the code book was iteratively adjusted with each pass. The study team took an emergent approach to thematic analysis and approached the initial creation of codes, categories and themes without an a priori analytical framework in order to center the stories shared by farmers. The final code book contained 168 codes, 27 code categories, and 9 themes (Appendix B). The study team met regularly throughout the analysis process to discuss codes, categories, and themes.

Interviews were conducted and coded in the same phase of the study, and analytic memos were kept throughout the process (Saldaña, 2009). As the number of interviews completed approached 15, no to few codes were added to the code book, suggesting data saturation had been reached (Fusch & Ness, 2015; Guest, Bunce, & Johnson, 2006; Mason, 2010). Time of year also influenced when to end the interview process. As the season changed to fall, farmers began commenting more on future seasons and the overall tone of the interviews began to shift, suggesting that a natural breakpoint had been reached.

After the initial thematic analysis was completed, the study team re-examined the data using a lens of resilience as informed by Darnhofer, 2014, who contextualized resilience capabilities at the level of farm businesses, and Meuwissen et al. (2019) who proposed a framework to assess the resilience of farming systems. These frameworks allowed findings about directly marketing small farms operating during the COVID-19 pandemic to be placed in the broader context of farm and food system resilience.

3. Results

3.1 Impacts of COVID-19 on farm businesses

Interviews explored daily farm operations, marketing channels, and changes in demand and revenue of each farm business during the pandemic. When discussing values and perceptions about small farms and farming, shifting personal and public attitudes emerged as a common theme. Each farmer shared a unique story about how they were impacted by COVID-19; broad themes are reported here. Where examples and illustrative quotes were selected for inclusion, they generally reflect themes commonly shared by the sample population except where otherwise noted.

3.1.1. Farm operations

Interviewees described how the pandemic impacted many aspects of their farm operations, including production, labor, business costs, and prices. However, within these areas farmers often shared opposing experiences. While some farmers reported unchanged production, others changed what they grew to meet the demands of new or expanding market channels, like CSAs. Some farms relied on a small number of employees and therefore did not experience significant disruptions in labor. However, some who previously relied heavily on volunteers found themselves negatively impacted without their help. Business costs did not change for some, but others did incur higher costs as a result of the pandemic, though for varying reasons. Changes in product sale price too were varied; while some did not change prices, others increased prices, and others still decreased prices. These topics are further explored and contextualized with farmer quotes below.

3.1.1.1. Production

Many farmers noted that production did not shift as a result of the pandemic, in part because plans for the season had already been made. Others noted that production was highly tailored to their market channels, and as market channels shifted, so did their production. For example, one farmer noted how production changed as they were no longer able to sell to restaurants:

> *We ended up not planting as many greens, like arugula and salad mixes, that we may push to our direct sales customers like restaurants. We almost completely stopped growing that stuff.*

Another explained that their production plan typically includes selling at the farmers market. Prior to COVID-19, their strategy was to focus on growing three types of lettuce; however, as they shifted to a CSA model, production changed:

> *We just did more, different varieties of lettuce. We did some little unique one-off things that you would find in a CSA that don't do well at market. So, peppers for us. I can't sell a pepper to save my life at market, but people love them in CSA so we grew peppers this year which we would not have done otherwise.*

Interviewees reported experiencing both upstream and downstream supply chain disruptions, though none that caused significant changes to production. Two farmers explained it was difficult to access seeds during the pandemic. However, one farmer was able to move forward by choosing different varieties of seed than typical, and the other was able to rely on a stock of seeds that they save from year to year. For farmers selling meat products, the pandemic presented unique stressors as they dealt with fallout from bottlenecks in the meat processing industry. Farmers described challenges accessing on-farm custom slaughter, concerns around "if slaughter was going to shut down," and how they "were very limited on USDA processing." Despite these concerns, no interviewees reported major impacts to their meat production as a result of processing disruptions.

3.1.1.2. Labor

Experiences accessing labor differed across farms. Those who utilized volunteer labor encountered challenges as a result of COVID-19 health and safety restrictions. One farmer explained that before the pandemic hit, they had already purchased seeds and planned production with the expectation that their volunteer labor force would be available. However, because of

COVID-19 they did not have volunteers in the 2020 season and production quantity and quality decreased due to this shortfall in labor:

> *Things like thinning beets and thinning carrots, which is so essential in order for you to have a better product in a number of months, I just didn't have the bandwidth to do all of that [without help].*

Many interviewees had a relatively small labor force to begin with, though farms with more employees found themselves needing to adjust their labor force. Some operations were just the farmer, the farmer and their significant other, or the farmer and one other business partner and as a result did not make changes to labor in the 2020 growing season. In contrast, one farmer described hiring four employees instead of six, but by planting crops that could be managed using mechanization they fared well. A farmer who typically relies on volunteer labor was initially worried about the ability to keep up with the amount of work; however they explained how their small team of employees completed everything on their own:

> *We were concerned that we weren't going to have enough labor to manage everything, but that did not prove to be the case because we had a super good core team. So even without our volunteers, we were able to do everything.*

3.1.1.3. Business costs and prices

While some farmers experienced no change in business cost associated with the pandemic, this was not true for all. Several farmers experienced an increase in labor costs, though for different reasons. For some, increased labor costs came as a result of paying higher wages due to COVID-19 related labor shortages. Others noted the extra time associated with more rigorous sanitation practices, for example sanitizing tools at the end of each shift. One farmer attributed increased business costs to farm worker safety programs geared towards large scale agricultural operations:

> *WSDA implemented a lot of farm worker safety programs thinking about farm workers in Wapato and Yakima and those conditions. So that makes sense. So we had to buy a hand washing station and build that. And you had to build it some place close to the field. So you have to have a barrel of water, and a barrel heater, and a faucet, and a catch basin, and soap, and paper towels, and the garbage and all that.*

While they understood the need for the regulations, they reflected on how this placed a disproportionate burden on their operation by requiring a much smaller business to comply with the same standards.

Two farmers who produced meat reported increases in processing costs. A farmer who produces beef explained their experience:

> *The costs doubled between early in the pandemic and June, and so that, for a business our size, is huge. I'm not sure why, but it jumped from $1.10 per pound for processing to $2.79 a pound for processing in that time frame.*

For the most part, prices that interviewees charged for their products did not change, though this was not uniformly the case. One farmer explained they had increased the sales price of their beef due to the doubled processing costs, while another farmer decided to lower prices on all products. The latter farmer felt that this was "the right decision to make," but noted this would not have been possible without off-farm income. Shifts in sales prices were also associated with shifts in market channels. For example, one farmer sold much of their garlic to the grocery store in 2019 at a wholesale price. During COVID-19, they instead sold their garlic at their farm stand and therefore charged a higher retail price.

3.1.2 Market channels

Interviewees experienced significant reorganization of their market channels due to the pandemic. Perhaps the most obvious and dramatic shift occurred as a result of restaurants either

closing or significantly reducing their capacity. Farmers described restaurant sales that disappeared entirely or were non-existent early in the pandemic and then slowly returned, though at lower levels than normal. One farmer described how they had planned to sell much of their produce to restaurants, but were unable to find enough restaurant customers and so shifted to CSA instead:

> *I was planning on nine restaurants at $500 a piece per week for orders. Now, we have four restaurants at about $120-$200 a piece per week. So we increased our CSA and we're up to 70 [shares] now.*

Shifts towards CSA sales was a common theme, with farmers also shifting from farmers market to CSA. Logistically, farmers described this as an "easy" shift:

> *It just felt like a really natural, easy way to do the numbers. Like how many more CSAs would I need to make up the market income that I projected? Oh, I think I can do that, or close enough.*

While some farmers shifted to a CSA model, others focused more on selling via their farm stand. While one farmer opened a farm stand during the pandemic, others simply chose to divert more sales volume through their already existing farm stand. Many, though not all, farmers markets closed or reduced capacity during the pandemic. As a result, some farmers opted out of markets entirely or decreased the number of farmers markets they participated in. Multiple participants explained that the risk of COVID-19 made them hesitant:

> *We were a little afraid to go to the market in the first place, not only because we thought sales would be low, but also we were just at the beginning of the pandemic and we were like, well, do we want to be surrounded by people every week? Is that going to be worth it? It's going to be too stressful.*

A farmer who had relied heavily on farmers markets as their main sales channel said they restarted their CSA when they learned the markets were going to close. However, they also implemented a new sales strategy:

> *When markets shut down, we occasionally just went down and sold on the streets of Seattle. It was by no means a worthwhile market, but it maintained the idea that we are committed to growing.*

Eventually, farmers markets did reopen. While some farmers chose to stay away and shift towards alternate market channels, this same farmer chose to focus heavily on selling at farmers markets. They reflected on the success they were able to achieve as a result:

> *If you look at our books COVID is the best thing that's happened to us. This year, I'm still crunching the numbers, but we're definitely in the black. But we did that through doubling down on selling at farmers markets. Really taking farmers markets and what we grow for farmers markets seriously.*

Some farmers shared stories of new market channels that emerged as a result of the pandemic. These new market channels were often facilitated by personal relationships. A flower farmer explained how prior to COVID-19, weekly subscribers would pick up flower orders at an office building or drop sites at retail stores. When the pandemic hit and these spaces closed, this farmer was able to shift their drop site to the home of a personal contact instead. This same farmer previously sold a significant amount of flowers wholesale to florists for weddings, which was majorly disrupted as a result of COVID-19. However, they were able to supplement this loss in part after being invited by a friend to participate in a home delivery service:

> *I have known [this friend] for a long time and she approached me about it. The whole thing was an adaptation to the farmers market closing, and she is very creative and*

innovative. So she was quick on her feet and said okay let's do some home delivery since the markets are closed, and she invited me to join that as a producer.

3.1.3. Demand and revenue

Most interviewees experienced an increase in demand during the pandemic, though this increase in demand manifested in different ways. While some had a boom in CSA sales, others noted they had more online sales or more sales at certain farmers markets. While demand in general seemed to increase, farmers explicitly noted that certain items, like vegetable starts and animal products were particularly popular during the 2020 season:

Online sales started earlier and have been stronger than last year because of COVID.

At [one farmers market], our sales have doubled from last year to this year.

So, I had a CSA waitlist and wasn't really advertising. Like, I'd already filled it but just kept getting people asking.

I've had so much interest in the CSA. People are like, are you doing a CSA this year? They wanted to give me money.

I sell tomato and pepper plants in the spring, and that was a huge increase. People wanted to plant their own gardens.

Perhaps the largest uptick in demand was for meat and animal products including milk and eggs. A pork producer explained that they stopped selling at the farmers market because they were sold out of product. Much of their demand increase came from individuals buying whole and half pigs online. A beef producer explained that their supply of beef that usually lasts

between 6-8 months sold out in 2 months. One farmer, who at the time of interview had already sold what they considered a "good amount" of beef put it this way:

> *It's been going like gangbusters. All of a sudden people's interest in local foods jumped a ton this year.*

Changes in revenue experienced by farmers were not uniform across the board. Some interviewees experienced no change in revenue, some experienced a decrease in revenue, and others experienced an increase in revenue. Some farmers expressed that from a financial perspective, COVID-19 was particularly good for their business. However, some who experienced increased revenue also provided insight into what they described as "stifled growth." In other words, some expected rapid growth for their business in the 2020 season, and actual growth was less than anticipated. One farmer put this in context:

> *We were expecting a 25% increase in gross sales this year, and that was a conservative estimate. And this year, our gross sales are just under 12% higher than they were last year...If you look at other farms that have been established for longer and aren't going through periods of rapid growth, they aren't doing as well. So we are the odd scenario here where COVID definitely had a negative impact on markets however that's not reflected in our accounting.*

3.1.4. Shifted attitudes and feelings

On top of the changes and adaptations that occurred as a result of the pandemic, all of the interviewees noted that everyone had started to think about things differently. Some noticed this shift in their own attitudes and feelings. Many farmers expressed a general sense of uncertainty. Some wondered if the increase in demand they were experiencing would be maintained in future seasons, or if they were just creating "insecure marketing streams." Others explained how it was difficult to adapt if they didn't know what the world would look like in a month or even a year. Farmers described how this ubiquitous feeling of uncertainty made decision-making more

difficult. For example, a farmer producing vegetables, sheep, and eggs described how this uncertainty would make their business decisions more conservative. Another farmer who produced raw milk, among other animal products, explained that decisions were now riskier. The dairy farmer had experienced an unprecedented boom in demand and was now faced with a decision of whether or not to expand their herd size:

> *What if we buy the cow and people stop coming? What if instead of producing 25 gallons of milk per day, we're producing 40 gallons and then we get stuck with 20? You can't just turn a cow on and off.*

Stress was a common feeling expressed by farmers. Some were stressed because COVID-19 greatly reduced their cash flow, particularly at the beginning of the season. Stress was exacerbated as farmers who relied on off-farm income were unable to work their other jobs. For one farmer, this tight cash flow meant "living tightly," and suspending their house payments for six months. Others were worried about the possibility of getting sick or having someone on their crew get sick. These fears strained social dynamics among farm employees as they had to navigate social distancing while working a job that required close contact with others. Some interviewees also acknowledged that the pandemic was not the only challenge faced in 2020, hinting at the 2020 presidential election as well as social unrest and general public polarization. One farmer shared their experience of how public and political polarization intersecting with COVID-19 made work particularly uncomfortable:

> *Most of the folks out here where I live don't seem to care, or have very strong political opinions about things like masks and social distancing. That makes it challenging to get supplies and not feel like people are being nasty and giving you the stink eye.*

While many farmers shared difficult feelings, they also reflected positively on some aspects of the pandemic. Several farmers described a collective "wake up call" for the public as a result of the pandemic and connected this to a positive shift in attitude towards small farms. A pork producer described how they had huge success during the pandemic in part because they were able to begin selling half a pig a week to a market they felt would previously have been unavailable to them. This farmer described how people seemed to "be on a different wavelength" because of COVID-19 and shared their experience in this new market channel:

> *One grocery store in Seattle started buying half a pig a week to cut up and put in the butcher case, and [my contact] told me that she was using the COVID craziness as a way to get some new things approved by her boss. For example, buying half a pig a week from a local pork farm was not something that her boss would have signed onto before because it's very expensive, I'm guessing.*

All interviewees shared the sentiment that the pandemic reinforced their reasons for farming. Many expressed the feeling that their business was "perfect for the pandemic," and that shopping at a farm stand or getting food through a CSA allowed safe access to nutritious food. Some farmers appreciated how government messaging emphasized the necessity of farm work:

> *The pandemic has made me feel like my business is essential, and that we are important. Because when it was only essential workers that were supposed to go to work, I was like: "Oh!" [Farmers] are a part of that.*

All interviewees also said that they felt a new or renewed appreciation from the public about their work and the work of small farms:

> *I have seen a general leaning into our awareness of our food system and being intentional about how we live.*
>
> *It seems like people are more concerned and excited about local food and local food systems. And maybe they've realized that they took those for granted in the past and are*

understanding how important it is to have a resilient local food system. So, I'm feeling that from customers.

Farmers also reflected on a renewed appreciation for the benefits and feasibility of local food systems. In general, farmers reflected on how they felt the pandemic affirmed the "viability of a local food system," and one farmed predicted "a pretty dramatic shift in people's willingness to consider [CSA] as a model," particularly if it shifted to accommodate more consumer choice in orders. Further, both farmers and customers saw how strong local food systems had the ability to address chronic problems, like climate change, and acute problems, like the pandemic. One farmer noted that "small farms are regenerative and hold carbon," and another described how "having a local food source is critical" as natural disasters become more intense as the climate changes. Customers and farmers also saw how small farms were able to adapt to meet the unique challenges that arose during the pandemic. For example, several farmers noted that customers chose to shop with them because they felt safer:

We've gotten a lot more business through our farm stand from people that are afraid to go to grocery stores, and don't feel comfortable waiting in line at the farmers market. They know it's going to be fresh and healthy foods and they don't have to wait in line. And it's safe. They feel safe.

Others also described how customers viewed shopping with them as a safe, social activity. Some would make weekly trips to the farm or CSA drop sites and tell the farmers it was something they looked forward to every week. One farmer commented on shifting customer attitudes toward flower purchases, inferring what customers might be thinking:

It's like [the customers are thinking]: everything is hard and unpredictable and I feel kind of depressed. And flowers are helping, so I need flowers.

3.2 Drivers of impacts and adaptations

Farmers also explained their understanding of why they experienced impacts or adapted in the way they did. Themes emerged around diversity, flexibility, support, personal and community values, and access to resources.

3.2.1 Product Diversity

The majority of interviewees described themselves as diversified farm operations, which proved to be particularly beneficial during the pandemic. Farmers noted that supplying diverse products attracted customers, who were interested in buying multiple items from one location. Interviewees also contrasted themselves with farms with less diverse offerings that did not have other products or market channels to lean on if challenges arose anywhere along the supply chain of a particular product. One farmer compared their diversified operation to a fictional cucumber farmer who could, in theory, be struggling during the pandemic:

> *If I was just a cucumber farmer growing cucumbers for a pickle packer, and that pickle packer had to cut their orders in half because of staffing issues, I would be in a world of hurt. But because we're diversified, because we're direct to consumer, we can find a channel to sell pretty much anything.*

3.2.2. Flexibility

In general, interviewees used words like "nimble," "adaptable," and "adjustable" to describe their operations, noting that if they needed to make changes it was "easy." This operational flexibility manifested most clearly as the ability to shift between market channels and having autonomy over decisions. Several farmers noted that their operation's small size made it easier to change and adapt. One farmer acknowledged the difference in coordinating logistics for a large operation or work crew as opposed to just themselves:

It's not like I'm having to reroute trucks. You know, I don't have 100 laborers coming out to harvest. So, I can pretty quickly change where I'm going to sell something or when I'm going to harvest it.

One farmer explained how their production decreased as a result of insufficient farm labor. However, they were able to sell CSA boxes this year from the production they did have and by sourcing produce from other farmers. They recognized how having autonomy in their decision making allowed them to be creative in how they chose to move what product they did have. They also recognized that not all operations have this flexibility, and contrasted themselves to a family that had been in the dairy business for 90 years who was forced out of business because they couldn't find an alternative market for their milk:

They sold all of their milk to a wholesaler...and they could not retool. They were dumping 250,000 gallons of milk per day because of their contract and because they were not allowed to sell directly to the consumer...They tried to keep as many [employees] as they could. They sold everything but their home, they liquidated their retirement, just to keep their employees going. And finally, they said the only thing we have left is our home. And just like that, they sold their cattle to the meat packer, and they were out of business.

In contrast, a dairy farmer interviewed for this study was able to make adaptive changes during the pandemic enabled by the independent, diversified nature of their business. At one point, they found themselves with extra milk; however instead of dumping the excess and incurring a loss, they chose to make cream and sell that to their customers as well. This was in part possible because they had the autonomy to pivot to new production methods and were not beholden to rigid contracts that held them to one product. They described the experience this way:

We would fill 5-gallon buckets and three days later, skim that milk and sell it for cream. So we ended up having a good cream following for quite some time, and the skim milk went to our pigs and our chickens who really enjoyed it.

3.2.3 Support

Across the board, interviewees expressed feeling supported by their community. This took many forms, including increased verbal support, supportive grocery product managers, and direct financial support from customers. One farmer noted an abstract understanding of support for local food. They "always kind of feel and know" the support is there, but as a result of COVID-19 they experienced "tangible evidence" of that support as customers reached out to them offering to buy products, contact county officials, or generally trying to be of use:

> *I was waking up to emails with people saying, "hey I remember you from the farmers market, what can I do?" And offering to buy products or to contact King County Health or the mayor's office. And asking, "is there a form letter that people have started writing?" And having that community support… was a great thing to have during the dark, early months of COVID.*

For some farmers, community support manifested as access to new market channels. Many of these new market channels arose as community members were looking for ways to support both farmers and those in need. Some farmers gained new market channels in more "traditional" outlets like grocery stores. Other farmers had opportunities to participate in novel partnerships like mobile farmers markets, selling to non-profit organizations, or partnering with a bookstore that was providing meals to healthcare workers. One farmer shared their unique experiencing partnering with a friend:

> *A friend of mine is an executive at [a tech company] and wanted to support me. So my friend said, look, whatever you can't sell at the restaurants because of COVID, I will buy from you and I will give to [a non-profit].*

As detailed in section 3.1.1.1, farmers selling meat products encountered challenges as a result of bottlenecks in the meat processing industry. One farmer explained how they were able

to rely on their networks to navigate challenges accessing slaughter and therefore avoid major disruptions to production. They explained they were faced with a decision to either use a processor that had raised prices or use a processor that was openly racist and transphobic, neither of which were acceptable options for the farm. However, by networking within their community they were able to find a "band-aid solution" that allowed them to access slaughter that aligned with their farm values without raising prices. They did note however that accessing slaughter will continue to be a problem in future years. A different farmer noted that the only reason accessing slaughter was not a stressor this year was because they were a member of a co-op which supported their processing needs. They reflected that farmers not in a co-op may not have fared as well.

Interviewees also shared stories of mutual support within their farming communities. One farmer explained they were able to purchase more beef cattle by calling friends and asking around. Another explained how they chose to fill gaps in production by purchasing directly from other farmers to fill their CSA orders which served the dual purpose of providing a complete CSA box and providing financial support to other farmers. Some farmers also described how networks or associations they belonged to moved meetings to an online format. They expressed gratitude for this space to connect with their peers, troubleshoot challenges, and celebrate successes.

Farmers reported receiving both direct and indirect forms of government support. Farmers shared stories of selling to institutions like food banks who had received government funds to purchase their produce. Other farmers shared stories of seeing more circulating "local currency," a resource akin to a "market bucks" matching program. Only a small number of interviewees reported receiving direct government aid in forms such as the Paycheck Protection

Program (PPP) or the Economic Injury Disaster Loan (EIDL). Some farmers indicated that they were too small to even apply for these programs. Others said that not having an absolutely clean criminal record was a barrier to their operation as well as other operations they knew. When farmers did pursue aid, it was not always a smooth process. One shared their frustrating experience spending time filling out the PPP application, only to be disqualified:

> *I have no time [for] trying to keep up with all the different government programs, and I know I probably left money on the table. For the PPP, I finally decided to apply and spent two or three hours with the application. And on the last page you needed to certify that you had X payroll on February 15. Well, we had zero payroll on February 15 because we are seasonal and so I was disqualified from PPP.*

3.2.4 Values

During interviews, farmers described the mission of their business as well as the values that guided them. All interviewees wanted to run a successful business at baseline yet seemed to broaden their definition of success beyond profit maximization. In fact, many farmers were explicit that money was not the only, or even the most strongly held value of their business:

> *We're not in this to make money. This was basically a lifestyle choice about knowing where our own food came from and sharing it with others.*

> *My goal is not to make as much money as I possibly can and be Mr. Monopoly; it's to run a sustainable business.*

Nearly all farmers interviewed for this study emphasized that their values were an important part of their business, and environmental stewardship, producing nutrient dense food, and feeding the community emerged as shared core values (Table 2). Thirteen of the fifteen (87%) of farmers explicitly called attention to at least one of these core values either in their farm's mission and values statement, or elsewhere in the interview.

Table 2. Core Values
Core values and illustrative examples as expressed by interviewees

Commonly shared core values	Number of farmers expressing this value	Examples of farmer phrasing
Environmental stewardship	11/15	"*We aim to be good stewards of the land producing naturally grown products using sustainable, low impact farming methods."*
Feeding the community	11/15	*"It's a value of the farm to feed the folks that are nearest to us and keep those food systems supplied."*
Producing nutrient dense food	6/15	"*[we have a desire] to be a provider of healthy food."*
Multiple core values expressed simultaneously		
2 core values	7/15	*"[Our mission is] working with the land and the environment to create food access for our community."*
3 core values	4/15	*"Our goal is to grow nutrient dense foods, whether that's vegetables or proteins, as sustainably as possible, with community in mind."*

During the pandemic, farmers leaned into their stated mission of feeding others. Farmers defined those they were feeding by using phrases such as "our community," "local communities," "our county," and "our neighborhood." One farmer described their purpose as being to feed "people," and while the term is broader than "community," it nonetheless captured the shared intensity behind this commonly expressed value:

> *We've lived below the poverty line and have been unable to afford our products, so we toyed with the idea of taking the summer off and just growing enough food for the family and just enjoying the summer. And that was a very attractive idea for about a day. But we*

> *just feel a commitment that as a farm we are here to produce food for people. And we stuck with that and went ahead with our season.*

Several farmers explicitly stated the importance of improving food access in their communities. For some, this meant selling their produce to stores in areas with low food access, accepting electronic benefits transfer (EBT) cards, offering CSA shares on a sliding scale, or offering discounts to traditionally marginalized communities. One farmer described their deliberate effort to identify gaps in food access in their community, and how this influenced their decision to provide food to low-income seniors as opposed to a food bank. Specific to the pandemic, many farmers reflected positively on how they felt they were able to fill gaps in food access, when for example there were shortages at grocery stores, food banks, or people did not feel safe leaving their homes. One farmer shared a story of how the small but growing Hispanic population in their community leaned on their farm stand for produce when they didn't feel safe going to the store:

> *We found out they were feeling very fragile when things first started because some of them aren't citizens and they didn't know if they would have health care if they got sick, so they didn't want to shop [at the store] at all. So they connected with our farm stand. There was one person who was basically buying for everyone and bringing it to a central location.*

Farmers also shared stories about how their values influenced their operations, market channels, and price decisions. Farmers described their desire to "be an asset to the community," and emphasized the notion that they weren't farming just to "get bigger," but to provide quality food aligned with the values of their business. During the pandemic, it became particularly evident that values were tightly linked to decisions about setting prices. This was exemplified by the viewpoint that while having a viable business was important, profit and money were not the

only values that drove decision making. One farmer described their ability to see the needs of their friends – the people they wanted to feed – and adjust their prices down accordingly:

> *It was the moral decision for us to make because we looked around and saw a number of our friends struggling.*

Interviewees reflected on perceived values held by their customers as well. This was most evident for meat producers who described the "reminders" customers received about industrial meat production. One pig farmer mentioned how the COVID-19 outbreaks experienced in slaughterhouses drew negative attention in the press and subsequently drove a spike in demand:

> *Any time something happens in the news with the big slaughterhouses, people get reminded that there are these big factories that process 10,000 pigs a day. And then they come and buy more from a small farmer.*

Several farmers reported that their customers began to express the importance of local farms and local food systems more openly. Farmers suggested that this was in part because people recognized the importance of having a healthy, local food supply in case of disaster. There seemed to be a collective realization among both customers and farmers that small farm businesses do more than just provide food, and that small farms will be integral in shaping future food systems. One farmer described COVID-19 as a "fire drill," the first of many unforeseen disturbances to come, particularly in light of a changing climate. Other farmers drew similar connections and shared how having farms that are connected to their communities, who produce healthy food, and care for the land are important community assets.

3.2.5. Access to additional resources

Throughout the interviews, farmers identified access to particular resources that contributed to their ability to adapt and respond to the pandemic. Unsurprisingly, access to financial capital was particularly beneficial. Some farmers had access to capital from previous jobs they had since left, and other farmers had partners who worked off the farm. One farmer shared how important off-farm income was for them this year:

> *If we didn't have the blessing of my husband working outside the farm we would have been sunk for sure.*

Other farmers reported that farming was not their full-time occupation, and their typical off-farm jobs were negatively impacted by the pandemic. The loss of off-farm income for farmers in these situations created added financial burdens and stress during the 2020 season. Access to social capital was also important to farmers, as it facilitated access to new market channels, inputs, and services. One farmer conveyed the importance of having family in the area to assist with childcare:

> *We are very lucky that my wife's folks are healthy and helpful and have been able to act as our child support, because there is no such thing as daycare for farmers market workers, and you can't take a two-year-old to the farmers market.*

Interviewees expressed gratitude for their land and how it helped them succeed during the pandemic. Access to water and fertile, productive land were two properties that farmers reflected on as vital assets. Other farmers noted that existing infrastructure was crucial for success. Infrastructure mentioned by interviewees included buildings used as farm stands or farm stores,

greenhouses, and space for parking. One farmer reflected on how their farm's location was particularly beneficial:

> *We're close to the city and that makes it a lot easier to adapt, because we have a customer base within a half hour of our farm. We're lucky. Honestly, I think farms that are further out have a harder time changing, so large populace density just across the water from us is super beneficial.*

3.3 Support for farmers

Interviews invited farmers to reflect on opportunities for support they would like to receive. Farmers acknowledged the difficulty of their career choice; farming is a physically and mentally demanding profession and COVID-19 made the job all the more challenging. In part, these challenges were exacerbated as typical employment benefits are not available to farmers. Particularly disconcerting for farmers during the pandemic: lack of accessible healthcare. Several farmers expressed the importance of farm internship programs and growing the next generation of farmers. At the same time, they recognized that farming is not always a viable career option and empathized with people who chose alternate career paths. One farmer grappled with their career choice if it meant offering insufficient wages and benefits to their employees:

> *I look at how much money we bring in, and you know, I'd love to be able to offer my employees health benefits and give them a raise, but if I can't do it, is farming worth it?*

Throughout interviews, farmers reflected on the ability of small farms to address both short- and long-term challenges. Interviewees recognized the value small farms have in that they were able to adapt to meet customer needs during the pandemic, and they actively address concerns of climate change by using environmentally sound and regenerative practices. Statements such as these highlight the importance of regulations, policies, and programs that

support the success of small farms. As one farmer explained, small farms won't be able to support their communities if they can't survive shocks and ongoing disruptions:

> *And that's the biggest indicator to me of what COVID has done. It's pointed out that the little farmers are necessary, but if they can't survive COVID they're not going to be there for the next thing that comes down the pipe, unfortunately.*

In order to hear directly from farmers about the support they need, interviewees were asked to reflect on resources they would like access to that are not readily available to them. Interviewees voiced several suggestions that would benefit their businesses, and Table 3 generally describes these resources and provides a direct example.

Table 3. Desired Resources
Desired resources and illustrative examples reported by farmers.

Desired resource	Example
Access to aggregation, food hubs, co-ops, etc.*	*"Increase in the centralized distribution for small scale growers. There's the Puget Sound Food Hub, but they only serve a handful of farmers."*
Access to bookkeeping, accounting, administrative resources*	*"There's not really effective software...I've got a bookkeeping system, but it's not really designed to keep track of my veg sales and stuff."*
Pairing food access and farm viability*	*"I have been thinking a lot about the link between customers really wanting to support local farmers and farmers having an excess of whatever...how do you put those two things together?"*
Employment benefits	*"Health insurance for farmers."*
Reduced barriers to creating value-added products	*"I don't have access to a processing kitchen. That's one thing I've been really hungering for because there's huge potential and the profitability goes up dramatically with value added."*
Mental health services	*"But the thing I hear again and again and again from other farmers... it's just people are super, super stressed out. And I know that there are some mental health resources in the state of Washington for farmers but I have not seen them in any of the*

	resource lists that have been passed around to me."
Reduced barriers to access financial capital	*"I think more capital that is not a loan."*
Support for farm internships	*"I'd like to see the [Washington State Department of Labor & Industries Farm Internship Program] more robust."*
Farm infrastructure	*"The biggest challenge is large infrastructure items. For instance, we don't have a [local] haying operation. And it's really expensive to own that equipment."*
Community outreach	*"The public isn't aware of a lot of the farm products or farms that are out there trying to move product... There's always work that can be done with outreach."*
Change in meat industry regulations	*"There needs to be a change in the way small farmers do meat. There are very limited options, it's very costly, and they can't begin to compete."*
Funds for farmers who identify as Black, Indigenous, or other People of Color (BIPOC)	*"I would like to see more dollars made available to help BIPOC farmers buy land and start their business."*

*Denotes resources that were mentioned by ≥ 5 farmers

4. Discussion

The purpose of this study was to explore the experiences of western Washington State directly marketing small farms during the COVID-19 pandemic. These results provide novel insights into the context and nuance of these experiences and shed light on the resilience of such farms during the 2020 growing season. Overall, this study demonstrated that small farms experienced impacts in their daily operations, market channels, and revenue, though each farm differed in exactly how these impacts were felt. Farmers also described a positive shift in attitude towards small farms and local food systems and leaned into their values and personal relationships during the pandemic. Finally, farmers in this study demonstrated resilience capabilities and reflected on the power of small farms to positively shape future food systems.

While themes emerged through interviews, each farmer shared a unique story. The uniqueness of experiences highlights an important component of resilience: strategies that foster resilience are multiple, changeable, contextual, and active (Darnhofer, 2014; Herman, Lahdesmaki, & Siltaoja, 2018). This section discusses common and contrasting themes related to labor, market channels, revenue, and shifted attitudes during the pandemic. Results are then placed in the context of existing frameworks for farm and food system resilience.

4.1. Farmer Experiences

Common themes emerged across interviews when exploring impacts of the pandemic, particularly around labor, market channels, revenue, and shifted attitudes. One important characteristic of responses was the heterogeneity of farmer experiences. Producers experienced important distinctions in the ways they were impacted by labor shortages, changed their marketing channels, and how their revenue changed, that set them apart from each other as well as large scale agricultural operations. While heterogeneity of experience was a key characteristic, one shared experience emerged around how farmers felt appreciated by their customer base and community. The following sections give further detail into each of these themes.

4.1.1. Labor, safety, and mental health

As described in section 3.1.1.2, farm labor was a challenging aspect of operations during the pandemic and had specific implications for the physical safety and mental health of farmers.

4.1.1.1. Safety regulations and scale

In contrast to large scale agricultural operations with many employees, interviewees in this study had small work crews which made complying with some farm worker safety regulations burdensome. One farmer detailed the extent of the equipment required to set up

sufficient handwashing stations; they described the disproportionate financial and logistical impact that this requirement had on their operation, compared to the impact on a large-scale operation in Yakima or Wapato, for example. This farmer was alluding to the regulations geared towards addressing major outbreaks in fruit picking and food processing operations in Yakima, Chelan, and Clark counties (Berton, 2020). They acknowledged the necessity of implementing farmworker safety regulations yet noted how their situation differed.

Broad and sweeping regulations to protect agricultural workers were warranted, particularly given how agricultural and farm workers were infected at alarming rates at a national level. For example, by September 2020 nearly 43,000 meatpacking workers across nearly 500 plants in the US had become infected with COVID-19 (Reiley & Reinhard, 2020). Those who work in fruit and vegetable production were also endangered and hired and migrant fruit and vegetable producers faced high risk of contracting COVID-19 (Lusk & Chandra, 2021). Still, regulations geared towards addressing the safety of operations with thousands of employees are likely to have different impacts on smaller scale operations. Results of this study show just that, highlighting a clear need for advocates in agricultural regulatory bodies that help small farms navigate policies geared towards large scale operations.

4.1.1.2. Labor shortages and mental health

Impacts of COVID-19 on labor utilization varied among interviewees, and it is important to consider how farmer burnout may have been an unintended negative consequence of changes in labor force. Farms that previously relied on one or two people for farm labor tended to be less impacted by labor challenges during the pandemic. However, some farmers who previously used either paid or volunteer labor described feeling impacted by labor shortages. Interestingly, while one farmer drew a clear connection between lack of labor and decreased quality and quantity of

production, others did not have this experience. One farmer described how production was maintained even with two fewer employees, and another described how production was maintained with only their core team of employees and no volunteers. While on the surface these are stories of success, it is also possible that implementation of such short-term workarounds contributed to the physical, emotional, and mental stress (i.e., burnout) experienced by farmers. And as reported in section 3.1.4, farmers interviewed in this study did describe feelings of stress and uncertainty that were compounded by the pandemic.

It is clear that the pandemic took a toll on the mental health of US farmers (Krebs, 2020; Pappas, 2020; Wypler & Hoffelmeyer, 2020). One study reported that farm workers are more likely than other rural adults to say that their mental health was impacted as a result of COVID-19 (American Farm Bureau Federation, 2020). Farmers and farmworkers in that study identified several factors influencing farmer mental health, including things like hours of labor, financial issues, and farm or business problems. Farmers worked incredibly hard during the pandemic to continue operations and keep providing food, and this is reflected in the present study by farmers who were able to maintain production despite less labor. Now, however, it is imperative to understand the full consequences of this productivity. As one interviewee relayed, farmers were "super, super stressed out" during the pandemic; both timely assistance and further research are needed to address and understand the mental health impacts of the pandemic on farmers.

4.1.3. Market channels, autonomy, and personal relationships

Many interviewees were able to successfully pivot their market channels in response to COVID-19, and autonomy in decision making and support from personal relationships were a critical part of this success. Most, though not all, interviewees tended to shift away from restaurants and farmers markets to selling via CSA and farm stands. Interviewees reflected on

how this shift often meant altering production plans to meet the needs of differing market channels, suggesting that autonomy in decision making was beneficial to their operation during the pandemic. Results of this study provide insight into how and why farmers were able to pivot their market channels and is useful in understanding this trend among small farms that was seen across the US during the pandemic (Lemos & Ackoff, 2020; Local Food Research Center, 2021; White, 2021; etc.). Future research could more deeply explore relationships between autonomy in farm business decision making and ability to nimbly adapt to rapidly changing market conditions.

Personal relationships and community support were critical facilitators for many farmers who pivoted their market channels during the pandemic. Some farmers re-started or grew pre-existing CSAs and noted that customers were eager to sign up and support farmers in this way. Personal relationships also helped to facilitate new market channels. For example, one farmer was able to sell their produce to a friend who subsequently donated it to a non-profit organization. A flower farmer described how their friend invited them to participate in a mobile farmers market, and how they were able to change one of their drop sites to the home of an acquaintance. Only one farmer shared an experience of participating in a new market channel that was created by a public organization, suggesting that among those interviewed, personal and private connections played a larger role in accessing new market channels than did government support. In general, interviewees noted the importance of their personal networks in several aspects of their farm operations. This support included procuring animals, finding alternative meat processors, and commiserating about and troubleshooting challenges as they arose.

4.1.4. Stifled growth and off-farm income

Several farmers interviewed in this study explained that despite the fact their accounting showed the 2020 growing season as their best yet, they didn't consider it an unconditional success. They noted that their revenue was not as high as they had projected or planned for; in their words, they experienced "stifled growth" as a result of COVID-19. In Washington State, farm businesses of all sizes experienced negative financial impacts of the pandemic. A survey examining impacts of COVID-19 on Washington State farm businesses reported that nearly half of respondents experienced revenue loss in 2020 compared to 2019 (Collier et al., 2021). It is tempting, then, to look at the 43% of small farm survey respondents who reported revenue increase in 2020 compared to 2019 and take this as a positive. However, as described by interviewees in section 3.1.3, simply experiencing an increase in revenue is not necessarily an unconditional success when stifled growth is taken into consideration.

Furthermore, two-thirds of farmers interviewed for this study were considered new farmers and may have been particularly vulnerable to financial disruptions. Many new farmers face unique challenges compared to established farmers, particularly around capital. For example, new farmers tend to rely more heavily on off-farm income, have less wealth, and have more debt compared to established farms (Key & Lyons, 2019). In this study, nearly half of interviewees earned at least some off-farm income. One farmer detailed how they would have been in serious financial trouble without the off-farm income of their husband during the 2020 season. Even farmers who reported particularly strong surges in demand explained how the loss of off-farm income was stressful during the pandemic. As such, despite the increase in revenue experienced by some farmers, it is important to recognize that revenue disruptions or "stifled growth," may be especially harmful to new farmers on a critical growth trajectory.

4.1.5. Increased appreciation for farmers

Farmers interviewed for this study spoke to the "local food boom" that occurred during the first growing season of the COVID-19 pandemic and provided insight into drivers behind this phenomenon. Farmers described how the people they interacted with seemed to be thinking about things differently, whether that meant being a grocery manager being more willing to purchase pork from local farms, or consumers being more resolute in their need for flowers. Farmers universally described that they felt more appreciated by their customers, and many shared how they believed the pandemic was causing people to have an increased appreciation for local food and local food systems in general. Particularly during the pandemic, farmers noted that they were able to provide safe access to nutritious foods. Notably, many of the farmers interviewed for this study made concerted efforts to make their food available to low-income community members, food banks, and organizations focused on food and social justice. However, it is important to examine who tends to be able to purchase local foods and explore if certain people or communities were left out of this local food boom.

4.1.6. Desired resources

The desired resources described by farmers provide a starting point for policy and program creation for organizations like WSDA or others looking to support small farms in Washington State. Resources desired by farmers in this study suggest that they face similar challenges and barriers as other farmers and small farms across the country. For example, access to resources like capital and farm infrastructure directly address known barriers into agriculture including low purchasing power of new farmers, difficulty accessing credit, and high initial startup costs (Figueroa et al., 2020). Access to labor and health insurance are other commonly cited concerns by young farmers (Ackoff, Bahrenburg, & Shute, 2017), and interviewees echoed

these as they voiced their desire for things like employment benefits, access to mental health services, and strong programs to train interns and new farmers.

4.2 Resilience in action

This section analyzes study findings in the context of three farm resilience capabilities outlined by Darnhofer (2014): buffer capability, adaptive capability, and transformative capability. Darnhofer calls attention to the notion that the term capability implies an active process, rather than an asset or characteristic. In order to examine the characteristics that allow farms to demonstrate these capabilities, Meuwissen et al. proposes utilizing resilience attributes as laid out by the Resilience Alliance (2010), among them: diversity, openness, tightness of feedback, and systems reserves. Results of the present study demonstrate how some small directly marketing farms acted on these capabilities and further suggest an interplay between farm business values and resilience. Table 4 defines and provides illustrative examples from this study for Darnhofer's three resilience capabilities and selected resilience attributes from Meuwissen et al. and other sources.

Table 4. Resilience capabilities and attributes
Resilience capabilities and attributes with demonstrative examples reported by interviewees

Resilience capabilities and attributes	Definition	Illustrative example
Buffer capability[a]	The ability to absorb a shock without a change in structure or function, like persistence or robustness (Darnhofer, 2014; Meuwissen et al., 2019).	Farmers increased the number of CSA shares sold to compensate for the loss of other market channels.
Adaptive capability[a]	The ability to adjust and change in response to shock, but without changing essential functions or systems (Darnhofer, 2014; Meuwissen et al.,	Farmers shifted production slightly to meet demands of shifted market channels. For example, planting more

	2019).	varieties of lettuce and other specialty items.
Transformative capability[a]	The ability to implement significant changes, essentially creating a new system in response to severe shocks or enduring stressors. This could include changing functions, such as a transition from crop production to agritourism (Darnhofer, 2014; Meuwissen et al., 2019)	Farmers articulate the role of small farms in modeling environmentally sound practices and responding positively to climate change
Diversity[b]	Functional diversity, i.e., multiple species of crops grown on a farm; Response diversity, i.e., a range of different reactions that contribute to the same outcome or function (Carpenter et al., 2012; Kerner & Thomas, 2014; Meuwissen et al., 2019; Reidsma & Ewert, 2008).	Producing a wide range of products protected against supply chain disruptions, like labor shortages causing processing delays.
Tightness of feedback[b]	The ability of one part of a system to change in response to other parts of the system (Meuwissen et al., 2019; Walker & Salt, 2006).	Swift shifts to selling via CSA as other market channels became unavailable.
Systems reserves[b]	The resource stocks of a system, including natural, economic, and social capital (Biggs et al., 2012; Kerner & Thomas, 2014; Meuwissen et al., 2019).	Farmers experiencing a shortfall in volunteer labor compensate with a well-organized core team
Openness[b]	Connectivity between systems (Carpenter et al., 2012; Meuwissen et al., 2019).	Shifting to farmers markets in response to a gap as other farmers left farmers markets.
Redundancy[b]	The extent to which elements of a system are replaceable or complete the same function (Tendall et al., 2015).	Relying on off-farm income during the 2020 growing season.

a = resilience capability; b = resilience attribute

4.2.1 Buffer capability

In this study, many respondents expressed that some parts of their operation shifted only minimally, if at all, which demonstrates resilience via buffer capability. Buffer capability can be

understood as the ability to absorb a shock without a change in structure or function, similar to persistence or robustness (Darnhofer, 2014; Meuwissen et al., 2019). A shift between existing market channels as a response to a shock is an example of buffer capability (Darnhofer, 2014), which was a common experience among interviewees. In the 2020 season, many farmers leaned heavily on their existing CSAs as they were unable to sell to restaurants or at farmers markets. Some farmers shared experiences of selling more at existing farm stands and online as other methods of compensating for lost market channels.

Interviewees were highly responsive to these changing market conditions, suggesting tightness of feedback between farm businesses and marketing channels. In order to shift to the appropriate marketing channels, farmers also displayed a remarkable degree of openness to their markets and customer base. In other words, farmers were highly attuned to market conditions and were able to determine which market channel to shift to as other outlets closed. For example, while most farmers chose to shift away from farmers markets, one farmer was able to clearly identify the gap this created and stepped in to fill it; they subsequently had success selling at farmers markets.

Some farmers, particularly those who did not hire additional labor or only hired a small number of employees, reflected on how labor and production did not change. These farms exhibited the ability to maintain production and achieve the same level of productivity with fewer inputs, another component of buffer capability (Darnhofer, 2014). For example, in response to hiring fewer employees, one farmer shifted production to crops that could be mechanically managed. Another farmer described their “super good core team” that was able to maintain productivity without volunteers. Relying on this strong core team is akin to drawing on social capital and leaning on trusted networks and dedicated employees for support during

challenging times. Notably, this scenario underscores the importance of considering the cost of resilience, especially if it comes at the cost of physical and mental health of overworked employees.

Importantly, access to financial and social capital was critical for farmers who demonstrated buffer capability. For example, one farmer explained how they "would have been sunk for sure" if their partner did not have off-farm income. Yet because this farm did not rely on farm income to survive, they were able to continue farming in the 2020 season. Here, this second income stream provided redundancy that was critical to the farm's ability to survive the pandemic. Interestingly, only two farmers explicitly called out access to financial capital from previous careers as beneficial, which could suggest that few farmers in this study had access to or utilized financial systems reserves. In part, this may be due to the high proportion of new farmers in this study. As mentioned in section 4.1.4, new farmers tend to have less wealth and more debt compared to established farms. These details were not gathered in the present study, though this is one possible explanation for the minimal utilization of financial systems reserves by interviewees. Further, given that interview questions did not explicitly probe into financial systems reserves, there may have been reluctance to share detailed financial information. Farmers were also able to rely on social capital, or their networks, families, and friends for support in the 2020 season. Here, social capital can be understood as a type of systems reserve and was used to access a range of resources from childcare to new market channels and other services. Some farmers expressed they felt "lucky" to have these resources at hand, which invites the need to examine the privileges experienced by farmers interviewed in this study. For example, what are the systemic structures in place that allowed one farmer to access fertile land on a location that they described as an ideal distance from their customer base? Given the

predominantly White sample population of this study, it is important to understand how historical and current racial disparities in farming, particularly related to capital and land access (Horst & Marion, 2019; Figueroa et al., 2020) allow for the ability to demonstrate resilience via buffer capacity. Not experiencing the stability provided by buffer capability may be yet another disparity experienced by farmers who identify as Black, Indigenous, and other People of Color (BIPOC), women, or transgender.

4.2.2 Adaptive capability

Farmers in this study nimbly adjusted parts of their operation in order to continue farming during the pandemic, demonstrating resilience via adaptive capability. Adaptive capability can be understood as the ability to adjust and change in response to shock, but without changing essential functions or systems (Darnhofer, 2014; Meuwissen et al., 2019). Darnhofer further describes adaptive capability as adjustments in which something is added or shifted slightly, but will accomplish the same essential function (Darnhofer, 2014). In the context of these interviews, this is illustrated in part by the farmers who were able to shift production slightly to meet new needs. For example, one farmer planted different types of lettuce and other specialty items for their CSA. They attributed the functional diversity of their production, a resilience attribute, to their success relative to farmers who were bound by contract to produce only one product. One farmer provided the fictional example of a cucumber farmer who could be experiencing challenges as a result of labor disruptions in a pickle packing facility. They explained that because their farm was diverse, and not relying solely on cucumbers for example, they were able to successfully adapt to changing conditions when disruptions occurred.

Interviewees also exhibited response diversity, or the ability to respond to a disruption with multiple strategies, which contributed to adaptive capability. For example, one farmer

shared their experience with their excess milk supply and their ability to manage this "problem" by producing and selling cream, and feeding the byproducts to their chickens and pigs. In contrast, a different farmer shared a story of a large dairy producer who "could not retool," dumped significant amounts of milk, and was forced out of business. Here, while both farmers had excess milk at one point, the first farmer was able to respond in such a way that both generated income and reduced waste, whereas the latter was unable to do so. In this scenario, diversity, flexibility, and autonomy in decision making are closely related and contribute to adaptive capability.

Shifting to new market channels is another way in which interviewees demonstrated adaptive capability. Farmers described selling at new mobile farmers markets, to new grocery stores, to non-profit organizations, and other community partners. The shifts to these new market channels were facilitated by the resilience attributes openness and systems reserves. In these scenarios, it is the connectedness (openness) that farmers had with their customer base and networks that allowed them to access the social capital that linked them to new market channels.

4.2.3. Transformative Capability

While farmers in this study made adaptations to their business during the pandemic, major, transformative changes were discussed primarily in the context of the collective power of small farms to shape future food systems. Transformative capability can be understood as the ability to implement significant changes, essentially creating a new system in response to severe shocks or enduring stressors. Transformations are likely to occur over a long period of time and can be triggered by a crisis (Darnhofer, 2014). It is possible that the COVID-19 pandemic will serve as a trigger for larger food systems transformation, as opposed to transformation experienced at the level of farm businesses. As detailed in section 3.2.4, farmers interviewed for

this study expressed their values as central to their business. In essence, small farms clearly demonstrate these values and can therefore serve as a model for food systems transformation. For example, farmers articulated that because many small farms focus on regenerative and environmentally sound practices, they will be important players in responding positively to climate change and can serve as a model for other farms to adopt similar practices. Further, farms demonstrated that feeding communities and producing nutrient dense food are important business values. Again, by embodying these values, farms may serve as a model or even motivation for other parts of the food system to demonstrate these values. Simply put, small farms and the values they demonstrate may contribute to transformative capability at the food system level.

Resilience theory has been criticized for working to maintain an inequitable status quo (Darnhofer, 2014; Olsson, Jerneck, Thoren, Persson, & O'Byrne, 2015) and as such it is important to consider the privileges afforded to farmers who participated in this study, particularly when considering equitable transformations in the food system. While not exhaustive, privileges afforded to interviewees included access to fertile land, access to infrastructure, access to financial capital, and access to social capital. When considering privilege, it is worth calling attention to the fact that 14 of 15 study participants identified as White. Farmers who identify as Black, Indigenous, and other People of Color (BIPOC) have been systematically excluded from commercial agriculture as a result of forced removal from traditional homelands and other discriminatory federal practices (Horst & Marion, 2019). For example, the Homestead Acts redistributed land taken from Indigenous communities at no or very low cost to White Americans, specifically excluding indentured servants, recent immigrants, and slaves. Despite facing significant barriers to entry, Black farmers made up 14%

of producers by 1890. However, this fell dramatically as a result of racist policies including loan and credit denial, fraud, and intimidation (Figueroa et al., 2020). As of 2017, farmers who identify as Black or American Indian/Alaska Native comprise just 1.4% and 2.3% of the country's agricultural producers, respectively (USDA National Agricultural Statistics Service, 2017b, 2017a). Systemic inequities continue to exist clearly today and were exacerbated during the pandemic. For example, Black farmers received just 0.1% of federal COVID-19 farming aid (Reiley, 2021). Acknowledging this historical and ongoing inequitable context is important to promote the reallocation of resources where they were previously withheld. Equitable transitions that increase racial and ethnic inclusion in agriculture are likely to further increase resilience, as additional values, characteristics, and practices not otherwise captured in the present study gain a greater presence in commercial agriculture.

4.3 Values and resilience

Farmers interviewed for this study were deeply connected to their values and expressed how their values influenced many aspects of their farm businesses. While running a viable business operation was a clear priority for interviewees, it was also clear that these farmers were highly driven by more than profit. Results of this study suggest that values, particularly values focused on "community," are a driver of resilience at the level of farm businesses. Though farmers described their community in different ways, "community" – broadly speaking – can be defined as "a group of people with diverse characteristics who are linked by social ties, share common perspectives, and engage in joint action in geographical locations or settings" (MacQueen et al., 2001). For example, one farmer described their desire to be an asset to the community, which indicates an openness between this farm and their customers, local organizations, and other farmers. Results also suggest that values related to community could

augment systems reserves, particularly social capital. This was highlighted in many ways, but can be distilled down to how farmers, the farming community, and customers showed up for each other during the pandemic; farmers were dedicated to providing food, and customers stepped up to help facilitate new market channels.

4.4 Study limitations

This study was limited by the short timeframe during which it was conducted and the overall small sample population, both of which contributed to the near-homogenous racial identity of respondents. Completing interviews during the 2020 growing season placed a considerable time constraint on both preparation of recruitment materials and recruitment itself. Although Spanish interpretation was available, recruitment information was only available in English which may have excluded participants who would have otherwise been willing to participate. Furthermore, recruitment was not designed to over-sample from BIPOC farmers, who constitute only 5% of total farmers in western WA (USDA National Agricultural Statistics Service, 2017c). Thus while participant racial demographics were generally reflective of the region, conclusions drawn from the predominantly White sample population likely do not fully represent the experiences of BIPOC farmers in the region. This is a noteworthy limitation considering the societal importance of prioritizing equity, and future work in this area would benefit from methodological approaches which target recruitment towards and center the experiences of BIPOC farmers.

Farmer mental health may have also influenced the study population, as one survey reported that 66% of farmers/farmworkers felt that COVID-19 impacted their mental health (American Farm Bureau Federation, 2020). While interviewees in this study expressed that they experienced negative emotions and mental health impacts as a result of the pandemic, it is

possible that experiences of farmers who faced significant mental health impacts were not captured by this study, for example if those farmers did not participate. Particularly given that many interviewees expressed how tightly their personal and business lives were linked, those who were willing to participate in an interview may have had different experiences than those who did not feel they had the capacity, time, or inclination to participate.

Considering that only 15 farmers participated in this study, the myriad unique experiences of small farms in Washington State are certainly not all captured here. However, the data likely achieved or closely neared data saturation for the population that was represented. While no exact number of interviews is prescribed to achieve data saturation, Guest (2006) estimated that saturation can often be reached in as few as 12 interviews (Guest et al., 2006). Others have noted that focus should shift from the number of interviews to the depth and richness of the data (Fusch & Ness, 2015). Through the use of in-depth, semi-structured interviews which typically lasted 60 minutes, this study was designed to invite and document depth of experience. Further, as interviews and coding occurred in the same phase of the study, the code book was assessed for the addition of new codes and emerging novel themes after each interview. By the last interviews, few if any new codes were added to the codebook, indicating saturation was achieved. Further, co-coding and peer debriefing were used throughout the study in order to increase the credibility and dependability of findings (Thomas & Magilvy, 2011).

5. Conclusion

This study sought to examine the experiences of western Washington State directly marketing farmers and small farms during the first growing season of the COVID-19 pandemic. Findings provide deeper context to already-documented impacts that occurred within farm operations, marketing channels, revenue, demand, and general attitudes towards small farms. It is

important for WSDA and policy makers to understand the nuances of these impacts in order to better serve the needs of small farms as part of the Washington State agriculture industry. This study also shed light on the resilience capabilities and resilience attributes that interviewees employed in response to the pandemic. Future research should focus on ways to both promote resilience attributes and facilitate the ability of farmers to act on resilience capabilities. Deeper understanding here can inform policies and programs that support farmers ability to manage with resilience in mind.

References:

Ackoff, S., Bahrenburg, A., & Shute, L. (2017). *Building a Future With Farmers : Results and Recommendations From the National Young Farmer Survey*. National Young Farmers Coalition. https://www.youngfarmers.org/wp-content/uploads/2018/02/NYFC-Report-2017.pdf

American Farm Bureau Federation. (2020). *Impacts of COVID-19 on Rural Mental Health*. https://www.fb.org/files/Impacts_of_COVID-19_on_Rural_Mental_Health_1.6.21.pdf

ATLAS.ti Scientific Software Development GmbH (Version 8.4.25.0). https://atlasti.com/

Berton, H. (2020, May 28). Inslee announces new requirements to slow spread of COVID-19 in agriculture industries where outbreaks are on the rise. *The Seattle Times*. https://www.seattletimes.com/seattle-news/inslee-announces-new-requirements-to-slow-spread-of-covid-19-in-agriculture-industries-where-outbreaks-are-on-the-rise/

Biggs, R., Schlüter, M., Biggs, D., Bohensky, E. L., Burnsilver, S., Cundill, G., Dakos, V., Daw, T.M., Evans, L.S., Kotschy, K., Leitch, A.M., Meek, C., Quinlan, A., Raudsepp-Hearne, C., Robards, M.D., School, M.L., Schultz, L., West, P. C. (2012). Toward principles for enhancing the resilience of ecosystem services. *Annual Review of Environment and Resources*, *37*, 421–448. https://doi.org/10.1146/annurev-environ-051211-123836

California Farm Bureau Federation. (2020). *Survey Shows Strain on Rural California*. http://www.cfbf.com/impactsurvey

Carpenter, S. R., Arrow, K. J., Barrett, S., Biggs, R., Brock, W. A., Crépin, A. S., Engström, G., Folke., C., Hughes, T.P., Kautsky, N., Li., C.Z., Mccarney, G., Meng, K., Mäler, K.G., Polasky, S., Scheffer, M., Shogren, J., Sterner, T., Vincent, J.R., … de Zeeuw, A. (2012). General resilience to cope with extreme events. *Sustainability*, *4*(12), 3248–3259. https://doi.org/10.3390/su4123248

Collier, S. M., Fogel, A., Moore, M., Sipos, Y., Lewis, L., & Raymond, L. (2021). *COVID-19 Impacts & Adaptations Among Washington State Farm Businesses, Research Brief 1*. https://nutr.uw.edu/cphn/wafarm/brief-1

Darnhofer, I. (2014). Resilience and why it matters for farm management. *European Review of Agricultural Economics*, *41*(3), 461–484. https://doi.org/10.1093/erae/jbu012

Dennis, B., Lilley, J., & Durkin, C. (2020). Results from the third COVID-19 Farmer Survey. Retrieved May 8, 2021, from https://extension.umaine.edu/maine-farmer-resource-network/covid-19/farmer-survey-3/

Eat Local First. (n.d.). *WA Food & Farm Finder.* Retrieved August 13 2021 from https://eatlocalfirst.org/wa-food-farm-finder/

Figueroa, M., Penniman, L., Feldman, M., Treakle, J., Pahnke, A., Calo, A., Iles, A., Bowman, J. (2020). *Land access for beginning and disadvantaged farmers.* Data For Progress. https://www.filesforprogress.org/memos/land_access_for_beginning_disadvantaged_farmers.pdf

Fusch, P. I., & Ness, L. R. (2015). Are we there yet? Data saturation in qualitative research. *Qualitative Report*, *20*(9), 1408–1416. https://doi.org/10.46743/2160-3715/2015.2281

Guest, G., Bunce, A., & Johnson, L. (2006). How Many Interviews Are Enough?: An Experiment with Data Saturation and Variability. *Field Methods*, *18*(1), 59–82. https://doi.org/10.1177/1525822X05279903

Herman, A., Lahdesmaki, M., & Siltaoja, M. (2018). Placing Resilience in Context: investigating the changing experiences of Finnish organic farmers. *Journal of Rural Studies*, *58*, 112–122. https://doi.org/10.1016/j.jrurstud.2017.12.029

Hobbs, J. E. (2020). Food supply chains during the COVID-19 pandemic. *Canadian Journal of Agricultural Economics*, *68*(2), 171–176. https://doi.org/10.1111/cjag.12237

Holling, C. S. (1973). Resilience and Stability of Ecological Systems. *Annu.Rev.Ecol.Syst.*, *4*, 1–23.

Horst, M., & Marion, A. (2019). Racial, ethnic and gender inequities in farmland ownership and farming in the U.S. *Agriculture and Human Values*, *36*(1), 1–16. https://doi.org/10.1007/s10460-018-9883-3

Inslee, J. (2020, June 24). Inslee, leading nonprofits launch fund for state's food banks as supply levels

drop. *Medium*. https://medium.com/wagovernor/inslee-leading-nonprofits-launch-fund-for-states-food-banks-as-supply-levels-drop-1dacbb05fcb7
Kerner, D. A., & Thomas, J. S. (2014). Resilience attributes of social-ecological systems: Framing metrics for management. *Resources*, *3*(4), 672–702. https://doi.org/10.3390/resources3040672
Key, N., & Lyons, G. (2019). *An Overview of Beginning Farms and Farmers*. USDA Economic Research Service. https://www.ers.usda.gov/publications/pub-details/?pubid=95009
Klassen, S., & Murphy, S. (2020). Equity as both a means and an end: Lessons for resilient food systems from COVID-19. *World Development*, *136*. https://doi.org/10.1016/j.worlddev.2020.105104
Krebs, N. (2020, May 20). COVID-19 Crisis Puts Pressure On Farmers' Mental Health. *Side Effects Public Media.* https://www.sideeffectspublicmedia.org/community-health/2020-05-20/covid-19-crisis-puts-pressure-on-farmers-mental-health
Kulish, N. (2020, April 8). "Never Seen Anything Like It": Cars Line Up for Miles at Food Banks. *New York Times.* https://www.nytimes.com/2020/04/08/business/economy/coronavirus-food-banks.html
Lemos, M., & Ackoff, S. (2020, April 28). Young Farmers COVID-19 Survey Summary. *National Young Farmers Coalition.* https://www.youngfarmers.org/2020/04/covid19surveysummary/
Lewis, H. (2020, March 26). How Panic-Buying Revealed the Problem With the Modern World. *The Atlantic*. https://www.theatlantic.com/international/archive/2020/03/coronavirus-panic-buying-britain-us-shopping/608731/
Local Food Research Center. (2021). *2020 Appalachian Grown Annual Producer Survey Report*. https://asapconnections.org/report/2020-appalachian-grown-producer-survey-report/
Lusk, J. L., & Chandra, R. (2021). Farmer and farm worker illnesses and deaths from COVID-19 and impacts on agricultural output. *PloS One*, *16*(4), e0250621. https://doi.org/10.1371/journal.pone.0250621
MacQueen, K. M., McLellan, E., Metzger, D. S., Kegeles, S., Strauss, R. P., Scotti, R., Blanchard, L., Trotter, R. T. (2001). Can Public Health Researchers and Agencies Reconcile the Push From Funding Bodies and the Pull From Communities ? *American Journal of Public Health*, *91*(12), 1929–1938.
Mason, M. (2010). Sample size and saturation in PhD studies using qualitative interviews. *Forum Qualitative Sozialforschung*, *11*(3). https://doi.org/10.17169/fqs-11.3.1428
Meuwissen, M. P. M., Feindt, P. H., Spiegel, A., Termeer, C. J. A. M., Mathijs, E., de Mey, Y., Finger, R., Balmann, A., Wauters, E., Urquhart, J., Vigani, M., Zawalińska, K., Herrera, H., Nicholas-Davies, P., Hansson, H., Paas, W., Slijper, T., Coopmans, I., Vroege, W., … Reidsma, P. (2019). A framework to assess the resilience of farming systems. *Agricultural Systems*, *176*. https://doi.org/10.1016/j.agsy.2019.102656
Moore, M. (2020). *Washington State Agricultural Producer COVID-19 Economic Impact Survey: Results*. Washington State Department of Agriculture. https://seattlegood.org/wp-content/uploads/2020/10/WSDA_EconomicImpactSurvey_Results.pdf
Olsson, L., Jerneck, A., Thoren, H., Persson, J., & O'Byrne, D. (2015). Why resilience is unappealing to social science: Theoretical and empirical investigations of the scientific use of resilience. *Science Advances*, *1*(4), 1–12. https://doi.org/10.1126/sciadv.1400217
Ostrom, M., & Donovan, C. (2015). *Profile of Small Farms in Washington State*. Washington State University Extension. http://pubs.cahnrs.wsu.edu/publications/wp-content/uploads/sites/2/publications/tb39.pdf
Pappas, S. (2020, September 24). COVID-19 fallout hits farmers. *American Psychological Association.* https://www.apa.org/topics/covid-19/farming-communities-stress
Reidsma, P., & Ewert, F. (2008). Regional farm diversity can reduce vulnerability of food production to climate change. *Ecology and Society*, *13*(1). https://doi.org/10.5751/ES-02476-130138
Reiley, L. (2020, April 23). Full fields, empty fridges. *Washington Post*. https://www.washingtonpost.com/business/2020/04/23/fixing-food-dumping-food-banks/?arc404=true
Reiley, L. (2021, March 25). Agriculture Secretary Tom Vilsack says only 0.1 percent of Trump

administration's covid farm relief went to Black farmers. *Washington Post.* https://www.washingtonpost.com/business/2021/03/25/vilsack-interview-usda-rescue-plan/
Reiley, L., & Reinhard, B. (2020, September 24). Virus's unseen hotzone: the American farm. W*ashington Post*. https://www.washingtonpost.com/business/2020/09/24/seasonal-farm-workers-coronavirus/
Ridley, W., & Devadoss, S. (2021). The Effects of COVID-19 on Fruit and Vegetable Production. *Applied Economic Perspectives and Policy*, *43*(1), 329–340. https://doi.org/https://doi.org/10.1002/aepp.13107
Saldaña, J. (2009). *The coding manual for qualitative researchers*. Los Angeles: Sage.
Stabiner, K., & Barber, D. (2020, May 18). Nearly a third of small, independent farmers are facing bankruptcy by the end of 2020, new survey says. *The Counter*. https://thecounter.org/covid-19-dan-barber-resourced-small-farmer-survey/
Tendall, D. M., Joerin, J., Kopainsky, B., Edwards, P., Shreck, A., Le, Q. B., Kruetli, P., Grant., M., Six, J. (2015). Food system resilience: Defining the concept. *Global Food Security*, *6*, 17–23. https://doi.org/10.1016/j.gfs.2015.08.001
Thilmany, D., Canales, E., Low, S. A., & Boys, K. (2021). Local Food Supply Chain Dynamics and Resilience during COVID-19. *Applied Economic Perspectives and Policy*, *43*(1), 86–104. https://doi.org/10.1002/aepp.13121
Thilmany, D., Jablonski, B., Angelo, B., Low, S., & Tropp, D. (2020). *Mitigating Immediate Harmful Impacts of COVID-19 on Farms and Ranches Selling through Local and Regional Food Markets*. Colorado State University. https://localfoodeconomics.com/wp-content/uploads/2020/03/2020_03_18-EconomicImpactLocalFood.pdf
The Civil Eats Editors. (2021, August 2). *20 Solutions-Focused Food and Agriculture Stories for your Summer Inspiration.* Civil Eats. https://civileats.com/2021/08/02/20-solutions-focused-food-and-agriculture-stories-for-your-summer-inspiration/
Thomas, E., & Magilvy, J. K. (2011). Qualitative Rigor or Research Validity in Qualitative Research. *Journal for Specialists in Pediatric Nursing*, *16*(2), 151–155. https://doi.org/10.1111/j.1744-6155.2011.00283.x
USDA. (n.d.). Beginning Farmers and Ranchers. https://www.farmers.gov/your-business/beginning-farmers
USDA National Agricultural Statistics Service. (2017a). *American Indian/Alaska Native Producers* . https://www.nass.usda.gov/Publications/Highlights/2019/2017Census_AmericanIndianAlaskaNative_Producers.pdf
USDA National Agricultural Statistics Service. (2017b). *Black Producers*. https://www.nass.usda.gov/Publications/Highlights/2019/2017Census_Black_Producers.pdf
USDA National Agricultural Statistics Service. (2017c). NASS - Quick Stats. [Data Set]. Retrieved August 3, 2020, from USDA National Agricultural Statistics Service website: https://data.nal.usda.gov/dataset/nass-quick-stats
USDA National Agricultural Statistics Service. (2017d). *Table 2. Market Value of Agricultural Products Sold Including Landlord's Share, Food Marketing Practices, and Value-Added Products: 2017 and 2012.* https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_State_Level/Washington/st53_1_0002_0002.pdf
USDA National Agricultural Statistics Service. (2017e). *Table 3. Economic Class of Farms by Market Value of Agricultural Products Sold and Government Payments: 2017 and 2012.* https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_State_Level/Washington/st53_1_0003_0003.pdf
USDA National Commission on Small Farms. (1998). *A Report of the USDA National Commission on Small Farms*. https://www.iatp.org/sites/default/files/258_2_106175.pdf
Walker, B., & Salt, D. (2006). *Resilience thinking: sustaining ecosystems and people in a changing world*. Washington DC: Island Press.

Washington State Department of Agriculture. (2017). *Washington Agriculture: A Global Impact.* https://cms.agr.wa.gov/WSDAKentico/Documents/Pubs/650-GlobalImpactDirHandout-web.pdf?/650-GlobalImpactDirHandout-web

Washington State Department of Agriculture. (2021). Agriculture: A cornerstone of Washington's economy. Retrieved August 1, 2021, from https://agr.wa.gov/washington-agriculture

Washington State Department of Agriculture. (n.d.). *Direct Marketing in Washington State Fact Sheet 11.* https://cms.agr.wa.gov/WSDAKentico/Documents/DO/RM/RM/11_DirectMarketingInWaState.pdf

Washington State Department of Commerce. (2017). Key Sectors Bring Focus to High Growth Industries. Retrieved August 1, 2021, from https://www.commerce.wa.gov/growing-the-economy/key-sectors/

Weersink, A., Massow, M. Von, Bannon, N., Ifft, J., Maples, J., Mcewan, K., Kckendree, M.G.S., Nicholson, C., Novakovic, A., Rangarajan, A., Richards, T., Rickard, B., Rude, J., Schipanski, M., Schnitkey, G., Schulz, L., Schuurman, D., Schwartzkopf-genswein, K., Stephenson, M.,… Wood, K. (2020). COVID-19 and the agri-food system in the United States and Canada. *Agricultural Systems*, *188*. https://doi.org/103039

White, N. (2021). Farming in the time of pandemic: Small farms demonstrate flexibility, innovation, and hope. *Journal of Agriculture, Food Systems, and Community Development*, *10*(2), 1–3. https://doi.org/10.5304/jafscd.2021.102.008

Whitt, C. (2020). *Farm Structure*. USDA Economic Research Service. Retrieved June 26, 2020 from https://www.ers.usda.gov/topics/farm-economy/farm-structure-and-organization/farm-structure/

Wypler, J., & Hoffelmeyer, M. (2020). LGBTQ+ Farmer Health in COVID-19. *Journal of Agromedicine*, *25*(4), 370–373. https://doi.org/10.1080/1059924X.2020.1814923

Yorgey, G. G., Hall, S. A., Allen, E. R., Whitefield, E. M., Embertson, N. M., Jones, V. P., Saari, B.R, Rajagopalan, K., Roesch-McNalley, G.E., Horne, B.V., Abatzoglou, J.T., Collins, H.P., Houston, L.L., Eqing, T.W., Kruger, C. E. (2017). Northwest U.S. agriculture in a changing climate: Collaboratively defined research and extension priorities. *Frontiers in Environmental Science*, *5*(52), 1–20. https://doi.org/10.3389/fenvs.2017.00052

Appendix A.

Interview Guide:

Hi, my name is Dani Ladyka and I am a graduate student at the University of Washington. Thank you so much for taking the time to chat with me today, I know it's an incredibly busy time of year.

As part of my thesis project, I am conducting interviews to understand how small, direct marketing farms, like yours, have been impacted by the pandemic. Hearing directly from farmers adds so much to our understanding of how the farming sector has been impacted, so I'm grateful you were willing and able to chat.

An additional purpose of these interviews is to understand if and how farms like yours make our regional food system more resilient to disruptions and disasters. I can start to explore this idea of resilience by learning about your need to adapt your farming operation to the pandemic, your ability to adapt, your ability to make significant changes, and facilitators or barriers to this process.

In addition, I'm particularly interested in learning about how adapting to the pandemic may have influenced your farm income or the market channels you use. Hearing directly from you about your experience with the pandemic thus far will add a lot of depth to our understanding of how small, direct marketing farms contribute to resilience in our food system.

This work is part of a collaborative effort with the Washington State Department of Agriculture to develop a better understanding of the experiences of small farms in Washington State during the pandemic. I'll compile my findings into a short report that will be made available to industry stakeholders, and I will share it with you as well. Results and knowledge gained from my project can be used by the Washington agricultural industry as a whole and inform future policy advocacy. A fully anonymous synthesis of results may also be published in research literature, which I can also share with you.

Before we begin the interview, I have a few logistics to share:

- First, none of the information you share with me today will be connected to your name or your business name.

- Second, for participating in this interview, you may opt to be entered in a drawing for one of three, $100 e-gift cards. At the end of the interview you'll have the opportunity to provide your preferred email address for contact should you win.

- If there are any questions that you prefer not to answer that is perfectly fine and we can move on to the next question. If at any point you wish to stop the interview and no longer participate in the study, please let me know and we can end our conversation without any consequences.

- To give you an idea of where our conversation is going today, I'd first like to gain a baseline understanding of you and your farm – things like where you're located and what you produce. Then I'd like to dive into some of the ways that you were impacted by COVID and how you responded to those impacts. We'll end by talking about things that influenced your ability to respond and hearing your thoughts on how the pandemic may have changed or reaffirmed community values.

- I would also like to record this interview. *[If using webcams: I will record the whole meeting, both video and audio].* This is to make sure I don't miss anything you say, so I will go back and listen to and transcribe our conversation. The recording will be saved on a secure, password protected computer hard drive. Per Washington State law concerning research data, I will retain the recording for 6 years, and then delete it. Do I have your permission to record this interview? *[If permission is granted, turn on recorder].* Great, as discussed, we're now recording.

Before we get started, are there any questions I can answer for you?

***Section 1: About you*:** First, I want to learn a little bit more about you.

1. Just to confirm, are you over 18 years old?
2. Are you a first-generation farmer?

   Probe:
   1. If not a first gen farmer: can you briefly describe your farming background?
3. How long have you been farming?

***Section 2: About your farming operation*:** Next I'd love to start learning more about your farming operation.

4. Can you give me an overview of your farm? I'm interested in things like size, location, and what you produced pre-COVID. Later we'll have the opportunity to talk about if and how COVID changed your production.

Probes:
   1. Where is your farm located?
   2. How many acres do you farm/what is the size of your farm?
   3. What products do you produce?
   4. Do you produce any value-added products?
   5. How long have you been in business?

5. Does your farm have mission and value statements? Can you briefly describe them?

6. Now I'd like to learn a little more about your marketing channels, or the ways in which you get your products to customers. I want to provide the definitions I've been working, which are the WSDA official definitions, with so we're on the same page. You might remember that I was looking to chat with farmers who direct market, which I'm considering selling via things like farmer's markets, CSAs, online, U-pick operations, or farm stands; but also includes selling directly to grocery stores, restaurants, or institutions like schools. Non-direct marketing would be selling your products via wholesale distributor, broker, or packer; processor; USDA Foods (commodity program) or export. With that in mind, prior to COVID, what types of direct marketing did you engage in?

7. To get a better understanding of your typical farm income, like, the last year or two prior to COVID, I'm going to read some income ranges. Please stop me when you hear the one that best describes you. Is your farm income typically:
    1. Between 0-$10,000?
    2. Between $10,000-$50,000?
    3. $50,000-$100,000?
    4. $100,000 - $150,000?
    5. $150,000-$200,000?
    6. $200,000-$250,000?

Probe:

1. Is farming your full-time occupation?

Section 3: About the impact of and responses to COVID-19: Now I'd like to talk about how you've been impacted by COVID, and how you've responded.

8. Has what you produce changed because of COVID?

Probes:

1. Are you now growing different crops?
2. Are you now producing value added products?
3. Have you had to change your prices?
4. Was this shift easy or difficult to make? Logistically? Was the decision easy or difficult to make?

9. **How are you getting your products to customers now?**

For this question, a deeper dive into the how or why/why not may be appropriate for each of these probes.

Probes:

1. Are any market channels no longer available to you because of COVID?
2. Are any market channels new because of COVID?
3. Are you able to engage with programs like the Farmers-to-Families Food Box program, or the Farm to Food Pantry initiative?
4. Are you having to waste or dump any product?
5. Was this shift easy or difficult to make?

10. **(Halfway) Has your relationship with your customer base changed?**

For this question, a deeper dive into the how or why/why not may be appropriate for each of these probes.

Probes:

1. Has the number of customers changed?
2. Has the demographics of your customer base?
3. Have your interactions with customers changed (e.g. amount of time spent talking, topics of conversation)?

11. **How has COVID impacted your revenue this year?**

Probes:

1. Will you have a gross change in revenue?
2. **Will revenue look significantly different in different market channels (e.g. CSA sales up but direct to restaurant way down)?**
3. How do you think COVID will impact your revenue the rest of this year?
4. Do you foresee COVID impacting your growth in future years? Why?
5. Have you experienced a change in costs associated with business? (For example, things like needing more gloves, boxes for CSAs, seeds, contracts, insurance, or anything like this.)

12. **I know that folks have faced a whole slew of different challenges to their farming operations because of the pandemic; things like challenges related to closed market channels, cash flow issues, challenges accessing PPE and necessary sanitation, increasing operating costs…there's been a lot. What has been the biggest challenge to your operation that you've experienced?**

Probe:

1. Why do you think that is?

13. **Have you experienced any positives for your farm because of COVID?**

Probe:

1. Why do you think that is?

14. Earlier I mentioned the idea of exploring the *need* to change parts of your operation. If there are parts of your operation that didn't need to change, that would suggest they're robust and could withstand this kind of shock. Were there any parts of your operation, like marketing channels, labor, or production that didn't change? *Or, if things did not change: Were there any parts of your operations that you thought might change, but didn't change?*

Probe:

1. Why would you say these didn't change?

***Section 4: More about responding to COVID*:** I'd like to learn more about things that influenced your ability to respond to COVID. In other words, the barriers or facilitators to changes you've made.

15. **Do you think there are characteristics or qualities of your farm that influenced your ability to, or even need to respond to the pandemic? In other words, what made the process of changing easier or harder?**

16. Are you a part of any networks or groups that influenced your ability to make changes to your operation?

Probe:

    1. Briefly, how do you engage with these groups? Email, listservs, meet-ups (in a different time, perhaps!)?

17. What resources would you like to see available which currently are not? (For example, would you benefit from funding in a certain area, trainings or assistance in breaking down other barriers of market entry)?

Section 5: Looking forward: As we begin to wrap up, I'd like to know more about if the pandemic changed the way you view your business.

18. Earlier you described the mission and values of your farm. Has the pandemic challenged or reaffirmed these at all? If so, how? *If no mission/vision statement:* Do you think the pandemic has challenged or reaffirmed your reasons for farming?

19. **Do you think the pandemic changed the way the public views or values small farms, like yours?**

Section 6: Closing: In closing, I'd like to invite you to share any other impacts, adaptations, challenges, or successes that I didn't ask you about.

20. Do you have anything you'd like to add here?

Section 7: We've reached the end of the interview! I'm going to stop the recording now, but I'll I have a few more housekeeping questions for you after I do [*Stop recording, confirm verbally*].

21. Would you like to share an email address to be entered into a drawing to win a $100 e-gift card?

22. Would you like to share your age, gender, and ethnic and racial identity?
    1. How old are you?
    2. How would you describe your gender identity?
    3. How would you describe your race and ethnicity?
23. I am also still recruiting for this study – so if you know of anyone who would be interested in participating feel free to share my information with them or if you feel comfortable sharing their names with me I can also reach out.

Thank you again for taking the time to talk with me today. I really appreciate hearing your thoughts and experiences. Before I compile a final report, I will share a draft of my analysis with you that contains any quotes of yours that I include. The quotes will be fully anonymized, but I want to give you the opportunity to review them and make sure I understood you correctly. This will likely occur in the next month or two. In the meantime, please feel free to reach out if you have any questions, and I will be in touch!

Appendix B.

Focused codes, categories, and themes

Focused Codes	Category	Related Themes
- "Big meat" alternative - Increased demand for animal products - Accessing slaughter - Regulations are a barrier - Reminders	Animal production	- Farm operations - Demand - Values
- Cost of business stayed the same - Labor costs more - Spending more on sanitation	Business costs	- Farm operations
- Cash flow was tight - Challenge accessing labor - Complex decisions - Labor costs more - Difficulty accessing resources - Stress - Tense political times	Challenges during covid	- Farm operations - Shifted attitudes or feelings
- Increased demand from covid - Increased demand for animal products - Uncertainty in demand - Reminders	Demand	- Diversity - Support - Market channels - Shifted attitudes or feelings
- Donations are down because there's no "extra" - Participation in hunger relief programs	Emergency food system	- Market channels - Demand - Values
- Pivot - Social dynamics with employees - On-farm volunteers - Quick decisions - Small size made us flexible - Farm values influence operations - Expected change but didn't change	Farm operations	- Farm Operations - Diversity - Flexibility
- I teach others	Farm/public interface	- Farm Operations

- Social opportunity		- Market channels - Values
- Farming as a career option - Farming is my full-time occupation - Farming is not my full time occupation - Farming is my full time occupation, but not my partner's	Farming as a career	- Shifted attitudes or feeling - Values
- Dissatisfaction with aid - Lack of information - Regulations are a barrier - "Too small"	Government	- Farm operations - Support - Access to resources
- Things take more labor - We managed with less labor - Labor costs more - Challenges accessing labor - On-farm volunteers - Small number of employees - Small size made us flexible	Labor	- Farmer operations - Flexibility - Access to resources
- Benefits of diverse market channels - Connection to new market channels - COVID market channels work better for me - Restaurant sales changed - Market channels lost to COVID - Instability of market channels - CSA predicted stability - Relationships facilitate market channels - On farm infrastructure is helpful	Market channels	- Market channels - Diversity - Values - Flexibility - Access to resources - Support
- Perfect for the pandemic - Relationships facilitate market channels - Received government support - Pivot - Quick decisions - On farm infrastructure is helpful - Direct community support to farms - Flexible contracts - Ability to make changes - Small size - "No challenges during COVID" - Benefits of diverse market channels	Positives/positive facilitators during covid	- Diversity - Flexibility - Access to resources - Support
- Prices have decreased - Prices have increased	Prices	- Farm operations - Values

- Prices haven't changed - Prices vary by market channel - Farm values influence price decisions		- Support
- Production has not changed - Production has increased due to COVID - Change in production due to COVID - Benefits of diverse production	Production	- Farm operation - Market channels - Diversity - Flexibility
- Revenue down in COVID - Revenue up in COVID - Revenue the same in COVID - Revenue stifled due to COVID	Revenue	- Demand - Values - Diversity - Flexibility
- Customers don't feel safe at the store - Personal health scares - Spending more on sanitation - Social distancing	Safety	- Demand - Market channels - Values
- Luck - Stress - Uncertainty - Hopeful - "We survived"	Sentiments	- Farm operations - Access to resources - Support - Shifted attitudes or feelings
- Litmus test - Catalyst - People thinking about things differently - Fire drill - Increased customer appreciation - People don't feel safe at the store	Shifted attitudes	- Demand - Shifted attitudes or feelings - Values - Support
- Fire drill - "Big meat" alternative - Increased demand for animal products - Farming as a career option - Fill the gap	The role of small farms	- Demand - Shifted attitudes or feelings - Values
- Uncertainty in demand - Predicted stability of customer base - Predicted stability of market channels - Litmus test - Viability of local food systems - More changes next year	Thinking to the future	- Shifted attitudes or feelings - Values
- Farm values influence market channels - Farm values influence operations - Farm values influence price decisions - Money is not my only value	Values	- Shifted attitudes or feelings - Values

- Value feeding the community		
- Reminders - Fire drill - Litmus test - "Big meat" alternative - People thinking about things differently - Fill the gap	Driving consumers to small farms	- Demand - Shifted attitudes or feelings - Values
- Accessing slaughter - Direct community support to farms - Mutual support - Networks - Received government support	Access to resources	- Farm operations - Market channels - Diversity - Support
- Diverse skillset - Quick decisions - No one got sick - We managed with less labor - On-farm infrastructure is helpful - Ability to make changes	Well-managed farm operations	- Farm operations - Values - Diversity - Flexibility - Access to resources
- Ability to make changes - Flexible contracts - Money is not my only value - Quick decisions - Relationships facilitate market channels - Value feeding the community	Autonomy in decision making	- Farm operations - Values - Diversity - Flexibility - Access to resources
- Accessing slaughter - Benefits of diverse market channels - Catalyst - Commitment from customers - Relationships facilitate market channels	A resilient/flexible environment	- Market channels - Shifted attitudes or feelings - Demand