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Being a Farmer in Austria during COVID-19—A Qualitative Study on Challenges and Opportunities

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Abstract: To assess the effects of COVID-19 on Austrian farmers, a qualitative study design including computer-aided, qualitative content analysis was applied. Interviews with 34 Austrian farmers covering a broad spectrum of the sector were conducted to identify the impacts, obstacles, and opportunities during the first year of the COVID-19 pandemic. The results show that the diverse and heterogeneous impacts of COVID-19 on farms created significant challenges but also opportunities. Negative impacts included sales difficulties due to the closure of the hospitality industry and farmers markets, the ban on non-agricultural activities, the disrupted availability of workers and agricultural inputs, and the related additional workload. Mitigation of negative effects through political measures and interest groups showed limited effectiveness. Nevertheless, the functionality of the agricultural sector was maintained. During the initial phase of the pandemic, direct impacts on agricultural production were minimal and adjustments were adequate. There were also positive effects on parts of the agricultural sector, such as a boost in direct sales, increased demand in the food retail sector, and improved public perception of agriculture and farmers. Long-term changes in farms have been triggered and/or reinforced by the COVID-19 pandemic, mainly driven by digitization, investments in product and/or process innovations, and adjustments concerning marketing.

Keywords: qualitative content analysis; direct sales; long-term impacts; consumer behavior; food supply chain



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1. Introduction

The outbreak of coronavirus disease 2019 (COVID-19) was declared a pandemic on 11 March 2020 [1]. In an attempt to contain the virus and minimize consequences of the health crisis, governments around the world imposed lockdown strategies including social distancing, closure of non-essential retail, schools, and the hospitality industry, travel restrictions, and cancellation of events [2]. Restrictions on economic and social activities negatively impacted the economy, causing a global recession [3], with a 3.4% decline in real gross domestic product per capita in OECD states in 2020 [4]. Effects on all economic sectors were discussed [5] and inevitably many questions about the impact of the COVID-19 pandemic on agricultural and food systems were raised [6]. Since all actors in food systems are affected [7], a growing body of literature is observing the immediate impacts of the pandemic on agriculture globally [8–12].

Austrian agriculture is characterized by alpine landscapes, a high share of small-scale family farms, and the highest proportion of organically farmed agricultural land in the European Union (EU) [13]. Early on, Darnhofer [14] pointed out how the resilience of Austrian farms would be tested by the disruptive dynamic of the COVID-19 pandemic. So far, the only available empirical research on Austrian farms shows mostly negative economic impacts as well as private burdens on farmers [15]. Meuwissen et al. [12] report that the sensitivity and exposure of farming systems across Europe vary greatly. Therefore,

there is a need to investigate positive and negative impacts on Austrian agriculture in relation to its unique structure. The objective of the presented study is to meet this need by exploring the individual experiences of Austrian farmers, the opportunities and challenges they faced during the initial phase of the pandemic, and the possible long-term impacts on farms to address the following research question: How did the COVID-19 pandemic impact Austrian agriculture?

1.1. Structure of the Paper

The paper is structured as follows. First, based on a literature review, general impacts of COVID-19 on agriculture are summarized. Secondly, the applied qualitative research approach is described and empirical findings from interviews with 34 farmers are presented. Finally, the findings are discussed and conclusions are drawn.

1.2. Theoretical Background: Agriculture and the COVID-19 Pandemic

As an integral part of food supply chains, farmers were largely exempt from restrictive measures during the COVID-19 pandemic [16]. Nonetheless, mitigation strategies, changes in consumer behavior and the long-term nature of these changes [17], as well as the health crisis itself had multidimensional supply-side and demand-side impacts on agro-food systems globally [18,19]. Due to the interdependence of actors—including producers, transporters, processors, retailers, vendors, and consumers—disruptive events trigger what Béné [16] describes as ripple effects throughout the food supply chain. In this context, COVID-19 is compared to other adverse events with severe impacts on food systems and their actors such as extreme weather events and economic or political crisis [16]. In the case of COVID-19, mitigation measures as a major source of externalities affect groups of actors and cause spillovers downstream or upstream along the food supply chain [16].

One aspect concerns disruptions of international transportation networks. During the initial pandemic phase in the EU, for example, borders were closed, air travel was massively restricted, and internal border controls and travel bans were introduced [20,21]. Since the primary agricultural sector in developed countries depends on temporary foreign workers, movement restrictions caused labor shortages [22,23]. Labor-intensive activities such as vegetable, fruit, and wine production were especially affected [10–12,24,25], while family farms coped better, according to a French study [8]. In some cases, production plans needed to be adapted, for example in Poland, where farmers shifted production towards less labor-intensive vegetables [12]. In addition, the availability of agricultural inputs was affected [7,9]. For instance, in the Chinese province of Hubei, fertilizer and pesticide shortages due to the closure of manufacturing facilities resulted in lower yields of vegetable production [26]. To counteract availability problems, agricultural workers were declared essential [23] and in May 2020 the EU implemented measures to enable the unhindered transport of food and the mobility of seasonal workers in the agricultural sector [27]. Early on in the pandemic, daily production activities as well as spring tillage and planting were negatively affected for the majority of family crop farms in China [9]. However, impacts on agricultural production and delivery of food in Europe were limited [11,12]. This is in line with findings from Béné et al. [7]. They assessed the impacts of COVID-19 on food security across 62 countries and concluded that apart from initial disruptions, the availability of food was not affected. Food systems responded adequately to the disruptions of the pandemic and thus maintained their main function as food suppliers [7]. In contrast, in low- and middle-income countries, a decline in the purchasing power of households had adverse effects on the accessibility and affordability of food [7]. To support farmers and maintain food security, supportive measures including financial aid were taken globally [12,27,28].

The shutdown of sales channels, including restaurants, cafés, hotels, catering, and markets, negatively affected the income of farmers [11,12,25]. Weersink et al. [29] showed that the closure of the hospitality industry and the subsequent reorganization of food supply chains had the greatest immediate impact on the North American agricultural sector. The negative effects of market closures can be illustrated by the example of French dairy farms.

While they largely experienced zero to moderate economic impacts, the drop in turnover caused by the closure of farmers' markets negatively impacted those dairy farms with direct marketing strategies [8]. Meanwhile, the shift towards private consumption increased sales volumes in retail. Just-in-time food supply chains struggled to quickly implement necessary changes—for example, provision of package sizes suitable for retail—and to reallocate outputs [19,29]. Due to its nature, agricultural production continued, resulting in some farmers being unable to sell excess produce and being forced to dispose of highly perishable products such as milk and vegetables on some occasions [11,29,30].

Even though food demand is inelastic and therefore the effects of the pandemic on overall food consumption are limited [11], changes in daily lives during the pandemic brought about major adjustments in food consumer behavior [18]. In the short-run, panic-buying behaviors caused by consumers' fear of scarcity resulted in temporary shortages and stockouts across many countries [19,29,31]. Changes in food consumption patterns and shopping behaviors were observed, especially during lockdowns, for example, increased interest in cooking and baking, preference for e-commerce, and increased demand for products beneficial to health and comfort food [18,19,29]. Although these changes primarily required adjustments to the downstream end of food supply chains [16], they also affected demand at farm level. Some producers experienced difficulties in placing output on the market [18]. For example, the shift from the hospitality industry to consumption at home discriminated against expensive restaurant cuts of beef [18,29]. After initial disruptions, a rapid rebound of agri-food systems was observed [18,29].

Nevertheless, the pandemic highlighted the importance of agriculture for food security and provision of public goods, such as cultural landscapes for recreation, improving the image of farming in the public eye [10,12]. Consumers increasingly preferred local products and short food supply chains, which initially appeared to be more resilient [10,11,19]. Some authors even assume that national strategies after COVID-19 should put an emphasis on local food (Protected Designation of Origin: PDO certification, etc.) to support public health. As Glogovetan et al. [32] point out: "The food products with the certification PDO, PGI, TSG have a better impact on consumers' health because of their pure ingredients and the lack of artificial chemicals". The trend towards local food had beneficial effects on farmers engaging in direct sales to customers and e-commerce [11,12,25,33]. For example, diversified farms in Italy experienced an increase in quantities sold and gained new customers [11]. Conversely, the ban on agrotourism, gastronomic, and educational activities had adverse effects on diversified farms [11,33], even though a survey in Poland revealed a generally high interest in holidays on agrotourism farms during the pandemic [34].

Ultimately, COVID-19 is a direct threat to human health. It has been shown that agricultural workers, particularly hired and migrant workers, in the USA are at a high risk of contracting COVID-19 [23]. Infections and quarantine measures decrease the availability of agricultural workers and potentially have adverse effects on food supply [23]. In the USA and Canada, the shutdown of meat and dairy processing plants due to infections within their workforce caused ripple effects on livestock farmers [29]. Besides, a wide array of psychological issues including loneliness, fear, panic, obsessive behavior, and depression can be caused by the nationwide lockdowns, quarantine measures, and intense media coverage of COVID-19 [35]. The closure of schools and care facilities for children places additional burdens on families and particularly women, who perform the majority of unpaid care work [36].

According to the literature, COVID-19 will have long-term impacts on agriculture [9,19,29]. The pandemic is likely to accelerate trends in agriculture, including but not limited to structural change [37], e-commerce [19], automation [29], and digitization [22], and to contribute to the strengthening of smaller and localized food supply chains [19]. Further, it is expected that the use of risk management tools by farmers will increase [29]. For example, a general interest in pushing automation and technologies in agricultural production is observed across Europe, North America, Australia, and New Zealand to reduce the reliance

on labor [10,12,29]. Therefore COVID-19 presents a chance to change agro-food systems for the better [14].

However, considerations about long-term impacts remain speculative as they depend on factors such as the duration of the COVID-19 pandemic, recession, changes in consumption patterns [29], the political measures taken [9], and the short-term resilience of farms' commerce [33]. While impacts vary greatly across agricultural and food systems, it can be concluded that the COVID-19 pandemic has affected, for example, the availability of agricultural workforce and inputs, sales, and consumer food demand globally; nonetheless, overall food production and the food supply remain resilient.

2. Materials and Methods

2.1. Qualitative Research Design

Since the COVID-19 pandemic is a disruptive event unique in its scale and the diversity of its consequences, a qualitative research approach with semi-structured interviews and qualitative content analysis has been employed to identify its impacts on Austrian agriculture. Similar methods have been applied previously to address the impacts of COVID-19 on agriculture [8,10,11,38]. By reconstructing the subjective viewpoints of farmers, the qualitative interview approach allows us to examine crucial challenges and opportunities that may affect the resilience of Austrian farms in general [39]. Therefore, drawing on the strengths of qualitative methods, we explore the impact of COVID-19 on agriculture as a new phenomenon and generate hypotheses for further quantitative research on the topic [40].

Following the principle of maximal variation sampling [39], we aimed at a small sample size of at least 30 farms with a high diversity regarding agricultural and non-agricultural activities, farm size, production systems, and location. Austrian farmers were randomly contacted through an Internet search and asked to voluntarily participate in the study. Ultimately, interviews with 34 farmers were carried out through online video calls between 11 February and 22 March 2021. The interviews were conducted virtually in order to protect all persons involved from contagion risks. This approach is cost and time efficient without neglecting the visual aspects of communication [40]. With the consent of the interviewees, they were recorded as audio files for documentation.

Conducting semi-standardized interviews using an interview guide was chosen as an appropriate method since several topics and certain information needed to be covered in order to answer the research question adequately [39,41]. Based on the limited literature available at that time, an interview guide was designed. This included initial reflections about the resilience of Austrian farms in the context of COVID-19 [14] as well as impacts on agricultural production, the availability of agricultural inputs and work force, sales, and insurance globally [25,26,28]. The literature also covered the role of COVID-19 mitigation measures and financial aid for farms. The use of an interview guide ensured that all topics with relevance to the research question were covered. However, to maintain the principle of openness, the interviewer was allowed to change the order of questions, rephrase questions, or point out important aspects if necessary [40]. Exclusively open-ended questions were asked to encourage farmers to answer freely and in detail and to possibly elicit new themes [39]. In the interviews, the collection of structural farm data (products, size, work force, etc.) was followed by two introductory questions including: "How has the COVID-19 crisis affected the farm?". After that, a series of open-ended questions about the impact of COVID-19 were asked, followed by questions tackling the public image of agriculture, consulting services and information, and the future aspired to for the farm. Interviews lasted between 20 and 75 min, with an average duration of 36 min.

Literal transcription of the recorded interviews was completed manually by the interviewer. In order to improve legibility, dialects were translated into Standard German. To ensure confidentiality, the interviewees were anonymized in the transcripts with the abbreviation "LW" followed by consecutive numbers from 1 to 34. Using the software MAXQDA (version Standard 2020, release 20.4.2, VERBI GmbH, Berlin, Germany), the

interview transcripts were analyzed by means of qualitative content analysis [42,43]. The method followed the structuring approach of Kuckartz [42]. After developing an overall understanding for the text material by reading, marking, and writing case summaries, the coding of the text material was carried out in two steps. In the first step, deductive codes derived from the interview guide were used to structure the interviews one by one into main categories (see Table 1). Code definitions were saved as memos in MAXQDA The extent of the selected text segments—between one word and several paragraphs—was determined by the statement context. In a second step, each main category was further decomposed using inductive sub-codes. Content and value of statements were the central criteria for the sequential formation and application of inductive sub-codes. The main result is a differentiated code system with three levels. It should be noted that despite the systematic approach, developing and applying a code system is an interpretive and therefore subjective process. There was no need to check intercoder reliability since the entire qualitative content analysis was conducted by one person [42]. Finally, a category-based evaluation of the main categories was carried out to summarize the interviews.

Table 1. Impacts of COVID-19 on Austrian agriculture—13 main categories.

No.	Main Category	Frequency	Percent
(1)	Sales and direct sales	408	27.7%
(2)	Operating materials	157	10.7%
(3)	Labor force	45	3.1%
(4)	Working hours	48	3.3%
(5)	Production and activities	46	3.1%
(6)	Risk management	52	3.5%
(7)	Future perceptions of economic development	198	13.5%
(8)	Regulatory framework	169	11.5%
(9)	Representation of interests	58	3.9%
(10)	Training and consulting	48	3.3%
(11)	Sources of information	84	5.7%
(12)	Public perception and media coverage	131	8.9%
(13)	Future perception of social impacts	27	1.8%
Total		1471	100%

2.2. Description of the Sample

For most of the 34 Austrian farmers (30), agriculture is their main source of income, which is a much higher share compared to the Austrian average, where more than half are part-time farmers [13]. The sample is quite heterogeneous, covering the overall structure of the sector. The farm size ranges from very small with only about 1 ha to large with 180 ha, the average size amounts to 48 ha, while the seasonal average size of the workforce ranges from 6.8 to 8.6 persons. About half of the interviewed farmers hire non-family workers. In 2020, the average size of the 155,754 Austrian farms amounted to 46 hectares [13]. Half of the sample farms are organic, which is far higher than the overall proportion in Austria, which is 23% [13]. Farms with direct sales are over-represented as well (30), as only about 14% of Austrian farms frequently sell their products directly to consumers [44]. The reason for the high proportion of direct sales farms may be seen in the recruitment process: these farms are usually highly visible, and it is easier to motivate them to take part in interviews. Additionally, direct sales to the hospitality industry are important sales channels of some of the sample farms, which are not included in these official statistics. Other sources estimate that the proportion of direct sales of farms—including those that sell to the hospitality industry—amounts to 28% [45]. Further activities of the sample farms include non-agricultural secondary activities (mentioned five times), farm holidays (four times), educational offers (twice), and a traditional “Buschenschank” (a wine tavern, mentioned once). Most of the farms are organized as sole proprietorships, only four are private partnerships, and two are limited liability companies.

3. Results

As expected, the COVID-19 pandemic caused more negative than positive effects for the interviewed farmers. Table 1 contains the aggregated list of the code categories deducted from the transcripts of the interviews with the farmers. A more detailed structure of positive, neutral, and negative codes can be taken from Table A1 of the Appendix A. The codes were assessed by means of the qualitative content analysis program MaxQDA2020. The most important category, sales and direct sales, contains a total of 408 individual text fragments from the interviews (27.7% of all assigned codes). The least important category only contains 45 text fragments (labor force; 3.1%).

Based on the initial interview question, 13 farmers estimated that the pandemic induced a predominately negative performance. By contrast, eight farmers assumed a more positive overall effect of the COVID-19 pandemic on their farm. A balanced judgment was given by eight interviewees, while the rest were impacted to a small extent (three farms). (In addition to these codes, we included two brief questions focusing on social aspects and the changes in the personal lives of the farmers (impacts of COVID-19 on, e.g., childcare, social environment, circle of friends). As expected from the literature [36], the results suggest that particularly farmers with children—more precisely, female farmers—were more affected by the pandemic. Homeschooling of children was frequently mentioned in our study as a psychological stress factor, mainly carried by female farmers. However, overall, the farmers interviewed considered the social consequences in rural areas to be less significant than in urban regions).

3.1. Economic Effects

Code categories (1) to (7) in Tables 1 and A1 in the Appendix A refer to the economic effects of the COVID-19 pandemic on Austrian agriculture.

3.1.1. Sales

The most significant impacts of the COVID-19 pandemic refer to sales and, in particular, direct sales of farmers. As the Austrian hospitality industry was frequently closed (for two months in spring 2020 and again from November 2020), 23 farms reported declines in demand for their product. Some even reported massive declines; the decrease depended on the importance of the hospitality industry as clients for farmers and was also higher if farmers were dependent on winter tourism. Individual farmers also reported huge losses due to reduced demand by community catering, quality wine exports, and to some extent in the retail sector. Changing market conditions also impacted some farmers negatively; for example, due to the reduced price of pork meat, it was even impossible for one farm to cover production costs. Overall, the sales slump due to closed sales channels seemed to have the highest impact on farmers.

By contrast, there were also farms that experienced significantly increased direct sales to consumers (only sales to consumers are meant here confirming Balling [46]). Almost half of the sample reported increased sales particularly in farm shops, but also via subscription box schemes, delivery services, crowd farming, and self-service facilities. About one-third of the sample succeeded in implementing or promoting online shopping channels for their products, in particular as they achieved more awareness on social media. Others reported an increased demand in the retail business, which seemed to be a contradiction to some interviewees (who reported a decrease in, e.g., wholesale). However, as private sales in the retail sector were boosted in particular in the early phase of the pandemic by the nationwide lockdown and even panic buying by consumers, about one third of the interviewees were clearly able to benefit. Although it is predicted that the reported tremendous rise in sales in the first stage of the pandemic will decelerate, the improved situation should last even in the long run at least for some of the interviewed farmers. The success of direct sales during the COVID-19 crisis is due to several reasons. Shifts in attitudes and behavior, such as consumption at home, online shopping, and preference for regional products of consumers, are quite important. In addition, the overall customer

base could be widened (even though the structure of the clientele stayed more or less the same). However, even in direct sales of farmers' products, some interviewees reported a negative impact of the COVID-19 pandemic, mainly due to the closure of farmers' markets or reduced attractiveness of them even during times when they were opened. Consumers feared the risk of infection, in particular in the early stages of the pandemic. Additionally, the lack of tourists (especially in the winter season) led to a massive decline in demand at those farms that were directly selling their agricultural products mainly to tourists; besides, these farms quite often sell their products to the regional hospitality industry as well, which again enhances the negative effects of the pandemic. Finally, some farmers also reported that competition between farmers who sell directly and those who sell to the retail sector increased and that the overall demand in rural areas stayed low even during the pandemic, preventing positive effects of the pandemic on direct sales.

As some farmers had to face a significant decline in demand from the hospitality industry and other usual sales channels, they had to process or market their production surplus efficiently. For instance, some used their milk to further process it, another farmer sold the eggs to a food manufacturing company, or excess vegetable production was used to produce biogas. Overall, the changed market conditions also influenced market prices; for some products, the market price went down (e.g., milk, pork meat), while for others, higher demand, for example, in direct sales, led to significantly higher beef prices.

3.1.2. Operating Materials

In general, purchases of operating materials stayed unchanged or were partly adapted to a change in demand. Some farmers also increased their storage capacities for operating materials (such as diesel or packaging materials) to reduce uncertainty. About half of the farmers reported longer delivery times or delivery difficulties for the required materials (seeds and seedlings, packaging materials, agricultural machines, spare parts, fertilizers, pullets, etc.); others had no problem buying the required materials. Some even reported shorter delivery times. For many materials, prices stayed more or less constant or were reported to increase within expected margins. By contrast, some farmers reported significantly higher prices for some raw or building materials and spare parts. Additionally, as an exception to the general trend, diesel was reported to have been cheaper at times in spring 2020.

3.1.3. Labor Force and Workload

Particularly at the beginning of the pandemic, foreign workers were lacking in the sector due to the closure of borders, decreased mobility, and quarantine measures [47]. In total, 3165 temporary employment permits for seasonal workers were granted in 2020 [13]. About one-third of the interviewees were affected by a shortage of workers. To some extent, the farmers reacted by employing the workers in advance, having workers fly in, separating them into teams during the high production season (to prevent infection clusters and maintain production even in the case of COVID-19 infections), and so on. Altogether, the involved farms had to cover higher expenses for items such as accommodation and to deal with increasing efforts regarding the organization of the labor force. By contrast, an equal proportion of farmers reported no such issues. The availability of workers was even less difficult for some as it was easier to recruit domestic workers from other sectors.

Almost half of the farmers reported that their own workload increased temporarily or even in the long run and/or that workload peaks shifted. This was mainly due to the abovementioned boost in direct sales. Other reasons for increased workloads were shortage of workers, farmers' secondary jobs, a general increase in sales, or an adjustment of agricultural production. For the other part of the sample, the workload stayed more or less the same; a small proportion of them even reported at least temporarily fewer working hours due to changes in production and sales.

3.1.4. Agricultural Production

The vast majority of the interviewees reported no significant changes in their agricultural production. Hence, the COVID-19 pandemic had no major effects on agricultural production. However, about one-third had to adapt their production, processes, and organizational procedures. Some had to lower the production level due to a decline in demand. Others reported that they adapted processes. For instance, as the meat industry faced massive disruptions induced by COVID-19, some farmers left their fattening pigs longer on their farms or invested more time in calf husbandry. Other impacts were also induced by the closure of borders, such as transnational machinery co-operation or access to foreign land properties. There were also some negative effects on non-agricultural secondary activities, such as farm holidays, tasting, or catering in a “Buschenschank” (wine tavern).

3.1.5. Risk Management and Future Perception of Economic Development

In general, the farms did not adapt their risk management due to the assumption that there was no need to do so or because the farmers already had an existing and functioning risk management system. However, the reasons for that stayed rather unclear in the interviews. For instance, seven farmers said they were increasing their storage capacity to cover future risks of non-availability or higher prices. In addition, the diversification of marketing activities, adaptation of production quantities, increased insurance amounts, or purchase of an emergency power generator were named as explicit measures in view of corporate risk management. Overall, the importance of a risk management system that worked well increased significantly. Some interviewees even reported that they personally became more relaxed considering the implications and consequences of the COVID-19 pandemic that they had had to face and conquer in the recent past.

Many of them saw positive effects of the crisis as well and expected these positive impacts—such as the development of new and innovative sales channels or the persistent high demand for agricultural products—to be continued in the future. Some also expected an economic recovery after the pandemic. Additionally, the consequent implementation of digitalization and the shift of the strategic focus of farms were expected to be of a long-term nature, too. Investments that will follow the crisis or were induced by it (such as more independency via photovoltaics) were considered to have long-lasting, positive effects leading towards higher profitability and competitiveness. However, due to the risks of the COVID-19 pandemic, not all farms expected to survive: the termination of business or at least parts of it—livestock breeding was mentioned frequently in this context—might reinforce the overall trend of a declining number of Austrian farms. In addition, the high risk of persistently low demand in the hospitality industry, consistently low prices, and the market pressure involved were mentioned as well as the overall increased uncertainty that the farmers expected in the future.

Most of these risks and expectations were considered to be valid in the long run, with only a few expecting the consequences to be of short-term nature and that they would be “back to normal” soon. The adaptation of production processes (e.g., by conversion to organic farming), the implementation of new shopping channels (direct sales, online, etc.), investments to become more independent (from, e.g., the energy sector), less dependency on highly affected sectors (such as the hospitality industry), digitalization in all divisions (e.g., order management), the application of online training tools, and enhanced marketing activities via social media were some important examples triggered by the COVID-19 pandemic reported by farmers. Accordingly, more than half of the sample confirmed that most of the modifications and adaptations induced by the pandemic were of a strategic nature. As a consequence, most farmers said they would likely include future disruptions in their strategic decision making, while a few were even thinking about giving up their businesses. The divergent expectations regarding the future outcomes of the pandemic are obvious: While some interviewees expected the positive effects of the pandemic (such as a significantly higher demand for direct sales) to continue after the pandemic, others feared that the altered economic conditions would rather induce declining market prices

for agricultural products, a still-critical level of demand from the hospitality industry, and further disruptions at markets, which altogether would prevent the economic recovery of the sector at least in the short run.

3.2. Institutional Framework

Code categories (8) to (10) in Tables 1 and A1 in the Appendix A refer to the effects of the COVID-19 pandemic on Austrian agriculture regarding the institutional framework. At the very beginning of the COVID-19 pandemic, the Austrian government implemented a number of actions to prevent the pandemic from further spreading, on one hand, and to support the economy, on the other [48]. In particular, the restrictive measures in early 2020 were criticized by many of the interviewed farmers. The closure of borders, the short time in which they had to adapt to the measures, the closure of public markets, the immediate shut-down of the catering sector and schools, and also quite different measures in neighboring countries affected most of the farms significantly. Nevertheless, most interviewees more or less understood the necessity of these actions and the struggles of political decision makers (even though—according to several interviewees—the measures could have lasted for a shorter time and should have been more consistent, too). The situation was new and unpredictable to the whole society. However, surprisingly, eight of the 34 interviewed farmers mentioned explicitly that they took actions regarding improved hygiene due to the virus.

Amongst others, the official actions to support the economy contained an investment premium, which was used by the interviewed farmers to purchase new agricultural machines, photovoltaics, or automatization equipment or to launch other investment projects. Most of the farmers valued the investment premium as an adequate and positive reaction of the government to the pandemic; however, a minority of the interviewed farmers considered the investment premium to be too low to be a real incentive. Four interviewees made use of the national short-term work scheme and three mentioned a one-off payment. Many of the interviewed farmers did not obtain national support due to explicit reasons for exclusion (such as a minimum required loss of sales), because they had no real need for support, or because they considered the bureaucratic efforts required to make the application to be too high and too lengthy. Besides that, national actions were criticized by some farmers because of the too-low funding rates, the denial of public authorities that the agricultural sector was also heavily affected by the pandemic, the limited adequacy of measures, and the fact that grants were paid out with huge delays. Concerning the surprising lack of foreign workforce, the replacement by domestic workers (which was supported by the authorities) was considered to be inadequate, mainly because agricultural work requires specific skills and usually is very demanding.

With regard to evaluating the representation of their interests during the pandemic, about half of the interviewees evaluated the work of the relevant institutions (such as the Austrian Chamber of Agriculture, Vienna, Austrian Chamber of Commerce, Vienna, Organic Farming Associations, Vienna, etc.) more or less positively; they considered their consultancy, information transfer, the offer of digital training and consulting opportunities, and so on to be an adequate reaction to the huge economic challenges of the pandemic. In particular, digital training and consulting opportunities were mostly evaluated positively. Many of the interviewees made use of these offers via webinars or video conferencing, as face-to-face training and consulting were usually canceled. Even collaboration with others and private meetings were implemented in virtual spaces. These innovative communication tools were considered to increase flexibility and reduce time efforts, which was an incentive for some to make use of training and consulting opportunities during the pandemic. However, some farmers stressed the need for personal contacts, and about one-third of the interviewees did not make use of training or consulting during the pandemic for various reasons. Significant critical issues were mentioned regarding representation, such as a lack of support, limited communication, and tardiness in reactions, to name just the most

important ones. Some interviewees seemed to be genuinely dissatisfied and disappointed by the responsible institutions.

3.3. Media Consumption, Information Search, and the Public Perception of the Sector

Code categories (11) to (13) in Tables 1 and A1 in the Appendix A refer to the effects of the COVID-19 pandemic on Austrian agriculture with regard to public perceptions and media-related topics. In general, the most important sources of information for the interviewed farmers were still TV and radio. However, online media channels became one of the most important information sources as well, while print media lost significance in comparison to pre-pandemic times. Most of the interviewed farmers used multiple channels, with only a minority relying completely on online information sources—as in other parts of the population, there was a growing distrust in classic mass media among a small part of the interviewed farmers. Finally, five farmers even mentioned that they significantly reduced their media consumption during the pandemic. Most of the farmers stated that they noticed at least temporarily more and more positive media coverage of agricultural and food-related topics, in particular referring to food security and quality, regionality and origin, harvesters and agricultural workload, appreciation of system-relevant jobs, or related topics. Only a minority of the interviewees reported that in comparison to other system-relevant sectors (such as the health sector), agricultural topics were underrepresented.

Altogether, almost all of the interviewees noticed a positive change in the perception of the importance and relevance of a well-functioning and resilient national food production. In this respect, the image of agriculture seems to have changed significantly as a result of the COVID-19 pandemic; some interviewees assumed that the shift may have been influenced not only by media reports but also by changes in the attitudes and behaviors of consumers as well. The interviewed farmers realized that consumers were increasingly demanding regional food, and the role of local suppliers and the significance of domestic agriculture and its performance within the society clearly improved. To some extent, the interviewees stated that they observed an increasing acceptance of the sector as a core contributor to the economic wellbeing of the nation as well as a growing awareness of food-related topics among the public. As mentioned before, the rising appreciation led to a growing preference for regional and local food and to greater interest in origin and traceability but also in topics related to agricultural direct sales, food quality, and food security. This change in perception by the general public was accompanied by a general increased awareness of nutrition. However, at least some of the interviewees were quite suspicious about whether these changes in image, awareness, and appreciation would last in the long run; about one-third expected a return to about the same valuation of the sector as before the COVID-19 pandemic. In addition some interviewees also expressed their hope that the positive change would also lead to a higher willingness to pay by consumers and a departure from the consistently romantic image of the agricultural sector towards a more realistic assessment of the real contributions of Austrian farmers.

Not all topics have a positive connotation in the public perception. Regarding seasonal workers, farmers reported a critical discussion about the working conditions and the dependency of Austrian agriculture on foreign workers. Obviously, as the closure of borders reduced the availability of foreign labor, the topic gained public attention during the COVID-19 pandemic—as shown by newspaper reports [49,50]. Before the pandemic, this was not a huge discussion point among the general public.

4. Discussion

Most of the 34 Austrian farmers interviewed felt either positively or negatively affected by the COVID-19 pandemic. By contrast an investigation about the general impacts on 86 French dairy farms showed that 81 farmers reported no or only minor effects of the pandemic [8]. In accordance with other studies, COVID-19 had major income effects on farms, which were sometimes positive but mainly negative [12,15,25]. The shutdown

or restrictions on out-of-home consumption, which accounted for 34% of all consumer spending on food before COVID-19 [51], had a direct negative impact on farms selling to the hospitality industry or indirectly by causing them to sell less to wholesalers, which is in line with previous findings [18,52]. According to a survey (telephone interviews with 1804 Austrian farmers), 46% experienced no economic after-effects, while 34% experienced slightly negative effects and 15% experienced strong negative effects [15]. Compared to other sectors [52] or to farms in China [9,25], the economic consequences were moderate for the majority of Austrian farms. Our interviews found that the individual impacts on sales were heterogeneous, and some farms suffered high losses. Similarly, out of 86 French dairy farms, 54 reported no impacts on their turnover, 6 reported turnover losses of more than 10%, while two increased their turnover [8].

The interviewed farmers used surplus products for direct sales or alternative processing. However, it is reported that some farmers from Italy had problems placing products on the market [18]. The surplus of products intended for the hospitality industry (for example beef, potatoes, wine, and spirits) probably influenced producer prices in a negative way [13,16]. In one case, a farmer had to dispose of vegetables destined for local restaurants, which highlights a certain inflexibility of just-in-time production for food value chains [29,53] and indicates that food waste might have increased in the sector due to COVID-19 [11].

Over two-thirds of German consumers visited a restaurant or food chain outlet between the lockdown in Spring 2020 and November 2020 [54], which is in line with the reports of farmers about the recovery of sales to the hospitality industry during that phase. According to international literature, certain branches of the agricultural sector were more strongly influenced by COVID-19 [10,15,29]. In Austria, negative economic consequences are particularly pronounced for the wine sector, pig fattening, and cattle fattening, with 66%, 89%, and 75% of the farms reporting negative impacts, respectively [13,15]. The majority of requests submitted to the Austrian Ministry of Agriculture for compensation of losses originated from the pig-fattening sector [13]. Out-of-home consumption and the hotel industry in Austria reported the highest negative economic impacts of COVID-19 [52]. There was also a significant negative impact on farm holidays. The Austrian farmhouse holidays sector, which contains 11% of all guest beds (i.e., 113,746) in the Austrian tourism sector, reported a 20% decrease in overnight stays due to COVID-19 in 2020 (in comparison, the Austrian tourism sector as a whole lost 36% of overnight stays) [13]. The lower decline in overnight stays for farmhouse holidays compared to the overall tourism sector may be due to increased popularity of farmhouse holidays during COVID-19, as has been reported for Poland [34].

The collapsed out-of-home consumption was partly replaced by a 12.6% increase in food consumption at home in Austria in 2020 [55]. This had a direct positive effect on farmers selling to consumers. Most farmers in the sample who were selling to consumers reported an increase in demand. Kirner et al. [15] observed that only a third of farmers involved in direct sales reported positive impacts. Austrian market data show that sales from farms increased by 23.9% and sales at farmers' markets by 12.6% in 2020 compared to the year before [55]. These findings show that agricultural direct marketing is a viable diversification strategy to increase the resilience of farms. Yoshida et al. [33] examined 74 urban farms in Japan and came to the same conclusion. An important factor for the increase in consumer demand was the improved perception of agriculture in our survey. The problems faced by food retailers in coping with the rapid change in demand at the beginning of COVID-19 increased consumer awareness of the importance of agriculture with respect to food security, and more consumers turned towards short food supply chains and alternative food networks (such as food coops, community-supported agriculture, food boxes, etc.), which initially turned out to be more resilient [10,11,14,19].

The farmers in our survey reported an increased preference for regional and organic food, which has been observed in other studies as well, for example in Austria [55] and France [8]. The increased preference for regional and local food is an important long-term

consumer trend in Austria. For decades, they have been promoted by national umbrella food marketing programs [56]. The farmers also noticed a rising interest in food and nutrition. Studies from the USA, Canada, and Italy observed that consumers used the additional free time during lockdowns for cooking and baking [18,29].

Similar to farmers in other European countries [12], the farmers in our study reported minor consequences of COVID-19 for their agricultural production, which is in accordance with Kirner et al. [15], who observed that only 10% of Austrian farms adjusted their production. While only some farms found that particular input factors were not available, a bigger share of farms reported that they were impacted by long delivery times and increased input costs. In particular, increases in investment costs for machines, spare parts, and construction were mentioned. Meuwissen et al. [12] reported the same for different agricultural systems in Europe.

Political measures focused primarily on sustaining agricultural production and on mitigating the immediate effects of COVID-19 [12,27,57], such as availability of seasonal workers and input factors. Only a few of the interviewed farmers who experienced significant economic negative impacts had received financial support; many farms were not eligible. Bureaucratic hurdles, insufficient scope of the schemes, and slow payments restricted the effectiveness of the available financial support. Farmers positively mentioned the information support received from institutions representing their interests but criticized the overall performance due to idleness and lack of support. Digitalization helped the interviewed farmers to participate frequently in webinars and similar educational offers, which is also reported in the literature [12]. Flexibility, saving time and costs, and having more time for family and management tasks made the use of digital education offers attractive to interviewed farmers, similarly to what was found in other studies [58]. By contrast, the farmers perceived the lack of face-to-face exchange and technological barriers negatively, in accordance with the findings of Erjavec et al. [58]. The interviews made clear that the reduction of social contacts during COVID-19 had a negative influence on many farmers. Kirner et al. [15] observed that 20% of farmers reported psychological strain. Some farmers reduced their news consumption from the media. Dubey et al. [35] observed psychological stress due to overconsumption of media reporting. The increased workload was another reported negative consequence, also observed by Perrin and Martin [8]. However, the farmers surveyed also reported positive aspects of working on a farm compared to office work in urban areas. Therefore, the general psychological strain during the pandemic [35] might be lower in the farm community compared to the overall population.

In accordance with the literature [9,33], almost all of the interviewed farmers expected long-term business transformations as a result of the pandemic with the aim of diversifying and increasing the autonomy of their farms. For example, the difficulties in finding seasonal workers during COVID-19 were an incentive to carry out automatization, which is in line with the findings from international literature [10,29,30]. Farmers reported that they were investing in solar energy to become less dependent on energy providers and on fossil fuels. For some dairy farms, the production of their own dairy products gained importance. Mitigation of future market risks via diversification was mentioned, as well. Digitalization will gain further importance, based on the responses in our survey. In particular, small farms rapidly adopted the use of digital technologies to overcome difficulties in selling their production [18,22]. Snow et al. [10] reported that farmers in Australia and New Zealand improved their virtual communication and showed higher acceptance of it. Farmers in our survey said that they would continue to use their newly installed online shops as an additional sales channel. During COVID-19, more consumers became used to ordering online, which could be beneficial in the long-term for farms using this channel [19,54]. The expectations about the development of sales over different channels after COVID-19 were heterogeneous, similarly to findings from Japan [33]. Some farms were not planning to sell to the hospitality industry again, which could make sense in the light of negative forecasts for out-of-home consumption, for example, in Italy [18]. Those who were selling directly to consumers planned to continue and expand their business, profiting from an increased

appreciation of consumers [11,18,30]. A transition to food value chains that are short and local, although less efficient, could reduce future uncertainties [59].

Our results underline that COVID-19 served as a catalyst for processes such as digitalization and automation [12] and consumer trends such as regionality and online shopping [18,54]. COVID-19 could potentially lead to long-term structural transformations of Austrian agriculture if more farmers switch to organic farming, cease livestock farming, change business practices fundamentally, or exit from farming altogether. The long-term effects of COVID-19 on agriculture are dependent on factors such as the duration of COVID-19, economic development, changes in consumer behavior [29], political measures [9], and the short-term resilience of farms [33].

A significant limitation of this study is that the structure of the sample deviates notably from the farm structure in Austria by having a higher share of organic farms and farms selling directly to consumers. Both have profited more from changes in consumer demand than conventional farms. Insofar, our results are not in congruence with Kirner et al. [15], who observed that only 5% of farms experienced positive effects, while for the majority, the negative economic consequences of COVID-19 significantly outweighed the positive ones. Accordingly, the results reflect to some extent the situation of Austrian farmers. This limitation could be considered in future studies (in particular, in neighboring countries), to achieve a more global perspective or at least a reliable comparison with other Central European agricultural systems.

5. Conclusions

Even though the results from 34 qualitative interviews with Austrian farmers have to be interpreted as hypotheses (and, in the best case, tested via a subsequent quantitative study), the study delivers some important conclusions for stakeholders within the food supply chain (particularly politics, agriculture, and science). As a core conclusion from the discussion of the results—also compared to the findings from international literature—we observe multidimensional impacts of the COVID-19 pandemic on Austrian agriculture: Interviewed farmers reported a broad spectrum of positive and negative consequences on their farms depending on individual capacities and the main sales channels. The severest consequences of the pandemic were the loss of sales due to closure of the hospitality industry and related markets, the ban on non-related agricultural activities, reduced accessibility of foreign seasonal workers in particular, and delivery problems for input factors. Positive effects of the pandemic were a higher demand for food products sold directly from farms and a higher consumer demand in food retail. Another positive aspect was an increase in the importance of regional or local food production and of short food value chains. This implies a higher resilience of farmers who were selling directly to consumers, as these farms reported an increase in demand (as mentioned above). Furthermore, the appreciation of agriculture in society improved significantly according to the farmers. The pandemic has brought to the forefront how important national and regional food production is with respect to food security. Whether this positive image of agriculture will persist in the long run is uncertain.

The cushioning of negative impacts of the pandemic by governmental support programs was limited in its effectiveness. Farmers mentioned that the process was too bureaucratic and the thresholds for participation too high. By contrast, farmers evaluated extension services and educational offers positively, and the acceptance and use of digital formats increased significantly. Overall, the flexibility and quick responses of farmers ensured that production volumes were maintained, and Austrian agriculture seemed to be quite resilient when faced with the COVID-19 pandemic.

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Appendix A

Table A1. Positive, neutral, and negative impacts of COVID-19 on Austrian agriculture in 13 main categories; n = total number of assigned text fragments.

Main Category	Positive Impacts	Neutral Impacts	Negative Impacts
(1) Sales and direct sales (n = 408)	Increasing demand in retail Increasing demand in direct sales and new customers, e.g., online, direct from farm New sales channels, e.g., online shops Higher demand in hospitality industry except in lockdowns	Unchanged demand for feedstuff and seeds	Sales slump due to closed hospitality industry and farmers' markets Lower demand in hospitality industry and wholesale Lack of tourists as consumers Unsaleable surplus in production Low market prices for selected products, e.g., pork meat
(2) Operating materials (n = 157)	Occasional shorter delivery times Diesel cheaper at times	Purchases predominantly unchanged Purchases adapted to demand Storage of operating materials	Long delivery times or delivery difficulties Delivery difficulties for, e.g., spare parts and packaging materials Higher purchasing prices for, e.g., raw materials and machines
(3) Labor force (n = 45)	Higher availability of domestic workers	Short-term working hours	Restrictions on admission of foreign labor force Labor force shortage Higher expenses for accommodation and organization of labor force
(4) Working hours (n = 48)	Lower workload	Change in workload peaks and work required	Increasing workload
(5) Production and activities (n = 46)	Impulse for innovation, e.g., increase in processing and automatization	Predominately no adaption of production Adaption to changed demand	Disruptions cause occasional adaption of cultivation, animal breeding, processing Prohibited activities, e.g., farm holidays, tastings
(6) Risk management (n = 52)	Only a few additional actions, e.g., storage Greater awareness of importance	In general, no additional actions required Risk management already established	
(7) Future perceptions of economic development (n = 198)	Development of new and innovative marketing and sales strategies Positive prospects due to economic recovery after COVID-19 Persistent high demand for agricultural products	Long-lasting changes such as investments Digital communication Shift of strategic focus of farms	Termination of business or parts of it (in particular livestock breeding) Increased uncertainty Negative prospects due to persistent low demand in the hospitality industry Ongoing falling producer prices

Table A1. Cont.

Main Category	Positive Impacts	Neutral Impacts	Negative Impacts
(8) Regulatory framework (n = 169)	Investment premium for various projects	National support programs to compensate for, e.g., short-time work cost, loss of sales	Covid measures disrupt activities, e.g., closing borders, markets Additional expenses for hygienic measures Bureaucratic efforts required to gain access to support programs Lack of general acceptance of affectedness of the sector Some farms were not entitled to support
(9) Representation of interests (n = 58)	Actual information sharing and consulting		Insufficient support and representation of interests
(10) Training and consulting (n = 48)	Development and usage of digital offers (time saving, higher flexibility) Increased usage of training and consulting		Cancellation of face-to-face training opportunities Lack of personal interaction via digital training and consulting
(11) Sources of information (n = 84)		Public TV/radio and online media are most important Print media are less important in comparison to pre-pandemic times Most farmers use multiple sources A minority mainly use online media Some farmers significantly reduced media consumption	
(12) Public perception and media coverage (n = 131)	Improved public perception of farms and the whole food sector in general Positive attitude change Increased importance of reliability of food supply More positive media reporting		Superficial attitude change Unrealistic expectations of consumers Negligence of agriculture in media reports
(13) Future perception of social impacts (n = 27)	More positive perception in public Social change		

References

1. Cucinotta, D.; Vanelli, M. WHO Declares COVID-19 a Pandemic. *Acta Biomed.* **2020**, *91*, 157–160. [CrossRef]
2. Hale, T.; Angrist, N.; Goldszmidt, R.; Kira, B.; Petherick, A.; Phillips, T.; Webster, S.; Cameron-Blake, E.; Hallas, L.; Majumdar, S.; et al. A Global Panel Database of Pandemic Policies (Oxford COVID-19 Government Response Tracker). *Nat. Hum. Behav.* **2021**, *5*, 529–538. [CrossRef] [PubMed]
3. Ozili, P. *Spillover of COVID-19: Impact on the Global Economy*; Munich Personal RePEc Archive: Munich, Germany, 2020.
4. OECD. *Growth and Economic Well-Being: Fourth Quarter 2020*; OECD: Paris, France, 2021. Available online: <https://www.oecd.org/newsroom/growth-and-economic-well-being-fourth-quarter-2020-oecd.htm> (accessed on 10 December 2021).
5. Nicola, M.; Alsafi, Z.; Sohrabi, C.; Kerwan, A.; Al-Jabir, A.; Iosifidis, C.; Agha, M.; Agha, R. The Socio-Economic Implications of the Coronavirus Pandemic (COVID-19): A Review. *Int. J. Surg.* **2020**, *78*, 185–193. [CrossRef] [PubMed]
6. Stephens, E.C.; Martin, G.; van Wijk, M.; Timsina, J.; Snow, V. Editorial: Impacts of COVID-19 on Agricultural and Food Systems Worldwide and on Progress to the Sustainable Development Goals. *Agric. Syst.* **2020**, *183*, 102873. [CrossRef] [PubMed]
7. Béné, C.; Bakker, D.; Chavarro, M.J.; Even, B.; Melo, J.; Sonneveld, A. Global Assessment of the Impacts of COVID-19 on Food Security. *Glob. Food Secur.* **2021**, *31*, 100575. [CrossRef]
8. Perrin, A.; Martin, G. Resilience of French Organic Dairy Cattle Farms and Supply Chains to the COVID-19 Pandemic. *Agric. Syst.* **2021**, *190*, 103082. [CrossRef]
9. Du, Z.-x.; Lai, X.-d.; Long, W.-j.; Gao, L.-l. The Short- and Long-Term Impacts of the COVID-19 Pandemic on Family Farms in China—Evidence from a Survey of 2 324 Farms. *J. Integr. Agric.* **2020**, *19*, 2877–2890. [CrossRef]
10. Snow, V.; Rodriguez, D.; Dynes, R.; Kaye-Blake, W.; Mallawaarachchi, T.; Zydenbos, S.; Cong, L.; Obadovic, I.; Agnew, R.; Amery, N.; et al. Resilience Achieved via Multiple Compensating Subsystems: The Immediate Impacts of COVID-19 Control Measures on the Agri-Food Systems of Australia and New Zealand. *Agric. Syst.* **2021**, *187*, 103025. [CrossRef]
11. Mastronardi, L.; Cavallo, A.; Romagnoli, L. Diversified Farms Facing the COVID-19 Pandemic: First Signals from Italian Case Studies. *Sustainability* **2020**, *12*, 5709. [CrossRef]
12. Meuwissen, M.P.M.; Feindt, P.H.; Slijper, T.; Spiegel, A.; Finger, R.; de Mey, Y.; Paas, W.; Termeer, K.J.A.M.; Poortvliet, P.M.; Peneva, M.; et al. Impact of COVID-19 on Farming Systems in Europe through the Lens of Resilience Thinking. *Agric. Syst.* **2021**, *191*, 103152. [CrossRef]
13. BMLRT. *Grüner Bericht 2021: Die Situation der Österreichischen Land- und Forstwirtschaft Gem § 9 des Landwirtschaftsgesetzes*; Bundesministerin für Landwirtschaft, Regionen und Tourismus: Vienna, Austria, 2021; Volume 62.
14. Darnhofer, I. Farm Resilience in the Face of the Unexpected: Lessons from the COVID-19 Pandemic. *Agric. Hum. Values* **2020**, *37*, 605–606. [CrossRef] [PubMed]
15. Kirner, L.; Mayr, J.; Winzheim, M. Die Betroffenheit land- und forstwirtschaftlicher Betriebe in Österreich durch COVID-19. In Proceedings of the 31st Jahrestagung der Österreichischen Gesellschaft für Agrarökonomie, Online, 16–17 September 2021.
16. Béné, C. Resilience of Local Food Systems and Links to Food Security—A Review of Some Important Concepts in the Context of COVID-19 and Other Shocks. *Food Secur.* **2020**, *12*, 805–822. [CrossRef] [PubMed]
17. Watson, R.; Popescu, G.H. Will the COVID-19 Pandemic Lead to Long-Term Consumer Perceptions, Behavioral Intentions, and Acquisition Decisions? *Econ. Manag. Financ. Mark.* **2021**, *16*, 70–83. [CrossRef]
18. Cavallo, C.; Sacchi, G.; Carfora, V. Resilience Effects in Food Consumption Behaviour at the Time of COVID-19: Perspectives from Italy. *Heliyon* **2020**, *6*, e05676. [CrossRef]
19. Hobbs, J.E. Food Supply Chains during the COVID-19 Pandemic. *Can. J. Agric. Econ.* **2020**, *68*, 171–176. [CrossRef]
20. Europäische Kommission. Member States' Notifications of the Temporary Reintroduction of Border Control at Internal Borders. Available online: https://ec.europa.eu/home-affairs/what-we-do/policies/borders-and-visas/schengen/reintroduction-border-control_en (accessed on 10 June 2021).
21. Linka, K.; Peirlinck, M.; Sahli Costabal, F.; Kuhl, E. Outbreak Dynamics of COVID-19 in Europe and the Effect of Travel Restrictions. *Comput. Methods Biomech. Biomed. Eng.* **2020**, *23*, 710–717. [CrossRef]
22. Hashem, N.M.; Hassanein, E.M.; Hocquette, J.-F.; Gonzalez-Bulnes, A.; Ahmed, F.A.; Attia, Y.A.; Asiry, K.A. Agro-Livestock Farming System Sustainability during the COVID-19 Era: A Cross-Sectional Study on the Role of Information and Communication Technologies. *Sustainability* **2021**, *13*, 6521. [CrossRef]
23. Lusk, J.L.; Chandra, R. Farmer and Farm Worker Illnesses and Deaths from COVID-19 and Impacts on Agricultural Output. *PLoS ONE* **2021**, *16*, e0250621. [CrossRef]
24. Tougeron, K.; Hance, T. Impact of the COVID-19 Pandemic on Apple Orchards in Europe. *Agric. Syst.* **2021**, *190*, 103097. [CrossRef]
25. Gu, H.-Y.; Wang, C.-W. Impacts of the COVID-19 Pandemic on Vegetable Production and Countermeasures from an Agricultural Insurance Perspective. *J. Integr. Agric.* **2020**, *19*, 2866–2876. [CrossRef]
26. Zhou, J.-H.; Han, F.; Li, K.; Wang, Y. Vegetable Production under COVID-19 Pandemic in China: An Analysis Based on the Data of 526 Households. *J. Integr. Agric.* **2020**, *19*, 2854–2865. [CrossRef]
27. Europäische Kommission. Unterstützung für Landwirtschaft und Lebensmittelindustrie während der COVID-19-Pandemie. Available online: https://ec.europa.eu/info/food-farming-fisheries/farming/coronavirus-response_de (accessed on 16 May 2022).

28. OECD. *COVID-19 and the Food and Agriculture Sector: Issues and Policy Responses*; OECD: Paris, France, 2020. Available online: <https://www.oecd.org/coronavirus/policy-responses/covid-19-and-the-food-and-agriculture-sector-issues-and-policy-responses-a23f764b/> (accessed on 16 May 2022).
29. Weersink, A.; von Massow, M.; Bannon, N.; Ifft, J.; Maples, J.; McEwan, K.; McKendree, M.G.S.; Nicholson, C.; Novakovic, A.; Rangarajan, A.; et al. COVID-19 and the Agri-Food System in the United States and Canada. *Agric. Syst.* **2021**, *188*, 103039. [CrossRef] [PubMed]
30. Lioutas, E.D.; Charatsari, C. Enhancing the Ability of Agriculture to Cope with Major Crises or Disasters: What the Experience of COVID-19 Teaches Us. *Agric. Syst.* **2021**, *187*, 103023. [CrossRef]
31. Islam, T.; Pitafi, A.H.; Arya, V.; Wang, Y.; Akhtar, N.; Mubarik, S.; Xiaobei, L. Panic Buying in the COVID-19 Pandemic: A Multi-Country Examination. *J. Retail. Consum. Serv.* **2021**, *59*, 102357. [CrossRef]
32. Glogoveţan, A.I.; Dabija, D.C.; Fiore, M.; Pocol, C.B. Consumer Perception and Understanding of European Union Quality Schemes: A Systematic Literature Review. *Sustainability* **2022**, *14*, 1667. [CrossRef]
33. Yoshida, S.; Yagi, H. Long-Term Development of Urban Agriculture: Resilience and Sustainability of Farmers Facing the COVID-19 Pandemic in Japan. *Sustainability* **2021**, *13*, 4316. [CrossRef]
34. Wojcieszak-Zbierska, M.M.; Jęczyński, A.; Zawadka, J.; Uglis, J. Agritourism in the Era of the Coronavirus (COVID-19): A Rapid Assessment from Poland. *Agriculture* **2020**, *10*, 397. [CrossRef]
35. Dubey, S.; Biswas, P.; Ghosh, R.; Chatterjee, S.; Dubey, M.J.; Chatterjee, S.; Lahiri, D.; Lavie, C.J. Psychosocial Impact of COVID-19. *Diabetes Metab. Syndr. Clin. Res. Rev.* **2020**, *14*, 779–788. [CrossRef]
36. Power, K. The COVID-19 Pandemic Has Increased the Care Burden of Women and Families. *Sustain. Sci. Pract. Policy* **2020**, *16*, 67–73. [CrossRef]
37. Acosta, A.; McCorriston, S.; Nicolli, F.; Venturelli, E.; Aratchilage, U.G.; ArceDiaz, E.; Scudiero, L.; Sammartino, A.; Schneider, F.; Steinfeld, H. Immediate Effects of COVID-19 on the Global Dairy Sector. *Agric. Syst.* **2021**, *192*, 103177. [CrossRef]
38. Goswami, R.; Roy, K.; Dutta, S.; Ray, K.; Sarkar, S.; Brahmachari, K.; Nanda, M.K.; Mainuddin, M.; Banerjee, H.; Timsina, J.; et al. Multi-Faceted Impact and Outcome of COVID-19 on Smallholder Agricultural Systems: Integrating Qualitative Research and Fuzzy Cognitive Mapping to Explore Resilient Strategies. *Agric. Syst.* **2021**, *189*, 103051. [CrossRef] [PubMed]
39. Flick, U. *An Introduction to Qualitative Research*, 4th ed.; Sage Publications: London, UK, 2009; ISBN 978-1-84787-323-1.
40. Lamnek, S.; Krell, C. *Qualitative Sozialforschung*, 6th ed.; Beltz Verlag: Weinheim, Germany, 2016; ISBN 9783621283625.
41. Gläser, J.; Laudel, G. *Experteninterviews und Qualitative Inhaltsanalyse: Als Instrumente Rekonstruierender Untersuchungen*, 3rd ed.; VS Verlag für Sozialwissenschaften: Berlin, Germany, 2010; Volume 43, ISBN 3531172387.
42. Kuckartz, U. *Qualitative Inhaltsanalyse: Methoden, Praxis, Computerunterstützung*, 4th ed.; Beltz Verlagsgruppe: Weinheim, Germany, 2018; ISBN 9783779936824.
43. Mayring, P. *Qualitative Content Analysis: Theoretical Foundation, Basic Procedures and Software Solution*; SSOAR: Klagenfurt, Austria, 2014.
44. Statistik Austria. *Agrarstrukturhebung 2016 Betriebsstruktur*; Statistik Austria: Vienna, Austria, 2018.
45. KeyQUEST. Landwirte Sehen in Direktvermarktung Beste Zukunftschancen. Available online: <https://keyquest.at/news/news/agrar-news/direktvermarktung> (accessed on 17 February 2022).
46. Balling, R. Entwicklung Und Bedeutung Der Direktvermarktung Im Kontext Der Regionalen Vermarktung von Lebensmitteln. *Ger. J. Agric. Econ.* **2000**, *49*, 458–462. [CrossRef]
47. Humer, L.; Spiegelfeld, A. *Saisoniers aus Drittstaaten in Österreich*; Internationale Organisation für Migration (IOM): Vienna, Austria, 2020.
48. Ruf, V.; Pöhler, J.; Bauer, M.W. *Betroffenheit und Reaktionen der Österreichischen Kommunen in der COVID-19 Pandemie*; Carinthia University of Applied Sciences: Klagenfurt, Austria, 2020.
49. Kurier. Corona Zeigt Abhängigkeit von Arbeitern aus Osteuropa. Available online: <https://kurier.at/wirtschaft/corona-zeigt-abhaengigkeit-von-arbeitern-aus-osteuropa/401027057> (accessed on 16 May 2022).
50. Wiener Zeitung. Schandfleck Erntehilfe. Available online: <https://www.wienerzeitung.at/nachrichten/wirtschaft/oesterreich/2079403-Schandfleck-Erntehilfe.html> (accessed on 16 May 2022).
51. RegioData Research. Neue RegioData-Studie: Konsumausgaben in Österreich. Available online: https://www.regiodata.eu/attachments/article/1168/1119_RegioData_Presseaussendung_Konsumausgaben.pdf (accessed on 17 February 2022).
52. Bachtrögl, J.; Firgo, M.; Fritz, O.; Klien, M.; Mayerhofer, P.; Piribauer, P.; Streicher, G. *Regionale Unterschiede der Ökonomischen Betroffenheit von der Aktuellen COVID-19-Krise in Österreich, Ein Strukturansatz auf Ebene der Bundesländer*; WIFO Working Papers No. 597; WIFO: Vienna, Austria, 2020.
53. Aday, S.; Aday, M.S. Impact of COVID-19 on the Food Supply Chain. *Food Qual. Saf.* **2020**, *4*, 167–180. [CrossRef]
54. Busch, G.; Bayer, E.; Iweala, S.; Mehlhose, C.; Risius, A.; Rubach, C.; Schütz, A.; Ullmann, K.; Spiller, A. Einkaufs- und Ernährungsverhalten sowie Resilienz des Ernährungssystems aus Sicht der Bevölkerung: Eine Studie während der Corona-Pandemie im November 2020: Ergebnisse der dritten Befragungswelle. In *Diskussionsbeitrag*; Department für Agrarökonomie und Rurale Entwicklung: Göttingen, Germany, 2021; No. 2102.
55. AMA. Marktdaten RollAMA Haushaltspanel. Available online: <https://amainfo.at/> (accessed on 17 January 2022).
56. Schermer, M. From “Food from Nowhere” to “Food from Here:” Changing Producer–Consumer Relations in Austria. *Agric. Hum. Values* **2015**, *32*, 121–132. [CrossRef]

-
57. BMLRT. Klarstellungen zu Systemrelevanten Unternehmen im Zusammenhang mit der Lebensmittelproduktion. Available online: <https://info.bmlrt.gv.at/themen/landwirtschaft/informationen-zum-coronavirus-uebersicht/coronavirus-landwirtschaft-lebensmittelproduktion-und-verkauf.html> (accessed on 28 October 2021).
 58. Erjavec, K.; Janžekovič, M.; Kovač, M.; Simčič, M.; Mergeduš, A.; Terčič, D.; Klopčič, M. Changes in Use of Communication Channels by Livestock Farmers during the COVID-19 Pandemic. *Sustainability* **2021**, *13*, 10064. [[CrossRef](#)]
 59. Pulighe, G.; Lupia, F. Food First: COVID-19 Outbreak and Cities Lockdown a Booster for a Wider Vision on Urban Agriculture. *Sustainability* **2020**, *12*, 5012. [[CrossRef](#)]