

The effects of COVID-19 crisis on small family farms: Empirical evidence from Visegrad countries

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Abstract: This paper aims to investigate the effects of the COVID-19 crisis on small family farms in Visegrad countries and to provide evidence of how they have responded and coped with the crisis. We conducted our investigation using an exploratory qualitative research design based on 86 semistructured in-depth interviews with owners or responsible managers, and explored the effects of the COVID-19 pandemic on different areas of their businesses, such as human resources, supplier-customer relations, production, distribution channels or strategies, price of inputs and outputs and business models. Our findings showed that small family farms have been resilient in the face of the COVID-19 pandemic. Several negative impacts were identified, such as a decrease in sales due to the closure of accommodation and restaurant services, delays in the supply of inputs, and minor problems with the availability of workers, but those were perceived to be moderate. However, the COVID-19 pandemic created not only difficult challenges but also opportunities for small farms. Based on our findings, three main recommendations regarding the adaptability and resilience of family farms in Visegrad countries have been formulated: *i*) the importance of a diversification strategy, *ii*) selling through short supply chains, and *iii*) digitalisation of agriculture.

Keywords: family farming; multifunctional agriculture; post-COVID recovery; qualitative research; V4 countries

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The outbreak of the coronavirus disease in late 2019 was declared a global pandemic by the World Health Organization (WHO) on March 11, 2020 (Cucinotta and Vanelli 2020). To prevent the spread of the virus and minimise the effects of this pandemic, governments worldwide have begun implementing various unprecedented measures, such as cancellation of events, school closing, social distancing, travel restrictions, border closures, investments in healthcare facilities, closure of nonessential retail, and contact tracing (Hale et al. 2021). International efforts to control the virus inevitably not only affected the populations' daily lives but also caused economic shocks and affected the functioning of economies worldwide (Nicola et al. 2020). Although agriculture does not seem to have received as much attention as some other sectors (Beckman and Countryman 2021), many issues related to the COVID-19 pandemic have inevitably arisen and affected farmers and their businesses (Mohd Suib et al. 2023). As stated by Deconinck et al. (2021), the COVID-19 pandemic has caused unexpected significant stresses on agricultural and food systems. The uncertainty that is the nature of agricultural systems has increased even more (Haqiqi and Horeh 2021), resulting in doubts regarding the resilience of agricultural and food systems worldwide (Popescu and Popescu 2022). Therefore, identifying and examining the impacts of the COVID-19 crisis can have significant implications not only for potentially vulnerable agricultural communities but also for governments and policymakers.

To contribute to nascent empirical research on the influence of the COVID-19 pandemic on small family farming in V4 countries, we empirically investigated how this situation affected farmers and how they managed post-COVID recovery. Our study focuses on small family businesses from the perspective of multifunctional agriculture, as this sector also includes nonproductive activities of farms that have been largely affected by the COVID-19 crisis. Family businesses are generally characterised as vulnerable because of their autonomous, family-oriented standing and their constrained financial capital and resources (Bartoloni et al. 2021; Srhoj et al. 2021). In addition, they show certain particularities regarding their behaviours and measures during crises (Kraus et al. 2020). Globally, family farming is estimated to account for 80% of the world's food production, occupying 75% of agricultural land (FAO 2014), which proves its central role in food self-sufficiency and security, in the protection of the environment, and in achieving sustainable development (Graeb et al. 2016; FAO 2019). Owing to the

importance of this sector of agriculture, there is a significant research gap in the current research on vulnerability in times of crisis, which we are trying to respond to with our study. This paper aims to examine the effects of the COVID-19 crisis on family farms in four Visegrad countries – namely the Czech Republic, Slovakia, Poland, and Hungary (hereinafter referred to as V4 countries), to provide evidence of how these businesses have responded and coped with the crisis. To do so, we employed an exploratory qualitative research design based on semistructured in-depth interviews with owners or responsible managers of small family farms, and explored the effects of the COVID-19 crisis on different areas of their businesses such as human resources, supplier-customer relations, production, distribution channels, and strategies. The survey in countries that face similar difficulties and challenges stemming from their common history before the post-1989 economic transition allowed us to evaluate the findings comprehensively together by considering heterogeneous effects across countries.

Although the analysed countries are relatively similar in terms of the development of their economies, certain differences can be seen in the agriculture of family farms in particular Visegrad countries, as a result of specific conditions, environment and the socio-economic structure of the country. The relative importance of family farms is significantly higher in Poland and Hungary than in the Czech Republic and Slovakia (European Commission 2023). Family farms accounted for 85% of all farms in the Czech Republic and Slovakia in 2016, while the share in Hungary was 97.2% and in Poland 98.7%. This also corresponds with the share of the total utilised agricultural area – while family farms in Poland covered almost 96% of the utilised agricultural area (namely 12.3 million ha of land for agricultural production) and almost 50% in Hungary (namely 2.3 million ha), this share did not reach even one third in the Czech Republic and Slovakia (21.9%, and 16.3% respectively, which is equivalent to 0.76 million ha, resp. 0.31 million ha). In terms of the number of family farms, Poland ranks second among all EU countries; according to data provided by the European Commission (European Commission 2023), there were 1 411 thousand family farms in Poland in 2016 (only Romania has more family farms), while in Hungary 418 thousand, in the Czech Republic only 23 thousand and 22 thousand in Slovakia. These characteristics reflect the different size structure of family farms in particular Visegrad countries, where the Czech Republic and Slovakia have a significantly larger average

size of family farms, i.e. 33.5 ha, resp. 24 ha per farm, while the average size of a family farm in Poland is 8 ha per farm, and only 5.5 ha per farm in Hungary (Svobodová et al. 2022). As for the share of family farms in the performance of agriculture as a whole, family farms in Slovakia and in the Czech Republic accounted for below 20% of the monetary value of agricultural output produced by the sector. In Hungary, it was about 40%; however, Poland family farms accounted for more than 75% of the value of agricultural output produced by the sector (European Commission 2023). As follows from the above characteristics, the significance of family farms in terms of their volume and production varies in particular Visegrad countries, their importance is indisputable and they are believed to be key drivers of taking on responsibility for the multifunctional development of rural areas in all Visegrad countries (Kowalski et al. 2010; Kémeny et al. 2017; Hlavsa et al. 2020; Némethová and Rybanský 2021).

Our findings indicate that small family farms in V4 countries have been resilient in the face of the COVID-19 pandemic. Although negative impacts were mentioned (such as a decrease in sales due to the closure of accommodation and restaurant services, delays in the supply of inputs, and minor problems with the availability of workers), they were perceived to be moderate. We also compared our results with other previously published studies conducted in agriculture, and based on all of the findings, we draw conclusions and implications to improve the understanding of the issues and challenges faced by small family farms in V4 countries during the COVID-19 pandemic.

MATERIAL AND METHODS

Approach. We applied exploratory qualitative research using in-depth personal semistructured interviews (with CEOs or responsible managers of small family businesses), which allowed for maximum variation, following the principles of appropriateness and adequacy (Graebner et al. 2012; Bryman 2016). Data analysis started directly after each interview until saturation was reached, i.e. further data collection did not give new insights, as is common practice in qualitative research (Yin 2013). The structure of the personal interviews was designed to identify a series of factors that most probably affected the original business model of small family businesses within V4 countries.

The interviews were carried out in person, online (MS Teams, Zoom, Skype or other similar online platforms) or on the telephone, and were recorded and

subsequently transcribed into written form (Corbin and Strauss 2014). After the interviews, the transcripts were read and coded in an open manner (Miles et al. 2014; Williams and Moser 2019; Hennink et al. 2020) to determine how small family businesses were affected, what specific measures family businesses take and which additional changes within the businesses emerged because of the COVID-19 crisis. We iteratively analysed the data, and the identified common themes were subsequently verified using feedback loops. To ensure the reliability and validity of the findings (Sousa 2014), a researcher from a particular V4 country read and coded the data independently and compared, discussed and revised the codes iteratively before consolidating them.

Data collection. Interviews for data collection were performed between March and May 2022 in four V4 countries: Czech Republic (March 21 to May 30), Slovakia (March 22 to May 10), Hungary (March 25 to May 30), and Poland (March 22 to April 30). Preliminary (pilot) qualitative research took place in February, when the structure and clarity of the questionnaire were tested on two selected respondents. The target group of respondents was small family businesses operating in the multifunctional farming sector within V4 countries, i.e. family farms with up to 50 employees and annual turnover of up to EUR 10 million (European Commission 2022). The family farm is understood as a farm managed and operated by a household and, at the same time, a farm with exclusively family labour or predominately family labour (at least 50% of the regular labour force), as defined by the European Commission (2023) based on the FAO definition. Respondents were selected using the purposive sampling technique (Tongco 2007; Hennink et al. 2020). All respondents participated in the research under the promise of their anonymisation. Thus, each participant was marked as P_{x1} , P_{x2} , P_{x3} , ..., P_{xN} , where x denotes the country (i.e., $_{CZ}$ for the Czech Republic, $_{SK}$ for Slovakia, $_{HU}$ for Hungary, and $_{PL}$ for Poland) and N denotes the number of participants in a particular country (i.e. 23 in the case of the Czech Republic, 16 in Slovakia, 22 in Hungary, and 25 in Poland).

RESULTS AND DISCUSSION

Even though the respondents came from different regions and countries and from different areas of agriculture entrepreneurship, we can find many similarities in the respondents' answers regarding the COVID-19 crisis. Our interviews showed that most

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farms coped well with the COVID-19 crisis. The analysis of the data obtained from our interviews (86 in total) led to a number of findings, which we divided into five topics:

- i) Human resources
- ii) Supplier-customer relationships
- iii) Prices of the inputs and outputs of the production
- iv) Nature of production and sales
- v) Strategies and business models of agricultural family businesses

Human resources. Almost all of the respondents stated that the COVID-19 crisis did not affect the workforce (i.e. there were no staff downsize or fluctuation) as small family farms follow the typical traditional structure for family businesses, i.e. family labour dominates, and they rely on family members and employ only a few seasonal workers. It is clear that many workers were absent from work because of the COVID-19 illness or quarantine, but these cases mostly fell outside the peak season of work on the farm: *‘A lot of people got sick, but that didn’t affect the harvest because they didn’t get sick at harvest time’* (P_{PL}20). Most interviewees employing seasonal workers noted that in 2020 and 2021 there were difficulties in finding a good workforce and that there were changes in staffing of part-time workers (e.g. P_{CZ}14, and P_{HU}2).

However, the COVID-19 pandemic often affected the work of the farmer’s family because active family members could not fully work on the farm because of reasons such as the home education of their children: *‘My wife, which had been preparing the cheeses for the market, has given up this activity due to the home teaching activity’* (P_{HU}1). Conversely, when external employees were in quarantine, family members had to be more involved in production to save the business situation, e.g. *‘Working hours of our employees often increased during replacement due to COVID-19 illness, resulting in an increase of extra work per person’* (P_{HU}15).

Nevertheless, it should be mentioned that a few farmers assessed the impact of the COVID-19 pandemic in this area as positive – if farmers also have other jobs, then the mandated home office allowed them to devote more time to farm work (P_{HU}11, and P_{HU}14).

Supplier-customer relationships. The majority of the respondents confirmed that there was no need to change the original structure of their suppliers. Most of them have long-term business relationships with their suppliers, so it was not necessary to change anything in this matter during and after the COVID-19 crisis. In addition, this period also brought challenges

to the establishment of new e-shops and promotion on social networks, even for those farmers who had not yet used these possibilities, as confirmed by P_{CZ}14, P_{CZ}15, and others: *‘For customers, we established a new e-shop with the possibility of sending goods and increased online promotion on social networks (Facebook and Instagram). We gained a new customer segment – direct purchase’* (P_{CZ}14). In particular, farmers who sell their own products and processed agricultural products focused on online sales with delivery or pick-up directly from the farm. As the population moved to cottages and weekend houses during the lockdowns, home delivery became a significant outlet for farmers (P_{SK}11).

Farmers trading abroad have seen the impact on the delay of supplies from abroad and the increase in prices. For instance, P_{HU}11 stated that *‘we observed an effect on deliveries from abroad – either they completely disappeared because the factory was closed or the delivery time multiplied’* (P_{HU}11). A producer of pork meat and cold cuts confirmed this situation: *‘during the COVID-19 pandemic, there were delays in the supply of feed (rapeseed meal, and vitamin concentrate) of up to 2 weeks’* (P_{PL}12).

Organic farmers (P_{HU}5, P_{HU}7, P_{HU}8, P_{HU}15, and P_{CZ}9) detected an increase in demand, which was due to the increase in health awareness and the fact that people also went to the market because of social relations as there was no other place to go. Consumers also focused on increased purchase and consumption of foods rich in vitamins and functional foods that can boost the immune system to help fight viruses, such as organic products, which was experienced by organic farmers (P_{SK}5, P_{SK}7, P_{PL}24, and P_{PL}25).

In viniculture, there was an interesting phenomenon during the COVID-19 pandemic. Most respondents from this area of agriculture noticed an increase in wine consumption of their private customers, up to the point that they compensated for the reduction of incomes from delivering to restaurants and other facilities. *‘The number of customers from restaurants decreased rapidly; nevertheless, the number of private customers increased by 25%, which compensated for the decrease in turnover in restaurants. People started drinking more during the COVID-19 crisis. At the moment, our business aims more at private customers, and it was caused by the COVID-19 crisis’* (P_{CZ}10). A wine producer from Poland confirmed: *‘COVID-19 had a terrible effect on humans, but wines and winemakers had a good time – people began to drink more wine’* (P_{PL}6).

Prices of the inputs and outputs of the production. The most evident change during and after the COVID-19 crisis was noticed in the category of input and output prices, as confirmed by the majority of the farmers (e.g. P_{CZ1} , P_{CZ2} , P_{CZ17} , P_{HU5} , P_{HU9} , P_{HU11} , $P_{HU15-22}$, P_{PL12} , P_{PL14} , P_{PL17} , P_{SK5-11} , P_{SK14} , and P_{SK15}): *‘This is certainly the most sensitive impact of COVID-19’* (P_{CZ17}). In 2021, input prices increased, as mentioned by all surveyed respondents, but some businesses maintained output prices at the expense of their trade margins (particularly in viniculture, e.g. P_{CZ5} , P_{CZ9} , P_{CZ10} , P_{CZ11} , P_{CZ14} , and P_{CZ15}). Most respondents had to increase output prices during the pandemic, and they are expecting further price increases. Significant input price increase was influenced by more complicated methods of delivery, distribution channels (stopped farmers’ markets, sales at market-places, exhibitions, and fairs), and the lack of inputs (packaging materials and others).

However, it was difficult for respondents to differentiate between price increases due to the COVID-19 crisis and price increases due to the ongoing economic and political crisis. Most respondents are afraid of the future, and they do not know how to plan their price strategy given the unpredictable economic and political circumstances.

Nature of production and sales. Interviews with farmers across V4 countries revealed that the main changes in this issue due to the COVID-19 pandemic are the involvement of new sales channels, such as social media, online presentations and promotion or e-shop launching, eventually taking away service. A positive effect of the COVID-19 crisis was noticed, i.e. these new marketing and sales channels will be used in the future as well: *‘The role of online sales has certainly increased. We now know that this channel can be relied upon in the future.’* (P_{CZ9}). An impact on the choice of distribution chains was also mentioned by some farmers (e.g. P_{HU1} , P_{HU3}), i.e. the effort to sell through short distribution chains or direct sales. One Hungarian respondent sees this as an opportunity: *‘I would like to convert my arable fields to organic and start direct sales. I believe that sustainable agriculture and finding a market niche provide an opportunity for smaller family farms.’* (P_{HU3}). In a few cases, farm owners had more time due to the COVID-19 pandemic, which they used in inventing new products. Owing to this, production was enriched with new products (P_{PL17} , P_{SK1} , and P_{SK2}).

Strategies and business models of agricultural family businesses. The majority of farmers were

forced to change their business models or strategies during or after the COVID-19 crisis. Most respondents focused their strategy on the stabilisation in the market: *‘We are implementing a maintenance strategy’* (P_{CZ10}) or *‘to produce as cheaply as possible and sell as expensive as possible’* (P_{PL10}). The COVID-19 crisis was not conducive to long-term strategic changes. Some farmers had plans to expand their businesses before the COVID-19 pandemic, such as an increase in production (P_{PL5} , P_{PL6} , and P_{CZ17}), or expand the activities in agrotourism (P_{PL7}), but such plans were rather postponed (P_{PL9}).

Nonetheless, some farmers also mentioned positive impacts, such as the introduction of new forms of sales (online sales, take away sales) and advertising (P_{CZ14} , P_{CZ15} , P_{PL17} , P_{PL21} , P_{PL2} , and P_{SK15}), and they are planning to continue with these strategies. Some farmers even see the COVID-19 crisis as an opportunity that might contribute to sorting out ideas and directing the business: *‘Crisis is an opportunity... everyone should rethink his agricultural practices’* (P_{HU1}).

In general, respondents described areas in which strategies should be created in the future, but it is difficult to decide whether they are directly related to the COVID-19 crisis. The findings showed that their future strategies after COVID-19 crisis should be the provision of workforce and seasonal workers, better utilisation of financial funds, application of short supply chains, and sustainable soil cultivation that might change the soil water capacity during drought.

The results of our study showed that the COVID-19 pandemic created not only difficult challenges but also opportunities for small firms in the agricultural sector in Visegrad countries. The most significant effects of the COVID-19 pandemic were observed in the area of sales and prices, which was confirmed by the vast majority of farmers in our study. The decrease in sales depended on the importance of the hotel and restaurant services as clients for farmers, as also confirmed by studies conducted in other countries, e.g. Cavallo et al. (2020) and Meixner et al. (2022). Owing to lockdowns and COVID-19 restrictions, farm sales to the hospitality industry decreased, simultaneously with a decline in sales to wholesalers. By contrast, there were also farms that experienced increased sales to consumers, i.e. wine farms in the Czech Republic lauded the increase in wine consumption of their private customers because it compensated for the reduction of incomes from delivering to hospitality industry. The strategy of customer diversification has proven to be important in times of the COVID-19 crisis. Our

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results suggest that the increase in direct sales to customers in the time of the COVID-19 pandemic might be considered a general phenomenon in agriculture (Meixner et al. 2022), as well as the increase in preference for organic and local food (e.g. Perrin and Martin 2021; Meixner et al. 2022). As confirmed by our research, if farms produced organic products in addition to conventional agricultural production and were able to respond to the growth in demand for organic and local food, their incomes were not negatively affected by the COVID-19 crisis due to the development of consumer demand towards healthier food products. In line with other studies from agricultural sectors (Meuwissen et al. 2021; Grigorescu et al. 2022; Meixner et al. 2022), an increase in input prices (mainly due to more complicated delivery, changes in distribution channels, or lack of inputs) had a significant income effect on farms. Thus, they were forced to gradually increase the prices of their products. However, some businesses (particularly in Czech viticulture) maintained their output prices at the expense of their trade margins to keep existing customers.

As already mentioned, the interviewed farmers also confirmed positive consequences of the COVID-19 pandemic for small family farms in V4 countries, such as the launching new marketing and sales channels (online promotion, direct sales/short distribution channels, online sales, and take away service) or higher demand for agricultural products perceived by consumers as healthy and beneficial for immunity (shifting consumer attitudes toward organic or functional food). This sales channel diversification strategy appears to be a long-term effect of the COVID-19 crisis [confirmed by other previously published studies, such as Hobbs (2020), and Perrin and Martin (2021)], as interviewed farmers expect the use of newly introduced sales methods and online service offerings to continue in the future.

Most of the interviewed farmers did not report significant effects of the COVID-19 crisis on the workforce or production. Some of them were temporarily affected by a shortage of workers, which was addressed to some extent by the greater involvement of family members. Conversely, in some cases, family members work less on the farm because of the home education of their children. In summary, human resources stayed more or less the same [similarly to Meixner et al. (2022)].

Apart from a reduction in the level of production in a few farms, no significant changes in production were reported for the small farms surveyed, which is in ac-

cordance with the study by Meuwissen et al. (2021) and Meixner et al. (2022). Rather, negative impacts on non-agricultural secondary activities linked to the hospitality industry were mentioned.

Our findings regarding the limited impact of the COVID-19 pandemic on agricultural production are consistent with a number of already published studies, such as Laborde et al. (2020), Meuwissen et al. (2021), Perrin and Martin (2021), and Mohd Suib et al. (2023).

CONCLUSION

Our paper presented an empirical study on agriculture, and provided evidence of the effects of the COVID-19 crisis on family farms in four Visegrad countries. Based on the sample of 86 family farms, the study presented findings on how the COVID-19 pandemic affected farmers and how they managed post-COVID recovery, and delivered important conclusions for stakeholders. Most interviewed farmers perceived the effects of the pandemic as moderate – the most frequently mentioned negative impacts were the decrease in sales due to the closure of accommodation and restaurant services, delays in the supply of inputs, and minor problems with the availability of workers. However, even these negative impacts were not fundamental because the main activity of the farms is agricultural production, which was not interrupted or limited during the COVID-19 pandemic. Conversely, a number of farmers considered the COVID-19 crisis as an opportunity to introduce new forms of sales, launch effective online promotions, strengthen relationships with long-term business partners, or acquire new customers, owing to changes in consumer preferences and purchasing habits, such as online shopping and regionality. Overall, family farms have coped well with the COVID-19 crisis in all four countries studied, and on the basis of the findings from the interviews, the following implications can be drawn.

Three main recommendations regarding the adaptability and resilience of family farms in V4 countries during the COVID-19 crisis were identified: *i*) the importance of a diversification strategy, *ii*) selling through short supply chains, and *iii*) digitalisation of agriculture.

First, our findings confirmed that farmers with more diversified production were affected by minor negative effects of the COVID-19 crisis not only because of the spread of their production activities but also because they were able to retain a much more diverse customer base – diversification as a strategy has paid off, both

in terms of products and marketing channels. At the same time, less dependence on external input suppliers also proved to be a factor of better viability during the crisis, i.e. moving toward more autonomous agricultural systems, when family farms rely mainly on internal resources and are embedded in local networks. These results are consistent with the resilience theory, which emphasises diversity, feedback tightness, and modularity as key determinants of increasing the resilience of agricultural systems (Meuwissen et al. 2019). Enhancing the resilience of farms through such diversification of activities, products, or sales channels naturally brings increased costs (Bowman and Zilberman 2013), so it will be necessary and desirable to monitor this adaptation and assess how it threatens farm profitability and resilience. In this context, small farmers could be helped by governments, e.g. by providing tax credits, as a tool to mitigate the negative impacts on the financial situation of these farms.

Second, supply chain organisations appear to play a significant role and influence on farmers' viability during crises, as also pointed out by previous studies, e.g. Hobbs (2020). During the COVID-19 pandemic, the importance of short food supply chains and regional/local production became apparent. As a result of the COVID-19 crisis, consumers have thought more about what products they buy, focusing more on fresh, natural, and quality products. Our research has confirmed that family farms have taken advantage of this feature and have adapted to new customer requirements – many farms selling directly to consumers reported an increase in demand and a strengthening of the links between farmers and consumers. Therefore, our next recommendation concerns the support of cooperation projects on short supply chains, which would not necessarily include only funding but mainly informational, educational, methodological and other activities leading to the improvement of general knowledge regarding the issue of short supply chains with the aim of contributing to the topic of creating an effective distribution network of supplier–customer relations.

The third feature of the COVID-19 crisis, in addition to having significant long-term effects, is the acceleration of the digitalisation processes of agriculture present in all its activities (Klerkx et al. 2019), which can also help in shortening the food supply chains. As access to consumers was prevented by the closure of markets during the COVID-19 pandemic, the digitalisation of the sales process (i.e. creating online stores, selling agricultural products through social platforms, and online promotion) became a key survival strategy for

many family farms. Although the older part of rural society gets used to this, we would consider it very useful to have a training initiative for small farmers in the field of digital marketing.

Finally, several limitations of our study should be kept in mind when interpreting the results. First, our study is not representative of all V4 family farms. Our research did not cover all types of family farms but focused only on farms in multifunctional agriculture. Future research could, therefore, be conducted across a larger spectrum of farms and their geographic locations. Second, we examined the impacts of the COVID-19 pandemic and farm resilience in terms of farmers' subjective perceptions. It would be beneficial to objectively assess impacts on farms by incorporating economic measurables. Third, this study focused only on the short-term effects of the COVID-19 pandemic. Thus, long-term effects should be further evaluated. Considering these limitations in future studies would allow for a more global perspective and would assist in designing policies and regulatory environments, leading to greater resilience of agricultural systems not only during periods of crises.

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