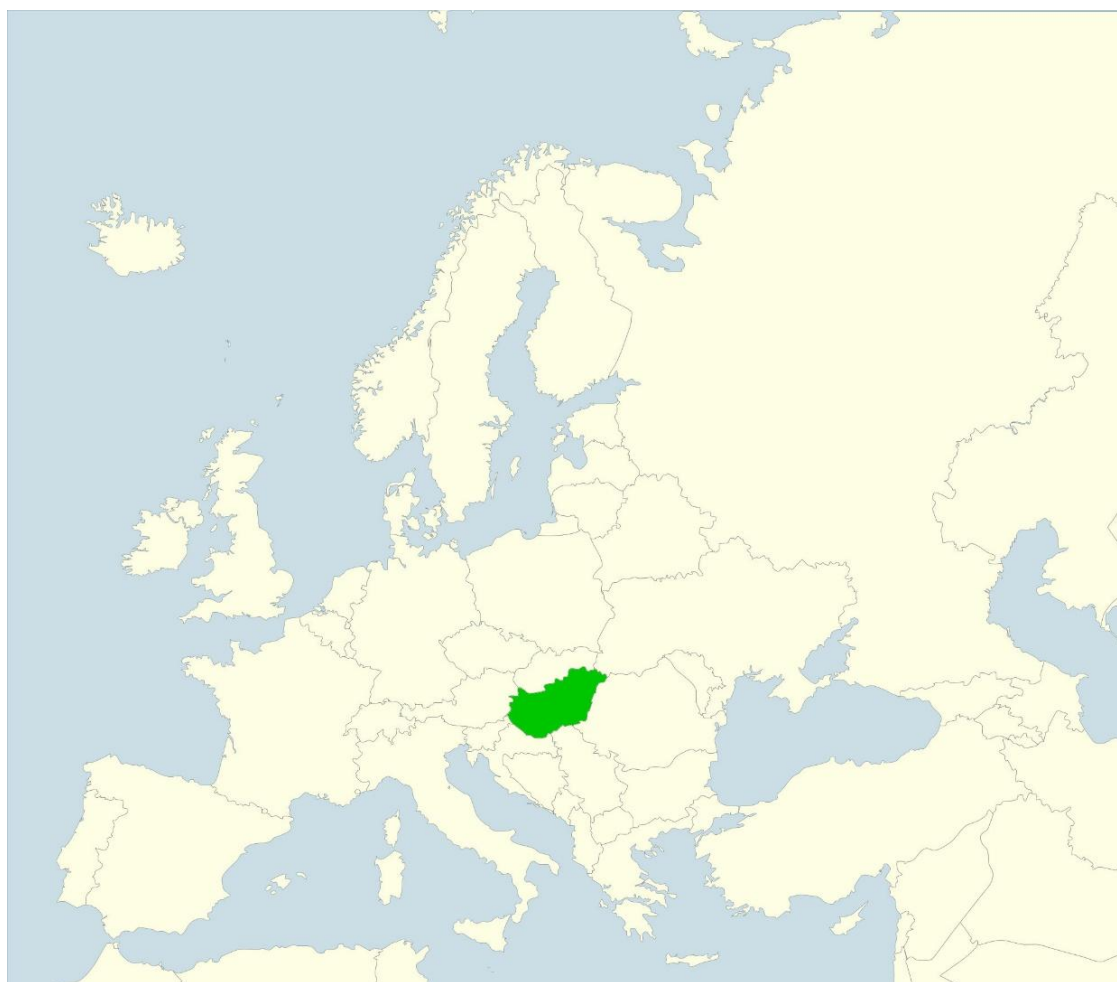


WHY HUNGARIAN FARMERS HESITATE TO ADOPT ORGANIC FARMING: FARMER EXPERIENCES AND PRACTICES

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Abstract: This paper explores how Hungarian farmers perceive the shift to organic farming, focusing on its practical, economic, and knowledge-related challenges. It examines whether difficulties experienced in organic farming reflect genuine concerns for conventional farmers – potentially explaining their reluctance to convert – or whether they fear different aspects than the actual challenges in organic systems. The study draws on qualitative interviews with both farmer groups and content analysis. Results show that farmers view the shift as a broader transformation of farm management. Organic farmers see challenges as manageable through experimental learning and cooperation, while conventional farmers emphasize uncertainties related to markets, yields, and regulations. Findings highlight the importance of advisory services, knowledge exchange, and farmer networks.

Keywords: conversion to organic farming, Hungarian farmers' perspectives, knowledge exchange, cooperation, economic risks, climate adaptation

Highlights:

- Economic and market risks limit organic conversion despite subsidies.
 - Organic conversion requires changes in farm management and knowledge.
 - Organic and conventional farmers differ in conversion perceptions.
 - Cooperation supports knowledge exchange and organic market development.
 - Organic farmers adopt more climate adaptation practices.
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1. Introduction

In recent years, the shift toward organic farming has gained momentum as consumers increasingly demand healthier, environmentally friendly food options. Governments and agricultural institutions worldwide are encouraging farmers to adopt organic practices, citing benefits such as improved soil health, biodiversity preservation, and long-term sustainability. However, while the transition holds promise, it also presents significant challenges for farmers. From shifting toward a more holistic approach to farming to coping with uncertain market dynamics, farmers face a complex environment.

This article explores the complex journey of converting to organic agriculture through the perspectives of Hungarian farmers. Organic farmers recount the difficulties they have encountered during the transition, while conventional farmers reflect on the challenges they perceive and anticipate.

The empirical foundation of the study is a series of in-depth interviews conducted as part of the ETICOF (Education, Training, and Innovations in Conversion to Organic Farming) project.

Although the initiative broadly supports the transition to organic farming through educational and innovation-oriented approaches, the present analysis concentrates on insights derived from primary data.

The interviews provide a detailed understanding of farmers' experiences, perceptions, and decision-making processes, highlighting both practical and knowledge-related barriers to conversion. This perspective enables a nuanced interpretation of the factors shaping the transition, without extending to the broader objectives or policy context of the ETICOF project (ETICOF, 2024).

Accordingly, the main aim of this study is to explore the socio-economic, knowledge-related, certification and regulation-related factors shaping farmers' perceptions of the conversion to organic farming in Hungary.

The following research questions were formulated:

RQ1: How do Hungarian farmers perceive the transition to organic farming and what challenges do they associate with the conversion process?

RQ2: What knowledge-related factors influence farmers' attitudes toward organic farming and how do organic and conventional farmers differ in their perception of the "knowledge gap"?

RQ3: What roles do farmer cooperation and networks play in supporting the transition to organic farming?

RQ4: How do farmers perceive the economic risks and market-related barriers associated with organic farming in Hungary?

RQ5: What differences can be observed between organic and conventional farming practices in terms of soil management, crop rotation, and plant protection strategies?

RQ6: How do farmers perceive the relationship between organic farming practices and climate change adaptation?

2. Theoretical background

Farmers' decisions to organic farming conversion are shaped not only by environmental considerations but also by market conditions, policy incentives, and broader socio-economic contexts that influence the perceived costs and benefits of conversion. Moreover, behavioural factors such as farmers' attitudes, risk perceptions, values, and social norms play an important role in shaping conversion decisions, indicating that adoption is not driven solely by economic considerations (Dessart et al., 2019).

Global demand for organic food continues to grow, with worldwide retail sales reaching approximately €145 billion in 2024, indicating sustained consumer interest in organic products (Willer et al, 2026). This increasing demand may contribute to further development of the organic sector and can act as an additional incentive for farmers to consider conversion to organic farming. In spite of this growth, the global market is characterised by pronounced regional

differences, with the United States dominating production and Europe accounting for a major share of consumption (Willer et al., 2026; BIOFACH, 2026).

The Hungarian organic market has been experiencing significant growth in recent years. Retail sales increased by approximately 13.9% by 2025, making it one of the fastest-growing organic markets within the European Union (Willer et al., 2026). Although around 6.3% of Hungary's agricultural land – approximately 320,000 hectares – is under organic management, the majority of this area consists of permanent grasslands (61.2%), while arable land accounts for a considerably smaller share (34.1%). Domestic consumption is relatively low, still considerably below the EU average, with an average annual expenditure of about €10 per capita. In these terms, improving market access and consumer awareness is crucial to increasing organic consumption. The expansion of the organic sector in Hungary is primarily driven by rising consumer demand, along with policy support and subsidy schemes that promote organic production (ÖMKi, 2025; EEA, 2025; KSH, 2026; OrganicTargets4EU, n.d.). These policy measures are largely implemented through the European Union's Common Agricultural Policy (CAP), which provides financial support for both the conversion to and maintenance of organic farming, as well as compensation for income losses during the transition period (CAP, 2026). Furthermore, broader EU initiatives such as the European Green Deal and the Farm to Fork Strategy emphasize the role of organic agriculture in achieving more sustainable and climate-resilient food systems, including the target of expanding organic land to 25% by 2030 (CAP, 2026; EU Commission, 2026; EU Council, 2026).

Apart from regional policy frameworks, international climate commitments also influence agricultural policy development. International agreements such as the Paris Agreement have strengthened the global focus on climate-friendly land management practices. Organic farming systems are considered to support climate mitigation and adaptation goals through improved soil carbon sequestration, reduced reliance on synthetic fertilizers, and increased ecosystem resilience. Hence, the interaction between policy incentives and international environmental objectives facilitates the development and expansion of organic agriculture in Europe (European Commission, 2021; Pe'er et al., 2019). Together with market demand, these factors drive farmers' decisions to convert to organic farming.

The emphasis on organic farming in policy is largely driven by its environmental benefits.

By eliminating synthetic fertilizers and pesticides, organic systems foster a resilient underground economy of microbes and fungi that revitalize the earth (Reganold & Wachter, 2016). This transition from "feeding the plant" to "feeding the soil" not only enhances long-term food security but also mitigates the environmental toll associated with conventional industrial practices (Davidar et al., 2010).

The primary environmental triumph of organic farming lies in the restoration of soil health and its ability to act as a carbon sink. Through techniques like crop rotation, green manures, and composting, organic matter levels are significantly increased, which improves soil structure and enhances its capacity to sequester atmospheric carbon. This robust soil matrix acts as a natural

sponge, increasing water retention and making crops more resilient to extreme weather events such as droughts or heavy rainfall (Gattinger et al., 2012).

The primary environmental triumph of organic farming lies in the restoration of soil health and its function as a carbon sink. Through practices including crop rotation, green manuring, and composting, organic matter levels are increased, improving soil structure and enhancing carbon sequestration, while also increasing water retention and thereby contributing to greater resilience to extreme weather events such as droughts and heavy rainfall (Gattinger et al., 2012).

The shift toward organic inputs contributes to improved water quality by reducing nutrient losses from agricultural systems. Organic farming typically relies on slow-release organic fertilizers instead of readily soluble synthetic nitrogen sources, which may lower nutrient leaching into groundwater and surface waters (Mäder et al., 2002). Consequently, this limits nutrient leaching into aquatic ecosystems and helps prevent eutrophication in freshwater and coastal environments (Seufert et al., 2012). Furthermore, organic farming contributes to higher levels of biodiversity, supporting more diverse plant, insect and animal communities, and enhancing ecosystem services such as pollination and natural pest control (Ticktin et al., 2014). Despite these well-documented environmental advantages, conversion to organic farming is a complex process that requires fundamental changes in farm management and the adoption of new production practices (Rizzo et al., 2024).

During the conversion period which lasts typically two to three years, farmers must comply with EU organic production regulations, without being able to market their products as organic (EU, 2018/848). As a result, producers face higher production costs, yield reductions, and increased production risks before benefiting from organic price premiums. Although area-based subsidies partly compensate for these temporary income losses, the conversion period continues to be economically uncertain and requires a high level of professional expertise and preparedness from farmers (NAK, 2021; Biokontroll Hungária, 2024). It should be noted that in crop production, this period is also essential for restoring soil quality and biological activity, thereby creating the ecological conditions necessary for successful organic production (Sacco et al., 2015).

One of the main technical challenges hindering the transition to organic farming is weed and pest management. The prohibition of synthetic herbicides and pesticides requires farmers to adopt knowledge-intensive practices such as diversified crop rotations, cover cropping, mulching, intercropping, and biological control (Delattre et al., 2023; Mwangi et al., 2024). Although these strategies can effectively suppress weeds and pest pressure, their performance is highly dependent on site-specific conditions, timing, and farmers' ecological knowledge (Mwangi et al., 2024). Thus, organic production relies extensively on farmers' experience and adaptive management, whereas the variability and labour requirements related to nonchemical control methods persist as an obstacle to wider adoption (Swanton et al., 2008). Weed and pest control in organic systems is further constrained by the heterogeneity of mechanical and biological methods, as well as the limited reliability and high costs of emerging technologies such as robotic weeders (Swanton et al., 2008). Pest management depends on the conservation of natural

enemies, habitat manipulation, and biopesticides, all of which demand substantial monitoring and entomological expertise (Headrick, 2021). In general, knowledge-intensive approaches contribute to yield variability and increase management complexity, highlighting the importance of targeted training and advisory support systems for organic farmers.

Beyond technical constraints, social and behavioural factors fundamentally shape farmers' decisions to adopt organic farming. Peer effects, social norms, and local networks are key determinants of adoption intentions, as interaction with neighbouring organic farmers and participation in knowledge networks can reinforce pro-environmental behaviour (Tran-Nam & Tiet, 2022).

Farmer identity further affects conversion decisions, as organic farming may be perceived as inconsistent with conventional farming norms, requiring farmers to reconstruct their professional identity and overcome social stigma (Sutherland & Darnhofer, 2012; Lähdesmäki et al., 2019). At the same time, the transition involves a steep learning curve, requiring farmers to acquire new ecological knowledge while unlearning conventional management practices. Although attitudes toward organic farming are often positive, uncertainty in terms of yields and practices remains a major barrier, suggesting the importance of experiential learning and farmer-to-farmer knowledge exchange (Cento et al., 2025). Social networks provide both informational and emotional support during the transition process; however, peer influence may either facilitate or discourage adoption depending on local social norms and reference groups (Brigance et al., 2018).

Xu et al. (2018) highlight that reluctance to adopt organic farming is primarily driven by sustained satisfaction with existing production systems and perceived stability in current practices. As the transition requires significant changes in management and production strategies, it may disrupt this sense of stability and entail considerable investments of time and effort to reestablish it. Also, adoption decisions are influenced by negative perceptions of organic farming within farming communities (Xu et al., 2018).

Overall, the literature indicates that farmers' decisions to convert to organic farming are driven by a combination of socio-economic, knowledge-related, and regulatory factors. These findings are consistent with conceptual frameworks of farm-level change, which suggest that significant management transitions arise from the interplay of economic, behavioural, and contextual factors rather than from a single driver (Sutherland et al., 2012; Knowler & Bradshaw, 2007). Extensive research has examined the environmental benefits of organic farming as well as individual categories of barriers, which are often discussed separately. However, less attention has been paid to how these factors interact during the conversion period and shape farmers' decision-making processes within specific national contexts. The present study addresses this gap by focusing on Hungarian farmers' perceptions of the transition to organic farming.

3. Methodology

In-depth interviews were chosen as the main methodological approach to address the research questions, as they are well suited to uncover personal motivations, individual experiences including decision-making processes, and behavioural patterns within a specific context. To explore the challenges related to the conversion to organic farming, 20 in-depth interviews were conducted with 10 organic and with 10 conventional Hungarian farmers. Anonymity was ensured throughout the research process, and no identifying information about farms or respondents is disclosed. During the selection of interviewees, particular attention was paid to ensuring diversity in farm size and production type. Organic farms included in the sample were certified under EU regulations and represented arable and mixed systems, ranging from 3.5 to 5,000 hectares and 16 to 3,800 livestock units. Conventional farms were chosen using the same criteria, including conventional, parallel, and in-transition farms, with sizes ranging from 60 to 4,550 hectares and 40 to 2,565 livestock units. Participants were identified through the interview team's professional network and a snowball sampling approach.

The questionnaire design was based on a semi-structured approach, using open-ended questions developed by the interview team, which were organized as follows:

Farmers' perceptions of the conversion

- Perceived main barriers and benefits of converting to organic farming
- Consideration or intention to convert (for conventional farmers)
- Changes in farm profile following the transition to organic farming (e.g., shifts between livestock, crop production, or mixed systems) and the reasons behind these changes

Knowledge

- Agricultural training needs related to organic farming
- Information needs related to conversion
- Main sources of information (e.g., advisory services, peers, media, institutions)

Cooperation

- Level and forms of collaboration with other farmers
- Relationships with nearby producers (cooperative vs competitive)
- Extent of knowledge and experience exchange

Innovation and community engagement

- Role of innovation and precision solutions in organic farming
- Involvement in social, environmental, or ethical organizations
- Engagement with local communities or disadvantaged groups
- Changes in social perception of farming and farmer identity

Economic considerations

- Changes in input use intensity (increase/decrease compared to conventional farming)
- Evolution of farm support schemes and subsidies
- Adjustments in marketing strategies and sales channels

- Changes in time investment for marketing
- Risk management strategies during transition (e.g., yield loss, market uncertainty)

Farming practices and production systems

- Main production activities and purposes (food, feed, energy, etc.)
- Changes in livestock feeding strategies
- Adjustments in breed/species selection
- Changes in animal health management

Crop rotation

- Changes in crop rotation structure and diversity
- Use of legumes in rotation
- Adoption of intercropping, cover crops, or green manure
- Utilization of secondary crops

Soil management

- Changes in tillage practices
- Adoption of soil conservation techniques (e.g. minimum tillage, mulching, direct sowing)
- Management and use of crop residues

Nutrient management strategies in different production systems

- Changes in nutrient management approaches
- Use of organic fertilizers (e.g., manure, compost, green manure)

Plant protection

- Changes in plant protection and weed control strategies
- Pest challenges
- Methods of crop protection
- Use of biological control methods

Water management

- Indirect water-related practices through soil and crop management (e.g., mulching, crop choice, soil structure improvement)

Climate change and climate adaptation

- Perceived impacts of climate change on farming
- Adaptation responses embedded in farming practices

Interviews were conducted in 2023, during the summer and autumn, with farm owners or managers, primarily through on-site visits that also allowed for direct observation of farm operations. Interview duration ranged from 1 to 2.5 hours, depending on the depth of discussion.

The collected interview data was analyzed using the qualitative data analysis software NVivo 12. This tool supports the systematic analysis of interview transcripts by facilitating data organization and thematic exploration. During the coding process, the structure was refined based on the analysis of three pilot interviews, which helped establish the final coding scheme.

4. Results and discussion

4.1 Farmers' perceptions of the conversion

Farmers participating in the interviews generally described the transition to organic farming as a complex and long-term process rather than a simple technological change. For many respondents, conversion requires a fundamental reorganization of farm management, including adjustments in crop rotation, soil management practices, and plant protection strategies.

Organic farmers often emphasized that these changes become manageable over time through experience and experimentation. This finding is consistent with previous research highlighting that the adoption of organic farming practices is strongly based on experiential learning (Padel, 2001).

In contrast, several conventional farmers perceived the transition as uncertain, particularly because of possible yield fluctuations, regulatory requirements, and the need to adopt unfamiliar production techniques. Concerns about the long-term economic viability of conversion were also raised. As one farmer noted, organic conversion would only be worthwhile if “we should sign a contract for at least 10 years of use with the land owners,” while also expressing concerns that “the organic market will also become saturated.” These findings align with earlier studies that identified perceived economic and technical barriers as major deterrents to organic conversion (Eti, 2025).

4.2 Knowledge

A recurring topic in the interviews was the importance of knowledge and learning in the conversion to organic farming. Farmers repeatedly emphasized that organic production requires a deeper understanding of ecological interactions, crop rotations, and soil management practices. Several respondents noted that the transition involves a gradual learning process during which farmers must adapt their production strategies and experiment with new management approaches, which aligns with the “learning-by-doing” processes described also by Morgan & Murdoch (2000).

Organic farmers often described learning as a continuous process based on experience and experimentation. Many respondents highlighted the importance of peer learning and informal knowledge exchange among farmers, which they considered particularly valuable for gaining practical insights into organic production methods. Similar findings have been reported in previous research emphasizing the role of farmer-to-farmer learning, social networks in the diffusion of organic farming knowledge (Morgan & Murdoch, 2000). Several organic farmers emphasized that observing other farms and sharing experiences helped them better understand how organic techniques and methods can be adapted to local conditions.

Conventional farmers, however, more frequently referred to the lack of reliable information and practical training as a major obstacle to conversion. Some respondents expressed uncertainty about the technological requirements of organic farming as well as the availability of trustworthy

advisory services. For these farmers, the perceived lack of practical knowledge increased the risks associated with the transition. This finding is consistent with previous studies identifying knowledge gaps and limited access to advisory services as significant barriers to organic adoption (Knowler & Bradshaw, 2007).

Organic farmers reported using a wide range of information sources during the transition process. Several respondents mentioned online platforms and websites of professional organizations as important sources of information. Others referred to professional books, articles, and printed materials related to organic farming. Training events, courses, and lectures were also cited as opportunities to acquire new knowledge.

In addition, many organic farmers emphasized the importance of direct interaction with other farmers who already have practical experience with organic production. This reinforces earlier findings that informal knowledge networks and peer interactions often play a more influential role than formal advisory systems in supporting the adoption of sustainable farming practices (Ingram, 2008). Personal exchanges and farm visits were often perceived as particularly valuable, as they allow farmers to observe production practices and discuss practical challenges under real farming conditions. The importance of experiential learning was also reflected in the views of conventional farmers. One respondent stated that “regular field visits guided by reliable farmers” would have been particularly helpful in demonstrating that arable crop production can be successful without pesticides.

4.3 Cooperation

Organic farmers generally expressed a positive attitude toward cooperation with other farmers. Most respondents described other farmers primarily as partners rather than competitors. Knowledge exchange was frequently mentioned as an important aspect of cooperation. Several organic farmers emphasized that sharing experience, information, and practical knowledge with other farmers helped them improve production practices and solve problems related to practical issues.

Some interviewees also referred to broader forms of cooperation that could support the development of organic agriculture. One interviewee highlights the importance of systems thinking and collaboration. According to them, well-functioning farms could be connected at the national level to jointly plan and coordinate the processes of production, processing, and sales.

Organic farmers also highlighted several social conditions that facilitate successful cooperation. Openness, trust, shared values, and mutual respect were frequently mentioned as important elements of long-term collaboration among farmers. Reflecting these values, one organic farmer described how “organic farmers form a really good community, help each other, and share experiences,” and emphasized that opportunities for personal interaction are particularly important. For this respondent, organic farming had become “a lifestyle,” illustrating the strong social and community dimensions associated with participation in the organic farming sector.

Conventional farmers also expressed a generally supportive attitude toward cooperation, although their motivations were often more strongly linked to practical and economic considerations, such as reducing investment costs and improving market access. Similar motivations have been identified in previous research on farmer cooperation, where economic benefits and risk-sharing are important drivers of collaboration (Bijman, 2012; Valentinov, 2007).

They described various forms of collaboration, including contract work, shared storage facilities, joint marketing activities, and the joint use of equipment. Some interviewees also noted that cooperation can help farmers complement each other's product range and reach a wider market.

In addition to economic benefits, some respondents highlighted the importance of communication, honesty, and mutual trust as essential conditions for successful cooperation among farmers. This further supports previous research emphasizing that trust and communication are fundamental for sustaining long-term cooperative relationships (Pretty, 2003).

4.4 Innovation and community engagement

Innovation was generally considered important by the interviewed organic farmers. Several respondents described innovation as essential for maintaining farm competitiveness and adapting to changing environmental and market conditions, which is consistent with previous research highlighting the importance of adaptation and flexibility in enhancing the resilience and sustainability of farming systems (Darnhofer, 2010).

However, some organic farmers also noted that innovations often require significant investments and may therefore be more accessible to larger farms. This observation is consistent with previous research showing that the adoption of agricultural innovations is often constrained by financial capacity and farm size, with larger farms being more likely to implement capital-intensive technologies (Barnes et al., 2019; Läßle & Thorne, 2019).

A small number of organic farmers reported using precision agriculture technologies, such as precision nutrient application or modern seeding and harvesting equipment. At the same time, some respondents expressed doubts about the applicability of certain precision technologies in organic farming, particularly on smaller farms where investment capacity is limited. One organic farmer expressed reservations about the increasing role of digital technologies, noting that "I miss the human mind from the process and the humans from the landscape. If we rely too much on software and technical solutions, we may lose agricultural knowledge and know-how." Another farmer highlighted a more balanced perspective, explaining that "we combine traditional peasant knowledge with modern environmentally conscious solutions. Technology is a useful means to solve problems, but an excessively technological approach is not the right way forward."

Conventional farmers referred less frequently to innovation in the context of organic farming but acknowledged the importance of technological development for improving farm efficiency. In terms of social engagement, several farms reported limited but existing connections with

the local community. Some farmers employ local seasonal workers, while others occasionally host educational activities such as farm visits for schoolchildren or career orientation events.

4.5 Economic considerations

Interviewees frequently mentioned uncertainties related to market access, price stability and the organization of organic supply chains.

Farmers reported a diverse range of marketing strategies. Organic farmers more frequently referred to direct sales channels, such as local consumers, restaurants or community-based food networks, while sales through intermediaries or export markets were mentioned across both production systems. This finding is consistent with previous research showing that organic and small-scale farmers often rely more heavily on short food supply chains and direct marketing strategies (Renting et al., 2003). Farmers emphasized that establishing stable buyer relationships is essential for economic viability. In some cases, direct marketing channels have allowed farmers to achieve higher margins, as highlighted in the literature on short supply chains and alternative food networks (Marsden et al., 2000). However, several organic farmers also highlighted the difficulties of establishing reliable market connections and maintaining long-term contracts.

Conventional farmers, in contrast, often emphasized the limited development of organic supply chains and the lack of processing capacities in Hungary, which they perceived as a major barrier to conversion.

Conventional farmers often expressed that organic markets might remain limited or unstable. For several respondents, the perceived risk of lower yields during the conversion period combined with uncertain market returns represented a significant obstacle.

Several interviewees also highlighted the need for additional infrastructure investments when considering organic conversion. Storage facilities, processing capacities and specialized equipment were mentioned as potential constraints. For some farmers, these investments represent a significant financial risk, especially when the long-term economic returns of organic farming remain uncertain.

Table 1. Summarizes the transition barriers and challenges based on the interviews. Frequency of themes mentioned by organic and conventional farmers during the interviews. Source: own edition, 2026

Main theme	Organic farmers (n=10)	Conventional farmers (n=10)
Farmers' perceptions of the conversion	Transition perceived as a continuous learning process (Lack of knowledge: 5/10 ; Lack of experience: 2/10 ; Information sources: online sources 7/10 , literature 5/10 , training courses 3/10)	Transition perceived as uncertain and risky (Market barriers: 7/10 ; Lack of knowledge: 6/10 ; Lack of experience: 3/10 ; Yield loss concerns: 3/10 ; Crop protection concerns: 3/10)
Knowledge	Need for practical knowledge (5/10) Online and formal information sources (7/10) Learning from peers (4/10)	Lack of knowledge about organic farming (6/10) Lack of experience (3/10)
Cooperation	Support cooperation (9/10) Knowledge exchange among farmers (7/10)	Support cooperation (9/10) Knowledge exchange among farmers (4/10)
Innovation and community engagement	Innovation considered important (10/10) Precision farming solutions (2/10) Community involvement (2/10)	Innovation considered important (10/10) Community involvement (4/10)
Economic considerations	Market barriers (7/10)	Market barriers (7/10) Yield loss concerns (3/10) Price uncertainty (2/10)

Values indicate the number of farmers mentioning each theme (n = 10 per group).

4.6 Farming practices and production systems

Interviewed farmers described a wide range of production practices, reflecting the diversity of farming systems adapted to local conditions.

4.6.1 Crop rotation

Organic farmers typically use more diversified crop rotations than conventional farmers. Besides the major crops commonly cultivated in Hungary (wheat, maize, sunflower and rapeseed) several alternative crops appeared in organic crop rotations, including spelt wheat, triticale, chickpeas and various fodder crops. Leguminous crops such as alfalfa and clover were mentioned as important elements of soil fertility management. Other research also shows that organic farming systems rely on more diverse crop rotations and the inclusion of legumes to maintain soil fertility and nutrient cycling (Watson et al., 2002).

In contrast, conventional farmers reported less diversified crop rotations, typically centered on major arable crops, with more limited inclusion of legumes and alternative crops, although green

manure crops are sometimes integrated into rotations, while practices such as intercropping or undersowing remain rare.

4.6.2 Soil management

Soil management practices also differ among farms. Most organic farmers emphasized reduced tillage techniques aimed at preserving soil structure and moisture. Mulch-based practices and the use of crop residues to maintain soil cover were commonly mentioned. These practices are recognized by Lal (2005) as a key component of soil conservation and water retention strategies in sustainable and organic farming systems (Lal, 2005).

At the same time, some organic farmers expressed concerns about direct seeding, as the absence of herbicide use in organic systems increases the risk of weed pressure, making weed management a significant additional challenge. Conventional farmers reported a wider range of tillage practices, including ploughing, reduced tillage with cultivator use, and occasionally direct seeding.

4.6.3 Nutrient management strategies in the different production system

Organic farmers relied mainly on manure, compost and leguminous green manure crops, often complemented by additional soil amendments such as alginite or lime. Conventional farmers typically used synthetic fertilizers, although several interviewees also reported the use of organic amendments such as manure and compost.

4.6.4 Plant protection

Plant protection strategies also differed considerably. Organic farmers generally relied on preventive approaches including crop rotation, resistant varieties and biological solutions. Some of them described the use of ecological pest control methods, such as installing bird perches or integrating livestock into crop systems. Conventional farmers, in contrast, reported a more frequent use of chemical plant protection products, although several interviewees indicated efforts to reduce pesticide use through monitoring and precision technologies. This aligns with Pretty & Bharucha (2015) highlighting the increasing adoption of integrated pest management (IPM) and precision agriculture approaches in conventional systems aimed at optimizing pesticide use and reducing environmental impacts (Pretty & Bharucha, 2015).

4.6.5 Water management

Water management was identified as an increasingly important issue by all respondents. Several farmers reported growing dependence on irrigation due to increasingly frequent drought periods. However, access to irrigation infrastructure varied significantly across farms, often depending on local environmental conditions and financial resources.

Both conventional and organic farmers emphasized the importance of water retention in the soil. Several responses related to soil management and crop practices – such as maintaining soil cover,

reduced tillage, and crop diversification – indicate a shared focus on improving water retention and reducing drought vulnerability.

4.7 Climate change, climate adaptation

According to the interviews, adaptive responses to climate change were mentioned mainly by organic farmers (Figure 1). These respondents referred to several practices aimed at improving soil conditions and increasing the stability of production systems, including reduced tillage, maintaining soil cover through mulching, expanding crop rotations, adjusting crop and variety selection, and applying measures to preserve soil moisture. One farmer operating in a drought-prone region highlighted the need for adaptation, noting that “farmers of this region sow less corn nowadays, as they can see that they need to change their crops into more drought-resistant ones.” The respondent also emphasized increasing water scarcity, explaining that irrigation would become necessary but local wells are gradually drying out. These water retention and adaptive practices are also recognized by Altieri et. al. (2015) as important in climate resilience in sustainable and organic farming systems (Altieri et al., 2015).

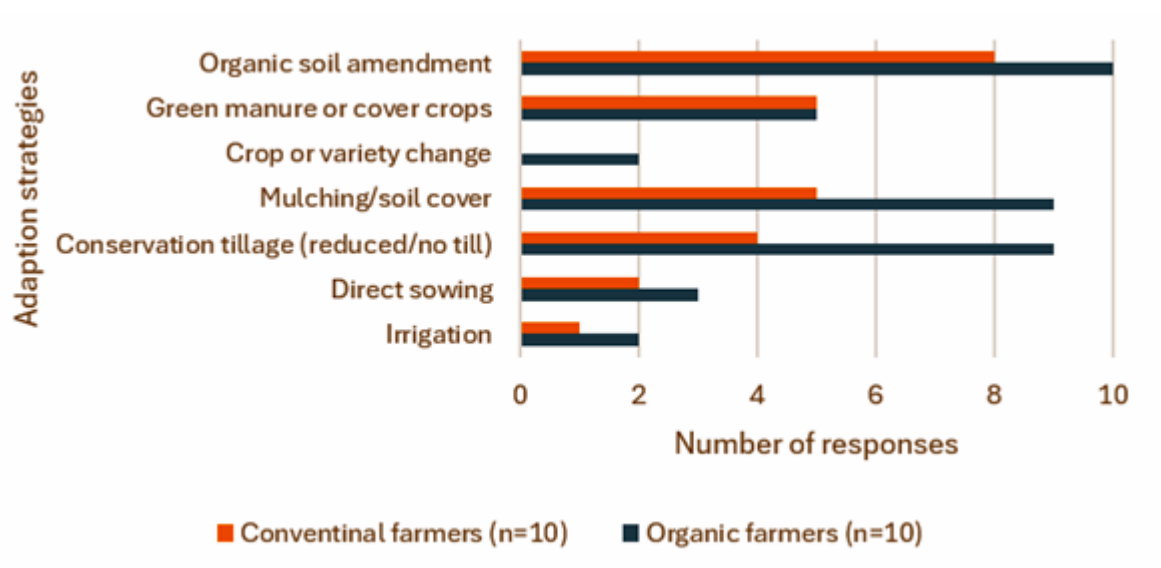


Figure 1. Interview results on climate change adaptation strategies by farming system. Source: own edition

In contrast, conventional farmers emphasized the negative impacts of climate change rather than specific adaptive practices. They frequently mentioned increasingly unpredictable weather conditions, yield losses, rising production costs, and the growing necessity of irrigation. As one farmer explained, “The changed circumstances present challenges to us. This year, for example, we started growing sugar beets, but without success. Due to the drought, there was no crop to be harvested. Growing corn is already risky. We irrigate what we can. Additionally, input prices have increased and income does not always cover expenses.” Only rarely did conventional farmers explicitly suggest that organic farming practices could improve the resilience of farming systems.

Overall, the interviews reveal a clear difference in how organic and conventional farmers interpret the conversion to organic farming. Organic farmers tend to frame the transition as a gradual learning process that involves experimentation, knowledge exchange, and adaptation of farming practices over time. One organic farmer noted that financial support is particularly valuable during this learning phase, as it helps compensate for lost income, and by the time support ends, they will already have established a well-functioning farm ecosystem. In this sense, organic farmers do not experiment randomly; they can afford to take calculated risks and remain profitable during difficult periods thanks to current support schemes. Conventional farmers, in contrast, more frequently emphasize the uncertainties associated with conversion, including potential yield fluctuations, regulatory complexity, and market risks.

5. Conclusion

The transition to organic farming represents both a significant opportunity and a complex challenge for farmers, requiring substantial adjustments in management practices, knowledge, and resource allocation. Understanding this process from the farmers' perspective is essential, as their experiences reveal not only structural constraints but also the underlying perceptions shaping adoption decisions. In addition, the findings show that the transition involves not only attitudinal differences but also observable differences in farming practices, particularly in crop rotation, soil management, and plant protection strategies.

This study highlights that, while organic and conventional farmers share several concerns, such as climate-related risks, the importance of cooperation, and the need for innovation, their interpretations of the transition differ fundamentally. Organic farmers tend to frame conversion as a learning-oriented and adaptive process supported by experience and knowledge exchange, whereas conventional farmers primarily associate it with uncertainty, economic risks, and institutional complexity. These differences are closely linked to how farmers perceive and address knowledge gaps: organic farmers rely more on experiential learning and peer-to-peer knowledge exchange, while conventional farmers more often perceive a lack of reliable information and advisory support as a major barrier to conversion. These findings confirm earlier claims in the literature that knowledge gaps, market uncertainty, and risk perception are key barriers to organic transition.

The original contribution of the paper lies in its comparative qualitative perspective: it demonstrates that barriers to organic conversion are not only technical or financial but also shaped by farmers' prior experience, confidence in available support systems, and perceptions of market opportunities. This distinction helps explain why similar structural barriers may lead to different adoption decisions among organic and conventional farmers.

The results also underline the important role of cooperation and farmer networks, not only in facilitating knowledge exchange but also in supporting market access and improving economic viability. At the same time, economic considerations remain a key constraint, as both groups highlighted uncertainties regarding market access, price stability, and supply chain organization.

For conventional farmers in particular, perceived market limitations and investment risks contribute significantly to their reluctance to convert. In terms of farming practices, organic systems are characterized by more diversified crop rotations, greater reliance on legumes and organic amendments, and preventive, ecology-based plant protection strategies, while conventional systems tend to rely more on simplified rotations, synthetic inputs, and chemical plant protection, even if efforts to reduce input use are emerging. These differences also relate to climate adaptation, as organic farmers more frequently associate their practices with improved soil conditions, water retention, and system resilience, whereas conventional farmers tend to focus primarily on the negative impacts of climate change rather than adaptive strategies.

These findings suggest that the barriers to organic farming are not solely technical or financial, but are also rooted in knowledge gaps, market organization, and risk perception. Consequently, the expansion of organic farming depends not only on policy incentives but also on strengthening advisory systems, farmer networks, and access to reliable market channels.

From a policy perspective, targeted training, peer-to-peer knowledge exchange, and improved coordination within supply chains could play a crucial role in reducing perceived risks and facilitating the conversion. Table 2 summarizes the main strategies suggested by interviewed farmers to support the transition to organic farming.

Table 2. Comparison of farmers' proposed strategies to support the transition towards organic farming.
Source: own edition, 2026

Organic farmers' suggestions	Main transition support mechanisms	Conventional farmers' suggestions
Diversification (educational farm services, agritourism, farm event)	Diversification Knowledge transfer Market integration Advisory systems	Diversification and on-farm processing for stability
On-farm processing		Training and advisory support (mentors, technology, legal issues, business planning)
Education and awareness raising (marketing support)		Transition planning (stepwise conversion strategies)
Planned nutrient management, preventive techniques		Market access improvement (market information, export opportunities)
Collaboration to reduce marketing barriers		Mentor/advisory programs
		Farm visits / knowledge exchange
		Technological innovation readiness

The findings should be interpreted in light of the study's limitations. The analysis is based on a small qualitative sample of Hungarian farmers, selected to capture diversity in farm size and production profile rather than statistical representativeness. Therefore, the results cannot be generalized to the entire Hungarian farming sector. Future research should use larger, regionally differentiated samples and mixed-method approaches to examine how farm size, production specialization, and locality influence farmers' perceptions of organic transition. Such approaches could provide deeper insights into the dynamic interaction between farm-level decision-making and broader policy and market frameworks.

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