How can agricultural statistics help policy makers? – the Hungarian example

Péter Tóth
Hungarian Central Statistical Office, Budapest, Hungary - Peter.Toth@ksh.hu

Márk Stoll
Hungarian Central Statistical Office, Budapest, Hungary - Mark.Stoll@ksh.hu

In line with EU trends, the number of farms in Hungary has been steadily declining over the past decades. More and more small farms are disappearing, especially those run by older farm managers with low digital literacy. Farm handovers are difficult, whether within or outside the family. Structural surveys, conducted in accordance with current EU regulations, provide a detailed picture of the structure of farms and how they are changing. The integration of data available from administrative sources and the linking of individual data are playing an increasingly important role in these surveys, with the ongoing goal of reducing the amount of data collected directly from respondents, which contributes to reducing the burden on data providers and optimizing costs and resources.

In Hungary, at the time of the 2020 Agricultural Census (IFS2020), only about one in ten of the mandatory EU variables came from administrative sources, while in 2023 (IFS2023) it was one in eight, but with continuous improvements and modernization, the proportion will reach 50% during the 2026 Integrated farm statistics data collection (IFS2026). Since the data quality of other sources is not entirely satisfactory, although the burden on data providers is reduced, the reduction in resource expenditure by statisticians is less apparent.

The questionnaires need to be supplemented with questions that cannot be obtained from other sources but are essential for policy makers. The professional cooperation between the HCSO and the Ministry of Agriculture has a long history. The Ministry of Agriculture plays a coordinating role with actors such as the Hungarian Chamber of Agriculture, professional organizations, farm associations, research institutes, and public institutions. The Ministry's demand for statistical data is growing and timeliness is playing an increasingly important role. Data are essential not only for planning, but also for evaluating individual policies. That is why agricultural digitization, precision farming, and generational change were important issues in the IFS2020 and IFS2023 surveys. Linking this data with other structural data (age, education, main activity, geographical location, Standard Output) is essential for data-driven decision-making.

Based on the IFS2020 data, Hungary, for example, enacted a law on farm handovers, which aims to simplify and facilitate the handover of farms. It is also essential for competitive agriculture to understand the vision of farm managers for the future. A good example of the use of data is that, based on the results of IFS2020, several calls for proposals were published on supporting precision developments, encouraging the digital transition of agriculture, and

creating a Digital Agricultural Strategy. Data analysis reveals which farms have been able to survive national and international challenges and crises, and which ones need to be supported in order to guarantee national supply security.

Keywords: structure of farms, policy makers, administrative data, vision of farmers, digitalisation

Legal background

In 2026, producing of agricultural statistics in the European Union is regulated by three main regulations and their implementing regulations. Statistics on agricultural inputs and outputs has to be produced by Member States on the basis of Regulation (EU) 2022/2379 of the European Parliament and of the Council of 23 November 2022 on statistics on agricultural input and output, amending Commission Regulation (EC) No 617/2008 and repealing Regulations (EC) No 1165/2008, (EC) No 543/2009 and (EC) No 1185/2009 of the European Parliament and of the Council and Council Directive 96/16/EC (SAIO Regulation), which entered into force on January 1, 2025. The details are specified in the implementing regulations for each topic. The production of data on the structure of agricultural holdings is regulated by Regulation (EU) 2018/1091 of the European Parliament and of the Council of 18 July 2018 on integrated farm statistics and repealing Regulations (EC) No 1166/2008 and (EU) No 1337/201 (IFS Regulation). The list of variables to be produced and their description are specified separately for each campaign (2020, 2023, 2026). The Economic Accounts for Agriculture (EAA) in the European Union are governed by Regulation (EC) No 138/2004, which was amended by Regulation (EU) 2022/590 for compiling regional economic accounts for agriculture.

In Hungary, in addition to EU regulations, data collection is also regulated by government decrees. Each year, the national statistical data collection program for the upcoming year is adopted, which includes not only statistical data collections but also an increasing number of data transfers. These regulations stipulate that providing data is mandatory for designated (sampled) data providers. The transfer of administrative databases is also facilitated by cooperation agreements with the data holder organizations. Legal regulations therefore provide the organizational framework, but communication is also very important for data providers. We always emphasize that the purpose of our data collections is not only to comply with the EU data reporting obligations, but also to provide up-to-date information to national and international decision-makers. The aggregated results by different dimensions of the data collections help to inform policy-making in the interests of farmers, to establish different subsidy systems, and to assist farmers in their decision-making.

Data on the structure of farms

Collecting and compiling data on the structure of farms requires lengthy and careful preparation. Before each campaign, the relevant implementing regulation must be reviewed, as although the core variables do not change, the modules differ from campaign to campaign. During preparation, in addition to cost-effective implementation, minimizing the burden on data providers is a key consideration. Therefore, the intensive use of administrative databases is essential. In Hungary, the 2020 Agricultural Census was a milestone in this respect, as the new Agricultural Register was completed and put into operation at that time. At the time of the previous farm structure survey in 2016, the microdata sent to Eurostat was still based entirely

on the surveyed data. During the 2020 Agricultural Census, the rural development and organic variables were derived from administrative sources. The proportion of indicators derived from administrative sources increased to 12.5% in IFS 2023 and will increase to nearly 50% in IFS 2026.

The preparation of campaigns involves close cooperation with the Ministry of Agriculture, professional organizations, and research institutes. The HCSO has cooperation agreements with these institutions, which are renewed and updated from time to time. The Ministry of Agriculture plays a key role in this cooperation and is the HCSO's most important partner in relation to data provision and compilation. Very often, data requests of varying dimensions and levels of detail need to be compiled very quickly in order to prepare various policy decisions and evaluate support programs. Part of the cooperation involves formulating national policy data requirements related to structural surveys, which do not appear as data requirements in EU regulations. The inclusion of these in the questionnaire is preceded by lengthy consultations, as each requirement must be extremely reasonable, and there are limits to the length of the national questionnaire. It is important to ensure that the questionnaires do not take too long to complete; in practice, this is set at an average of 25-30 minutes, depending on the size of the farms.

When designing questionnaires, it is important to only ask for information that cannot be obtained from other sources.

The use of administrative sources is therefore essential in agricultural statistics. However, linking the surveyed farms with the units/clients listed in the administrative sources poses a challenge.

Challenges with the administrative databases

To reduce respondent burden and optimize data quality, the HCSO has integrated a wide spectrum of administrative databases to maintain the Farm Register and substitute survey variables. The current operational sources include:

- Hungarian State Treasury (Paying Agency): Providing IACS databases which covers the different form of national and EU subsidies, supplemented with data on agri-environmental subsidies, organic farming subsidies.
- National Food Chain Safety Office (NFCSO): Supplying the Bovine and other animal registers, the Vineyard Register, Licensed Traditional Small-Scale Producer database, and the increasingly critical Electronic Farming Register (E-GN).
- Organic Certification Bodies (Biokontroll Hungária, BIO-Garancia): Providing detailed, client-level data on organic farming areas and livestock.
- National Chamber of Agriculture (NAK): Supplying membership records for population frame validation.

Each administrative database has its own structure and maintains relevant information according to its own requirements. We therefore had to design the whole process – reception data, transforming data, validation, and data linkage – separately for each database.

A significant structural adaptation was also required following the administrative merger of the Family Farm Registry with the Licensed Traditional Small-Scale Producer database, requiring a complete redesign of the HCSO’s data reception workflows to maintain longitudinal integrity.

One of the biggest challenges is that there is no unique identification number for the Hungarian farms which is recorded and existed in all administrative databases. Each database uses different identification keys, some of which exists in other databases, and some of which does not. Fortunately, some identifiers, such as the IACS identification number, are fairly common in several databases. However, there is no guarantee that any identifier that is not the database's own identification key would have been completely and accurately filled in any database.

Due to the lack of a unique identification number across all registries for private farms, a matching method was deployed to link records based on name variants and address normalization. Determining whether persons belonging to the same family farming separately or together is often a challenge. In addition, we must also consider whether administrative sources contain outdated information (e.g., deceased persons, incorrect addresses). There are also cases where administrative databases contain persons who are not engaged in agricultural activities but are registered for other reasons (e.g., for tax purposes).

The process of linking persons recorded in administrative databases with farms recorded in the Farm Register involves a number of complexities, due to the time difference between the datasets. Administrative databases record a static snapshot at a given moment, which rarely coincides perfectly with the reference date of the agricultural surveys.

Administrative data come from different sources, each with its own update schedule and data collection methodology. These differences require a flexible approach to data integration and validation, ensuring that the Farm Register are as accurate and up-to-date as possible. Regular updates and cross-checking of data from multiple sources are essential to reduce time differences and ensure the reliability of farm records.

This means that, in addition to the automatic, program-based linking steps, a significant amount of work is required to manually check and update data and links. This task is carried out continuously by the Farm Register maintainers.

National data needs

In line with the EU trends, the number of farms in Hungary has been steadily declining over the past decades. In 2020, there were 241,000 farms, which is 31% less than ten years earlier. Their number continued to decline by 2023, falling to just 196,000. The decline is likely to have continued in 2026, but we do not have exact figures as data collection will take place in the summer of 2026. More and more small farms are disappearing, especially those run by older farm managers with low digital literacy.

This necessitated the examination of two important questions in 2020, which we repeated in IFS 2023. The data of these modules are not available from administrative sources.

One of these dealt with the future vision of farm managers. One-third of them were over 65 years of age, so the question is what their plans are for the next 5, 10, 20 years. How long do they intend to continue farming, and when they finish, is there someone to whom they can hand over the farm? If so, do they envisage this happening within the family, or do they intend to sell their land, livestock, and equipment? This data, supplemented by structural data, provides an excellent opportunity for more in-depth analysis and for informing policy decisions. The data

was used intensively in policy-making, resulting in the adoption of a law in 2021 to facilitate farm transfers, which came into force in 2023.

The other module that received significant attention was agricultural digitization. Looking at the data for 2020 and 2023, it is clear that farms where the use of precision tools is widespread and where there is an opportunity to switch to digital technologies are significantly more likely to survive.

According to the data of the IFS2020, the general level of digitalization among Hungarian agricultural holdings was relatively low, with only 38% of farms utilizing any form of digital tool, primarily restricted to basic banking or e-government administration.

The adoption of advanced precision farming technologies was even more limited, utilized by merely 12% of the holdings.

The HCSO data clearly demonstrated a "digital divide" driven by age and education; however, it also proved that digital literacy is a critical catalyst for financial resilience. Farms utilizing digital tools participated in Rural Development Programs at a significantly higher rate (31%) compared to the national average (18%).

These structural statistics provided the empirical justification for the Ministry of Agriculture to fundamentally shift its support policy. Consequently, the national CAP Strategic Plan (2023-2027) introduced massive, targeted investment subsidies specifically designed to accelerate the digital transition and the widespread adoption of precision farming equipment across the sector.

The critical need for further digital transition was recently corroborated by a 2025 performance audit conducted by the State Audit Office of Hungary (SAO), which evaluated the effectiveness of agricultural digitalization measures between 2019 and 2023.

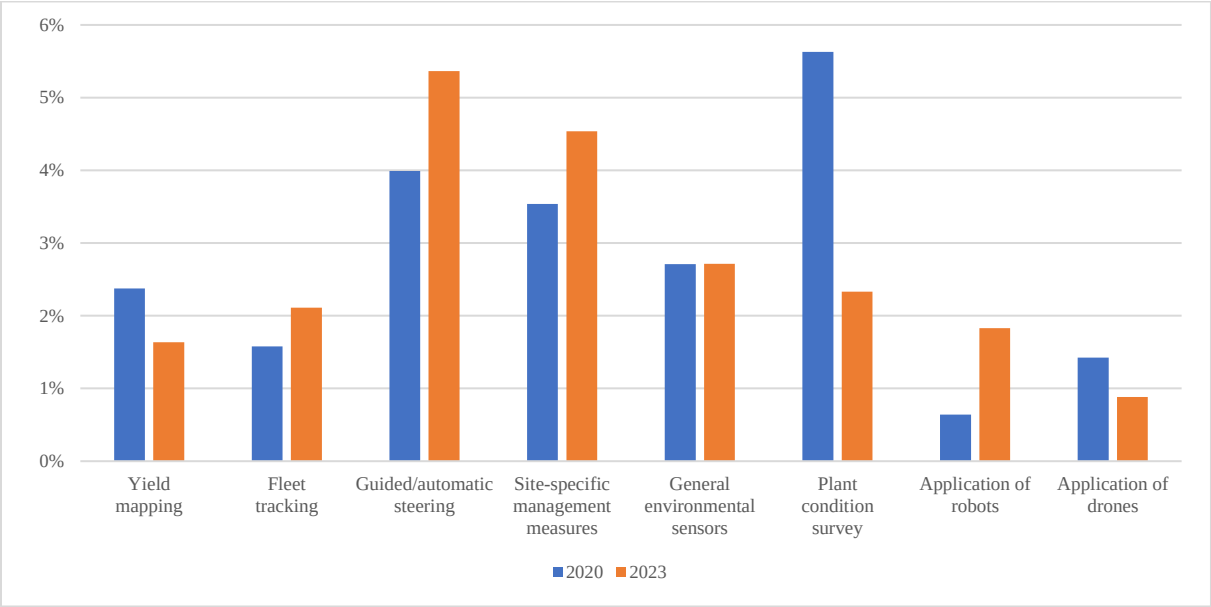
The report highlighted the overwhelming sector demand for modernization; due to high interest, the government had to nearly double the budget of the precision farming development subsidy program to 188.46 billion HUF.

The SAO audit confirmed that the procured digital tools successfully contributed to process optimization and direct cost reduction at the farm level.

However, the report also identified significant structural bottlenecks: the lack of interoperability between various administrative databases ('island-like operation'), and the fact that farmers could not yet fully exploit the potential of new technologies due to software compatibility issues and a lack of adequately trained workforce.

These findings strongly validate the strategic direction: while financial support for hardware is crucial, the true modernization of the sector relies heavily on targeted digital education.

Figure 1
Percentage of holdings using precision tools, 2020, 2023



Farm survival between 2020 and 2023 was deeply influenced not just by the presence of subsidies, but by the form of agricultural support utilized.

The survival of farms between 2020 and 2023 was significantly influenced not only by the availability of subsidies, but also by the form of agricultural subsidies.

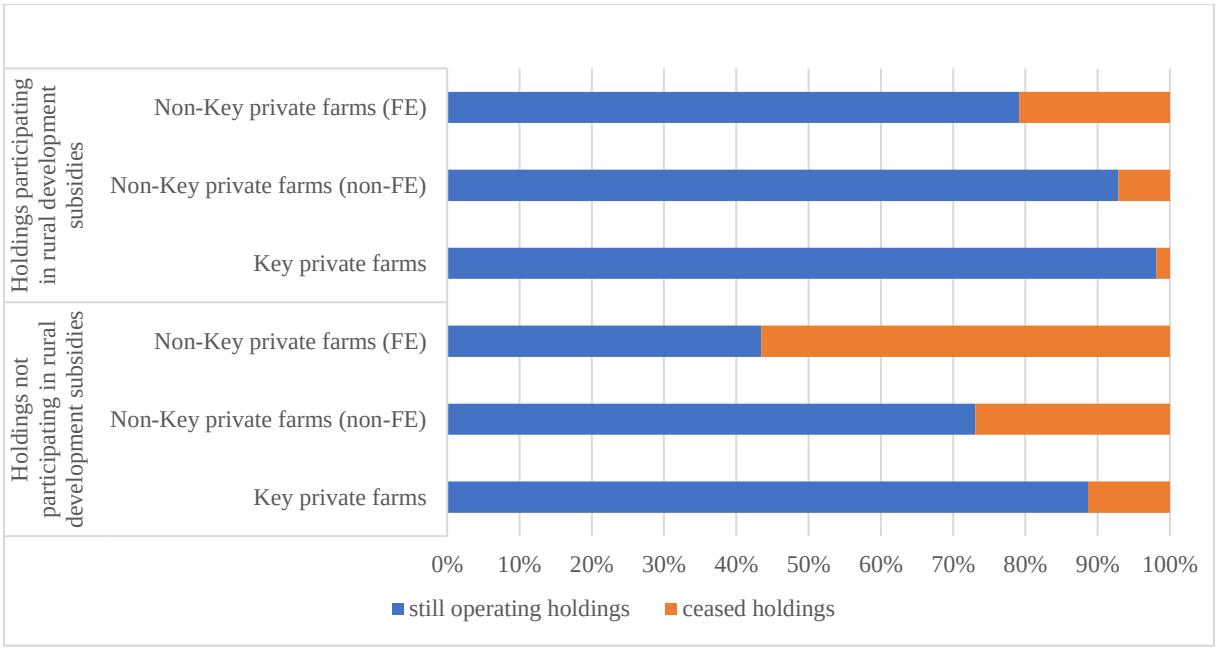
Private farms were analyzed according to three size categories:

- Key private farms: farms with significant agricultural activity – using key-private farms thresholds
- Non-Key private farms (non-FE): farms above the threshold of IFS in the legal act, but below than key-private farms thresholds
- Non-Key private farms (FE): farms above the national threshold, but below the IFS threshold

If we consider only those farms that have received rural development subsidies, there are still a significant proportion of farms operating in all three categories. Nothing illustrates this better than the fact that 98% of Key private farms operating in 2020, 93% of Non-key private farms (non-FE), and 79% of Non-Key private farms (FE) were still operating in 2023. Farms that did not receive support show the most unfavourable ratio in the non-key private farms (FE) category, as only 43% of them were operating in 2020 and 2023. Farms in other categories are in a more favourable position: 73% of non-key private farms (non-FE) and 89% of key private farms were still operating in 2023.

Figure 2

Impact of Rural Development Subsidies on the survival of private farms (2020–2023)



Other factors contributing to farm survival:

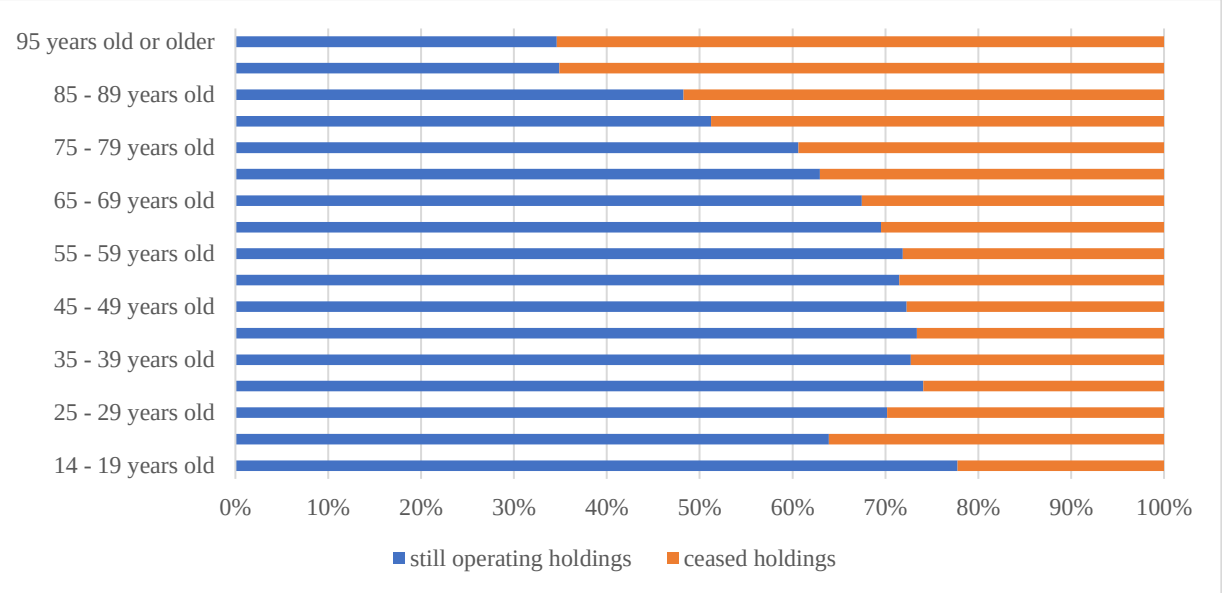
- Farms relying solely on basic area-based payments (SAPS) showed significantly lower resilience than those that successfully secured complex RDP investment and modernization support.
- The role of IT skills and age: Access to such higher levels of investment support was highly dependent on the age and digital skills of the farm manager. Older farmers with fewer IT skills struggled with complex application procedures and modern reporting requirements. As a result, they were often only eligible for simpler subsidies, which hampered their modernization capabilities and ultimately threatened their long-term survival.

Farm closures between 2020 and 2023 showed significant socio-demographic and regional differences:

Age: Farm managers aged 65 and over showed the highest cessation rate in all categories, which was closely related to the lack of designated successors.

Figure 3

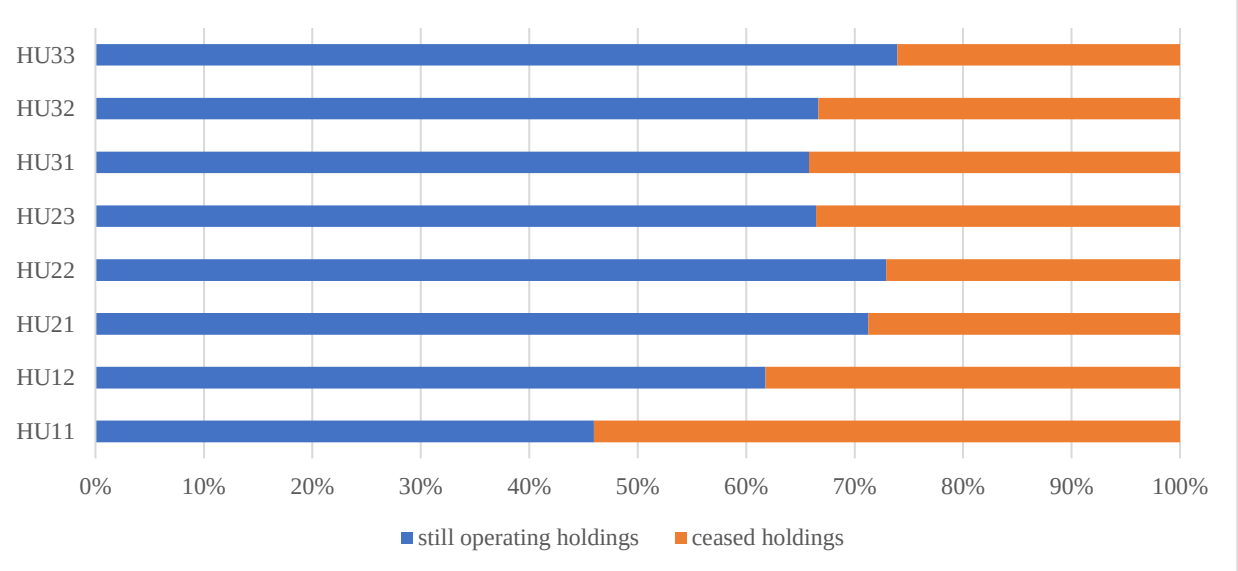
Impact of manager's age on the survival of private farms (2020–2023)



Regional differences: The rate of farm closures was not geographically uniform. Central Hungary (HU11) had the highest rate of farm closures, largely due to urbanization pressures and alternative non-agricultural employment opportunities. In contrast, traditional agricultural strongholds, such as the Great Plain (HU33), showed a much higher farm retention rate.

Figure 4

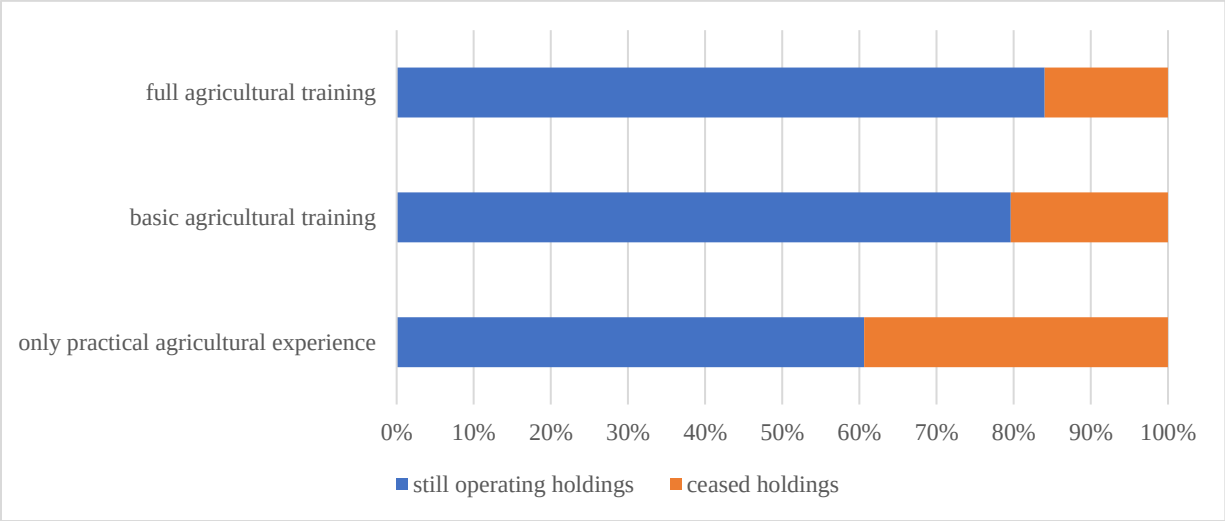
Status of farms operating in 2020 in 2023 based on the location of farms



Highest agricultural education level: Education played a critical role in preventing farms from closing. Managers with higher agricultural or university qualifications remained in business at a significantly higher rate than those who relied solely on practical experience. Formal education was closely linked to higher digital literacy, better market adaptation, and successful acquisition of RDP modernization funds.

Figure 5

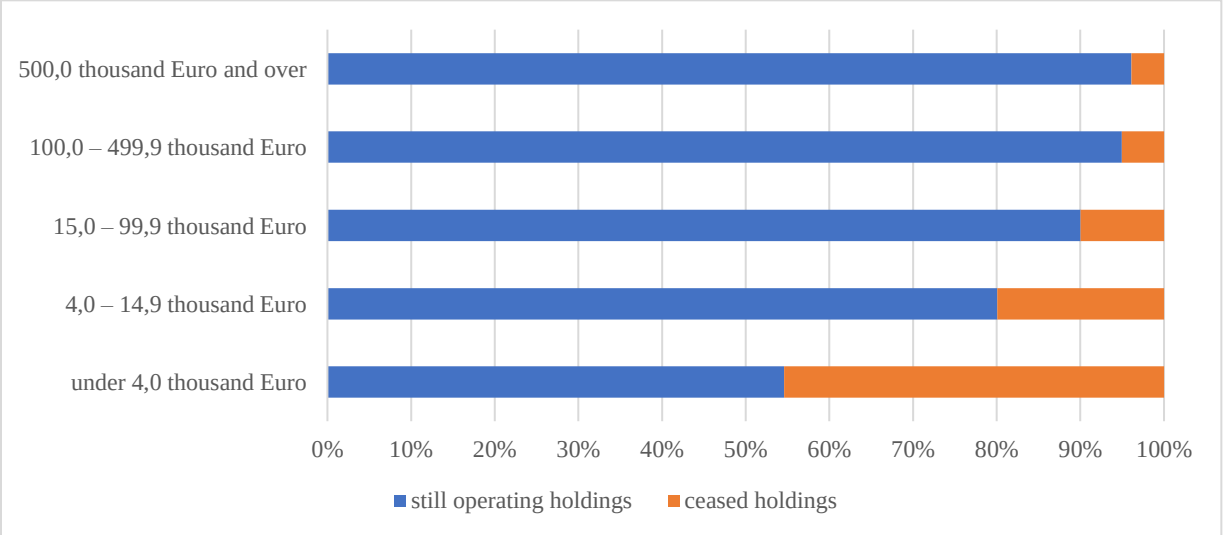
Status of farms operating in 2020 in 2023, based on the highest agricultural education level of the farm manager



There are significant differences in the survival of farms depending on their production value expressed in Standard Output (SO). Of the farms that produced 500,000 Euros or more in 2020, 96% were still operating in 2023, with 12 farms in this category ceasing operations. Only slightly more than half of the farms that produced less than 4,000 Euros in 2020 were still operating in 2023.

Figure 6

Status of farms operating in 2020 in 2023, based on the Standard Output classes



IFS2020 examined the "vision for the future" outlined by private farm managers. While the majority expressed a desire for long-term continuation, longitudinal follow-up until 2023 revealed a critical divergence.
A specific group of private farms was selected for analysis: those that announced long-term operating plans in 2020 but had ceased operations by 2023. The characteristics of these "optimistic but ceased" farms included primarily smaller economic size (low Standard Output), older farm managers whose health or family circumstances had likely changed unexpectedly, a lack of higher-level agricultural education, and an inability to secure investment capital or succession despite their original intentions.

The HCSO's farm-level linked database is an essential tool for the Ministry of Agriculture in the planning phase and evaluation processes of the Rural Development Program (RDP). By integrating administrative subsidy data and structural survey variables (such as Standard Output, nutrient balances, organic fertilizer data, and labour force indicators), the HCSO provides detailed, multidimensional profiles of agricultural operators. This enables policy makers to model ex-ante the potential economic and environmental impacts of proposed RDP pillars and to evaluate ex-post the actual effectiveness of allocated resources at both regional and farm level.

The 2023–2027 round of the Common Agricultural Policy (CAP) mandates strict evidence-based policymaking, elevating HCSO data from an informative resource to a mandatory legal foundation for the distribution of national and EU subsidies.
The Ministry of Agriculture relies heavily on these statistical insights to design, justify, and notify its support schemes to the European Commission.
A good example is the structural support for young farmers. IFS2020 data revealed that farm managers under 40 face severe capital disadvantages due to a significantly higher reliance on land leasing compared to older generations who farm their own land. This empirical evidence justified the strategic redesign and financial expansion of the "Young Farmer Start-up Support" to specifically target capital shortages and facilitate generational renewal.

Additionally, structural surveys highlighted the high number of small holdings that produce low standard output but are vital for rural population retention. This statistical proof was essential in negotiating the simplified flat-rate support scheme for small farms, preventing mass dropouts due to administrative burdens.

Data of the IFS2020 future vision module revealed that the vast majority of subsidized farmers would like to keep their farms in the family but face extraordinary legal and administrative uncertainties. This served as the empirical basis for the Farm Transfer Act in 2021. Subsequent amendments in 2024 were prompted by IFS2023, which identified specific barriers to young farmers entering the market, enabling policymakers to introduce flexible "partial transfer" options.

IFS2026 will enable monitoring of the changes resulting from the new legislation. Policy makers are eagerly awaiting the results, which will provide important information on the closure and development of farms, and are likely to reveal changes in the age composition of farm managers.

Recent activities

Until 2020, the outdated data collection method (door-to-door visits) made it possible to assess backyard farming, i.e. units that produced exclusively for their own consumption, whose contribution to agriculture was only a few percent. With the methodological change in 2020, these were removed from the agricultural statistics, as we now only collect data from farms. At the request and with the funding of the Ministry of Agriculture, we collect data on these households from a smaller sample of approximately 11,000 during the IFS 2026. The aim is to provide a professional basis for agricultural policy measures aimed at developing smaller units that are not considered farms in statistical terms but are nevertheless engaged in agricultural activities, and to provide data for fact-based decision-making. To this end, the survey collects data on the main characteristics of those which do not meet the threshold values of the IFS 2026 but are included in administrative records. No statistical data is currently available for this segment, which makes it difficult to plan and monitor policy measures.

Conclusions

Good decisions require good data. With agricultural subsidies accounting for around one-third of the EU budget, it is understandable that EU data requirements are expanding, while national data requirements are becoming increasingly frequent. It is necessary to find a balance between what is essential and what does not place an undue burden on data providers. In the current decade, national data requirements have helped to inform and prepare many decisions.

The HCSO has actively addressed this dual challenge through the continuous modernization of its agricultural statistical system. By steadily integrating diverse administrative registries - with the clear goal of sourcing 50% share of mandatory variables from administrative databases for the purposes of IFS2026 - the HCSO is successfully reducing the administrative burden on farmers while simultaneously enhancing data precision.

Beyond simply fulfilling EU reporting obligations, this linked, register-based data has proven its strategic value at national level. As demonstrated by the direct influence of the 2020 and 2023 surveys on the Farm Transfer Acts (Act CXLIII of 2021 and its 2024 amendments), targeted statistical insights are essential for addressing critical sectoral challenges like generational renewal. Furthermore, longitudinal analyses tracking farm survival between 2020 and 2023 have highlighted that access to higher-tier subsidies, combined with the agricultural education and digital literacy of farm managers, are the true determinants of long-term resilience.

Ultimately, by transforming complex administrative "big data" into actionable statistical evidence, the HCSO has evolved into an indispensable partner for policymakers, ensuring that future rural development programs are grounded in reality and optimized for the sustainability of the Hungarian agricultural sector.