FARM360TECH

UNDERSTANDING NEEDS IN THE AGRICULTURAL FIELD: INSIGHTS FROM THE FARM360TECH USER ENGAGEMENT SURVEY

At FARM360TECH, developing effective digital solutions for agriculture begins with a simple principle: listen to the people who will use them. As part of our user engagement activities, we conducted a survey with stakeholders across the agricultural sector to better understand the tools they currently use, the challenges they face, and the digital solutions they actually need. The results provide valuable insights that are shaping the design and development of the FARM360TECH platform.

Funded by the European Union

WHAT TOOLS ARE ACTUALLY USED?

The survey shows that a range of digital and monitoring technologies is already being adopted, though adoption varies widely.

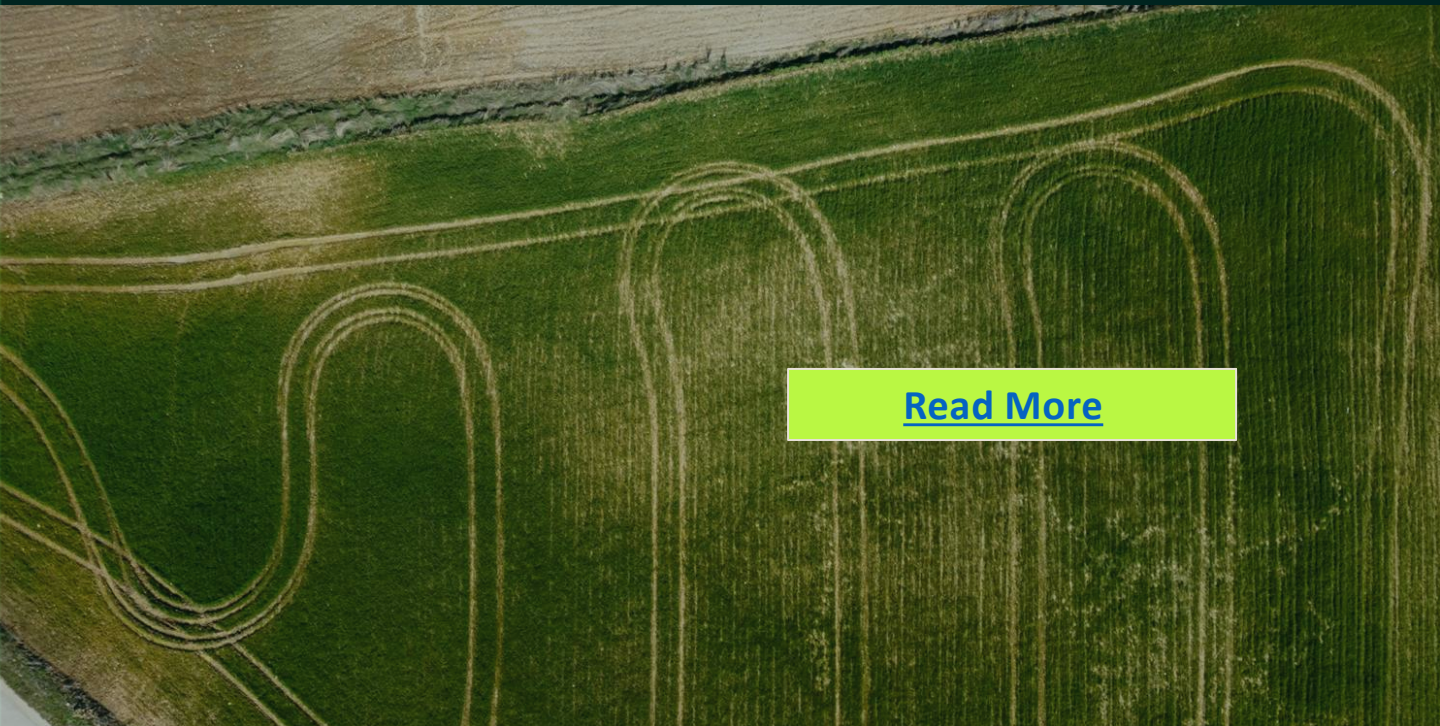
Weather stations emerged as one of the most widely used tools. Their popularity highlights the importance of local weather data for day-to-day farm decision-making. IoT sensors are also seeing strong adoption. Compared to more complex digital systems, these sensors offer practical benefits such as real-time monitoring of soil conditions and crop environments, making them increasingly attractive to farmers.

Irrigation controllers show moderate-to-high usage, confirming that water management is a key operational priority.

On the other hand, farm management software adoption remains moderate. While these systems can offer comprehensive digital support, barriers such as complexity, cost, or training requirements may limit broader uptake. Drones, despite their potential, currently show relatively low usage overall. This may reflect cost barriers, regulatory restrictions, or operational complexity. Traceability systems display moderate but inconsistent adoption. This suggests that supply-chain transparency is important, but not yet universally implemented across farms.

Interestingly, a noticeable share of respondents reported having no digital equipment at all, indicating that traditional or low-technology farming practices still represent a meaningful portion of the sector.

Finally, the category of “other” tools represented only a small share, suggesting that most users rely primarily on the main technologies already listed.



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MAIN CHALLENGES IDENTIFIED

The survey identified several consistent challenges in daily operations across countries.

The top challenge identified was pest and disease pressure. Crop health remains one of the most significant risks affecting farm productivity and profitability.

Water management ranked among the most important challenges, reinforcing the importance of efficient irrigation and resource optimization.

Another widely recognized concern is climate and weather risk. Respondents across all surveyed regions emphasized the increasing unpredictability of weather conditions and their impact on production.

High input costs, including fertilizers, energy, and other essential resources, also emerged as a major cross-country concern. Rising prices are placing growing pressure on farm operations.

Labor shortages were reported as a moderate-to-high challenge, reflecting workforce availability issues and increasing labor costs in many agricultural regions.

Respondents also pointed to limited access to digital tools as a challenge. While digitalization is progressing, gaps remain in accessibility, affordability, and usability.

Traceability and certification requirements were seen as important but less urgent compared to operational challenges such as pests, water management, and costs.

Finally, monitoring greenhouse or nursery performance ranked relatively low overall, suggesting that this is a more specialized concern affecting a smaller subset of farmers.

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WHICH USE CASES MATTER MOST?

The survey also explored which digital solutions are considered more valuable.

Two priorities clearly stand out:

- Early pest and disease detection
- Irrigation optimisation

It was emphasized that digital tools should go beyond data collection. Instead, they want actionable insights that directly support decision-making.

Key expectations include:

- Clear recommendations
- Real-time alerts
- Simple, practical guidance

The concept of Digital Twin technology and simulation tools was well received by respondents, particularly for irrigation and fertilisation planning. Respondents expressed interest in using these tools to better understand trade-offs between costs, yields, and water use, especially for short-term planning.

Traceability solutions were also considered relevant, but respondents stressed that ease of use is essential. Adoption is more likely when systems include automation and minimal manual data entry, while maintaining trust, privacy, and user control.

Another strong message from the survey was the preference for a single integrated platform. Farmers expressed interest in systems that combine:

- Weather data
- Soil and sensor data
- Optional satellite or drone integration

Equally important, the platform must be mobile-friendly and easy to use.

Overall, users want simple, integrated, and automated tools that help them make better daily operational decisions.

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UNDERSTANDING USER NEEDS

The survey responses also revealed a clear distinction between core needs and value-adding features.

Core Needs

The most critical requirements identified include:

- Decision support for irrigation and agricultural inputs (what, when, and how much to apply)
- Early alerts for pests, diseases, and weather risks
- Clear recommendations rather than complex dashboards
- Integration of data from multiple sources (weather, soil, and sensors)

Ultimately, farmers are looking for tools that help them reduce risk, avoid waste, and lower costs while improving productivity.

Nice-to-Have Features

In addition to these essential capabilities, farmers also expressed interest in advanced functionalities that could further enhance decision-making.
These include:

- Predictive insights and “what-if” simulations for irrigation and fertilisation strategies
- Explanations behind recommendations, helping users understand why a suggestion is made
- Automation features that reduce manual reporting and monitoring tasks
- Advanced crop monitoring and stress indicators for precision agriculture
- Field comparisons and geospatial visualisation tools for managing multiple plots

These features are not strictly necessary for adoption but could significantly increase the value and usability of digital farming tools.

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UNDERSTANDING USER NEEDS

From Insights to Platform Development

These findings play a key role in the activities of the FARM360TECH project that focus on user and system requirements, functional and non-functional requirements, system architecture, and technology selection.

The survey forms part of the task entailing User Requirements and Use Case Analysis. Through surveys and in-depth interviews with around 100 stakeholders, the project gathered valuable insights from farmers, advisors, and other agricultural actors.

Using structured methodologies, the project team systematically collected and validated these requirements to ensure the FARM360TECH platform reflects real operational needs in the field.

Building Technology That Works for Farmers

The message from the FARM360TECH survey is clear: farmers are open to digital tools, but only when those tools are simple, practical, and directly useful in daily operations.

Solutions that provide clear recommendations, automation, and integrated data will have the greatest potential for adoption.

By placing farmers and stakeholders at the center of the design process, FARM360TECH aims to develop technologies that truly support sustainable, efficient, and resilient agriculture.

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Funded by the European Union

This project has received funding from the European Innovation Council and SMEs Executive Agency (EISMEA) research and innovation programme under Grant Agreement No.101228421. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the EISMEA. Neither the European Union nor EISMEA can be held responsible for them.