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Rafael Perez-Armenteros, Dr Christina O'Connor & Dr Mary Curtin

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When the Next Drought Comes, Will Irish Growers Have the Tools to Respond?

Why digital readiness must come before AI in Irish agri-food

Rafael Perez-Armenteros (University of Murcia), Dr. Christina O'Connor (University of Limerick), and Dr. Mary Curtin (University of Limerick)

Introduction

In the summer of 2026, the debate about Irish food security became unusually concrete. It was not about artificial intelligence (AI) or some distant vision of the future of farming. It was about carrots.

Following one of the driest summers in recent years, Irish carrot growers warned that drought conditions had sharply increased irrigation needs, adding to fuel, labour, operational and energy costs. Met Éireann recorded July 2026 as the driest July on record in Ireland, with provisional rainfall of just 16 mm, or 17% of the 1991–2020 long-term average (Met Éireann, 2026).

For consumers, a dry summer may simply mean good weather. For growers, however, it changes both the economics and the management of production, as crops still need water, labour must be planned, quality maintained and retail supply protected, often under increasingly difficult conditions. What looks like sunshine from the kitchen table can look very different from the field.

This was a bread-and-butter issue in the most literal sense: whether the people growing everyday food had the tools, information and support to respond when weather, costs and supply pressures came together.

The Irish Carrot Growers Group, representing more than 95% of Ireland's retail carrot supply, warned that production costs had risen much faster than retail prices. According to reporting on the group's analysis, carrot production costs had increased by around 100% since 2020, while drought conditions increased irrigation requirements by approximately 166% (The Irish Times, 2026). Earlier in the year, the

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Phone: +353 1 716 4615 Website: https://www.ucd.ie/geary Email: geary@ucd.ie

vulnerability of domestic production had already been highlighted when one of Ireland's major carrot growers ceased production (Department of Agriculture, Food and the Marine, 2026).

The debate should not be reduced to whether consumers would pay a few cents more for carrots. The more important question is how growers respond when bad weather meets already tight margins and rising production costs, and whether they have the information and tools to make those pressures visible and manageable.

That question matters as Ireland increasingly discusses artificial intelligence as part of the future of agri-food. AI offers significant possibilities - AI could improve forecasting and help growers make better production and supply-chain decisions. Teagasc has already placed AI firmly on the agenda of the Irish food industry (Teagasc, 2025). However, the experience of the 2026 drought suggests that another question should come first: are Irish growers digitally ready to use these technologies when they face real production challenges?

This question matters in a sector that is economically important but structurally exposed. Bord Bia notes that horticulture accounts for a relatively small share of Irish agricultural land while supporting a significant number of agri-food jobs, and that the sector remains labour-intensive, exposed to high input costs, and characterised by tight margins (Bord Bia). In that context, digitalisation cannot simply become another cost or requirement; it has to help growers manage the pressures they already face. Horticulture provides a particularly useful lens through which to examine this wider challenge for Irish agri-food.

AI is not the starting point

AI does not operate in isolation. It depends first on good data and people who know how to use it. That requires digital skills, but also confidence that the information is relevant to decisions on the farm.

A forecasting system is only as useful as the data behind it, while irrigation recommendations depend on someone being able to interpret them in the context of the crop and current field conditions. Even the most sophisticated platform will add little value if it creates more complexity in an already demanding working day.

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Research on digital transformation has consistently shown that transformation involves more than adopting technology. It requires organisations to change how people work and how information is used (Vial, 2019; Verhoef et al., 2021). The same applies to AI, where business value depends on capabilities that have little to do with the AI system itself, from the quality of available data to the organisation's ability to use it (Mikalef & Gupta, 2021; Enholm et al., 2022).

This distinction is particularly important in horticulture, where products are perishable, weather conditions can shift quickly, harvesting windows are limited, and quality can deteriorate in a short period of time. At the same time, retailers expect consistent quality and deliveries to arrive when promised. Many production decisions therefore have to be made quickly.

In that context, digital readiness should mean something practical: having the ability to collect, interpret and use relevant information quickly enough to support better decisions in the field and meet the commercial requirements of the market.

In a dry summer, that could mean using soil-moisture data alongside weather forecasts to decide when and how much to irrigate. The same information could help growers anticipate crop stress and plan work around it. These applications may sound less exciting than artificial intelligence, but they create the foundations upon which useful AI can eventually operate.

The digital divide is also a knowledge divide

There is another dimension to digital readiness that deserves greater attention. On one side of the divide are people with deep agricultural knowledge. They understand how a crop responds to changing conditions and what works in practice on their own land. Much of this knowledge has been accumulated over years. Yet some may have limited confidence with data platforms, digital systems, or AI.

On the other side are people with strong technological skills. They may know how to build and work with digital systems but may have little exposure to seasonality, perishability, farm routines, labour constraints, or the informal knowledge that often determines whether a decision works in the field.

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The challenge, therefore, is not that one form of knowledge is more valuable than the other, but that they are rarely sufficient in isolation. Agricultural experience provides the context needed to judge whether a technological recommendation makes sense, while digital capability can help make that experience more precise, timely, and scalable. The policy challenge is therefore not simply to give growers more technology or to produce more technology specialists, but to create stronger connections between agricultural knowledge and digital capability.

This matters because the field is not a spreadsheet. A technically sophisticated solution that does not reflect how growers actually work may have little practical value. Equally, agricultural experience increasingly needs to interact with data as traceability, sustainability reporting, forecasting and supply-chain coordination become more important. Digitalisation works best when technology strengthens agricultural judgement rather than attempts to replace it.

What Spanish horticulture can offer the Irish debate

Spanish horticulture provides a useful comparison. Ireland should not copy Spain: the climate, scale, production systems and market structures are different. But Spain demonstrates how digital technology can become part of everyday horticultural decision-making rather than remaining a separate technological exercise.

Spain is one of Europe's leading fruit and vegetable exporters. Fresh fruit and vegetable exports reached €18.666 billion in 2025 despite declining export volumes (FEPEX, 2026). In regions such as Almería and Murcia, production is supported not only by technology but also by a wider network that connects growers with technical advice and the market.

Digital tools increasingly operate within this wider support system. Growers can use mobile devices to monitor growing conditions and make more informed irrigation and fertiliser decisions, while automated systems can respond to predetermined parameters without removing the grower from the decision-making process. The Andalusian regional government has highlighted the growing use of sensors and monitoring systems in Almería to optimise water and fertiliser use, reduce costs and improve environmental performance (Junta de Andalucía, 2025).

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What is striking in Spain is not simply the presence of technology. It is the extent to which technology can be integrated into ordinary production decisions: questions growers face every day, such as when to irrigate or whether changing conditions are likely to affect the crop. The lesson for Ireland is therefore not to import a Spanish model. It is to recognise that useful digitalisation combines technology, agricultural judgement, technical advice and market knowledge.

In a globalised agri-food system, Ireland also does not need to reinvent every solution from scratch. Knowledge already developed in horticultural systems elsewhere can be identified, tested and adapted to Irish conditions.

Three policy priorities for digital readiness

1. Start with growers' problems, not with technology

Digital policy should begin with the decisions growers need to make, rather than with technologies policymakers would like them to adopt. Training and support should therefore be organised around practical challenges, the problems growers actually encounter. In horticulture, that might begin with irrigation or crop monitoring and extend to planning labour or meeting buyer requirements. The question should not be "How can we introduce more AI into horticulture?" but "What information does this grower need to make a better decision?"

These practical outcomes should also guide how digital initiatives are assessed. The focus should be on whether technology saves time, reduces uncertainty, improves resource use, protects quality, or strengthens decision-making.

2. Build trusted bridges between growers and technology

Growers should not be expected to navigate digital transformation alone, nor should digitalisation be left primarily to technology providers. Trusted intermediaries are needed who understand both agriculture and technology. Teagasc, agricultural education providers, advisers, producer organisations and sector bodies can help growers assess which technologies are relevant, what problems they solve, and how they can be incorporated into existing production systems.

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The objective is not to turn every grower into a data scientist. It is to ensure that people with agricultural knowledge can access, understand, and use better information while retaining control over their decisions. Agricultural education also has an important role. Digital skills should be embedded in horticultural and agricultural learning through practical applications rather than taught as a separate technological subject.

3. Use universities to connect AgriTech entrepreneurship with international knowledge

Universities can provide a stronger bridge between agriculture, technology and entrepreneurship by bringing students, researchers and young technology entrepreneurs together with growers, advisers and producer organisations to work on real agricultural problems. These initiatives would require more than occasional interaction between universities, growers, advisers and technology entrepreneurs. They need coordination to align activities, cooperation to pursue shared objectives, and collaboration where actors jointly develop new solutions around real production problems (Castañer & Oliveira, 2020).

A horticultural business facing irrigation, forecasting, labour, traceability, or crop-monitoring challenges could become the starting point for a university-based innovation project. Technology students and young entrepreneurs would then work with people who understand the production environment, rather than developing a solution first and searching for an agricultural application afterwards.

These university-based agritech initiatives could also become gateways for international knowledge transfer. Ireland does not need to develop every digital solution independently. Universities, Teagasc, and industry have the opportunity to work with research centres, producer organisations, universities and agritech businesses in countries such as Spain to identify technologies and practices that are already working and assess how they might be adapted to Irish conditions.

The principle across all three aforementioned policy priorities should be simple: digitalisation should be evaluated by usefulness, not novelty.

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Conclusion

AI will undoubtedly play an increasingly important role in agri-food. It can help forecast, optimise, monitor and respond. But AI will not transform Irish horticulture by itself.

The pressure experienced by Irish carrot growers during the 2026 drought illustrates why the foundations matter. When irrigation needs rise, costs increase, and domestic supply depends on a relatively small number of growers, technological ambition needs to connect with production reality.

Ireland does not need to slow down its conversation about AI. It needs to make sure the sector is ready for it. That means giving growers practical digital skills and access to advice that connects new technology with agricultural experience. It also means using universities and international networks to bring young entrepreneurs closer to real farming problems and to adapt knowledge that already exists elsewhere.

The challenge is not to choose between people and technology. It is to design technology around people. Before the next drought comes, Irish growers should not be left simply hoping that conditions will hold. They need tools that work in the field, advice they can trust and digital systems that strengthen rather than replace agricultural judgement.

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