NEXT GENERATION LIVESTOCK FARMING: TECHNOLOGY AND TOMORROW’S FARMERS

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While livestock farmers already use a range of innovative tools and technologies to help ease their workload, new precision livestock farming technologies go a step further, paving the way for a digital transformation in animal health.

From detection and monitoring tools, to vaccines technologies, these cutting edge technologies are set to become essential tools in the future to support farmers in optimising animal care, while ensuring better traceability and reducing environmental impacts.

But sustainable use of such technologies requires a high level of farmer skills and management to maximise their potential.

As such, tomorrow’s farmers need support to reap the benefits of these technologies.

In this event report, EURACTIV focuses on the next generation of Europe’s livestock farmers and what is needed for them to be able to innovate to meet the sustainability demands on the sector.
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Generation Z – those born between 1997 and 2015 – is faced with the future farming paradox: it is an exciting time to be a farmer with many opportunities opened up by innovation, but a farmer’s life has never been so complicated.

Portraying the next generation farmer is an exercise that has been keeping agrifood experts quite busy.

Last December, the Commission’s science service Joint Research Centre (JRC) published the ‘Farmers of the Future’ foresight study, which aims at identifying and exploring possible future professional roles of farmers towards 2040.

Two camps emerged in the analysis: on the one hand, the “technophile farmers” who, in the words of the report, are “soil-less and high-tech”, as well as “biotech entrepreneurs”; on the other we see the rise of nature-based farmers like the so-called ‘regenerative’ ones returning to their roots.

Speaking at a recent event, the president of the executive board at Wageningen University and renowned food expert Louise Fresco had no doubt that future farmers will fall into the high-tech savvy category.

But according to her, the real aspect that will have an impact in forging the Gen Z farmer is the renewed central importance that the agriculture sector will take up in the economic fabric in the next years.

“Without exaggeration, we can say that agriculture is one of the most exciting sectors of the future because of petrochemicals used from fossil fuel industry and produced by agriculture, because of food, because of its landscape management, and also because of its role in a circular economy,” she said.

At the same time, a wide range of demands placed on farmers by the EU’s ambitious Green Deal are increasing the complexity of the job and the
uncertainty for agriculture workers.

“Sometimes I think the agricultural sector is being asked to solve everything,” said Fresco adding that, however, these demands for food sustainability and safety and environmental protection are now perceived as obvious.

For her, young farmers must be helped to overcome that.

“It is terrible to be in a sector where people feel that inherently you can’t do the right thing. So restoring pride in farming, especially in livestock farming is going to be really a challenge,” she said.

INNOVATION THAT GEN Z NEEDS

Previously viewed with scepticism, precision farming is gaining more and more relevance among farmers and now includes a range of different tools, from the Internet of things (IoT) and artificial intelligence to new branches such as fine-tuning or precision genetics.

“It really depends on which kind of farm you have,” said Alexander Bernhuber, an Austrian Christian Democrat MEP and a young beef cattle farmer, adding that he frequently uses his phone in his job and especially animal health apps.

“I’m really impressed from what has been done in the last few years, in particular in the dairy sector, how many new apps and how many new startups have emerged,” he said.

The animal health industry has evolved quite fast moving from a prevention approach through vaccines and antibiotics into listening to and understanding more the needs of farmers and of vets.

“We understand that the livestock sector is moving towards an era that I would call digitally enhanced farming,” explained Roxane Feller, secretary-general of the EU’s association representing manufacturers of animal medicines AnimalhealthEurope.

According to her, Generation Z will follow this connected health approach where animal health will not be a standalone issue and this will require integrated solutions, for instance, to use data effectively.

‘FARMERS ARE CREATIVE PEOPLE’

Among EU member states, little Estonia is very much seen as a big digital leader, earning it the nickname of e-Stonia. Kerli Ats, a young farmer at the helm of the Estonian Farmers’ federation, explained that the agriculture sector is no exception.

“One of my goals in animal husbandry day is to use a variety of digital tools that allow me to monitor herd in real-time,” she said, adding that she can analyse the movements and behaviour of her animals, assessing their health and activity.

Among the new innovative solutions that entered the market to help monitor animal welfare regularly, there are drones and 3d cameras while other technologies help farmers making better management decisions.

“We get a lot of data and this can help us a lot if we talk about these targets coming from the Green Deal,” MEP Bernhuber pointed out.

However, the use of data is a very sensitive topic. “Who gets access to data is, for me, something very important and has to be always taken into account,” he said, adding that the owner of the data must ultimately be the farmers themselves.

Innovation could improve farm management, animal welfare, productivity, ensuring better traceability, but it can also support farmers in their everyday lives.

“All these tools will also help farmers to go on holiday from time to time and be from all the burdens they had in the past. It’s an enormous challenge to be a young farmer,” said Louise Fresco.

However, she said that policymakers are too hesitant to take risks on certain innovations, while they need to be more audacious in trying something out.

“Farmers are creative people, and they need room to experiment, they need to find out the best possible ways of doing things and there is no other area so regulated as farming,” she concluded.
Agricultural education is "stale" and in need of a shake-up to help tomorrow's farmers meet the challenges ahead, according to a leading veterinary consultant and educator, Tommy Heffernan, who warned the sector is facing a decade of "massive change".

Faced with the complexities of farming combined with increasing pressure to meet the ever tighter green demands, the next generation of livestock farmers will have their work cut out for them.

To rise to the challenge, young farmers are increasingly looking to innovative new tools and technology, but support is not yet always there to facilitate the kind of "out of the box" thinking that is needed to meet the challenges that lie ahead, according to Heffernan.

"When it comes to young farmers, I think our agricultural education systems are really stale, especially if you put them beside technology and the way it is moving," he said, pointing out that the sector continues to be "too conservative" in its approach.

"The new way of doing it is going to be thinking outside the box down the narrow lane," he said, pointing out that what is required is the marriage of old and new ideas that will move the farming sector forward.

**WINNING HEARTS AND MINDS**

Highlighting that the sector is facing a decade of "massive change", while Heffernan acknowledged that data can be a "powerful tool" which can help influence behavioural change at a "huge level", he said it can also be overwhelming without the proper direction and support. [SHUTTERSTOCK]
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Heffernan acknowledged that data can be a “powerful tool” that can help influence behavioural change at a “huge level”, but it can also be overwhelming without the proper direction and support.

“Technology does have a role on farms if it makes life easier, but I can only get it to work for me if I know where I’m going,” he said.

Drawing on his own experience, Heffernan highlighted that his farm gets invaluable data from using stomach bolus’ to measure temperature and rumination in his cows but that the first time his team used the technology, the data completely overwhelmed them.

“The guys were presented with all this data, and they hadn’t a clue when it got all the alerts. So what they actually did was they stopped looking at it completely,” he said, highlighting the need to measure “only what matters”.

“When I’m a bureaucrat, I can talk about data flowing here and there, and it’s beautiful digitisation, and they’re lovely words, and it sounds great because the data can impact us. But when I’m on the farm, I’m looking at soil, I’m sorting out milking, I’m living my life around it, so I need the data to really work for me,” he said.

TOO MUCH OF A GOOD THING

This kind of purpose and direction is required to help farmers make the most of technological advancements and navigate a sea of data, he said.
Farmer checks dairy cows in his phone.

For many decades, policies for agriculture, research and development, education and training, and consumer demands have influenced the use of technology in farming as well as farm practices. T

Roxane Feller is the Secretary-General of AnimalhealthEurope.

Previously farmers looked to new technologies and other innovations as a way to reduce costs and increase farm efficiencies. That thinking changed significantly as a secure supply of safe and affordable food became standard practice for Europe’s farmers. And now, there is a tacit agreement – acknowledged or not by the general public – that food be produced using techniques that conserve natural resources, limit environmental pressures and pay greater attention to rural viability and animal welfare. Simply ensuring our safe supply of affordable food alone is no longer enough.

Europe’s farmers are faced on a daily basis with having to balance economic efficiency with environmental and social sustainability. They can be supported in this balancing act through education, training, financing and through access to new technologies, but most importantly

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farmers can be supported through the acceptance that different practices using technological advances can co-exist with ecological preservation.

For many years now farmers have been using robotics to help ease the workload such as robotic milking and feed distribution machines. New technologies are going even further today, with the digital transformation in animal health offering alternative practices to farmers collectively known as Precision Livestock Farming.

Breakthroughs in detection and monitoring tools, robotics and artificial intelligence, alongside advanced diagnostics and vaccines technologies are set to become essential tools for the future, by supporting farmers in optimising animal care, ensuring better traceability, and reducing environmental impacts.

For example, AI-assisted digital tools serve as a remote assistant to improved herd management. Using wireless sensor networks these technologies can assist the farmer in monitoring grazing animals’ activities from diverse locations throughout the day. Remote monitoring of activity and tracking of movement gives the farmer 24/7 oversight of the herd.

Working directly with their smartphones, farmers can also keep a digitalised scoring of their animals’ weight, size, and other indicators. Body condition scoring of animals – a commonly accepted indicator of health and well-being – can be challenging when farmers are faced with visually scoring entire herds objectively and accurately. With new digital technologies, data indicators are regularly tracked and can be analysed via apps, enabling farmers to make better and more timely management decisions, such as measuring feed intake or addressing health needs.

Feed techniques can also be enhanced using sensing technologies via smart machines that match nutrient supply precisely with the nutrient requirements of individual animals, based on real-time feedback from the sensors. Precision feeding can help improve resource use efficiencies for the farmer, while ensuring good nutrition of the animals.

By optimising the management of animal health through digitalisation farmers can reduce environmental impacts through more precise uses of feed and water, by reducing food losses and waste, and with a more targeted use of treatments.

What needs to be clear is these technologies should not be about the farmer spending less time performing standard husbandry checks and more time on the smartphone. Instead, with real-time data being collected, analysed and delivered to the farmer on the phone or tablet, this makes management of the animals slightly easier and less time-consuming. That’s extra time that can be dedicated to other tasks around the farm, or extra attention that can be given to environmental stewardship.

Innovative farming practices do not have to be opposed to nature. Data-driven management decisions with Precision Livestock Farming techniques support farmers in sustainable food production. And these digitally-enhanced animal health management practices help farmers to produce enough food on existing farmland, while preserving surrounding lands and biodiversity.

It is important to recognise nevertheless, that sustainable use of such technologies requires a high level of farmer skills and management to utilise them to their full potential. Access to such cutting-edge technologies and the knowledge and skills to use these tools will support an innovative, dynamic and modern livestock sector that will positively contribute to the EU Green Deal while also helping to attract new talent to Europe’s rural areas.