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Food chain conference

Driving sustainability

A sustainability conference organised to discuss and debate topics around building a more resilient food supply chain has highlighted some clear strategies for the future. *CPM* reports.

By Rob Jones

The food supply chain must prioritise collaboration across the industry and embrace new technology and data opportunities if it's to become genuinely resilient in the future, was the message to delegates at a recent sustainability conference.

Furthermore, the fundamentals of regenerative agriculture should be encouraged and integrated in all activities from field to fork and new benchmarks are urgently required to ensure sustainability targets are met.

Opening the conference, which was organised by Agrii, was sustainability and environmental services manager, Amy Watkins, who said major changes during the past ten years are shifting the landscape of food production.

"The UK leaving Europe arguably started the largest agricultural transition since the Second World War. Then, Covid-19 further disrupted supply chains globally and opened consumers' eyes to where their food comes from and the challenges associated.

"Food security and price volatility have become an even greater talking point since 2022, with war breaking out in Ukraine and this year's extreme weather further adding to the challenges," she explained.

"Ongoing change is something our supply chain has to accept as a reality, and building resilience into all stages of food production is absolutely critical. Producing safe, nutritious and affordable food for a growing population is a priority for our industry, but so too is achieving positive environmental outcomes at all stages of the journey."

The Agricultural Industries Confederation (AIC)'s Vicky Robinson said outcomes were now becoming the basis of thinking about future sustainability, rather than implementation of one specific production strategy over another.

"The original definition of regenerative agriculture, for example, is largely practice orientated with specific

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references to soil cover, minimal soil disruption, integrating animals and maximising crop diversity.

"That's quite a narrow definition, particularly as it doesn't mention desirable outcomes like improved soil health, greater biodiversity, protecting water, achieving integrated crop management and using more biological solutions," she outlined.

Then, economic outcomes such as financial viability and food security are also essential to long-term resilience and much of the guidance around sustainability, such as SFI, is outcomes based, added Vicky.

"But this is just the start. The government, advisors and farmers all have to work together to create a new way forward with the requirements of consumers and all of those in the various stages of food production involved."

Red Tractor's Philippa Wiltshire agreed, saying the food supply chain can't solve its problems by continuing to operate in sector silos, as it's done traditionally. "For the scope 3 primary data challenge the industry requires a common framework that it can work to with greater emphasis on proof and evidence of sustainable practices across all areas.

"If British agriculture is to make public commitments around sustainability that consumers will hold us to, it requires the facts. Data is the key to this, whether it be from trials and research or at an individual farm level, but the supply chain has to get better at finding this data," she said.

Phillippa believes this is easier in integrated systems such as in pigs and poultry because the complexity of the supply chain in arable production makes it challenging, but the sector has to find a solution to creating a single data hub that all can rely on.

"In addition, if farmers are to provide this data, they require the assurance it'll be used to give them value and they'll reap the rewards. Trust, quality and that assurance, plus transparency and honesty, are all required to make shared data work."

Derek Wilson of Origin Enterprises pointed out that there's no shortage of data in the industry, but how it works together is an issue. "Data can come from a number of sources and in different forms so there's a large formatting piece which must be done if it's to easily flow from one source to another, as well as ensuring security and privacy.

Peter Scott believes one of the most important benchmarks for delivering future sustainability is to focus on nitrogen use efficiency.

Peter Cartwright said NUE has proved essential in monitoring the Revesby Estate's use of nitrogen.

Data aggregation

"Agrii is already aggregating data from multiple different systems such as that from tractors, combines and drones in the Rhiza Contour system, so we know it's possible. Originally, farmers engaging with this were using it to largely improve profitability, but by definition, if you're farming in this way, you're adopting a more sustainable approach by using less inputs and knowing precisely the effect they're having," he said.

Agrii agronomist Todd Jex explained that the company's extensive trials and R&D programme are contributing considerably to the collective data set to the benefit of all growers. "What's becoming increasingly clear is the importance of soil health in future sustainability. We've found growers moving to minimum tillage are saving around £100-£130/ha compared with those ploughing.

"They also have much healthier soils with better structure and resilience, and 60-70% of my farming customers now say they're implementing a regenerative system of some type. But, it's not for everybody. If you're on really heavy soil it's often impossible to direct drill and the yield losses through the transition period can make it almost impossible to stick with," he said.

Todd continued by stating crop nutrition is another area where significant strides forward are being made. "Growers are desperate to reduce their reliance on synthetic inputs including inorganic nitrogen, and there are numerous options opening up in terms of new chemistry, physical and biological approaches.

"Nutrient density of the food people eat is becoming increasingly important and plant nutrition has a big role to play in this too," he commented.

According to Peter Scott, technical director at Origin Fertilisers, use of inorganic nitrogen fertilisers is the single largest component of the carbon footprint of crop production and any attempt to decarbonise food production will have to address this.

"In a typical combinable crop, 50% of the carbon footprint is related to the production of the fertiliser in the first place and the other 50% is due to in-field emissions. But, around half of human dietary protein consumed globally is directly related to the use of inorganic nitrogen and in the west, this would be much more. The issue of nitrogen use goes to the very heart of sustainable food production," he said.

"Green ammonia, where the hydrogen element of ammonia comes from water rather than gas, could play an important role in the future with regard to reducing the carbon footprint of manufacture, but we must also address in-field emissions."

Peter believes one of the most important benchmarks for delivering future sustainability is to focus on nitrogen use efficiency (NUE). "The higher the NUE, the lower the nitrogen loss, but you have to measure it to manage it.

"NUE changes from season to season, ▶

According to Jonathan Trotter, technology makes a vital contribution in delivering future sustainability.

field to field and crop by crop, so it's no good using default average values or national levels. We have to get local and encourage growers to do this."

Farms manager Peter Cartwright from Lincolnshire's 2400ha Revesby Estate, said NUE had proved essential in monitoring their use of nitrogen and has allowed the farm to better understand how other technologies could improve it.

"Nitrogen use is definitely a main element of our carbon footprint, but we're finding there are ways to manage it more effectively. Our own trials have shown the benefits of using Agri-Start Liquisafe, a nitrification inhibitor which holds nitrogen in the soil, for example, with some trials pointing to a 50% reduction in yield without the technology."

Peter Cartwright is also achieving results from using biologicals in the early stages of crop growth to promote plant health and build green area. "And rotation is important too – we include peas and beans wherever possible to put nitrogen back in the soil and improve its overall health plus cover crops are increasingly being used.

"Aiming to produce high yield is an often overlooked element of reducing the carbon footprint of crops. A 10t/ha yield dilutes the carbon footprint per tonne produced considerably, compared with a lower one," he added.

Jonathan Trotter, Agrii's technology trials manager, said technology makes a vital contribution in delivering future sustainability, with Revesby Estate being one of the company's first digital technology farms (DTF).

"The idea behind the DTF is to understand how we can leverage and integrate different technologies to make decisions on-farm and see how they can enhance decision making compared with a traditional agronomic approach.

"So, for example, the Skippy Scout drone system can monitor above ground crop growth and information from this could be enhanced by data on below ground nitrogen levels from in-situ soil nitrogen sensors such as Plentysense nitrogen blades."

According to Jonathan, this data can be combined with that from Soiltech Wireless soil moisture and temperature sensors dug into the ground, for example, and all the information collected can link to Agrii's Rhiza online Contour platform.

"Another system now being used is Fieldmate disease monitoring which can provide disease predictions for different crops based on climate, leaf wetness and other factors," he said.

Moral obligation

To follow, Charles Tozer of Boortmalt emphasised that all links of the supply chain have a moral responsibility to deliver greater sustainability. "You only have to look at the environmental catastrophes taking place around the world to realise we have to take action. As far as we're concerned, that starts with our own business operations.

"But ultimately, the end of our supply chain is the consumer, so the drive must come from them and we all have to work together to deliver more sustainable products in the future."

Angela Gibson of Viterra UK Ltd said collaboration was the key to achieving this, but urged caution. "We have to be careful to not import data if we can't protect it. Grain marketeers have an important function in collecting data and disseminating with traceability throughout the supply chain being essential.

"To move at scale, however, we have to move seamlessly across the industry with digital grain passports being essential in achieving this. They're the future and we require long-term commitment from AHDB or government to make these happen."

"We require consistency and granularity so farmers get the benefits from the data they hold and it could be we have to look at a completely new set of standardised metrics across the industry to deliver this."

Thomas Gent from carbon specialists Agreena said farmers, as primary data holders, should be encouraged to collect and present their data properly while being educated as to its value.

"There's a lot of data out there but the real question is what does it all mean? We have to show the value of this data to farmers and help them to understand how to get the most from it. With regard to carbon opportunities, for example, farmers want both complete flexibility and for the food industry to commit to them long-term, so this is something we have to work at and resolve," he commented.

Bill Angus of Angus Wheat Consultants believes genetics can play a big role in the future, but they're not the 100% answer. "Sustainable agronomy where genetics, chemistry and crop nutrition work together is the ultimate objective.

"We can't achieve the wheat yields we require without chemistry; yields would easily drop by a third and we'd end up with very poor quality crops. We should, however, move to de-risking varieties and raise our management standards as well as introduce greater diversity into crops from the wealth of plant genetics we can tap into," he said.

Closing the conference, Amy invited all individuals and organisations committed to working with stakeholders and farmers in the development of a more resilient food supply chain, to build a dialogue with the company. "If you want to develop such areas further, we are very much here to support you." ■

The conference was organised by Agrii and welcomed stakeholders from across the food supply chain.