Derisking the transition to regenerative agriculture using systems thinking

Open Innovation Forum

4 March 2025

Regenerative agriculture (regen ag) plays a vital role in improving soil health, enhancing biodiversity and ensuring the long-term sustainability of food production. However, many farmers face significant barriers, including financial risks, knowledge gaps and uncertainty about short-term economic returns during the transition.

Event Definition of Regenerative Agriculture:

"Regenerative agriculture is an approach to farming that continuously enhances the health of soil, plants, animals and communities while improving environmental sustainability.

It prioritizes soil health, biodiversity and ecosystem resilience to boost productivity, reverse climate change impacts and improve water and nutrient cycles.

Regenerative agriculture seeks to restore degraded lands and create a resilient, productive food system."

Our recent event brought together key stakeholders (0) from across the supply chain to explore the current challenges and identify innovative solutions for accelerating the adoption of regenerative practices. Led by EIT Food and the UK Agri-Tech Centre, the event fostered collaboration, highlighted cutting-edge technologies and encouraged active participation to drive meaningful change in the agricultural sector.

Key Focus Areas:

- **Reducing risks for farmers** transitioning to regenerative agriculture.
- **Building a strong support network** by integrating technology and engaging stakeholders across the supply chain.

Together, we took an important step towards creating a more sustainable and resilient future for agriculture.

The day began with presentations from Harry Langford from the UK Agri-Tech Centre and Alicia Abendroth from EIT Food, exploring their previous work on regenerative agriculture, what regenerative agriculture means to their organisations and the future of regenerative agriculture.

Pic 1. Alicia Abendroth presenting on the EIT Food Regen Ag Portfolio

Participant perception ranking

Pic 1. Attendees discussing potential rankings

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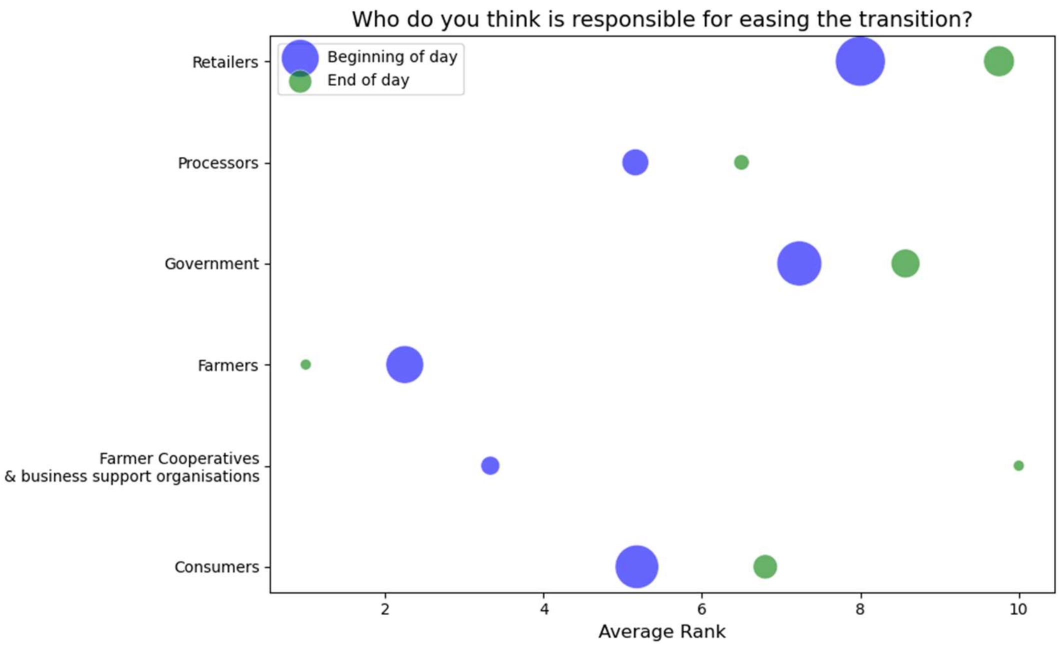
The day then transitioned into active discussions, but first initial perceptions of the attendees on Derisking the transition to Regen Ag was established using a ranking exercise. Attendees were asked:

- **Who do you think is responsible for easing this transition?**
  Options: Producers/Farmers, Retailers, Processors, Government, Consumers, Farmer cooperatives & business support organisations
- **What do you believe is the biggest barrier for transitioning to RegenAg for the farmer?**
  Options: Financial risk, Loss of production, knowledge gaps, access to technology, capital investment, consumer value & perception of Regen Ag products, Supply chain incentive, Policy & regulation
- **Of these solutions, how feasible do you think each one is for de-risking the transition to RegenAg for farmers?**
  Options: Regen Ag Product Certification, Grants for Capital Investment, Raising consumer awareness, Subsidies for Regen practices, Supply chain incentives

This exercise was repeated at the end of the day to see if discussions had changed the thoughts and feelings of those in the room or encouraged a consensus.



Retailers: By the end of the day, there was a noticeable increase in the perceived responsibility of retailers. This suggests that stakeholders increasingly viewed retailers as key players in facilitating the transition to regenerative agriculture as the day and conversations progressed.

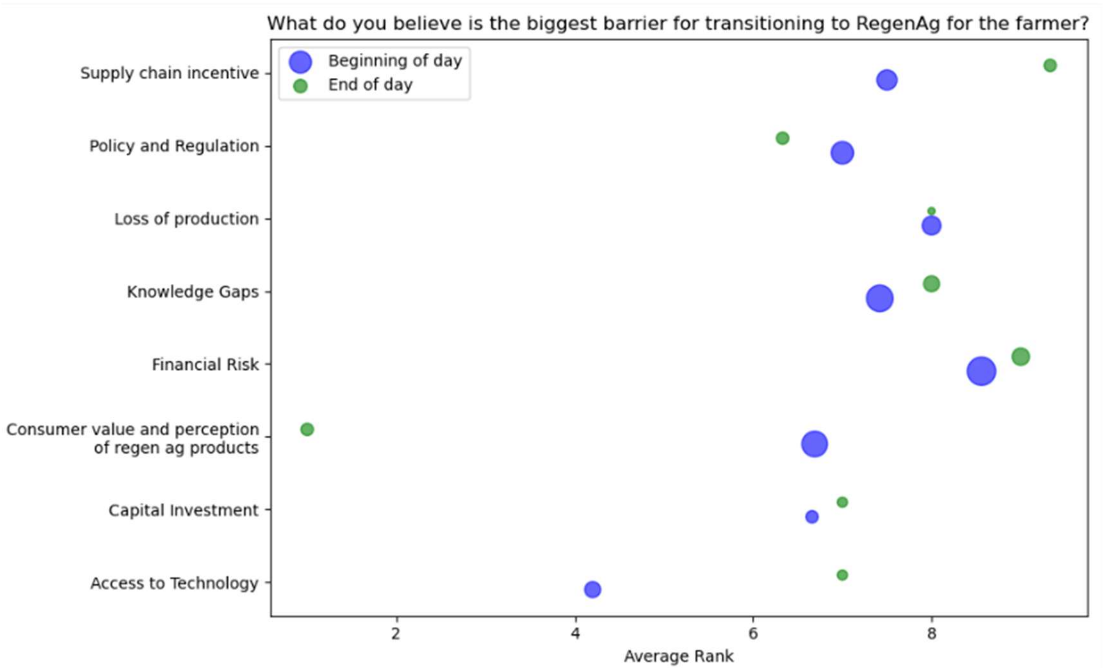
Processors: The perceived responsibility of processors also increased by the end of the day. However, the overall count was lower, indicating a degree of uncertainty among stakeholders regarding the role of processors.

Government: There was a clear increase in the perceived responsibility of the government by the end of the day. This highlights a growing expectation for governmental involvement based on the conversations held throughout the day.

Farmers: The perceived responsibility of farmers decreased significantly. Initially somewhat low, this further decline suggests that stakeholders may be shifting their focus away from farmers as the primary agents of change.

Farmer Cooperatives & Business Support Organizations: There was a significant increase in perceived responsibility for farmer cooperatives and business support organizations. Despite this increase, the lower count suggests that there was a lack consensus across the entire group of stakeholders.

Consumers: Surprisingly, the perceived responsibility of consumers increased by the end of the day. This indicates a growing recognition of the role consumers can play in driving the transition to regenerative agriculture through their purchasing choices and advocacy.



Supply Chain Incentive: This barrier was perceived as significant at both the beginning and end of the day, though there was a slight decrease in its average rank by the end of the day. This suggests that while still important, its perceived impact may have lessened slightly over time.

Policy and Regulation: This barrier remained relatively low in average rank throughout the day, indicating that stakeholders did not view it as a major obstacle to transitioning to regenerative agriculture.

Loss of Production: Initially, this barrier ranked in the middle, but it increased significantly by the end of the day. This indicates growing concern among stakeholders about potential production losses when transitioning to regenerative practices.

Knowledge Gaps: There was an increase in the rank of this barrier from the beginning to the end of the day. This suggests that stakeholders increasingly recognized the importance of addressing knowledge gaps to facilitate the transition.

Financial Risk: This barrier started with a high average rank and increased further by the end of the day. Financial risk was consistently seen as one of the most significant barriers, highlighting the awareness of economic concerns associated with transitioning to regenerative agriculture.

Consumer Value and Perception of Regenerative Agriculture Products: The perceived importance of this barrier increased over time. This indicates a growing recognition of the need to improve consumer awareness and perception of regenerative agriculture products.

Capital Investment: There was an increase in the average rank of this barrier from the beginning to the end of the day. This suggests that stakeholders increasingly viewed the need for capital investment as a critical factor in the transition process.

Access to Technology: This barrier remained relatively low throughout the day, indicating that stakeholders did not see it as a major obstacle compared to other barriers.

Overall, financial risk emerged as one of the most significant barriers consistently throughout the day, while policy and regulation were seen as less significant. Stakeholders also highlighted the growing importance of addressing knowledge gaps, consumer perception and the need for capital investment.

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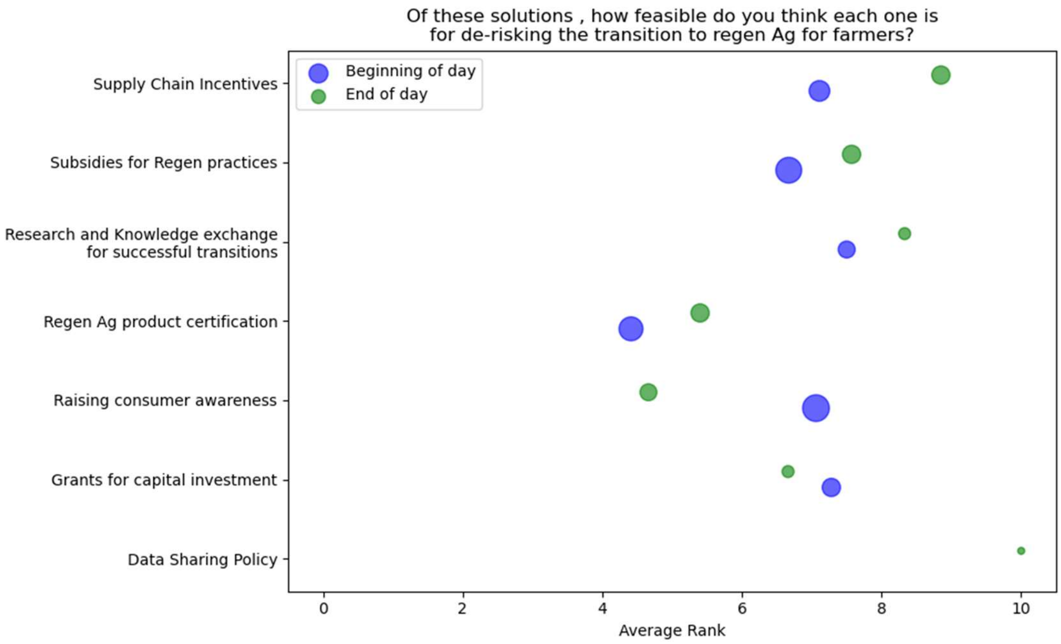

Supply Chain Incentives: This solution saw an increase in perceived feasibility by the end of the day, emerging as one of the top solutions. Stakeholders increasingly view supply chain incentives as a viable method to support farmers in transitioning to regenerative agriculture.

Subsidies for Regenerative Practices: The perceived feasibility of subsidies increased throughout the day. This suggests that stakeholders believe financial support through subsidies is a practical approach to de-risking the transition.

Research and Knowledge Exchange: There was an increase in the perceived feasibility of research and knowledge exchange. This indicates a growing recognition of the importance of sharing successful practices and research findings to aid farmers in the transition.

Regenerative Agriculture Product Certification: The feasibility of product certification increased by the end of the day. Stakeholders see certification as a valuable tool to ensure the credibility and marketability of regenerative agriculture products.

Raising Consumer Awareness: Surprisingly, the perceived feasibility of raising consumer awareness decreased by the end of the day. This aligns with the identified barriers but contrasts with the earlier findings on stakeholder responsibility, where consumer awareness was seen as increasingly important.

Grants for Capital Investment: The perceived feasibility of grants for capital investment decreased. This raises questions about why stakeholders might view this solution as less practical over time, possibly due to concerns about the availability or effectiveness of such grants.

Data Sharing Policy: This was a new solution proposed during the discussions. The introduction of data sharing policies suggests stakeholders are considering innovative approaches to support farmers by facilitating access to valuable information and resources.

Overall, **supply chain incentives**, **subsidies**, **research** and **product certification** emerged as increasingly feasible solutions, while **consumer awareness** and **grants for capital investment** saw a decline in perceived feasibility. The proposal of **data sharing policies** indicates a forward-thinking approach to addressing the challenges of transitioning to regenerative agriculture.

Roundtable Discussions

After the initial exercise, delegates moved on to discussions. In the morning, they joined tables based on their interests: Animal Health, Human Health, Environmental Health (Soils), Environmental Health (Climate) and Environmental Health (Biodiversity & Ecosystem Services).

They started by identifying the challenges and root causes of adopting regenerative agriculture. They looked at barriers from the perspectives of farmers, supply chain partners and consumers. They also discussed how these challenges are connected and who the key players are. Challenges were classified as either “Pain” (urgent) or “Pinch” (less urgent).

The room then split into two groups. One group focused on measuring impact and building long-term sustainability, while the other looked at bridging knowledge and technology gaps. They discussed how to measure success in regenerative agriculture, align farmer incentives with environmental outcomes and share data across the supply chain. They also talked about the role of technology in making regenerative farming easier and more accessible.

In the afternoon, attendees split into groups based on their interests: Financing for Change, Networking for Change, Policy for Change, Innovation Change and Education for Change. The first discussion was about reducing financial risks for farmers transitioning to regenerative agriculture. They talked about making it economically viable, financial tools like grants and subsidies, sharing costs with supply chain partners and innovative funding models like carbon credits.

The second discussion focused on supply chain collaboration and incentives. They explored how supply chain actors can support farmers, successful collaboration models and what needs to change to remove barriers. They also discussed the roles of technology, policy and collaboration in tackling these barriers and motivating farmers.

Pic 3. Interesting discussion roundtable.

Mapping Challenges & Root Causes

"What is the risk of not transitioning?"

At the event, we dug into the main challenges and root causes in the shift to regenerative agriculture. Climate issues were a big topic. Farms are having a tough time predicting yield changes, which messes with their finances and operations. Retailers are struggling with scope 3 emissions and keeping the supply chain steady during extreme weather. Consumers often don't get climate-related labels and their importance. The burden of cutting emissions is unevenly spread across the supply chain and there's no clear leader to bring everyone together. Producers don't have a "single

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source of truth" for climate solutions and farms aren't resilient to extreme weather, making them uninsurable. Financial planning for climate resilience is tough due to debt and monopolisation of margins in the supply chain creates barriers to change.

Soil health is another critical issue. Improving soil takes a long time, making it hard to see a return on investment. Practices often disturb the soil, which goes against regenerative principles. Farmers resist strict standards and audits and there's a lack of peer-to-peer learning networks and trusted examples. We need standardized soil monitoring using the same metrics and labs. ROI for soil regeneration doesn't match short-term expectations and farms need localized solutions. Regenerative standards aren't aligned, and variable weather and insurance risks are big concerns. Plus, we need to link the nutritional value of food to soil health.

Policy and behavioural barriers also came up. The debate between regenerative and organic farming creates conflict. Farmers need cost-effective, low-effort processes, but yield-based payment models don't consider quality improvements. There's a policy mismatch between health and agriculture strategies and proving the nutrient density of food from regenerative practices is tough. Government food production targets might clash with environmental goals. Policies often don't drive meaningful behaviour change and consumer pressure around nutritional density and sustainability is weak. There's a lack of data to show the benefits of regenerative agriculture clearly and the lack of standardized definitions creates trust issues in food systems.

Biodiversity and GHG emissions were other key areas. Biodiversity and GHGs often take a backseat to carbon reduction strategies. Incentives for biodiversity monitoring are limited due to cost and subjectivity. There's a stigma around the term 'regenerative agriculture farmer,' which can cause pushback. The political landscape pits environmental goals against farmer interests and processors and packers struggle with margins and absorbing sustainability costs. Certification schemes for regenerative agriculture are fragmented. Financial sustainability is a major issue, with regenerative agriculture yielding low ROI. Retailers focus too narrowly on GHG emissions, limiting collaboration. Policy frameworks, like land use planning, don't align with biodiversity targets and there's little supply and demand, as farmers lack incentives and consumer demand is weak.

These interconnected challenges highlight the complexities of transitioning to regenerative agriculture and show the need for comprehensive solutions that address both practical and systemic issues.

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Building Knowledge and Technology Gaps

The event highlighted several challenges and opportunities in bridging knowledge and technology gaps in regenerative agriculture. One major challenge is interoperability and integration, as different sectors calculate data differently and disparate datasets and MRV (Monitoring, Reporting and Verification) technologies hinder efficiency. The lack of clarity in the value of data and life cycle assessment methods slows decision-making and the adoption of regenerative agriculture. Additionally, the ROI for new technologies is difficult to quantify in this complex system and technology development, especially in robotics and labour-saving tech, is lagging behind market needs. Concerns around AI, GDPR compliance and proprietary data restrict accessibility and uptake, while farmers lack a single source of truth in available technology and shifting compliance baselines erode trust.

"How to put data in context of local area"

Despite these challenges, there are numerous opportunities. Improved data collection can enhance decision-making and risk management. Technologies like biotechnologies, feed additives and connectivity solutions can drive efficiency. Farmer-owned databases and standardised data integrators could help monetise information. Cross-sector collaboration through public-private partnerships, training programs and peer knowledge exchange could validate technology and accelerate adoption. Automation can reduce manual data entry, improving efficiency and adoption. Funding from government subsidies, impact investment and multi-source funding could de-risk technology adoption.

To address these challenges and seize these opportunities, several actions were proposed. Establishing standardised data formats and integration protocols is essential for transitioning to regenerative agriculture. International geopolitical action is needed to align regulation and incentives, and collaboration is crucial for impact investment, tech validation and multi-source funding. Encouraging investment and collaboration can make tech adoption viable and involving farmers in research and decision-making ensures practical solutions that meet farmer demand. Incremental adoption can minimise financial and operational risks, while training and education can upskill farmers and supply chain actors to integrate new tech effectively. Marketing and communication, using case studies and storytelling, can enhance trust and tech adoption.

"Need ecosystem benefits to be quantitative"

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These discussions underscore the importance of a collaborative and well-supported approach to bridging knowledge and technology gaps in regenerative agriculture.

Measuring Impact and Building Sustainability

In the short term, establishing baseline metrics and proxies like ecosystem services and worm counts can help set benchmarks for a functioning ecosystem. Retailer incentives, such as premiums for meeting minimum production standards, can drive sustainability. Ensuring farmers own and control their data, with options for anonymous use, is crucial. Optimizing existing solutions involves starting with easily measured metrics, leveraging technology and using farmer champions to promote engagement. Success can be measured through indicators like young farmer engagement, industry sustainability, balanced responsibility between farmers and scientists and biodiversity metrics. Accelerating technology, such as AI-driven biodiversity monitoring and exchange platforms, can integrate sustainability practices effectively.

Looking at the long term, comprehensive data collection is essential to measure both inputs and outcomes to track progress. A diverse and thriving industry requires economic, environmental and social sustainability supported by policy and financial measures. Securing long-term government backing through grants, regulation alignment and financial incentives is vital. Minimizing compliance burdens can reduce the administrative load on farmers while maintaining rigorous data collection. Accurate farmer data is essential for transparent consumer engagement and policy advocacy. It's important to avoid overreliance on data, as hitting sustainability targets should reflect genuine progress rather than just improved measurement accuracy. Building farmer trust in technology involves addressing concerns about the accuracy of regenerative metrics and putting data in the context of the local area.

These discussions highlight the importance of both short-term actions and long-term strategies to measure impact and build sustainability in regenerative agriculture.

Reducing Financial Risks

The event explored various solutions to reduce financial risks associated with transitioning to regenerative agriculture. Financial and market support, such as upfront payments, premium pricing and stacked funding options, can ease transition costs. Collaboration

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across the supply chain is crucial, with retailers, policymakers and processors sharing responsibility for sustainable farming. Transparent data and pre-competitive discussions can help align incentives. Education and knowledge sharing through peer-to-peer learning, consumer awareness and supply chain-wide training can drive adoption and reduce risk. Integrating technology and data, like precision farming, AI tools and ecosystem service valuation, can improve efficiency and enhance decision-making.

"Better [borrowing] rates for sustainable farming"

To secure funding and share risks, developing transition payments, grants and public-private investments is essential. Leveraging the existing market, retailers, insurers and financial institutions should help distribute financial risks and rewards. Making data work for farmers involves streamlining tools, integrating technology and ensuring data transparency for better decision-making. Encouraging policy alignment with flexible incentives tailored to different farming models and coordinated across agriculture, energy and insurance sectors is also important.

These discussions emphasized the need for comprehensive financial support and collaboration to make the transition to regenerative agriculture viable and sustainable.

Supply Chain Collaborations

The event highlighted the importance of supply chain collaboration in promoting regenerative agriculture. Strengthening ties between processors and retailers can streamline sustainable sourcing. Multi-supply chain models, like shared insetting programs, can spread financial risk and offset environmental impacts. Procurement policies should require scope 3, biodiversity and ESG targets, with farmers receiving premiums for sustainable practices. Financial and market support, such as sustainable borrowing/lending, insurance incentives and pre-competitive transition funds, can help de-risk regenerative adoption. Aligning sustainability requirements across retailers can reduce duplicate compliance burdens for farmers. Increasing consumer awareness and integrating sustainability education into the national curriculum can drive demand for regenerative products.

"Retailers introducing premium for minimum standards on production"

To support these solutions, creating a pre-competitive transition fund can encourage collaboration among industry players. Facilitating cross-supply chain data sharing ensures transparency and aligns reporting requirements across sectors. Policy and governance reforms should enable market-driven regenerative adoption by updating outdated subsidy models. Empowering farmers by strengthening their bargaining power, reducing financial risks and providing clearer market signals for regenerative adoption is crucial. Expanding consumer and stakeholder education can raise awareness about the environmental and economic benefits of regenerative agriculture. Developing industry-wide standards can provide a unified entry point for sustainable certification, reducing confusion and streamlining compliance.

These discussions underscore the need for a collaborative approach to supply chain management to support the transition to regenerative agriculture.

Takeaways and next steps

The event brought together regenerative agriculture experts and stakeholders from across the agrifood supply chain, including farmer cooperatives, startups, producers, manufacturers, academia, researchers and retailers.

Attendees were asked to record their opinions at the start of the day to establish a benchmark of perceptions regarding the feasibility of transitioning to regenerative agriculture, the responsibility of different stakeholders in supporting the transition and the biggest barriers to change. Repeating this exercise at the end of the day allowed attendees to reflect on how the discussions may have altered their views.

Roundtable discussions provided a platform for sharing knowledge and ideas on how the agrifood supply chain can collaborate to support the transition, focusing on the use of technology, policy and collaboration to overcome barriers such as financial risk for producers and measuring on-farm impact and sustainability.

There was a consensus that more opportunities are needed for the agrifood supply chain and the wider food system to come together and discuss collaboration for sustainable agriculture. Importantly, ongoing dialogue is essential to turn these initial discussions into actionable solutions.

Throughout the day four key themes rose to the top:

- **De-risking transition to Regen Ag along the whole supply chain**- Throughout the day, discussions highlighted the growing perception of the wider supply chain's role in the transition to regenerative agriculture. Currently, most of the risk falls on farmers, but there was a consensus that this risk should be shared across the entire supply chain, as the consequences impact everyone involved. Various roles for the wider supply chain were proposed, including the establishment of pre-competitive transition funds, offering premiums in retail for quality over yield and ensuring financial sustainability minimums.

- **Data standardisation and simplification –** There were many discussions about measuring the success of transitioning to regenerative agriculture, focusing on impacts on yield and ecosystem services. These measurements are crucial for financial incentives and decision-making support. However, there were concerns about the reliability of various measurement techniques and the heavy data administration needed to satisfy different stakeholders. Data ownership and responsible use were also discussed to ensure partners aren't penalised. To tackle these issues, there were suggestions to use AI and automation to simplify data handling, create responsible data frameworks, incentivise data collection, anonymise data and streamline compliance options. These steps aim to make data management easier and more supportive of the transition.

- **Behavioural barriers to Regen Ag transition –** Behavioural barriers to the transition to regenerative agriculture were also discussed, spanning from consumers to farmers. There is a notable lack of awareness among consumers about "regen ag," which affects their willingness to potentially pay a premium for these products or understand changes in food availability, such as nutritional density or seasonality. Some farmers also show reluctance to transition, primarily due to financial risks and a lack of agronomic support, as well as the lingering reputation from organic farming, however many are taking up Regen Ag practices without using this 'label'. Proposed solutions included agronomic training and education, marketing and communication to

"I wasn't doing anything wrong in the first place"

highlight the benefits of regenerative agriculture to consumers, government-led regenerative food drives and farmer-led research and development.

- **Holistic approach for a resilient transition-** Finally, the need for a holistic approach to regenerative agriculture was identified. This transition requires buy-in from the entire food chain, including farm suppliers, farmers, the supply chain, government and consumers. It's essential to consider the whole farm system, encompassing ecosystem services like biodiversity, carbon sequestration and soil health, as well as crop yield, quality and energy consumption. To facilitate this transition, new technologies, collaboration and agronomic practices that take the entire system into account are necessary. Proposed solutions include using proxies to demonstrate ecosystem benchmarks, focusing on farmer success metrics rather than just crop yield and linking nutrient density to regenerative practices.

We would like to thank everyone for their attendance and contribution to the day. We were delighted to see the passion and knowledge in the room, coupled with the collaborative discussions across the supply chain. We look forward to making meaningful change to the industry with you all.

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If you're interested in collaborating or learning more about our Open Innovation programmes, we'd love to hear from you.

Get in touch: emma.chapelhow@ukagritechcentre.com

i. List of Stakeholder Attendees

AHDB
AIC
AgriSound
Agribot
Arla Foods
BASF
Carbery Group
Cargill PLC
Chapman Farms
Co-op
Croda
Elaniti
EnableIOT Limited
Farm Carbon Toolkit
Global Farm Metric
Horizon Agricultural Machinery Ltd
KTG Ltd
LEAF (Linking Environment and Farming)
Land App
Leckford Estate (The Waitrose Farm)
Map Impact
Morrisons
MyEasyFarm
Myton Food Group
National Farmers Union
Nerit'e
Oxbury Bank Plc
Pilgrim's Europe
Puratos
RHS committee
Rothamsted Research
Soil Association
Straw Innovations
Sustainable Food Trust
University of Lincoln
Waitrose x Uni of Reading

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