

FROM GRASS ROOTS TO BLUE SKIES:

A vision for agri-tech

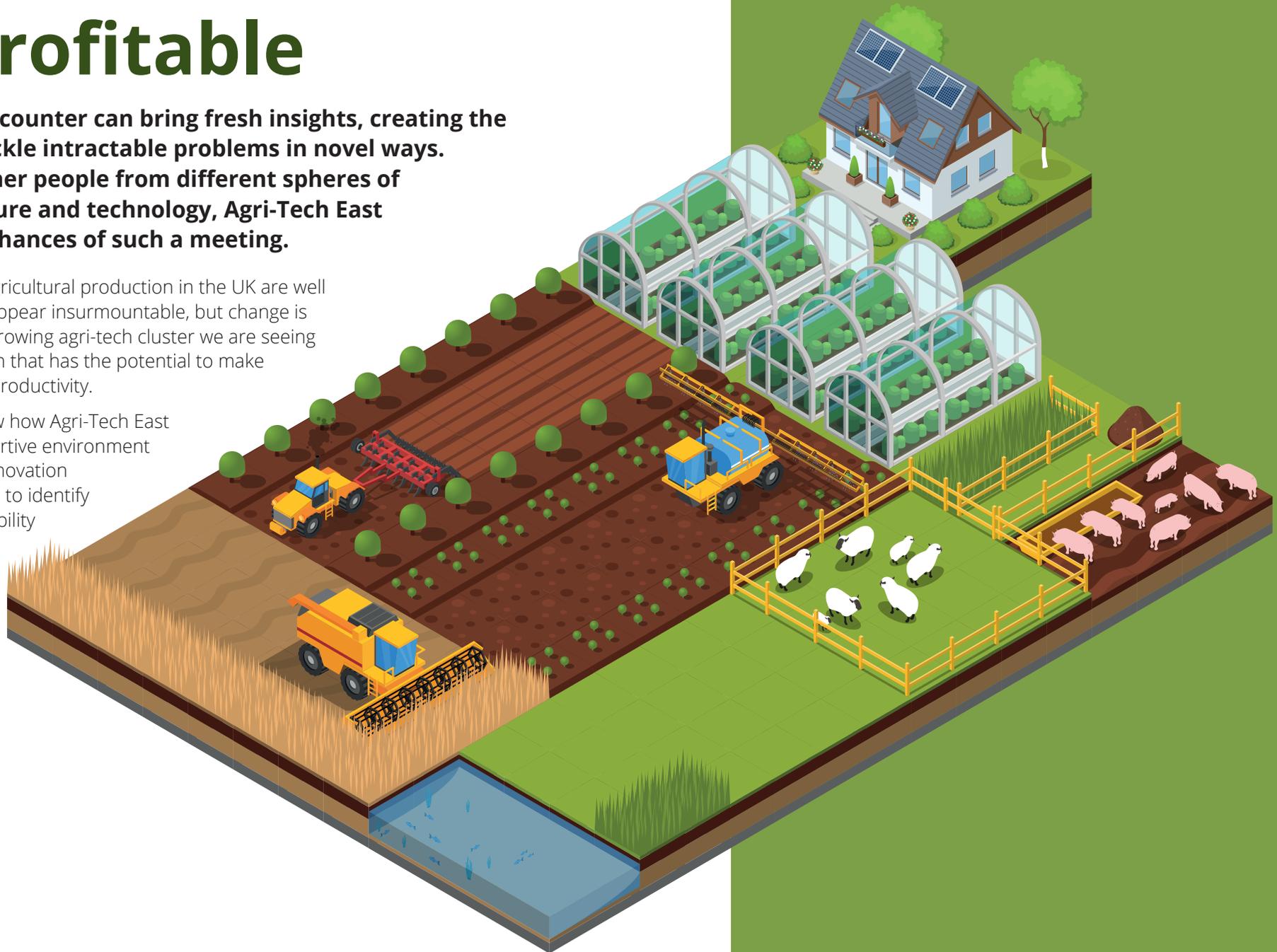


Sustainable and profitable

An unexpected encounter can bring fresh insights, creating the opportunity to tackle intractable problems in novel ways. By bringing together people from different spheres of research, agriculture and technology, Agri-Tech East is increasing the chances of such a meeting.

The challenges facing agricultural production in the UK are well documented and may appear insurmountable, but change is happening. Within the growing agri-tech cluster we are seeing pre-farm gate innovation that has the potential to make a significant impact on productivity.

This report aims to show how Agri-Tech East – by developing a supportive environment for industry-led open innovation – is helping its members to identify the levers where profitability can be increased sustainably.



FOREWORD: STOKING THE ENGINE OF AGRICULTURAL INNOVATION

The East of England has a strong reputation for being the crucible of agricultural innovation and now it is taking a lead in agri-tech.

It was Lord Coke from Holkham in Norfolk who was an instigator for the first agricultural revolution. His novel ideas for rotating crops to build fertility and improved breeding of sheep and cattle were shared on demonstration plots and through an agricultural show – the first beginnings of the Royal Norfolk Show.

The agrochemicals industry also has its roots here. It was Sir John Bennet Lawes' experimentation with 'super phosphorous' and soil management on his estate at Rothamsted in Hertfordshire that resulted in the first commercial fertiliser factory.

The second 'Green Revolution' in the 1970s introduced new crop varieties and the widespread use of fertiliser. Farmers across East Anglia took a lead in embracing this technology, boosting yields with their new approach to farming.

However, it can be argued that for the last thirty years improvements have been incremental, despite agrochemicals becoming more targeted and effective, machinery bigger and labour rationalised – so it is now possible for a single person to do the work of many.

The role of technology cannot be overestimated

Labour productivity has increased year on year, but since the 1980s farm outputs have failed to keep pace with these advances.

Although there have been many successes it is increasingly realised that the current model is

not sustainable – economically or environmentally – due to the degradation of soils, loss of habitats, pressure on water and need for resilience to climate change.

There is considerable scope to improve performance. Across the UK the yield and quality of crops varies widely, but even within a single field there are differences. This offers huge opportunities to reduce the 'yield gap' between what is potentially possible and what is actually achieved.

The time is right for a new revolution

It is widely thought that this time it will be a digital revolution, driven by high speed computing and the falling cost of technology. Again, this region, with its advances in communications, sensors, robotics and genomics, is at the forefront of ideas that have the capacity to shape the international agro-economy.

The big enabler over recent years has been convergence: a disparate collection of technologies is now coming together in a way that makes new products and services accessible to agriculture.

The 'Internet of Things' means that machines can communicate with each other. All aspects of cultivation can be managed with precision, directed by detailed maps and accurate sensors.

Advanced genomics is allowing improvements in crop varieties to be made in shorter time frames.

Improved models for prediction and forecasting enable closer integration within the value-chain to provide greater responsiveness to market demand.

The important element is still people

As Lord Coke understood so well, to gain adoption of new ideas you need to 'socialise them' to give people the opportunity to see them in action and to share experiences and insights.

Scientific knowledge is gained by asking big questions; innovation is achieved by tackling big problems. Both approaches are invaluable in a third agricultural revolution, but the essential element for success is the involvement of those who understand the land and have a passion for farming.

This is the guiding principle of Agri-Tech East, an independent membership organisation that brings together scientists and technologists with farmers and producers to create an environment that stimulates innovation and supports entrepreneurial activity. The aim of its membership is to increase the productivity, profitability and sustainability of primary production and research to create a vibrant cluster that is world-leading.

Agri-tech cluster not confined by geography

The growing involvement of international members and overseas trade associations means that learning experiences are being shared across the community, accelerating the rate of innovation.

As the organisation passes its third anniversary we review the status of the agri-tech cluster and celebrate the success of its members and the exciting collaborations that are evolving as a result of interactions within the ecosystem – from grass roots initiatives to blue sky research.

Dr Belinda Clarke FRSB ARAGS NSch
Director
Agri-Tech East



PRODUCTIVITY AS A MEASURE OF EFFICIENCY AND COMPETITIVENESS

Productivity is a measure of how well inputs are converted into outputs and as such gives an indication of the efficiency and competitiveness of the agriculture industry.

The DEFRA report 'Agriculture in the United Kingdom 2016' was sobering reading, particularly when looking at pre-farm gate productivity.

While external factors such as weather conditions or disease outbreaks may have a short-term impact, it is an increase in productivity over a longer period that provides one of the main drivers of agricultural income. The report showed that over 50% of farms are now operating below breakeven.

Deeper investigation shows that although productivity has appeared to improve, since 1982 this has been achieved not by increasing output but by cutting costs. Technology and automation have enabled labour to be more efficient, thus greatly reducing input costs.

Despite this, when prices are low, many producers receive incomes at or below their costs of production.



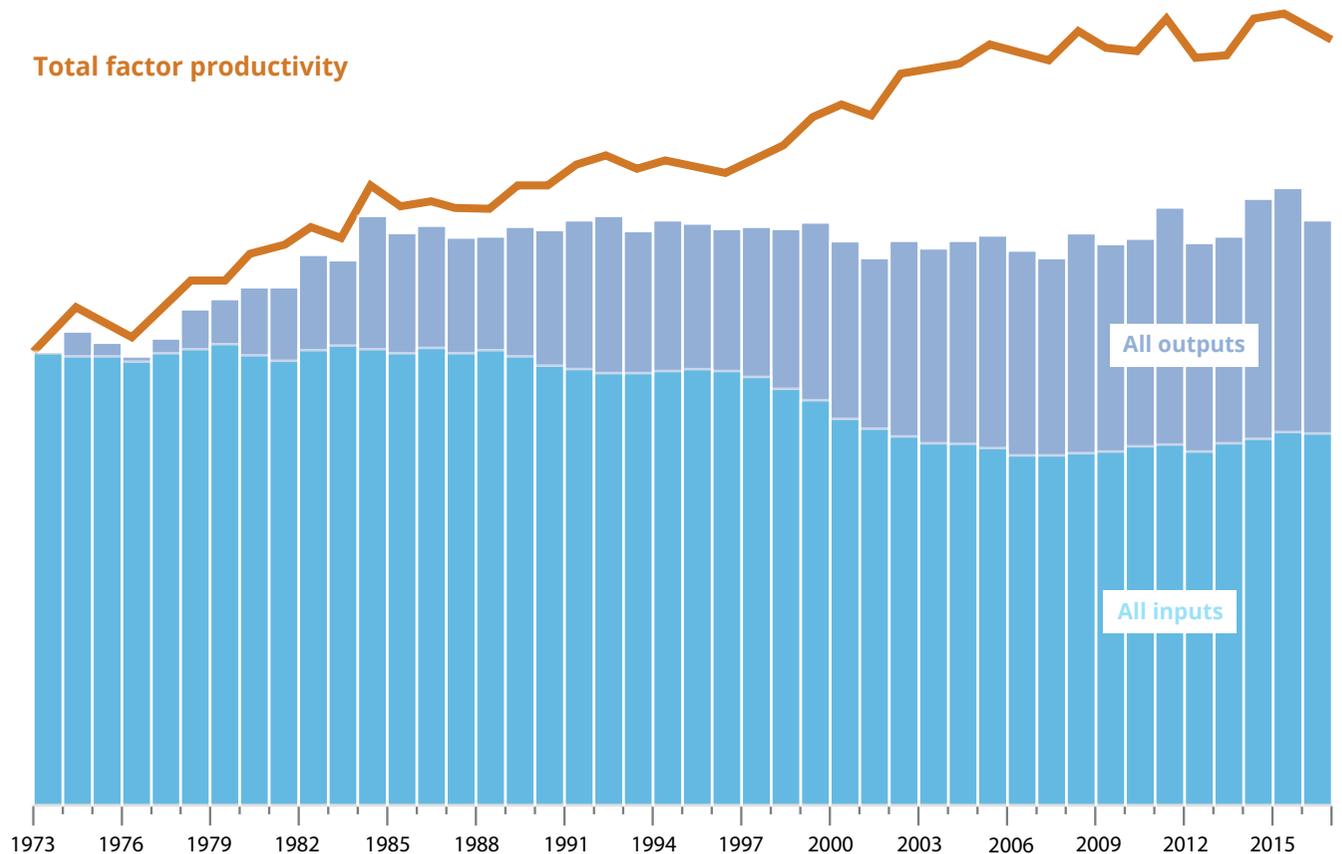
So why hasn't productivity increased more?

When Agri-Tech East commissioned a report in 2014 to survey the agri-food landscape in the East of England, it revealed a value-chain that has been virtually unchanged for the last 40 years.

This conventional model of farming offers few levers for improving productivity as increasing output is often not an option. Some produce is also wasted if outputs are surplus to the requirements of the contract or restricted by a quota.

For some commodity crops, a bumper yield means that prices will fall, unless it coincides with poor international harvests and/or favourable global currencies.

The focus of a farm business is therefore not just on boosting yields but also on reducing risk and minimising inputs. On-farm decisions have historically been made on the basis of previous performance and the traditional farming year.



Agri-Tech East has identified a number of levers where productivity, sustainability and profitability can be increased, including these examples:



An alternative approach

There is evidence from the East of England, and beyond, that an alternative approach is possible. Many high performing farmers achieve significantly better results given similar soil and weather conditions.

Agri-Tech East has stimulated discussions between all elements of the agri-food value-chain and has introduced non-traditional players into the conversation to investigate how yields can be improved, inputs reduced and productivity increased.

The consensus is that agriculture needs to work better with the environment. This requires a better understanding of natural mechanisms that promote soil and plant resilience. Land management techniques that retain and build fertility and encourage diverse habitats, are fundamental to creating a sustainable agricultural system.

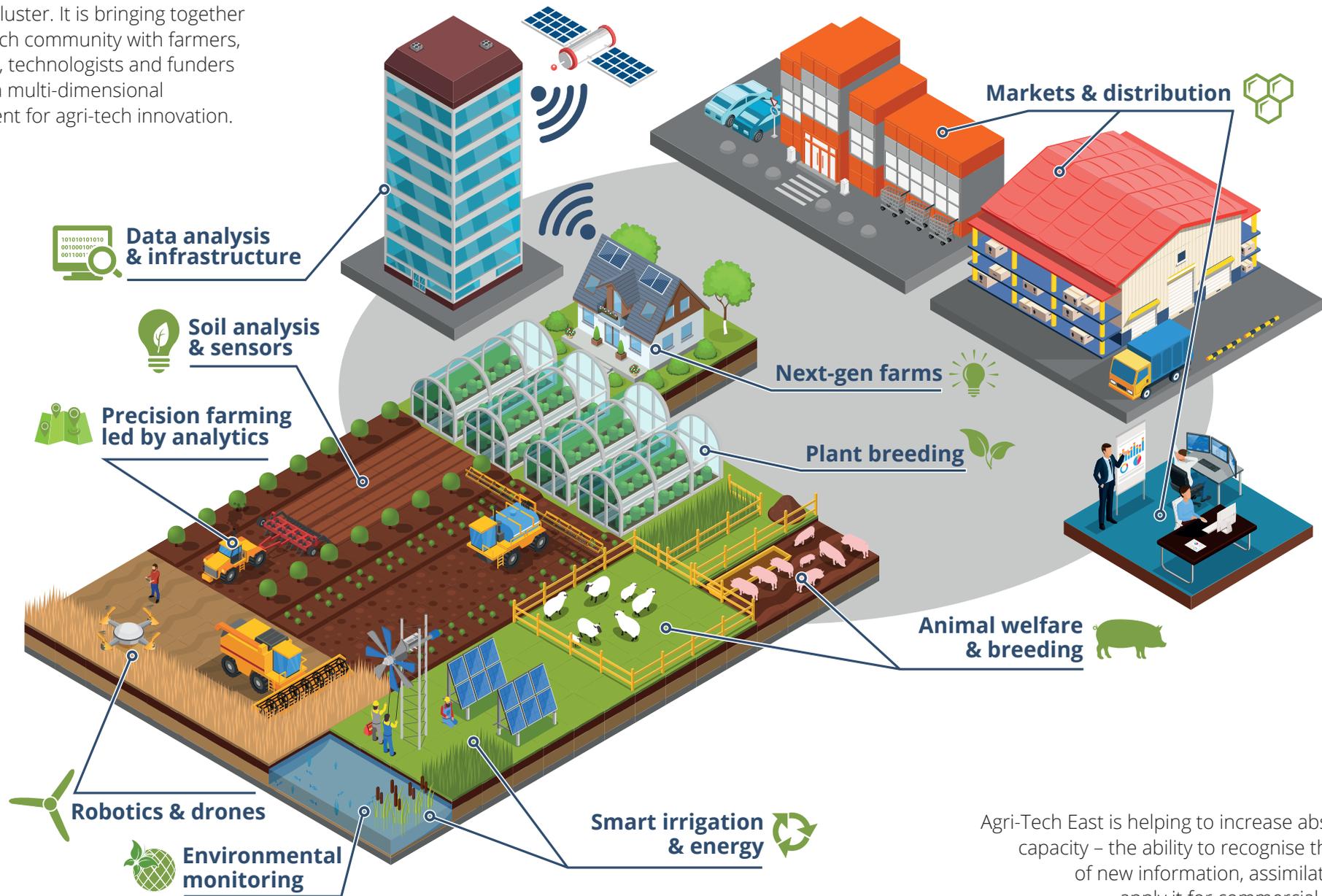
Beyond that, there is capacity to remove resource loss within the system, for example by better forecasting, improved crop establishment, precision applications and reducing run-off.

This is shaping the view that the future of farming lies in developing better mechanisms for responding to change – environmental, economic, social – in order to move towards a system where decisions and operations are directed by real-time need and not historical practice.

Agri-Tech East has built on the expertise of its multi-disciplinary stakeholder board to define a programme of activities that has identified the levers where more knowledge or an innovative approach can add value or overcome obstacles.

AGRI-TECH EAST: FACILITATING PROFITABILITY AND SUSTAINABILITY

Agri-Tech East is an independent membership organisation facilitating the UK's leading agri-tech cluster. It is bringing together the research community with farmers, producers, technologists and funders to create a multi-dimensional environment for agri-tech innovation.



Agri-Tech East is helping to increase absorptive capacity – the ability to recognise the value of new information, assimilate it and apply it for commercial benefit.

Key objectives of the agri-tech cluster

- To create greater value from primary production through use of new tools and technologies
- To produce food, energy and alternative products that generate economic value through the bioeconomy
- To support the adoption of agri-tech to improve the productivity and sustainability of farm production
- To create products, techniques and expertise that can be exported

Agri-Tech East's role

- To help frame industry needs so that end-user requirements can be understood by the scientific community and translated into research priorities
- To create channels for communication so that science and best practice can be made accessible to industry
- To facilitate interactions between organisations and between researchers from different disciplines, so that potential collaborators and end users can meet to create disruptive innovation

Ways in which Agri-Tech East supports innovation

Inclusive membership

Agri-Tech East has established a membership base that spans the value chain, up to and including the farm gate. Creating interconnections at every level strengthens interactions and risk sharing, reducing the barriers of entry to early-stage companies and non-traditional players. This brings fresh perspectives to the challenges facing the industry. Membership currently stands at over 125 members, showing a 50% growth in the last year.

Key stakeholder involvement

Agri-Tech East has identified individuals who are champions of change and represent the key stakeholders. Involvement of these key players has enabled rapid creation of a community and provided two-way mechanisms for promulgating ideas and input.

Framing the big questions

Special Interest Groups and workshops have allowed researchers, farmers and technologists to share their perspectives and gain better understanding of each other's requirements. Outputs are captured in reports, and informal networking has resulted in collaborations.

Targeting the next generation

Involvement of early career scientists and farmers through the Young Innovators' Forum has created connections between these groups, helping to forge links between future leaders in research and production.

Effective communication

Agri-Tech East's website provides a growing resource of original information:

- Facilitates networking by profiling key players, companies and organisations
- Explains emerging technologies and provides visibility for early-stage companies
- Creates opportunity to hear personal views of industry experts – 'leaders in the field'
- Provides bite-sized synopses of research findings with links to the original papers
- Captures output of workshops and events in short, accessible reports
- Communicates personal perspective on current developments through a blog

Other communication channels

Media relations, social media, speaking at industry events, and participating in policy workshops create opportunities for outward contact with potential partners, customers and funders.

Showcasing innovation

Agri-Tech East has led the development of Agri-Tech Week, during which workshops, on-farm demonstrations and its flagship REAP conference provide opportunities for discussion and networking. Increasingly, an international audience has been attracted to the UK to participate in the week. Agri-Tech East, in partnership with the Royal Norfolk Agricultural Association, also hosts the Innovation Hub at the Royal Norfolk Show.

COLLABORATIONS ARE FACILITATED BY THE CLUSTER

Many collaborations have resulted from chance encounters at Agri-Tech East networking events or through brokered meetings; some of these include:

- A major regional research organisation is working with a national potato processor to explore new innovations for post-harvest storage of potatoes following an introduction at an Agri-Tech East event
- SoftHarvest, a robotic harvesting technology for lettuces developed in the Department of Engineering at the University of Cambridge, was connected with G's Growers to refine a field-based solution for commercial adoption
- Agronomy company Hutchinsons is funding a PhD student at UEA to study pollinators in agricultural systems following a meeting with an academic at an Agri-Tech East event
- KisanHub provides software platforms, connecting data for farmers and enterprises. It was profiled at the first Agri-Tech East Pollinator event in 2014, and now has a partnership with NIAB that underpins NIAB's digital membership offer and decision support services
- Ozo Innovations Limited (Ozo) is developing hygiene and pathogen control solutions for the food production, food processing and horticulture sectors. Through introductions to investors brokered by Agri-Tech East, Ozo secured £2.5M of equity investment from one of the UK's leading agri-tech investment groups. Ozo is also collaborating with NIAB
- Spectrum Aviation, an aircraft crop surveillance company working with major growers and estates in Norfolk, Suffolk and Cambridgeshire, as well as elsewhere in the UK, provides crop monitoring data following introductions facilitated by Agri-Tech East



Case study: Forecasting a barbecue weekend and reducing waste

Forecasting is an area where a small improvement in accuracy could make a huge difference in profitability for farmers and producers.

Following a discussion with Microsoft at an Agri-Tech East meeting, G's Growers saw the potential to create a model that would reduce waste in the production of Iceberg lettuces.

After initial discussions with Microsoft provided proof of concept, G's subsequent collaboration with the Smith Institute has been instrumental in developing the concept further.

Salad consumption is highly variable depending on weather – a 'barbecue weekend' will boost demand and a wet one depress it. The maturity of the lettuce head is another variable: there is only a short time when it achieves the quality requirements of the supermarkets; if the head is too developed it will not have the required shelf life.

G's has employed sophisticated monitoring systems to measure the growth of the lettuces and also collate data on weather and microclimate. This has enabled it to identify key growth stages and amend sowing and planting schedules to mitigate against potential shortfalls in crop availability.

The Smith Institute has been helping G's to use this data to develop optimal production schedules that can cope with uncertainty. Additionally, it is creating an engine capable of analysing the data and creating 'what if' scenarios, which would allow the in-house team to consider different management strategies.

The IceCAM model is now in commercial practice in the UK and Spain.

MULTI-DISCIPLINARY MEMBERSHIP



CREATING A SUPPORTIVE ENVIRONMENT FOR ENTERPRISE

Growth of the cluster is enabling the introduction of initiatives that are driven by the membership, creating direct value for the organisations involved.

Agri-Tech East has helped its members raise funding from private investment following introductions to institutional, angel and venture capital funds.

Since the first REAP conference in 2014, 18 new businesses have featured in the Start-Up Showcase session, of which 16 are still growing and benefiting from the ecosystem. Four are featured here.

Vidacycle: Improving decision making and supporting innovation

Andrew Francis, Senior Farms Manager at Elveden Farms, was looking for a way to improve management of seasonal labour and to replace paper records. When he heard Abby Rose of Vidacycle pitch in the Start-Up Showcase at Agri-Tech East's REAP conference in 2015 he knew he had found a potential solution.

The 10,000-acre Elveden Estate grows vegetables including potatoes, onions, carrots and parsnips alongside cereals such as rye, barley and wheat. It sells its produce to McCain, PepsiCo, and Sainsbury's and has its own potato brand. Elveden is part of the LEAF network and promotes environmentally responsible farming.

The idea for the SectorMentor and WorkMentor apps came about when Rose's family returned to farming ten years ago, and they found themselves having to keep track of over 8,000 olive trees in the Loncomilla Valley in Chile.

After trying to monitor the trees' health and status on paper and through the use of expensive handsets, Rose decided to look to her software background to develop a solution.

"We bought some RFID tags online and put them on each tree. We created an app, SectorMentor, with a few big buttons that allow you to scan the RFID tag and enter the latest information for the tree. We then created another worker management app."

This idea would become WorkMentor, a phone app that allows workers to record when they worked and what they worked on. The system creates simple timesheets that show what each worker is doing and when, and how much each worker picked, as well as a trusted and transparent log of what everyone has done.

Rose's presentation at REAP led to a mutually beneficial collaboration with Elveden Farms, as Andrew Francis explains:

"The simple use of RFID tags stimulated ideas as to how else the technology could be applied. After a few meetings and conversations the concept has been developed further, by using the tags to keep electronic work records by logging people in and out of work, and including details such as pre-loaded work authorisations and photos of casual workers, which allows quick identification of pre-approved staff."

Interaction with the end user was vital for the development of a robust solution. Rose says: "We were very keen to work with farmers to develop the system, rather than trying to predict what they want."

Francis is a powerful advocate for technology and thinks extracting better information from data to support on-farm decision-making is where the future of farming should be heading.

"Vision guidance laser and hoes have increased the speed of weeding, along with a massive reduction in labour costs," he continues. "Flying drones give another dimension to crop monitoring – being able to access soil quality and check on crop growth from my office is a fantastic development."

Arlabion is developing next generation seed treatment products for sustainable crop management. The company's new product TRIVAZEN™ is an agrochemical to combat Fusarium in wheat, onions and other crops.

Co-founder Ella Kalnina was exploring the best routes to the market when she was invited to present in the Start-up Showcase at REAP. This resulted in introductions to the top experts in wheat research and seed breeding which has validated Arlabion's approach to the wheat pathogen problem. TRIVAZEN™ is currently undergoing final trials with NIAB prior to product registration.

Kalnina says: "When I pitched Arlabion at the very first REAP conference it was to test the industry reaction and interest; we did not even have a company registered. Since then we have set up a company and attracted seed investment from GM&C Life Sciences Fund.

"Through Agri-Tech East we got access to the best research capabilities in plant science – NIAB, John Innes Centre and University of Essex.

"We are developing new chemistry mainly for protecting crops from diseases that affect early growth of plants. It is a long and expensive process and a lot of trials have to be completed until the product can reach farmers. Our achievements are more technical than business centred.

"We managed to prove that our product TRIVAZEN™ is effective in protecting crops from pathogens that are currently difficult or impossible to control; examples include Septoria in wheat and Fusarium in onions. We are continuing trials on other crops and the results are extremely promising."

Entomics is using the black soldier fly to convert food waste into other products. In just two weeks the flies can break down food waste and build it back up into complex and valuable compounds within their bodies. The fat can be refined into an oil for use in animal feed, a protein to be used as a nutritional supplement to animal feed and an excellent fertiliser-biopesticide.

Being based in the East of England meant Entomics hit the ground running. Matt McLaren, co-founder of Entomics, says: "Agri-Tech East has been amazing; it has introduced us to agricultural scientists, businesses and farmers to give us insights into how the industry functions, from top to bottom.

"To understand agriculture as a business means we can work out how to place ourselves in the commercial world."

The company has secured over £1 million in private investment and grant funding from regional and national schemes, and has filed several patents.

It has established its base at the Eastern Agri-Tech Research Hub, a new research centre that is dedicated to reducing crop and food waste and improving resource use efficiency in the horticultural and fresh produce supply chains.



PBD Biotech has developed a fast, effective and highly specific test for tuberculosis in animals. It detects live bacteria in six hours, providing an unparalleled opportunity for infection control.

Following a presentation at REAP 2016, the technology is now being considered alongside the current 'gold standard' for TB testing and has secured significant seed investment. Recently the company won two awards in Canada for 'innovative technology likely to transform animal health and disease management'.

The technology has great potential not only for the control of tuberculosis in the agricultural sector but also as a quality standard to ensure the absence of live bacteria in food and dairy products. Agri-Tech East introduced PBD to agriculturally focused investors including the Eastern Agri-Tech Growth Initiative.

Dr Berwyn Clarke, Chief Executive at PBD Biotech, says: "Being members of Agri-Tech East is a massive asset for a start-up company in this sector and is already creating a hugely valuable impact for our company.

"Joining Agri-Tech East opened numerous doors to local investors and introduced us to a network of relevant bodies and regulatory advisors with a common interest in the improved control of mycobacterial disease in agriculture.

"Moreover, the opportunity to present at networking events such as REAP allowed us to really maximise PR opportunities that have had a startling impact on an early phase business."

ENCOURAGING EARLY STAGE AGRI-TECH

GROW is the UK's only Agri-Tech Business Plan Competition, and aims to encourage entrepreneurial thinking in the industry.

To enter, entrepreneurs and innovators from across the UK submit a 12-page business plan describing a new technology, product or service that will help improve the efficiency, productivity or sustainability of agriculture and horticulture.

The objective of GROW is to inspire novel, investable commercial concepts that have the potential to become new businesses. All those that register an expression of interest benefit from the support of an experienced mentor to help them to develop their business plan.

With business support, rent-free accommodation and access to expert help on offer to make the plans a commercial reality, the competition is designed to encourage and support the leaders of the agri-tech businesses of the future.

Since the launch of GROW in 2014, 16 new entrepreneurs have benefited from mentoring, profile and introductions. A number have gone on to develop commercial entities.



Particular highlights include:

Aponic – designs and manufactures a vertical soilless growing system that uses 90% less water than traditional growing methods. It can be used to grow low carbon high yielding herbs, salad crops, flowers, fruit and vegetables. It has attracted funding, partners and was the winner of the East Anglian Daily Times Small Business of the Year 2017.

Smartbell – provides the 'Internet of Cows' using technology to track movement of livestock. It has raised significant private and public sector investment. Its technology has been deployed across a number of farms in the South West and the East of England and was featured in the Innovation Hub at the Royal Norfolk Show in 2017.

Farming Data – a mobile-enabled trading platform to connect supply and demand for smallholder farmers in Africa. CTO David Godding says: "Thanks to GROW, we were exposed to a large number of agri-tech business insiders and investors who are currently helping us to bring our product to market."

Agronomex – a web based marketplace to facilitate trade of surplus produce and optimise resources. Founder and CEO Pascale Martin says: "In addition to getting the industry approval we were looking for, GROW helped Agronomex to move on to the next step and gain visibility – we have been offered funding and business support."

Diesel Dynamics – produces fuel saving systems to provide cost savings and reduce air pollution. Matthew Foy, Managing Director, says: "GROW opened the door to a wide potential client base, and it has enabled us to extend our applications beyond agriculture, including freight and bus operators, and pioneering work in the construction industry."

INTERNATIONAL PARTNERSHIPS

Agri-Tech East has been invited to support and add value to a number of EU projects and is working with overseas partners to enhance its international strategy.

EU projects include:

SMART-AKIS is a consortium aimed at promoting and sharing knowledge about smart farming technologies for precision agriculture.

Agri-Tech East is working with consultancy DTA to host and facilitate three workshops. The aim is to bring farmers alongside developers to provide input into smart farming technologies. The first event focused on the use of aerial imaging to improve application of inputs. A second workshop featured new innovations for smart farming to improve soil health and water management. A third will be held in early 2018.



BioBoost is a consortium funded through Interreg 2 Seas European Union focused on reducing waste in the fresh produce sector. It includes partners from Belgium, The Netherlands and the UK.

NIAB invited Agri-Tech East to contribute to NIAB's output alongside producers in the South East who grow aubergines, cucumbers, tomatoes, and salad vegetables. Agri-Tech East's role is to create a supply map to help identify opportunities for better utilisation of waste from various crops for production of more valuable end products.

Agri-Tech Week 2017 will feature an event showcasing projects that are adding value to 'waste'. This includes, for example, extracting pigments from coloured berry fruits for use in cosmetics and food colouring, a slug deterrent using waste olive stones, and use of insects to convert unusable food waste into soil conditioners and animal feed.



NETWORKING MEETINGS PROVIDE STIMULUS FOR COLLABORATIONS

Case study: **What is the impact of digestate on soil?**

Digestate, a by-product of anaerobic digestion, is increasingly of interest to farmers as it promises a rich source of nitrogen and an alternative to artificial fertilisers. However, still under debate is how to use it effectively to ensure the maximum amount of nitrogen is available to the crop.

Following discussions at the Innovation Hub hosted by Agri-Tech East at the Royal Norfolk Show in 2016, it was agreed to set up a Field Lab as part of the Soil Association's Innovative Farmers' network. Farmers are leading the trials to establish what is important to measure. In this case, yield data will be collected and used to determine Nutrient Use Efficiency (NUE).

Agri-Tech East is coordinating a consortium of six farmers with the support of Cranfield University, NIAB and the Soil Association.



HIGH PERFORMING FARMS SHOW POTENTIAL FOR INNOVATION

Case-study: **Salle Farms, UEA and NIAB TAG**

Nationally, yields of combinable crops – wheat, barley, and oil seed rape – have barely increased over the last 15 years and yet between farms there is considerable variation.

Salle Farms is one of the high performing farms that is increasing yields year on year.

The farm comprises approximately 2,000 ha of mainly medium textured loam soils in North Norfolk, with an annual rainfall of approximately 625 mm.

To address concerns about deteriorating soil structure and increasing levels of annual grass weeds, in particular black-grass, Poul Hovesen, Director of Farming for Holkham Estate and Farms & Estate Manager for Salle Farms, has introduced a longer-term rotational approach. This involves not just crop rotation but also cultivation techniques and the introduction of cover crops.

These measures have resulted in sustained increase in yield of more than 2 t/ha over the last two decades. Sugar beet yields have also increased significantly over the last decade and the upward trend at Salle is higher than growers supplying Cantley, the local processing factory, and the national average.

In addition to increasing yields this approach to cultivation has enabled a reduction in labour and machinery costs. In the autumn of 2016 only three machines were used to establish all the combinable crops: the Carrier, the Opus and the Rapid.

Determined to push the boundaries further, Hovesen continues to innovate and has recently introduced Controlled Traffic Farming and further cover crops, supported by scientists at UEA and advice from NIAB TAG.

Hovesen says that farming is still vulnerable to climate change as freak weather becomes more common, and argues that science has a role in improving resilience within the industry:

“Agri-tech can help us to understand what went wrong and maybe even prevent it from going wrong again. We need the scientists to help us understand what we can do to improve our methods. For example, does it help to have cover crops? Does it help when we plough or should we have zero-till?”

“There is a need for a more joined-up approach to research and development with teams working on soils and agro-chemicals. As farmers we need to have an understanding and respect for what research can do for us and to be knowledgeable enough to challenge our advisors and agronomists. If we do not, it is not precision farming.”

Crop research is crucial for future sustainable food production, says Hovesen. The biggest benefit will come from helping farmers to identify which varieties would grow best on their land and under their field conditions.

“Agri-Tech East brings together the people that have a passion for farming with scientists that will help them to understand it better – this is a good outcome.”





NEXT STEPS: VALIDATING THE PRODUCTIVITY BENEFITS OF TECHNOLOGY

The scope of this report is up to and including the farm gate and this is where we believe a major need for innovation still resides: to close the productivity gap, increase farm profitability and enhance sustainable resource management.

However, funding the full costs of development of an idea into commercial reality can be prohibitively expensive, even for a large agri-business and certainly for small businesses.

The importance of continued funding and support of the industry is in no doubt and it is not the intention of this report to be anything other than supportive of the existing instruments and initiatives and to encourage their continuation.

One area where there is scope for a new approach is around de-risking adoption of technologies.

Our interactions with all parties in the agri-tech cluster indicates that the unequivocal 'pinch point' in the acceptance of new innovations is the challenge around calculating the return on investment for farmers.

There are varying degrees of trust in the numerous sources of information about new innovations, and the requirement for objectivity in the form of an 'honest broker' is widely reported. This has been a subject for discussion in several forums.

Just as the 'Recommended List' for new crop varieties provides an independent mechanism for validating the claims of breeders, so too would a similar process for agri-technologies give confidence to farmers and growers about their efficiency, performance and, crucially, their economic benefits.

Such a mechanism would also allow growers to gain evidence to streamline audit processes, lowering the barriers for entry.

Within the healthcare sector, NICE (the National Institute for Health and Care Excellence) performs this role and makes judgements based on efficacy and the economic case for the NHS.

A similar model, inspired by NICE and managed by an independent body, potentially co-funded as a public-private partnership, could provide growers with the test bed and confidence they need to invest in new technologies, products and services.

Agri-Tech East, with its wide-ranging, international network of members, is highly supportive of this concept, and other moves which aim to make agriculture and horticulture more profitable, productive and sustainable.

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