

New thinking a step forward

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AHDB
AGRICULTURE & HORTICULTURE
DEVELOPMENT BOARD

*from theory
to field*

There's been a coming together of some of the most dynamic minds and businesses in our industry to form a consortium that could revolutionise the way research is carried out in the UK. *CPM* explores the new Centre for Applied Crop Science.

By Lucy de la Pasture.

Behind the scenes, there's been nothing short of a revolution in thinking when it comes to how best to tackle the problems facing agriculture. While there is no disputing the prowess of the UK's scientific organisations, historically they have worked in a degree of isolation and the transfer of science into the frontline of applied agriculture has been a major sticking point.

"In 2013, the Government came up with a vision to help agriculture tackle these issues, which became known as the agricultural technologies (agri-tech) strategy," explains Richard Laverick, chief technical officer at AHDB.

World leader

The agri-tech vision in a nutshell states the desire for the UK to become a world leader in agricultural technology, innovation and sustainability; exploit opportunities to develop and adopt new and existing technologies, products and services to increase productivity; and contribute to global food security and international development.

The aim was to create capacity in the UK to translate agricultural innovation into commercial opportunities for UK businesses but also to create four new centres that would stimulate inward investment and help to revolutionise farming practices in the future.

The centres proposed in the policy paper were Agrimetrics (big data), Agri-EPI (Agricultural Engineering Precision Innovation Centre), CIEL (Centre for Innovation Excellence in Livestock)

and the recently re-named CACS (Centre for Applied Crop Science), which was previously known as CHAP (Centre for Crop Health and Protection). The name change was implemented to better reflect the broad remit of the centre, and particularly its aim to bring research and applied agriculture closer together, he explains.

"The idea behind the centres was to bring together expertise from across the industry and for the centres to work together, generating a powerful knowledge resource. Because the centres are essentially start-up SME's, they're not yet in the position to demonstrate the value of that synergy."

Even so, the breathing of life into what was initially just a concept has already changed the way industry works together, he believes.

"To develop the vision something that has never happened before was achieved. For the first time the UK government, scientific organisations and the food and farming industry all came together as a consortium to identify and develop the opportunities and strengths of the agri-tech sector and address key

problems facing the industry.

“The four centres give access to a scientific base across all platforms, for example CACS has access to more than 500 specialists from within the consortium members. When you begin to comprehend this breadth of expertise and depth of understanding that has been brought together, then it brings home quite what this consortium could deliver. No other research provider can offer a resource like this.”

Significant investment

The Government has made a very significant investment in getting the agri-tech strategy off the ground, providing finance for world-class laboratory equipment, IT hardware and software, along with facilities to test and develop new agricultural technology and products. The investment reflects the importance of the fast-growing agri-tech sector to the economy.

In 2016, a government report estimated that agri-tech directly accounts for £14.3bn in value added to the economy and 542,000 jobs in the UK. To put this into context, core agriculture production accounts for £9.7bn in value added and around 474,000 jobs. The next largest sub-sectors are engineering and precision farming (a substantial element of which is wholesale activity related to agricultural machinery, equipment and supplies) animals, with each contributing just over £1bn in value added and almost 21,000 jobs.

No longer a concept, the first of four specialist agri-tech centres, Agrimetrix,

The Agritech Centres will tackle issues that no one part of the sector can address alone and establish new networks, says Richard Laverick.

took its first breath in 2015, swiftly followed by the other three centres which came to life during the last year. So, what will the establishment of CACS in particular mean to arable farmers in the UK? In Richard Laverick's view, the centres really are our chance to deliver long-lasting game-changing innovation in the agriculture sector.

“They'll tackle the issues that no one part of the sector can address alone and establish new networks, perhaps even with ‘competitors’ working together, to address the challenges we face in crop production. With the breadth and quality of organisations ▶



To get the best value for levy payers, CACS has to bid for projects in competition with other providers, notes Jon Knight.

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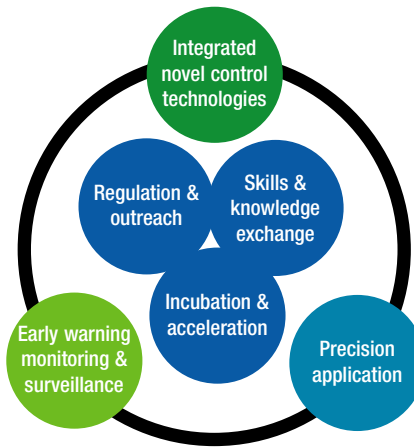
Part of the CACS funding has been used to build new state-of-the-art storage facilities at Sutton Bridge.

► involved, I believe CACS will play an important role in delivering solutions,” he says.

The capability of CACS is huge and is comprised of ten key ‘assets’, which AHDB’s head of plant health and protection, Jon Knight outlines.

“The units that make up CACS span every aspect of crop production, from soil health, real-time disease monitoring and decision support to crop storage research on the agronomy front. Supporting these are units working on resistance and virulence management, which will provide early warnings of emerging pesticide

Grand Challenges



- 1 Bespoke and timely advice to farmers
- 2 Actively managing pesticide resistance
- 3 Horizon-scan for new crops threats
- 4 Discover & deploy novel control technologies
- 5 Develop adaptable resistant crop varieties
- 6 Harness the potential of soils
- 7 Application efficiency of control products
- 8 Deploy variable-rate approaches of control
- 9 Convene expertise from across the food chain
- 10 Drive products and services to market
- 11 Create a proactive and independent voice
- 12 Navigate the novel control regulatory landscape
- 13 Maximise technology uptake
- 14 Create innovative KE solutions
- 15 Develop the skills to deploy new technologies

CACS has the objective of solving major problems faced in agriculture.

resistance threat, as well as support the development of more effective pest and disease control.

“A precision application unit has the capability of performing field trials to commercial spec on a semi-field scale,

Giving research more focus

James Moldon, head of technical services at Frontier, has been involved with CACS since the very beginning. When approached to see if Frontier was interested in becoming a member of the CACS consortium, it struck him as a chance not to be missed.

“We have a huge resource in academia but there’s a disconnect between what industry wants from research and what it actually delivers. The scientific community and commercial companies work in a very different way but in being part of the consortium, we’ve all begun to talk more and we have a common set of goals. Often research just needs a bit of a steer to help deliver more value at the farmgate and, through CACS, this can now happen,” he says.

One of the concerns frequently heard from growers is that they feel unconvinced that they get value from the public money spent on agricultural research. James Moldon is very aware of this and confesses that when he was farming he used to wonder where all the money on research went.

“The research institutes are one step removed from the front-line of agronomy so even though there is a trickle down of knowledge, growers aren’t always aware that

some of the advice being given by agronomists has been prompted by the results of academic research,” he says.

Frontier, and the other major distributors, have their own trials programme where the focus is mainly on the next 2-3 years because they’re looking for agronomic solutions that their customers can utilise immediately or in the near future, he points out.

“Now we have CACS, we have the opportunity to work with the diverse members in the consortium to help find these solutions. Many of us are working on finding answers to the same problem, such as controlling blackgrass populations. My hope is that the agronomy companies can come together and utilise CACS to help solve problems for the good of the industry where there’s no real competitive advantage to be had.”

Working with AHDB is something that James identifies as breaking new ground for Frontier.

“Our industry is so fragmented that it’s not something we’ve done before, we all have our own vested interests after all. One of the best things about the CACS consortium is that it’s a real step forward, becoming more open with one another and talking about common problems and how we can work together to find solutions.



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It’s also been eye-opening to understand the pressures on academia, especially where funding research is concerned,” he adds.

Perhaps the most novel thing about CACS is the strength of its governance team, with the appointment of Robin Batchelor as its CEO and John Chinn as chairman. It’s a team which will run the Centre independently while also having a good understanding of the commercial side of the business as well as research, he concludes.

which will provide a step forward in bringing these innovations through to the grower.”

Extend the range

No less important is a novel control and discovery unit, which will develop biopesticides to extend the range of chemical-free pest and disease control options available to growers. The unit will facilitate a better understanding of pathogens and pests and will work closely with the unit storing the national reference collection of biotic crop threats, he explains.

One of the more tangible assets making up the CACS are the lab-to-field mobile demonstration units. In the first instance Jon Knight envisages growers will come across these at AHDB Monitor farms and other events, where they will be used as a way of demonstrating the science to those in the field and facilitate knowledge exchange in a more interactive way.

But the labs are capable of much more than being a training facility. They can be fitted out with a range of different portable kit so can perform all sorts of diagnostics and testing, he explains.

Another interesting asset at CACS is the international supply chain resilience unit which will provide training and support in pest and disease control to overseas farmers. Although the benefits of this may not be immediately obvious to UK growers, it's actually something that matters to them, albeit indirectly, explains Jon Knight.

“All the produce imported into the UK is a pathway for bringing in other pests and diseases, so this unit will provide a vital role in helping identify possible threats and will work closely alongside the government's Animal and Plant Health Agency (APHA).”

Finally, rounding off the decade of assets is a facility unique in Europe, the Mesocosm, which will investigate the movement of pesticides in water bodies.



Training and support in pest and disease control will be provided to overseas farmers to limit the impact of possible threats.



The consortium brings together a huge reservoir of knowledge to work on problems like blackgrass management.

Yet to be built, this large facility is likely to be in demand by manufacturers of crop protection products, who will be able to commission edge-of-field waterbody safety assessments (e-flows) required for the registration process — a crucial factor in supporting innovation and keeping products coming down the pipeline.

Like any concept, it's not easy this early in the life of the agri-tech centres to fully appreciate the role they will play, suggests Richard Laverick. “CACS is completely different and it's best to think of it as an amalgamation of all the institutes we've become so familiar with over the years.”

One common misconception is that CACS is a funding body — which it isn't, clarifies Jon Knight. “Under the agri-tech strategy, the Government invested £23M in CACS to fully equip the different units and provide funding to refurbish out-of-date existing facilities, but otherwise CACS is open for business and will be funding itself through the services it provides.

The AHDB is in the unusual position of being both a CACS customer and a member of the consortium. Jon Knight is keen to point out that AHDB-commissioned

research will not be carried out through CACS by default.

“Our responsibility is to get the best value for our levy payers, so CACS has to bid for projects in competition with other providers and won't be shown any favouritism, although we'd fully expect CACS to produce very competitive bids given the assets and resources. It's also possible for the core members of CACS to work with other outside research providers, if they have the necessary skill, when it comes to formulating their bids for research funding,” he adds.

What is most encouraging about the agri-tech initiative is that Government recognises the importance of innovation in agriculture and has put its hand in its pocket and provided a sizeable amount of money to support the industry, adds Richard Laverick.

“There's no doubting the scientific capability that CACS can provide but its real strength lies in having diverse representatives of the industry around the table and working together to achieve a common goal.” ■

Members of CACS

