Ground-truthing research

AHDB

from theory to field

A failure of traditional research is that it can be difficult to translate into farming practice. Increasingly farmers are taking research into their own hands and the Innovative Farmers programme is helping them do this. *CPM* takes a closer look.

By Lucy de la Pasture

There’s an old proverb that says, ‘one man’s tonic is another man’s poison’. The same is true when it comes to farming systems — what’s right for one farm may be totally wrong for another and this can make interpreting the results of formal research in a way that’s meaningful at farm level difficult at best.

Consequently, more and more farmers are using on-farm trials to find answers to some of the more pressing problems they face, says AHDB’s Emily Pope.

Farmer-led agenda

“Our network of Monitor Farms delivers a farmer-led agenda and opportunities to address issues on the farm and the Strategic Farms help to deliver research into practice. The Innovative farmers programmes offers something unique which really complements the exiting AHDB network of farms cross different sectors,” says Emily.

“This is why AHDB partner with Innovative Farmers and have field labs that are coordinated by AHDB Knowledge Exchange teams, involving both Monitor Farms and Strategic Farms. Some of our own research activity also involves Innovative Farmers. This partnership brings the research and KE landscape together by working collaboratively.”

The Soil Association’s Dr Kate Pressland is programme manager for Innovative Farmers and she speaks very passionately about the value of farmer-centric R&D. The seeds for the Innovative Farmers programme were sown in the past and build on the concept of a much earlier project, established in 1989 by the UN Food and Agriculture Organisation.

This brought farmers together in ‘farmer field schools’, she explains. “The first one started in Indonesia where farmers were very geographically isolated and restricted by education. The aim was to look at reducing pesticide use in rice by encouraging natural enemies. The concept

Kate Pressland says that having the researcher on the farm can queue-jump knowledge blockages and is much more relatable than reading research papers.

was that if you bring farmers together to experiment and to share their knowledge, then the gains for everyone would be great.

"UK farmers aren't restricted in the same way, but they are restricted by time and it could be argued that they're restricted in the sense that there's so much information, where do you begin? We have an excellent but highly fragmented knowledge exchange system in the UK, and it takes time to find the information which may be relevant to your farm. Then you're on your own when deciding how to implement it."

In 2012 the farmer field schools idea was developed by the Soil Association (with Organic Research Centre) and field labs were born, funded by the Prince of Wales's Charitable Fund (PWCF) as part of its mission to help farmers become more sustainable and resilient. The funding gave both organic and conventional farmers a platform to test something on farm that they may have otherwise been unable to do.

"Farmers are all doing experiments all the time – testing things, dabbling with varieties or breeds and learning — as well as doing what they've always done, they're always tweaking. There's such an experimental spirit in farming — even working out when to harvest a crop is an experiment in itself."

The idea for field labs came from a UN initiative where farmers are brought together to share ideas and learning in Farmer Field Schools (pictured in Bangladesh). Photo FAO/Karina Coates

Push through barriers

This means that the sharing of information between farmers is a very powerful way of expanding knowledge, believes Kate "It's about pushing through barriers to innovation and bringing farmers together to share what they know and ideas that they have. By bringing a researcher into the mix, we're addressing the gap where farmers want to try something but had no way of doing it in a coordinated way with a bit of support."

Establishing the programme hasn't been without its challenges, says Kate, and to begin with the learning curve was a steep one. "We were so familiar with the concept of a demonstration farm or a scientific research project that it took a little while to work out how field labs were going to function best — if the experiments are less rigorous, less controlled than in a research project, then what value will they have?

Emily Pope explains that Innovative Farmers brings the research and KE landscape together by working collaboratively.

"It turns out that the field labs bring a lot of value. If you're going to be basing your business decisions on dabbling rather than research outcomes, then necessarily by experimenting with a group of others you're getting better data and testing each other's assumptions."

Kate concedes that the data is 'noisier' because the experiments take place on different farms, but argues that there's actually some real robustness to it. "The discussion which occurs when working out the reasons behind any vagaries between results really embeds the learning from the process," she comments.

Kate believes another huge plus is the ▸

Field labs address the real questions

The introduction of cover crops and bringing livestock back into arable enterprises are two known measures farmers can take to improve soil health on the farm. Putting the two together could be a way for farmers to eke out a more immediate financial return after planting a cover crop, says ADAS research scientist Dr Kate Smith, who is leading an AHDB-funded field lab.

Earlier this summer she got together with a group of farmers via Zoom to discuss the questions that they'd like to find the answers to. They decided to investigate whether grazing sheep can aid cover crop destruction, as well as look at their impact on soil properties and the following crop.

"One of the concerns farmers have is the cost of planting cover crops, where a return on their investment isn't immediately apparent. Grazing sheep is an area the group are keen to explore and establish what the benefits actually are," she explains.

By grazing sheep there's a potential to reduce feed costs and increase margins in the sheep enterprise. There are also possible soil benefits with added organic matter return and a potential benefit to the following crop from the sheep manure, which contains nitrogen in a form that's more available, explains Kate.

"Finally there's the possibility that by grazing cover crops, farmers will be less reliant on glyphosate to destroy them, though from discussions in the group it appears glyphosate will still be required," she adds.

The field lab has three sites which embrace different climatic conditions and soil types, with predominantly sandy and peat soils. The 'hub' is in Norfolk and this will be where ADAS make detailed assessments of the soil and cover crop. It's backed up by two satellite sites, one in Staffordshire and another in Cambridgeshire, where farmers will make their own assessments.

"Tramline trials have been set up in the cover crops by farmers, with support from ADAS to make sure the design returns the best data from each site. The field labs will look at over-wintered stubble, a cover crop and a cover crop grazed with sheep at each site and assess the impacts on soil structure and the following crop.

"At the hub site we'll analyse cover crop biomass, nitrogen content and its ME. After grazing we'll look at the soil properties and the farmers will keep a trial diary to record any poaching, run-off or erosion that may occur. Where possible they will also collect information on the livestock, such as liveweight gains and body condition," says Kate.

Using all this data ADAS will ultimately prepare a cost benefit analysis for using sheep to graze cover crops which will help some on the unanswered questions the group have about integrating sheep and cover crops on their farms, she explains.

A new AHDB-sponsored field lab is looking at the potential advantages from grazing cover crops with sheep.

The Innovative Farmers field labs bring a different dimension to the existing AHDB network of Monitor and Strategic farms.

▸ large amount of knowledge gained when trialling something on your own farm, which she says far outweighs seeing something written in a research paper that may have been based on a plot study or glasshouse experiment.

"Working in a way where the research was less controlled meant it took quite a while for researchers to work out what they could best bring to the process. But many saw this was either an opportunity to start to shine a light on something interesting which could be developed into a more sophisticated research project, or they found great satisfaction in being able to transfer their knowledge in plain English, in really useful terms, around the kitchen table and for the farmers to immediately absorb it.

"But we've pushed past the barrier of field labs not being seen as relevant as classical research because of their real value, evidenced by the fact that they have been responsible for changes in management on farm. Farmers 'dabbling' experiments are being elevated, and their research skills and inferences are improving."

Even so, there were still challenges in getting the support of the research institutes, says Kate. "They couldn't easily see the value of being involved — the system means research papers are the cash flow for academia. But what researchers really want to do is make a difference. They wanted the institutes to give them the thumbs up to be able to go and work with farmers. There aren't huge funds available to pay researchers or farmers, this works as mutually beneficial relationships," says Kate.

"Since 2012 many more institutes recognise the value of science communication and the field labs provide a pathway for this, with future research projects based on ground-truthed priorities and pilot data. This is compelling proof of impact for funders of academic research."

An Innovative Farmers field lab has enabled researchers to investigate the effectiveness of mowing off oilseed rape crops on farms in an effort reduce numbers of cabbage stem flea beetle larvae.

Positive feedback

Then BBSRC, which is the predominant funder of agricultural research in the UK, became supportive of the programme, she explains. "They saw this positive feedback of value from researchers getting involved in grassroots work and really understanding the priorities of farmers. As well as sharing their research knowledge, researchers were also gaining knowledge at the field level and BBSRC wanted to see this loop back into funding proposals for projects that would have a greater direct impact and value to farmers."

There are other benefits from direct interaction between researchers and farmers, adds Kate. "With academic research there's a large time lag before results are available to farmers, which really doesn't work for them as the horse may have already bolted on a problem they may be tackling. Having the researcher step foot on the farm can queue-jump this knowledge blockage and it's all done in such a human way that it is much more relatable than research papers.

"A large amount of agricultural research only focuses on the positive results, but equally the null results, which aren't published, can be of huge value as something not working is important to know."

Many of the field labs are looking at practices which may bring benefits to soil health.

Kate says a lot was learnt from this first phase but there was an appetite to do more by creating a network and in 2015 the programme became Innovative Farmers.

"Topics are farmer-led and the idea of a network is that the more farmers that are trialling something, the greater the insight should be into a subject — for instance, if six farmers are trialling a technique and it works for four of them but not for the other two, then the learning amplifies as the group tries to understand why this may be the case. 'Learning by doing' is very powerful and farmers like learning from each other — this is why everything Innovative Farmers does is open-source."

Innovative Farmers is still predominantly funded by the PWCF, but Kate believes farmers should be more valued for doing R&D. She's advocating grass roots research should be centrally recognised, with farmers supported to carry this out in a way that's beneficial to them so that it can move beyond the limitations of scale in being charitably funded.

There are encouraging signs that Defra is recognising the positive role farmers can play in shaping research projects capable of generating information which can be usefully applied at a farm level but the scale of funding and how it works for farmers is yet to be published, concludes Kate. ■

Research roundup

AHDB Project No 91580001 'Innovative Farmers field labs' runs between April 2019 and March 2022 at a cost to AHDB of £224,190 (cash £177,000, in kind £47,190). Innovative Farmers is predominantly funded by the Prince of Wales's Charitable Fund (PWCF) £800,000 and other non-AHDB sponsorship (including BBSRC) is £270,000. AHDB funding is split approximately as follows: AHDB Cereals & Oilseed 53%, AHDB Horticulture 19%, AHDB Pork 17% and AHDB Potatoes 11%.

Innovative Farmers is part of the Duchy Future Farming Programme. It is backed by a team from LEAF, Innovation for Agriculture, the Organic Research Centre and the Soil Association.

To find other field labs, visit *innovativefarmers.org/find-a-field-lab* and tick 'AHDB'.

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