

BUILDING BRIDGES BETWEEN SOIL SCIENTISTS AND FARMERS

WEDNESDAY 3RD AUGUST
10:00 – 13:00

How can soil scientists work more closely with farmers? Where does this work well around the world? How can the huge amounts of data farmers collect on their soils be made more useful both for farmers and soil scientists?

Below are the notes from the breakout workshops carried out at the session, which explored three different aspects of this topic:

1. **How soil scientists and farmers can directly work together** – led by Dr Tom Storr (Dyson Farming) and David Fuller-Shapcott (Sweethope Farm). This group shared practical ideas and tips on how to ensure this relationship is productive.
2. **Barriers that exist to successful interaction (and some solutions)** – led by Dr Felicity Crotty (RAU), Dr Lynda Deeks (Cranfield) and Dr Paul Newell-Price (ADAS). This group explored some of the structural challenges blocking successful interactions between soil scientists and farmers. They also looked at potential solutions and mitigations of these.
3. **How soil science can influence ag-policy** – led by Prof. Christine Watson (SRUC) and Dr Ken Loades (JHI). This group looked at the bigger picture, of how soil science can influence agriculture through policy. This benefitted from a range of experiences from Malawi to the US about how different countries around the world try to achieve this, and pulled together common themes from each.

With thanks to all the participants from more than 30 institutions, in 15 countries, from 4 continents around the world. The below insights are based on their experience and we are grateful for their enthusiasm in sharing them.

From across all the workshop the 5 key recommendations were:

1. Soil scientists need to communicate clearly and consistently, using farmers' language (and working with social scientists)
2. Work should be a two-way collaboration – not simply 'extension' – cf models such as [Innovative Farmers](#) – see full list below
3. Working through groups and individuals who farmers already trust should be prioritised to avoid farmer 'fatigue' or lack of trust
4. Need to build a circular funding/results loop between government, farms, and academics
5. Need (in the UK at least) for more national level soils information to be made available, including on the impact of policy

How soil scientists and farmers can directly work together

1. Simple, farmer-friendly messages

- a. Concise
- b. Consistent
- c. Talking farmers' language
- d. Farmer relevant research summaries
 - i. Details of how this can impact at farm level
 - ii. Include information useful for practical implementation of results (eg sowing depths, drill used etc)

One core theme (both in the panel, the breakouts, and at other WCSS sessions) was that often the message from soil scientists can be too convoluted, nuanced or jargon-filled to be easily used by farmers or policy makers. And too-often academics are perfectionists, letting 'the perfect be the enemy of the good' (cf. points below around transparency – presenting concise messages does not have to mean brushing over uncertainty). While soil science is clearly complex and there could be endless amounts of qualification and hedging of results, more effort is need to go into distilling research into concise and consistent messaging which those outside the soil science community can act on. Crucially, this message must be given in farmers' terms, not in academic jargon. For instance, writing research papers with clear, farmer-friendly results at the top (with details of how this could impact at a farm level, and details about the research that would help a farmer implement findings, such as the drill used or the sowing depth) – and then only moving into methods and more detailed analysis etc after this. Or writing research summaries specifically targeted at farmers (see dissemination points below).

2. Dialogue, not lectures

- a. Taking time to understand farmer context, not imposing solutions
- b. Letting farmers ask questions
 - i. Helped by having one-to-one or one-to-few groups; in one-to-many groups, there is more of a fear of asking a 'stupid question' which limits their value
- c. Hearing from farmers about their own stories
- d. Leaving times for informal conversations – eg mealtimes
- e. Involving farmers at the start of projects, not just at the end
 - i. Using organisations like Innovative Farmers to allow farmers to identify the problems to focus on
- f. Building communities around project
 - i. Researchers, farmers, advisors, industry (eg seed companies, analytical labs, etc)
 - ii. See [AHDB Soil Biology and Soil Health programme](#) as an example of how this operates effectively

Another theme was that often there is too much 'one-way traffic' with soil scientists trying to simply impose knowledge, rather than taking the time to learn from farmers in a two-way conversation. This fails to recognise the huge amount of knowledge that farmers have on their own soils and the opportunity to harness this to advance research goals. (Good examples at scale include [AHDB](#)

[Arable Conversations](#).) Additionally, taking the time to understand farm concerns allows the soil science to be made relevant to the farmers situation, increasing the chance to actually changing behaviour on the ground.

3. Multiple methods of delivery

- a. Using trusted facilitators (e.g. of farmer clusters)
 - i. Contacting existing long-term farm clusters (especially those with strong facilitators)
 - ii. Or setting up groups of similar farms – but lots out there already, and better to avoid duplication
 - iii. Foster some competitiveness between farmers!
 - iv. UK
 1. [Innovative Farmers](#)
 2. [Catchment Sensitive Farming](#)
 3. [FAS](#)
 4. [Soil Nutrient Network](#)
 5. [Monitor Farms \(Scot\)](#)
 6. [AHDB Monitor Farms](#)
 7. [KTIF](#)
 8. [LEAF](#)
 9. [FWAG / FWAG-SW](#)
 10. [BASE UK](#)
 - v. North America
 1. [Practical Farmers of Iowa](#)
 2. [PASA](#)
 3. [EFAO](#)
- b. Using businesses/consultants/advisors farmers already trust
- c. Linking with social scientists used to bridging this gap
- d. Decision support tools
 - i. But danger is the 'short term' academic funding cycle – these are only useful where they will continue to be updated – link in with existing tools that will continue
- e. Adding contact details to research / papers
 - i. Allowing farmers to easily follow up or ask questions
- f. Podcasts (can listen while working) and other video/audio output
- g. In person events
 - i. Soil roadshows
 - ii. Agricultural shows
 1. both local shows and the larger national shows (eg Cereals, Groundswell)
 - iii. Farm visits (potentially including soil pits, or practical demonstration of value of results to the farm visited)
- h. Use of platforms farmers use
 - i. eg The Farming Forum (TFF), Twitter

Alongside the normal methods of presenting results and sharing knowledge (eg publishing papers and expecting results to be automatically taken up), academics should try to innovate with a variety of different ways of reaching farmers. Some

suggestions included podcasts, working through local facilitators who already know farmers and are trusted by them, or running roadshows with soil pits for groups of farmers. A number of social scientists present also recommended more use of their skills by soil scientists – particularly in understanding how to connect with farmers in ways most likely to influence their behaviour. However, the overall message was to try to use multiple methods of actively engaging farmers, rather than passively waiting for uptake through traditional channels.

4. Trust

- a. Transparency
- b. Honesty
- c. Anonymity
- d. Genuine desire to want to help the farmers, not just use them

The final point that came out was that of trust. Some points – such as keeping farm data anonymous where this has been requested/offered – seem straightforward. There was however an emphasis on being transparent with farmers about how results had been arrived at. While farmers want to be able to draw clear messages from soil science, they also want to be clear about how such conclusions have been arrived at. In addition, being clear about the motives / purpose behind the data being collected, and how that will be used (and ideally how that could benefit the farmer or at least the agriculture industry more widely – what they can get out of the collaboration). This was summed up overall by the point that researchers should be genuinely interested in both learning from and helping the farmers they want to partner with – rather than just treating them as a way to tick a ‘dissemination’ or ‘extension’ box at the end of a project.

Barriers that exist to successful interaction *(and some solutions)*

- Soil maps not granular enough to provide field level insights for farmers
 - *Look to combine existing national data with on farm, field-level data (often from farmers or their partners)*
- Can get (relatively) easy access to farmers who are interested in soils already through meetings etc, but how to access those who aren't
 - *Policy can play a key role*
 - *either forcing action*
 - *or subsidising it*
 - *eg Scottish Government about to pay all farmers to do soil testing – will catch the ones who have not been doing it already (even though more progressive farmers have been for many years)*
 - *or the [Soil Nutrient Health Scheme](#) in N. Ireland*
- Lack of access to farmers (both in terms of introductions and sometimes practically – eg limited internet connection).
 - *Leverage new-found interest in soil carbon and regen agriculture to 'get a foot in the door'*
 - *Link with existing farmer groups and clusters*
- Farmers disengaged / lack trust in usefulness of collaboration with academics / 'scarred' or 'fatigued' from previous bad experience – especially conventional farmers
 - *Work through existing farmer groups / facilitators farmers do trust – eg agronomists, catchment sensitive farming*
 - *Recognise timing of when to contact farmers or expect cooperation from them, and fit to within their farming calendar (eg arable farmers more likely to have time November – mid Feb and June – early July before harvest)*
 - *Even conventional farmers becoming more interested in soil health – now mainstream (especially if can link to new subsidies, potential for carbon credits)*
- How to communicate complexity of data and/or counterproductive or counterintuitive results – into meaningful results for farmers
 - *Balance between clear messaging and recognising the complexity behind results*
- Studies often study treatments that aren't contrasting enough to generate useful results for farmers
- Structures of academic work not compatible with dissemination with farmers – eg researchers moving on to new projects leaving no time for write up; finite length of research projects.
 - *Present work with results first, methods later*
- Costs of using farm data – often requires significant cleaning before can be used in academic work
 - *Work with farmers to collect better data going forward*
 - *Work with companies providing monitoring / measuring devices to farmers*

How soil science can influence ag-policy

- Feed in through existing forums
 - traditional extension services in countries where those exist
 - e.g. in UK - Sustainable Soils Alliance
 - Direct links between government and key academics (how to identify who these academics with good links to policy makers are? do all researchers know?)
 - Get policy makers (politicians and civil servants) out on farms, in universities etc. to educate them
- Communicate clear messages
 - agree messages among the soil science community and then present a clear picture to external stakeholders
- Develop a virtuous circle between Government, farmers, and researchers
 - Government fund farmers and require that they collaborate with researchers. Outcomes of this research then feedback to update government policy.
 - This data exchange between farmers and policymakers (ideally via researchers) is key – see below.
- Need for clear systems for reporting soils information nationally (when this data is collected)
 - eg data government collects from farmers or requires farmers to collect to receive subsidy
 - make sure this data is easy for farmers to collect and share (with researchers and government)
- Need more requirements on government to share data created on the effects / impacts of different policies – so that they can be judged on their results and updates developed where required
- Need to make sure policies are suitably adapted for regional variances
 - What information on regional variations is required to achieve this? Does it already exist (and for which areas of each country) or does it require further research?