2022 Field Lab Journal
Practical results from farmer-led research
Celebrating 10 years
For ten years Innovative Farmers, as part of the Duchy Future Farming programme, has been collaborating with some of the most pioneering farmers and researchers in the UK. When we began, our concept of ‘field labs’ - on-farm trials - was not well understood. But now the model is firmly entering the mainstream. We have learnt as much about the process of co-design as we have from the results of the 120-plus trials we have supported along the way.

Farming is facing mounting pressures as the climate, nature and health crises demand more from farmers and land managers. We must find solutions today to some of the greatest problems facing agriculture. By supporting farmers to test the ideas they have on-farm we are able to speed up the adoption of innovative practices. Field labs can help to transform food production, improve livestock health, enhance biodiversity, reduce greenhouse gas emissions and improve farmland management.

Field labs have increased farmers’ confidence in on-farm experimentation and innovation. They have also highlighted to the research community the benefits of collaboration with farmers. We have nurtured a culture of sharing across the farming industry and seen an increased recognition of the value of on-farm trials. In the future, we are committed to helping even more farmers and researchers learn alongside each other. By increasing the access of research skills to more farmers we hope to give farmers the confidence to adapt their farming practices, delivering a sustainable agricultural sector in the UK.

None of this would have been possible without the generosity of the farmers and growers who made trials happen on their farms. The research community and wider industry has also provided countless hours of support to help nurture ideas and guide the strategic direction of Innovative Farmers through the programme’s steering group, chaired by Professor Tim Benton.

Our generous funders at The Prince of Wales’s Charitable Fund have sponsored us from the very beginning, alongside our supporters Waitrose & Partners. Thank you also to the Organic Research Centre, Innovation for Agriculture and LEAF for their support as partners in the programme and all our other funders, coordinators and contributors over the past 10 years.

The future of funding for on-farm research looks positive, with Defra moving to support on-farm trials through its commitment for innovation and research and development funding in England. The farmer-led innovation movement is growing. Globally there are more and more initiatives like Innovative Farmers that share our ambition to put farmers in the driving seat of research. But there is still work to be done to ensure every farmer has access to the research support they need.

Innovative Farmers is grateful to its funders for their support of the programme:

Innovative Farmers is delivered in partnership with:
How to establish and manage living mulches within arable rotations

The challenge

Living mulches provide an excellent opportunity for arable farming to improve soil health, build soil fertility without tillage or synthetic inputs, sequester more carbon, cut production costs, and potentially improve productivity.

The group of ten farmers (organic and conventional) wanted to discover whether they can establish and successfully manage a permanent living mulch of clover within arable rotations, with the main goals of controlling weeds and fixing nitrogen. A key question is whether this can be achieved without significantly affecting yields over the course of the whole cropping rotation. The group were also interested in the potential for living mulches to provide grazing to livestock directly after harvest and in the biodiversity benefits of integrating flowering crops with their cash crops.

The trial involved undersowing white clover into cereal crops in the spring, with a cereal crop direct drilled into the established clover the following season.

Living mulches can be any prostrate, low biomass crop that doesn’t outcompete the cash crop. White clover was selected for the trials to offer weed control and fix nitrogen. After clover establishment, a cash crop is planted into it – oats and rye were chosen as it was hoped their high competitiveness would reduce risk of yield loss. After harvest, the living mulch is left growing underneath, fixing carbon and nitrogen. The living mulch can be used as forage for livestock grazing or left overwinter as a cover crop to protect the soil before planting new crops directly into it in the spring.

How it works

• The two farms that successfully established living mulches found cereals grow well with clover understories, but with yield penalties in year one. The direct drill treatment results suggest half the yield penalty comes from implementing a no-till system, with the rest due to clover competition.

• Next season, the farmers plan to test different management practices to mitigate yield loss. They will trial holding back spring growth through mowing or sheep grazing the clover before cereal stem extension. Micro-clover, (lower growing varieties of clover), will also be trialled.

• Yield penalties can be partly offset by reduced fuel and labour costs from less cultivation, reduced seed costs (as sowing annual cover crops is now not necessary), and increased forage for sheep. There were also un-costed benefits to soil and biodiversity.

• While there was a reduction in annual weeds, perennial weeds increased.

• Conventional farmers have so far struggled to establish clover understories in the trials, with nitrogen fertiliser residues or thicker more competitive crops suspected to be the cause.

• For organic farmers the introduction of a living mulch may reduce the need for years of fertility building leys which would have an impact on yield of cash crops over the whole rotation. This requires further investigation.

We’ve got an organic field and a conventional field literally over the hedge from each other. Last year they were both growing spring barley so I thought it would be perfect to establish the living mulch in both - same day, same machine. The organic side came out perfectly, we’ve got a lovely living mulch under our barley, conventionally nothing - not a plant. This might be something to do with the effect artificial nitrogen has on clover. But we’ll try again and hopefully get it right!

James Alexander, Primewest Ltd, Oxfordshire

I really want to trial grazing more of the growing crop. The reasons for that are multiple. We want to try getting sheep back on after the cereal has established and graze it over the winter. We want to do this to suppress the clover, give the cereal a head start in that early race to get dominance, and to potentially knock back the clover whilst increasing nitrogen fixation, which could then feed the cereal crop as we go forward.

Mark Lea, Green Acres Farm, Shropshire
How can sensors help to reduce stress-based disease in greenhouse tomatoes?

The challenge

Tomato growers in the Isle of Wight and Yorkshire hope to considerably reduce waste from splitting and blossom end rot, which can cause yield losses of up to 10%. These are physiological issues affected by water, temperature, light and ventilation, which affect the uptake of water in the plants. Water balance sensors have been developed by industry to give insights into how plants respond to these growing conditions, but the technology has rarely been tested in UK glasshouses. The plan was to use this information to adapt the glasshouse environment to reduce stress on the plant with the hope that this will reduce fruit disease.

In this field lab, growers installed these sensors in non-organic beef and cherry tomatoes and organic piccolo tomatoes, with the plan to build a continuous picture of stem diameter and sap flow within the plants. It is hoped the findings can be applied to many other protected crops including peppers, cucumbers, and soft fruit, as well as with outdoor annual and perennial crops.

How it works

Blossom end rot is caused by insufficient calcium reaching tomato tissue. Incorrect water balance together with suboptimal light, ventilation and humidity can lead to a shortfall of calcium in the plant, particularly at the end of the fruit, making it unmarketable. Similarly, sudden fluxes in temperature and irrigation can cause tomatoes to split, particularly when combined with a period of unstable light conditions, affecting transpiration. By using the data generated by the sensors, farmers can adjust greenhouse conditions and irrigation to reduce stress.

What we learned

- Using feedback from the sensors, irrigation strategy has improved. On darker, rainy days, the growers now begin irrigation 2-3 hours later. On dry sunny days, irrigating earlier kept the stem diameter more constant. This reduces stress on the plant.

- Greenhouse night screens were being removed too quickly in the mornings. This brought in a sudden influx of cold air which caused the pores of the plant to close, decreasing water flow within the plant and to the leaves and causing scorch. Slowing down screen removal allowed hot air beneath the screen to mix with cold air above, resulting in reduced scorch. Further investigation needed on whether it’s possible to automate this.

- There were definite savings from reduced blossom end rot, with further room for improvement. Marketable fruit of beef tomatoes in the trial was 2% better in 2021 compared to 2020.

- Encouraged by these results, the growers are considering installing the sensors into plants with higher rates of disease and near a south facing edge in greenhouses. This would generate more useful data as these plants are under more stress.

Perspectives from the farm

So many things affect crop uptake of water so there is still a lot to investigate. We want to try and automate the start of irrigation in line with the sap flow and stem diameter information provided by the sensors or see if alarms can be set to notify us of when there are ‘dangerous’ water imbalances. Ideally, you want several sensors in each variety, but that gets expensive. With fluctuating gas prices and the economics of agriculture, saving waste is important, so we’re hoping to continue looking into this next year. Brian Moralee, Growing manager, APS Produce, Isle of Wight
The challenge

Potato Cyst Nematode (PCN) is a significant pest for potato farmers in the UK. Almost half of the land used to grow potatoes in the UK is infected. Farmers are investigating biological management because most pesticides have been withdrawn, are expensive, or are hazardous to operators and the environment. Few planted potato varieties are resistant to PCN, so sustainable approaches are urgently needed. Farmers in Shropshire and Lancashire are exploring the efficacy of trap crops to control the nematode.

This group has been trialling the best ways to establish Solanum sisymbriifolium (sticky nightshade) and Solanum scabrum (African nightshade). They investigated the latest viable trap crop sowing data to prevent the loss of a cash crop in the rotation, whilst allowing sufficient trap crop growth for effective PCN control. Consequently, they grew the crops between two normal cash crop harvest and planting dates.

How it works

Trap crops work by deceiving PCN with chemicals they release from their roots which signal the presence of a host, which triggers the nematodes to emerge from their cysts. However, the juvenile nematodes are unable to create the feeding site needed to develop which means the nematode’s life cycle cannot be completed, thus reducing PCN populations in soils.

What we learned

- Late June is the latest viable planting date in North Shropshire. Later sowing results in poor trap crop establishment. Trap crops planted in July in Lancashire didn’t establish in 2020 but did in 2021; the decisive factor was probably heavy rainfall after planting in 2020, reducing soil temperature and germination. Warmer locations further south may be suited to later drilling, but this was not studied.
- Plant the trap crop shallow: 0.5 - 1cm drilling depth leads to better establishment.
- Additional nutrition at planting (digestate or organic fertiliser) is correlated with better establishment. Both trialled trap crops have similar establishment when planted in late June. However, 2nd year trials indicate that S.scabrum is more responsive to this than S.sisymbriifolium.
- S.scabrum has a substantially greater proliferation of fine roots which may influence the effect on PCN.
- The group could not review whether the trap crop provided effective PCN control due to very poor establishment at the site with high PCN pressure. So more research is needed.

Next cash crop is planted, and rotation continues

Cash crop harvested in late June

Improved potato yield

Potato seed planted, fewer PCN are present in soils

PCN cannot fully develop and complete life cycle

Juveniles feed on trap crop root

Chemicals stimulate dormant PCN to hatch from eggs

Trap crop grows and roots release chemicals

Perspectives from the farm

If we don’t embrace new technology we’ll be left behind. We’ve now learnt a lot about trap crops and when I talk with other farmers they are really interested in what we’re doing. We’re losing the chemistry side of farming so understanding the biology is key. This field lab has put me five years ahead of the curve. But we need to lobby decision makers to put the trap crops into ELMS. Farmers need financial support if the wider industry is to all go in this direction.

Andrew Webster, A W & M A Webster, Shropshire

We drilled the trap crops on the 20th June after we had spread digestate. The aim was to get 0.5cm – 1cm depth. The field was all rolled and the headlands were rolled twice for better soil contact with the seed. Weed pressure was seen early on, but when temperatures rose the trap crops became dominant. S. sisymbriifolium can keep going until mid-February but S. scabrum will be killed by the first hard frost.

Neil Furniss, ME Furniss & Sons, Lancashire
How to establish and manage cover crops in a hopyard?

The challenge

Cover crops have not been grown on hopyards because of a fear they would harbour diseases like Verticillium Wilt, which can devastate production. Additionally, when hops are harvested, the entire plant is removed from the field, so the organic matter is not returned to the soil and the field is left bare over winter. With the soil exposed, fields are vulnerable to nutrient loss from run off, soil degradation, and loss of moisture in the hottest parts of the year. Bare soil also creates a seedbed in which weeds inevitably establish, including species which could potentially harbour Verticillium Wilt.

The field lab investigated growing a variety of cover crops that do not harbour disease to build organic matter in the soil and protect it from heavy rain. Four hop growers came together to identify suitable plants to use as cover crops and develop practical methods for establishment and destruction that fit with commercial practice.

How it works

Cover crops can increase soil health, sequester carbon, and reduce the inputs needed for weed control and soil fertility. In this field lab, black oats and rye were chosen as cover crops with the best characteristics for use with hops. It is necessary to destroy the cover crop to release nutrients to the soil, avoid competition with the hop crop and ensure that Verticillium Wilt cannot come in.

Requirements for cover crops:

✔ Fast growing
✔ Suitable for late summer / autumn sowing
✔ Not a Verticillium Wilt host
✔ Easy to manage - not too competitive
✔ Preferably a mix - more resistant to pests / diseases than single species

The best time to drill cover crops into hopyards is late August, just before starting hop harvest; soils are still warm and there is sufficient rain and daylight for the crop to establish.

Narrow-leaved cereal crops like oat and rye were the preferred cover crop mix as they are resistant to Verticillium Wilt. Broadleaf cover crops are only suitable with wilt-resistant hops varieties.

Higher seed rates are better, on hop soils a good seed rate is 50/50 rye and oat mix at around 125kg/ha.

A narrow seed drill is required for sowing the cover crop, for which growers can adapt fertiliser spreaders.

The optimum time to destroy the cover crop is in the spring before hop foliage surfaces.

Whilst most hop growers destroyed cover crops using chemicals, some crimper-rolled it and one grazed it with sheep. Grazing had mixed results and led to some patchiness.

Cover crop destruction by crimper rolling delivered an unexpected benefit of weed control, reducing the amount of cultivation needed to keep weeds at bay within the hopyard.

What we learned

We went from experimenting from one hop yard in year one, to growing cover crops in three hopyards in year two, and we’re doing it everywhere now. We’ve even started to apply the same thinking to our tree fruits. What we’ve realised is that cover crops or wildflower strips between the trees can ensure that we’ve got a feed source for pollinators all year round, and they introduce other insects that act as predators for the pests.

Ali Capper, Stocks Farm, Worcestershire

We’re not the first people to try this, we knew that leaving the soils bare in the winter was daft; but it was learning how do it that was important. Now we’ve done that, I’m hoping to carry out soil health assessments in spring 2022, but we know it takes several years to start seeing soil benefits.”

Rob Saunders, field lab coordinator, H. L. Hutchinsons Ltd
Couch grass is a common perennial weed that can be a major problem for vegetable growers as it can have significant negative effects on crop yields. Couch is drought tolerant, can survive for long periods without sunlight and can quickly establish in the ground in spring and autumn, spreading fast if left unchecked. Cultivating the land is a traditional, effective control method for those looking to eliminate or reduce their herbicide use, but it’s also damaging to the soil structure and labour intensive.

Five growers came together in this field lab to find out if buckwheat was useful as a biological method of controlling couch grass, replacing the need to cultivate or use herbicides. Participating growers carried out baseline sampling each year to determine the levels of couch grass infestation prior to any treatments being applied. They then grew a buckwheat crop, either on its own or as part of a mixture, with a control that consisted of their normal farm practice.

**Findings**
- After an initial 2 years of refining the practice, buckwheat’s performance as a couch grass control was practically as good as cultivation. But as it uses less labour and fuel and doesn’t damage the soil with mechanical tools, it was considered a more reliable control for the grower.
- Buckwheat shaded and slowed couch growth but did not kill it. But after it was incorporated into the soil, couch presence reduced noticeably in the following green manure and subsequent onion crop, possibly due to buckwheat allelopathy.
- At one organic farm, onion yields increased by 10% after buckwheat in 2019. The extra net income exceeded the cost of buckwheat seed and management by around 160%.

**Tips**
- Incorporate the buckwheat for the allelopathic effect then allow 3 weeks for the allelopathic effect to dissipate before sowing the next crop.
- Use an arable drill or cover the plot with mesh until buckwheat seed has germinated. Broadcasted seed could lack moisture and risks being eaten by birds.
- An integrated approach using green manures or fertility building leys is necessary so that couch has no time to establish.

**Perspectives from the farm**

**Andy Dibben, Abbey Home Farm, Cirencester**

Buckwheat is now a permanent part of my rotation. Before, mechanical cultivation was my only option for organic weed control, but I knew it was degrading my soil. The field lab really allowed us to perfect our approach to buckwheat – now I can combat couch grass and improve the soil structure on my farm.

**Ben Raskin, Head of horticulture and agroforestry, Soil Association**

This trial is a great demonstration of the potential of using plants to solve a problem normally addressed using machines or chemicals. Taking a long term view and aiming for acceptable control rather than elimination of the weed gave better yields with improved soil health. The dual action of shading and allelopathy show that these approaches need to be fully understood and can be more complicated, but are worth it if we can get them right.

**Can buckwheat cover crops control couch grass in organic systems?**
10 years of Innovative Farmers

The benefits of field labs

If it’s left to the market to deliver on, then you only get innovation in the things that the market identifies that it can make a significant profit from, and that leaves aside some of the many issues that we’re interested in, in terms of increasing the sustainability and resilience of farming systems. Innovative Farmers came along and democratised agricultural research. It has provided a non-market mechanism for helping farmers innovate to their benefit, rather than the benefit of the market players up stream.

Professor Tim Benton, Chatham House

The great thing about field labs is that they help farmers to find solutions. Innovative Farmers has given farmers the confidence to go out there and try things for themselves and empowered them to work with researchers as co-creators.

John Pawsey, Shimpling Park Farm, various field labs

I can’t believe that Innovative Farmers is only 10 years old. It has definitely made a change to the industry and it feels a very accessible way of getting a project off the ground.

Ali Capper, Stocks Farm, various field labs

From its launch I ‘loved the concept of Innovative Farmers’ field labs, bringing people from an array of backgrounds and disciplines to learn together in the living environment. The projects are credible, creative, and different – and highly practicable to land managers, growers and farmers.

Jane Craigie, Director, The Rural Youth Project

Before Innovative Farmers there just wasn’t as much opportunity for the proactive engagement of farmers in research projects that I think is necessary. Over the last decade I have seen time and time again the benefit of researchers talking to end users to get a steer about where their research should be going. Farmers are natural innovators and Innovative Farmers has shown in spades how modest amounts of money are really having a catalytic effect when it comes to changing UK agriculture for the better.

Dr Belinda Clarke, Director, Agri-TechE

The benefit of farmer-led research is that it’s answering the actual question, rather than what an academic might think is the question. We can think the science is there, but we still need rapid delivery and implementation of that work. But for me the reason I am passionate about Innovative Farmers is that it answers the questions farmers want to be answered, not forcing knowledge on them.

Liz Genever, Independent sheep and beef consultant, lucerne field lab

Being involved with field labs helps the farmers to do research themselves. In our field lab we got advice about how to set up replicated trials and how to get more accurate results. That’s the big change for me. Before I would eyeball something and conclude ‘that works’ or ‘that doesn’t work’ and that for me would have been the trial. Now, I’m able to compare properly.

Andy Dibbens, Abbey Home Farm, buckwheat for couch grass control field lab

Field labs help you to understand more about your crop and your farming system. Having the structure and the support of the researchers meant that I kept going out, looking at my trial twice a week, analysing the data and thinking about it. It really helped me to focus my mind on the issues.

John Richards, Riverford Organic Farmers, hot water seed treatment field lab

Having researchers to come and measure has been a game changer. Before being involved in field labs I wouldn’t have really measured anything. I would have just looked at the crop and I’d be going on gut feeling. Now we’re working with a lot more precision, and this helps us develop our understanding and also allows us to share that understanding with other farmers.

Mark Lea, Green Acres Farm, living mulch field lab

The Innovative Farmers concept is fantastic. Farmer-led research is a must because farmers love learning from farmers. By having farmers actively engaged in trials with that experience and knowledge means they are able to pass on their learning to other farmers and the wider agricultural industry – it’s just a win, win.

Paul Hill, formerly AHDB, Living mulch field lab

Learning from others

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While I may not have ended up using compost tea after researching it through a field lab, the results and discussions along the way led me to make compost on my farm. I decided to buy animals and a special machine to make compost with as I would rather do that than buy a sprayer for the tea because it offers so much more for the farm.

Sophie Alexander, Hemsworth farm, compost tea field lab

I think farmer-led research is really important because the grower knows what their main problems are. Without the support of Innovative Farmers we wouldn’t have been able to test our ideas properly.

Innovative Farmers has really helped us with the process and given us the business confidence to continue researching.

Brian Moralee, APS Salads, tomato sensor field lab

Field labs are helping us change the way we farm. After trialling cover crops on four hectares in our field lab, we are now going to put 60 hectares of them across the farm. And in 10 years I’d really like to be doing it across the whole farm, once we’ve learned a bit more.

Matthew Izod, WWN Izod Ltd, no till and cover crops field lab

Changing farming practices

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Reducing lamb mortality
The increased shelter from trees reduces perinatal hypothermia in lambs by up to 35%. If 10% of sheep had access to silvopasture, lamb mortality could be reduced by 46,000 lambs across the UK per year. This would increase income by close to £4 million across the UK. For farms that produce 100 lambs this would increase farm income by £255 a year.

Less disease
Silvopasture can help to combat liver fluke – a common parasite infecting livestock, reducing their growth and ability to reproduce. Trees act to improve soil conditions and reduce waterlogging and therefore the decrease the habitat for the snail that carries the disease. AHDB calculates that fluke costs the sheep and cattle industry around £300 million per year. If agroforestry could reduce the risk of infection by 5%, this equates to £15 million in savings a year.

More forage
Grass can be available between a week and three weeks earlier under trees: a 10% increase in silvopasture across sheep and cattle systems could lead to grass availability a week earlier resulting in the following savings (if housing was reduced by a week).

- £10 per week per dairy cow
- £6 per week per calf
- up to £1 per week per ewe

Across the country this could result in combined savings of almost £8 million.

Over the last 10 years field labs have changed the way we farm. But what if these ideas were scaled up?

Intercropping
In a field lab which ran from 2017-19, intercropping increased the overall yield of the crops planted in a field while decreasing the inputs needed.

Increased yields
Intercropping could increase yield on the average surface by up to 30%. If 10% of the UK’s arable crop surface adopted this practice, we could achieve a production yield increase of up to 500 tonnes, equivalent to an estimated £85 million.

Alternatively, the yield increase could lead to better land management - we could make up to 90,000 hectares of land available, without impacting overall yield, while increasing space available for food production or tree planting, and reducing feed production areas.

Reduced artificial fertiliser use
The field lab also showed that intercropping oats or oilseed rape with legumes provided sufficient nitrogen for the crop, meaning farmers could avoid the need for artificial fertiliser. If this was done on 10% of the UK cropping areas, it would mean savings of up to £30 million in fertiliser use across the UK per year.

A 10% reduction of artificial nitrogen use across all cropped areas could also result in a reduction of 300,000 tonnes of CO₂ associated with use of artificial fertilisers.

Mastitis
Mastitis is one of the biggest reasons for antibiotic usage in dairy farming. Field labs have trialled on-farm tests to detect which infection cases involve bacteria that respond to antibiotic treatment and those that cure without the need for antibiotics.

Reducing antibiotics
Interim results from the field lab show that, for those farms where the conditions are appropriate for this treatment, on-farm tests reduce antibiotic use in infected animals by an average of 35%. If used on half the UK’s dairy farms this could lead to a yearly reduction of around 120,000 antibiotic doses.

Lower costs
On an average herd (250 animals) 31 cows would not need treatment. This means the average organic dairy farm could save around £2,200 by avoiding wasted milk lost from treated cows where milk cannot be sold, and £400 in antibiotic treatments, adding to savings of £2,600. Non-organic farms could save £600 by avoiding wasted milk and £400 in antibiotic treatments.

Reduced herbicide use
In the field lab, intercropping beans and wheat reduced the weed burden by 75% for two years running. If this was done on an average UK conventional farm it would lead to a reduction in herbicide applications of at least 30%, equivalent to £75 per hectare per year.

If half of cropped areas across the UK adopted this, there would be a reduction of herbicide use of 1 million kilos across the country, from 7 to 6 million kilos.

A 10% reduction of artificial nitrogen use across all cropped areas could also result in a reduction of 300,000 tonnes of CO₂ associated with use of artificial fertilisers.

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A 10% reduction of artificial nitrogen use across all cropped areas could also result in a reduction of 300,000 tonnes of CO₂ associated with use of artificial fertilisers.
1. **It starts with an idea**
From an existing discussion group, project or network, a group of farmers or growers come together around an idea.

2. **Identifying existing knowledge and a suitable topic**
Supported by a coordinator, the group establishes a topic or challenge they’d like to explore and sets realistic expectations and outcomes for the field lab.

3. **Formulating a clear research question and co-designing a trial**
Innovative Farmers matches the group with a researcher so they can develop a practical research question to be answered through a field lab. The group works collaboratively to design what data to record and monitor, ensuring the trial is both scientifically robust and practical for a working farm. The plan should be realistic about the roles, responsibilities, and time that the trialists and researchers can commit.

4. **Applying for funding**
The group can apply to the Innovative Farmers Research Fund to cover trial costs.

5. **Progressing the field lab**
The group meets regularly and uses social media to discuss insights and tips and make sure the trial stays on track and data is collected regularly.

6. **Analyse results**
The group jointly analyses the findings and identifies what they have discovered over the duration of the field lab.

7. **Share findings**
The results and tips are shared with the farming community through events, online and in the media so everyone can benefit.

8. **Next steps**
The farmers apply what they have learned to their farming business and explore whether a new field lab or other funding streams are needed to answer further questions.

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**Field labs on the horizon**

- Can two-spotted spider mites be controlled by predatory mites to improve hop production?
- Can grazing red clover improve farm resilience without impacting ewe fertility?
- What are the commercially viable alternatives for propagation, transplanting and mushroom production in order to reduce peat use in horticulture?
- Can using on-site sap and plant health analysis tools in cereals help us reduce nutrient applications?
- How can we validate models for carbon sequestration in perennials like tree fruit?
- What are the best growing practices and routes to market for crops valued by communities of colour in the UK?
- What varieties of soybean could be introduced into arable rotations in the UK?
- How can we use satellite data to understand and monitor sward production and carbon flow to support on-farm decision making?
- What flax varieties grow successfully in Scotland, and how can we localise the supply chain for Scottish textiles?
- Can we use mob grazing to improve soil health and cattle worm burden in dairy farms?
- Can we use mob grazing to improve soil health and cattle worm burden in dairy farms?
- How do we ensure that a diverse range of plant varieties survive beyond 3-4 years in herbal leys?
Over the last decade, Innovative Farmers has supported over 120 groups to trial and adapt their farming methods in real time with the support of researchers, knowledgeable on the topic. This has given farmers and growers the confidence to change and adapt the way they farm to improve their sustainability.

Field labs are inspired by ideas from farmers seeking an alternative, better way to farm and wanting to generate the data and evidence to back it up.

If you have an idea that could make your farm more profitable, resilient, and sustainable, we can give you support and funding to test it out. We can help you explore your ideas, co-design your trial with researchers, and share the results so everyone can benefit.

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