



**Countryside and Community Research Institute**

# **Evaluation of DOFF Farmer Field Labs**

## **Final Report**

Prepared for the Soil Association  
by the:  
Countryside and Community Research Institute (CCRI)

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## **Executive Summary**

### **Aims and objectives**

The aims of this evaluation are to evaluate the impact of Field Labs according to:

- the nature and extent of farmer learning as a consequence of participating in Field Labs
- the nature and extent of farmer behavioural change/ uptake of ideas as a consequence of participating in Field Labs

### **Research Methods**

The research carried out for this evaluation used an original database of all DOFF event attendees provided by the Soil Association containing 536 names. This grouped attendees according to the 22 Field Labs they had participated in. A mix of qualitative and quantitative methods were used with three main methods employed:

- Semi-structured detailed interviews were conducted with 12 farmers/growers. Purposeful sampling was used to select interviewees from a list of larger and more established Field Labs
- A facilitators' discussion forum was convened with 9 facilitators who have been involved in the Field Labs (representing some 14 Field Labs)
- A telephone survey of 30 Field Lab participants (24 farmers and growers and 6 advisors) was undertaken, representing 14% of the 221 farmers/growers and advisors attending DOFF events since 1<sup>st</sup> April 2013

In addition CCRI team members attended a Field Lab and a facilitators/research workshop hosted at the Organic Research Centre's 9th Organic Producers' Conference.

Inevitably the evaluation is limited by the number of Field Lab participants consulted. The sample of 30 interviews in the telephone survey is not large enough to make any valid quantitative claims, although it is possible to identify some broad patterns in the responses which can be supported by the 12 detailed interviews.

### **Evidence of farmer learning**

It is apparent that significant learning has occurred as a result of attending Field Labs. Good correspondence between the three data sources confirms that topic knowledge, practices and understanding, and research understanding has been enhanced. Most evident is the enthusiasm for group learning.

Farmer learning is enhanced by the Field Lab experience although there are differences in the nature of this learning. Most distinctive is the reported increase in understanding of the topic while learning skills and practices is less discernible. For example, the majority of survey respondents (86%) agreed that their understanding of the topic had been enhanced by attending the Field Lab while some 37% agreed that Field Labs gave them a chance to learn skills and practices. For both detailed interview and survey respondents learning appears to be more about understanding the underlying science, and being given the tools and the confidence to go away and try things, rather than about acquiring specific skills and practices. This is very much in line with the Field Lab aim to enhance critical thinking.

Some 40% of survey respondents agreed or strongly agreed that they wanted to get more involved in research as a result of attending their Field Lab, although there was less interest amongst the detailed interviewees in undertaking research on their own farms. It is clear that, while a good proportion are inspired to do research, often they are were not sufficiently equipped or resourced. Aligned to this, more survey respondents disagreed than agreed that Field Labs had helped them design useful trials on their own farm. Many Field Labs were still in early stages and as such learning is a case of identifying the nature of research needed and knowing how to ask the right questions. However, a number of respondents already had a good level of understanding about research and formal trials and were carrying out experiments on their farms.

### **Evidence of farmer behavioural change**

Evidence of the impact of Field Labs is less clear with respect to farmers changing practices. Whilst it is clear that Field Lab participants are inspired to do something new or differently on their farm (just over half of survey respondents), actual change or plans to change were less evident (37% of respondents). However, translating interest into change is seen to be part of the Field Lab process. Commitment and continuity in group learning and good demonstration of outputs in Field Labs is more likely to give participants the confidence to make changes. For those who had changed practices, it was too early to identify any impact of these changes.

### **The Field Lab concept**

The fact that the majority of respondents (80%) wanted to continue to attend Field Labs is testament to their popularity amongst the farmers consulted. The majority of survey respondents (>64%) agreed that the Field Lab format was a better way of learning than farm demonstrations or farm walks. The special attributes they identified included: the intimacy of a Field Lab and allied to this that fact that people “have more of a stake”, and access to well-respected specialists. Some liked the focus the Field Lab offered while others appreciated the time to explore a wider range of topics. However, these sentiments were not universal, some found the Field Lab experience to be no different to that of a farm demonstration or walk; they also had suggestions for improving the process.

Working as a group is a distinctive element of Field Labs and is highly valued, some 62% of survey respondents felt they worked well together. The openness and sharing ethos were highlighted as important in instilling confidence and a sense of empowerment. This was enhanced when groups were of a sufficient number (generally >10) and had a good mix of participants, including some experts, as this provided a good breadth of views and experiences. The commitment, enthusiasm, honesty and expertise of host farmers were also seen to generate effective group learning and inspire confidence.

A further attribute is the opportunity Field Labs provide for developing participatory learning over time. This relies on sufficient continuity within groups to develop and build on learning amongst the participants. Poor attendance (due to time pressures and distance to travel) and commitment to Field Lab groups can mean that there are positive learning outcomes for the host, but less so for one-off participants.

## **Conclusions**

Farmer learning is enhanced by the Field Lab experience. Most distinctive is the reported increase in understanding of the topic. Often learning is more about developing confidence and a wider understanding of the subject than learning about specific skills and practices. In the same way, although some farmers reported that they acquired research skills, and were inspired to conduct research, learning appears to be more about knowing how to formulate ideas and questions. This is very much in line with the Field Lab aim to enhance critical thinking. Evidence of the impact of Field Labs is less clear with respect to farmers changing practices. Although clearly the Field Labs inspired farmers to change, translating this into action takes time. Learning as a group is highly valued by farmers, especially where this group brings together experts and a range of farmer experiences; has an inspiring host and is well facilitated. The fact that the majority of respondents hope to continue to attend Field Labs is testament to their success, even though not all farmers fully understand what Field Labs are trying to achieve.

## **Recommendations for enhancing farmer learning and behavioural change**

The Field Lab process (promotion, format, venue, follow up etc) has a direct effect on the extent and nature of learning and prospective behaviour change. The following recommendations suggest ways of enhancing the Field Lab so that more farmer leaning and behavioural change can be achieved.

**Improve targeting** at the promotion stage to explain to farmers clearly about the aims of Field Lab, this will ensure that farmers engage with, and benefit more from, the Field Lab.

**Improve farmer commitment** to Field Labs and continued attendance as this enhances learning opportunities. Suggestions for improving attendance and interest include: levy a small charge; offer more events to increase chances of busy people

being able to attend; hold virtual online meetings to allow farmers to connect if they are geographically dispersed.

**Continue to ensure** events occur at appropriate venues, with the right host, relevant expertise, sufficient numbers (>10) and at the right time of year to observe changes.

**Widen participation.** Participants appreciate diverse groups. Conventional farmers should be encouraged. Consideration should be given to partnering with other farming organisations.

**Improve dissemination** of Field Lab outputs to participants with distribution of research reports and possible development of Fact Sheets. Dissemination to a wider audience should be also encouraged through the farmers' own networks and through the website.

**Compensate Field Lab hosts** adequately. Although they are the principal beneficiaries of the Field Lab, they should be sufficiently compensated.

**Provide opportunities for facilitators to meet** on a regular basis to share best practice; and to discuss their understandings of: what the Field Labs are trying to achieve; what constitutes a successful Field Lab; and how this can be accomplished. Some standardisation in Field Lab delivery could be considered.

**Agree on a suitable time span (and strategy for completed) Field Labs.** Take account of the fact that Field Labs require different amounts of more time and resources to allow promising ideas to develop; and that some would benefit from a strategy for a self-supporting group to follow Field Lab completion.

**Monitor and evaluate** Field Lab progress from the start. Facilitators should encourage feedback from farmers and be able to assess the extent of their learning and changes on participants' farms.

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# 1 Introduction

## 1.1 Aims and objectives

Field Labs are a format for knowledge exchange, primarily among farmers but involving researchers. Field Labs are designed to empower farmers as innovators, increasing the impact of their own informal research and enabling them to influence the formal research that is done in their name. Specifically Field Labs should enable participating farmers to:

- Gain practical research skills that enable them to run useful trials on their own farms.
- Learn what is already understood to be best practice in tackling the specific problem that is the focus of the Field Labs they attend.
- Understand the best ways to obtain any research assistance they need.
- Gain a clearer view of their own needs for research support, and greater confidence to express them.

This evaluation will assess the impact of Field Labs with respect to these objectives.

The aims of this evaluation are to evaluate the impact of Field Labs according to:

- the nature and extent of farmer learning as a consequence of participating in Field Labs
- the nature and extent of farmer behavioural change/ uptake of ideas as a consequence of participating in Field Labs, and

Specifically the following are assessed:

- farmer learning in farming techniques/best practice
- farmer learning in research/innovation skills/critical thinking
- farmer willingness to take part in future research
- other learning outcomes from the Field Labs (contributions to the body of farming and research knowledge about a particular topic)
- farmer behaviour change/practical improvements
- estimate of any business (£/yr) impact
- identification of associated potential public benefit

## **2 Research Methods**

### **2.1 Introduction**

Three main methods were used in the following order: detailed interviews with farmers/growers, a facilitators' discussion forum, and a telephone survey with farmers/growers. Results from detailed interviews were used to inform and steer questions in the facilitators' discussion forum, likewise results from detailed interviews and the facilitators' discussion forum were used to develop the survey questionnaire. In addition CCRI team members attended a Field Lab towards the beginning of the evaluation and a facilitators/research workshop hosted at the *Organic Research Centre's 9<sup>th</sup> Organic Producers' Conference: Diversity in practice - practical research and innovation* towards the end of the evaluation.

Drawing on qualitative and quantitative methods allows patterns as well as processes to be explored; the telephone survey reveals patterns in responses, whilst the detailed interviews and workshops provide some explanation to these patterns and insight into processes involved. In this respect detailed interviews allow some in-depth analysis of the nature of learning and change in practice while the survey can be used to extend this analysis and get some idea of the extent of farmer learning and change. This mixed methods approach also allows some triangulation, for example, farmer self-reported learning or practice change could be validated by facilitators.

The research carried out for this evaluation used an original database of DOFF event attendees (farmers, researchers, facilitators, Soil Association and Organic Research Centre staff) provided by the Soil Association containing 536 names. This grouped attendees according to the 22 Field Labs they had participated in.

### **2.2 Detailed interviews**

12 semi-structured detailed interviews were conducted (2 face to face and 10 telephone). Purposeful sampling from a list of 22 Field Lab participants was used to select interviewees from a list of larger and more established Field Labs (see Table 2.1), including Field Lab hosts. The intention was to identify those who had the most experience of Field Labs and would be in a position to answer questions relevant to the evaluation. All interviewees were farmers/growers apart from one facilitator. Eight Field Labs were represented.

The interview schedule (Appendix 1) was compiled so that the aims of the evaluation were addressed focusing on learning (skills and knowledge, as well as new critical thinking and confidence in research techniques and scientific understanding) and on behavioural change (timing, scale, benefits).

## Description of respondents

As Table 2.1 shows 8 of the respondents were farmers, 3 were producers working in market gardening/ horticulture and 1 was a facilitator. Ten described themselves as innovative and active in information seeking. The majority had higher educational qualifications and /or had been involved in some trials prior to Field Labs.

**Table 2.1 Farmers represented in the detailed interviews of interviewees**

Respondent No.	Farm/position	Interview	Qualifications and innovative behaviour	Field Lab topic	Field Lab involvement
1	Organic dairy Herd Manager	Telephone	Innovative, group member	Antibiotics	All meetings of the group.
2	Organic dairy Farm	Telephone	Traditional and innovative	Antibiotics	All meetings of the group.
3	Horticultural Grower	Face to face	Degree in horticulture	Wood chip compost	1 event
4	Organic mixed farm (medium)	Telephone	Innovative	Compost tea	Involved from an early stage
5	Arable organic farm plus permanent pasture/woodland (medium)	Telephone	Conducted trials on own farm and attended conventional trials at nearby station. Degree in Ag. Econ.	Weed control in cereal crops and Creeping thistle	1 event of each
6	Organic arable farm and contract farmer (large)	Telephone	Innovative and progressive. Involved with ORC trials and hosts events	Weed control in cereal crops	Involved from an early stage 4 events
7	Cider fruit and hops producer	Telephone	Actively seeks information	Shropshire sheep grazing in fruit orchards	2 events
8	Organic dairy (medium)	Telephone	Innovative. Used to be manager of a research farm	Building fertility with leys	Attended the 3 <sup>rd</sup> event at Abbey Home farm
9	Conventional cereals and permanent pasture (medium)	Face to face	Conventional and commercial but with organic sympathies. Attends numerous events	Building soil organic matter	Involved from an early stage
10	Market gardener	Telephone	Keen to gather more information to learn from experienced organic growers	Foam Weeding	2 meetings
11	Grower -Poly tunnels and field veg	Telephone		Foam Weeding	1 meeting
12	Facilitator	Telephone		Foam Weeding	2 meetings

## **2.3 Facilitators' discussion forum**

A structured discussion group was convened with facilitators who have been involved in the Field Labs, at the headquarters of the Soil Association. In the two hour workshop facilitators were asked to discuss their thoughts and experience regarding (see Appendix 3):

- Evidence and examples of learning (knowledge, skills and practice as well as new understanding of research)
- Evidence and examples of behavioural change (timing, scale, benefits).
- Suggestions for improving Field Labs (particularly with respect to learning and changing behaviour).

Two members of the CCRI team facilitated the meeting, recording the data in notes through audio recordings. This was then analysed using the qualitative analytical software Nvivo 10. The material was subjected to a thematic analysis, and participants were assured that their contributions would not be attributed to them.

### **Description of respondents**

All 17 current facilitators listed on database provided by the Soil Association were invited and 9 were able to attend (representing some 14 Field Labs).

## **2.4 Telephone survey**

The DOFF telephone survey was based on a sample of 221 farmers/growers and advisors who had attended DOFF meetings. The original database of DOFF event attendees provided by the Soil Association contained 536 names. The database was then filtered to exclude any researchers, Soil Association and Organic Research Centre staff and any events which occurred before 1<sup>st</sup> April 2013. This left 310 names on the database. The database was then further filtered to exclude the names that appeared more than once having attended several meetings. After this filtering process the final database from which the telephone survey was drawn contained 221 names.

Each name on the database was assigned a number and 90 names were selected randomly using random number generator tables. Each contact was telephoned and asked if they would participate in the survey. In the event that they were unable or unwilling to participate, or were un-contactable or did not qualify for the survey then another name from the reserve list was contacted. Each telephone survey lasted on average around 10 minutes. The survey questionnaire can be viewed in Appendix 2. In total 30 telephone surveys were undertaken representing 14% of the 221 farmers/growers and advisors attending DOFF events since 1<sup>st</sup> April 2013. Due to the small survey size the sample cannot be considered representative of the 221 farmers/growers and advisors on the database, but does provide a good cross-section of responses.

### Description of survey respondents

The survey respondents comprised 24 farmers and growers and 6 advisors. Of the farmers and growers, the majority were organic producers.

A wide range of farm types were represented as shown in Table 2.2

**Table 2.2 Number of farm types represented in telephone survey**

Farm type	No. of respondents
Mainly arable	2
Mainly dairy	2
Upland beef & sheep	1
Lowland beef & sheep	2
Sheep only	2
Mixed	5
Poultry	3
Horticulture	5
Smallholding	2

In total 15 Field Labs were represented by the survey responses (see Table 2.3)

**Table 2.3 Field Labs represented in the telephone survey**

Field Lab	No. of responses
Building Soil Organic Matter	5
Management of Shropshire Sheep in Fruit Orchards	3
Moulting	3
Anaerobic Digestion	3
Fertility Building Leys	2
Flystrike and effectiveness of herbal repellent	2
Foam Weeding	2
Liverfluke and worm strategies in cattle and sheep	2
Using compost tea on Spring Triticale	2
Oats quality and rotation positioning	1
Participatory Plant Breeding	1
Practical options for reducing on farm GHG Emissions	1
Reducing antibiotic use in the dairy herd	1
Weed control in cereal crops	1
Woodchip Compost for Propagation	1

The majority of respondents (57%)<sup>1</sup> had only attended one meeting of their Field Lab, whilst 27% have attended 2 meetings and 17% had attended 3 meetings.

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<sup>1</sup> 17 people said that they attended only 1 Field Lab event, representing 10 Field Labs – most of which did offer more than 1 event (including: Anaerobic Digestion, Building Soil Organic Matter, Foam Weeding, Liverfluke and worm strategies in cattle and sheep, Moulting. 8 people said they attended 2 FL events, representing 7 FLs; 5 people said they attended 3 FL events, representing 5 FLs. This has been inserted as a footnote.

The survey questionnaire was developed to address the two main aims of the evaluation. It mainly contained attitudinal statements which the respondents were asked to rate on a Likert scale from 1-5 (strongly disagree to strong agree). There was also the opportunity to ask for clarification about the question and to provide an explanation of their responses and two open questions at the end to provide further evaluative details. The advisors that were surveyed were asked to consider the attitudinal statements based on their impressions of how farmers/growers were impacted by the Field Lab event. Where possible the statements were the same as those used in SA internal Year 1 Field Lab survey to enable some comparison, and assessment of change, to be made at some point in the future.

All respondents were assured that their comments would be confidential and no quotes would be attributed to individuals.

## **2.5 Limitations in methods**

Inevitably the evaluation is limited by the number of Field Lab participants consulted. As noted above the sample of 30 interviews in the telephone survey is not large enough to make any valid quantitative claims, although it is possible to identify some broad patterns in the responses which can be supported by the 12 detailed interviews. As requested by the SA the results are presented as % figures (to one decimal place due to the way the software calculates the figures), however, with a small sample number % figures can only be indicative. The numbers of respondents for the statement provided in the Figures provides a more realistic analysis.

The 12 detailed interviewees were purposefully selected as those who had committed to and/or hosted Field Labs; they are therefore all highly engaged and not necessarily representative of the larger sample.

Extent of learning is difficult to capture as it can take different forms, for example, learning in respect of acquiring new facts and new skills and learning in respect of acquiring a new outlook and way of thinking. It can also occur over different time periods and from a different baseline. However, the use of a mixed methods approach allows some exploration of these different forms.

There should always be caution in attributing change to a particular initiative since there is no counterfactual - and no before and after comparison available.

Learning and farm practice change are self-reported, that is ascertained through interview rather than observation, however, consulting facilitators has allowed some level of validation.

## **2.6 Report structure**

The report is structured around the two themes of the evaluation:

- the nature and extent of farmer learning as a consequence of participating in Field Labs, and
- the nature and extent of farmer behavioural change/ uptake of ideas as a consequence of participating in Field Labs

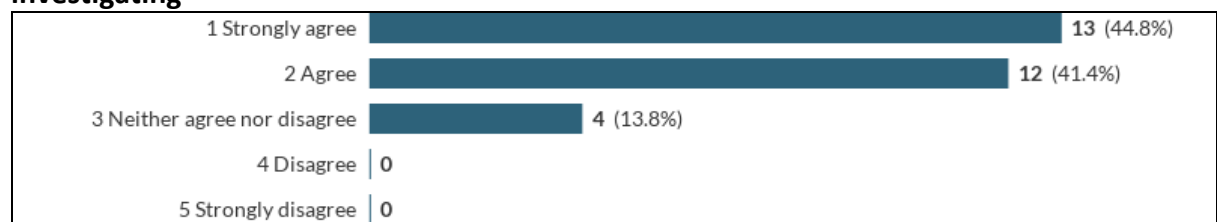
Sections 3-5 set out the results from each of the three data sources concerning the extent of farmer learning. Sections 6-8 set out the results from each of the three data sources concerning the extent of farmer behavioural change. Selected telephone survey results are presented with full survey results available in Appendix 3. Section 9 provides Conclusion and Recommendations. The term farmer here is used generically to refer to all Field Lab participants who are growers or producers.

### 3 The nature and extent of farmer learning as a consequence of participating in Field Labs: Results from telephone survey

#### 3.1 Improved knowledge, skills, practices and understanding

In response to the statement “the Field Lab gave me a **clearer understanding** of the topic we were investigating” some 86% either “agreed” or “strongly agreed” with the statement (Fig 3.1). There were no responses that were in disagreement with the statement. This result suggests that the majority of respondents felt they have gained a greater understanding of the topic that was being investigated by their Field Lab. The reasons given by those respondents who “neither agreed nor disagreed” with the statements were mainly because they considered they already possessed very specialist knowledge and understanding of the topic.

**Figure 3.1 The Field Lab gave me a clearer understanding of the topic we were investigating**



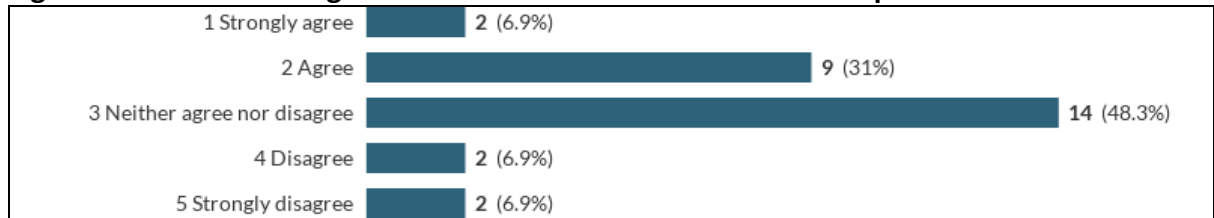
Overall, only 2 respondents “agreed” with the statement that they were disappointed with their Field Lab and expected to learn more about the topic. The majority (78.5%) were not disappointed with their learning experience (Appendix 2).

As Figure 3.2 shows 37.9% of respondents either “agreed” or “strongly agreed” that the Field Lab they attended gave them a chance to learn new **skills and practices**<sup>2</sup>.

<sup>2</sup> This statement was used to assess learning in techniques and best practices (see Field Lab aims). It repeats the statement used in the SA internal Year 1 Field Lab survey to provide

For example, one described learning about growing cover crops and assessing the impact on soil using soil pits and a spade. However, most respondents found they could “neither agree nor disagree” possibly because it was hard to identify any such outcomes or they had not been involved with the Field Lab long enough to bring about any such learning.

**Figure 3.2 The Field Lab gave me a chance to learn new skills and practices**

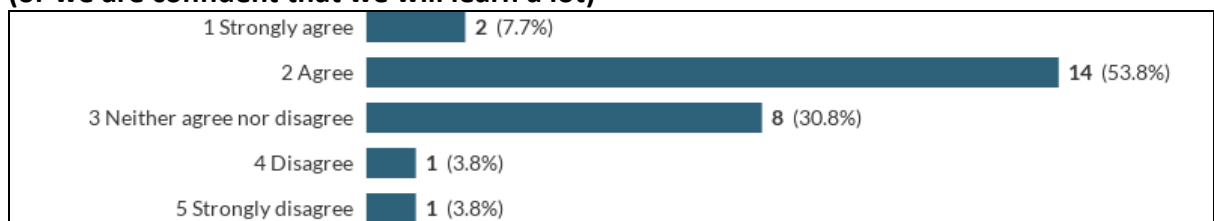


Of those who did not agree with the statement, some stated their Field Lab had taught them more about the underlying science to address their topic, one explained that “it introduced a different way of thinking about the problem” rather than any practical skills, or was focused more on testing a particular product.

### 3.2 Learning as a group - sharing, confidence building and empowering

The group learning aspect of the Field Labs was appreciated by respondents. Some 61% felt that their Field Lab group had **worked well together**, whilst some 30% felt they were unable to comment as they had only attended one event. One respondent felt that the discussion at their Field Lab was rather dominated by a particular group of people (Figure 3.3).

**Figure 3.3 The Field Lab group has worked well together and we have learned a lot (or we are confident that we will learn a lot)**



As the majority of respondents had only attended one meeting many of them felt unable to comment on any continuity of learning, responding that they “neither agreed nor disagreed” with the statement that the people attending the events changed too much to allow any continuity of learning, although over half “disagreed” or “strongly disagreed” (Figure 3.4). There was, however, recognition in the

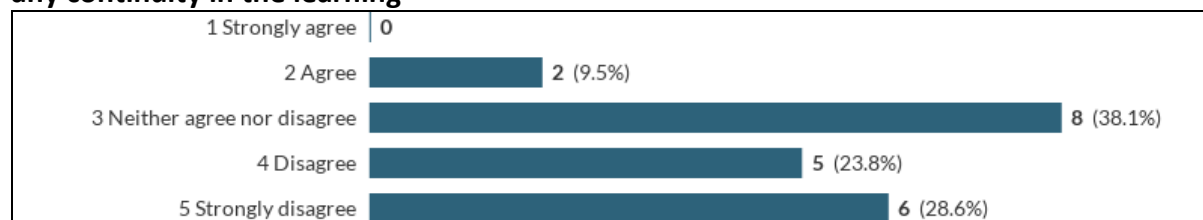
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some consistency Although these terms (skills and practices) could be interpreted differently by respondents, the survey interviewer explained to respondents that they were in relation to the Field Lab topic and provided clarification and examples if respondents were having trouble in answering this question.



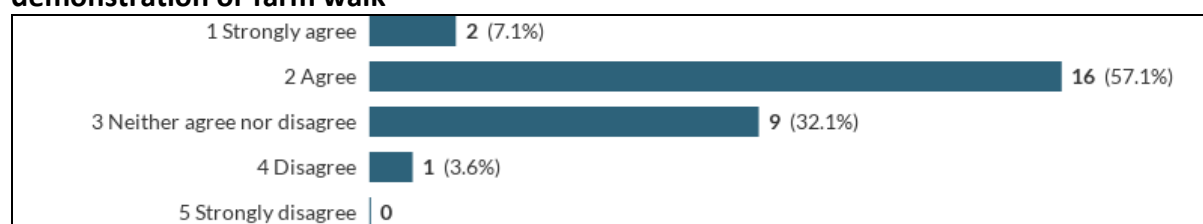
comments of the difficulties of attending all events because of time pressure and the geographical spread of members involved in some Field Labs.

**Figure 3.4 The people attending the Field Lab events changed too much to allow any continuity in the learning**



Over two-thirds of respondents agreed that the format of a Field Lab was a **better way of learning about a topic than other learning events**, such as farm demonstrations or farm walks (Figure 3.5). The comments provided suggested that Field Labs could be more intimate and focused than demonstration or farm walks

**Figure 3.5 The Field Lab is a better way of learning about a topic than a farm demonstration or farm walk**



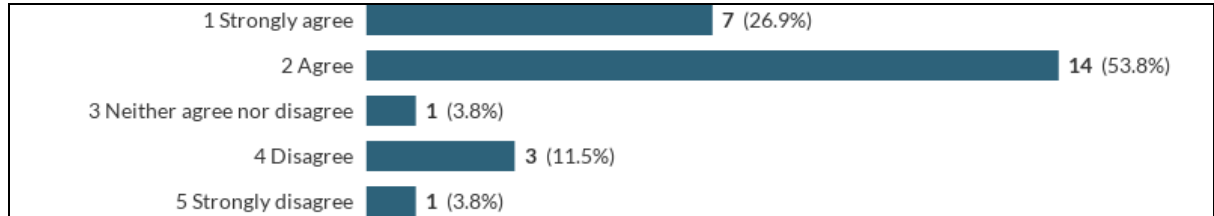
A range of comments were provided to qualify responses. Those who “agreed” that Field Labs were a better form of learning felt they generated better discussions with a range of people, including specialists in the field and were able to focus more on a particular topic. Those who could not answer or “disagreed” tended to have experienced Field Labs which were less participatory.

- *The Field Lab is more intimate. Able to get very easy access to a well-respected specialist. Easier way to discuss things.*
- *People have more of a stake in Field Labs, it is more participatory*
- *More discussion and different sorts of people from a range of situations*
- *They are more focused than a farm demonstration/walk and as trials are undertaken in a semi-controlled environment they should produce better facts and figures*
- *Definitely being able to take time and explore a wider range of topics.*
- *Much more focused, farm walks can go badly off topic*
- *It made you aware that things could be done differently*
- *Yes - even when the trial doesn't work*
- *It was like a farm walk in many ways.*
- *It was in fact very similar to a farm walk - it is not a typical Field Lab*
- *It is the same thing. Their farm lab event didn't really discuss trials*
- *They sat around a table and discussed the product. The farmer trialled the product and presented the results at the second event. There was nothing really to look at.*

- *There are a range of models to reach farmers and this is one good example but not better.*
- *I have got more out of doing a farm walk in the past*

Confirmation of the appreciation of farmer Field Labs as a way of learning is illustrated by the responses to the statement in Figure 3.6. Some 80% of respondents said that they will **definitely keep attending Field Labs** to learn more.

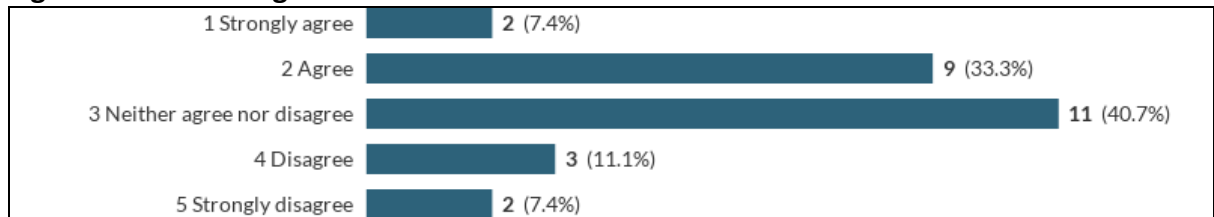
**Figure 3.6 I will definitely keep attending/hosting the Field Lab to learn more**



### 3.3 Learning about research methods

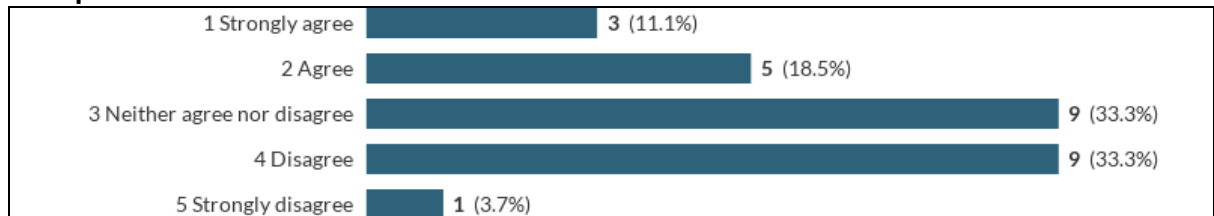
As Figure 3.7 shows, some 40% of respondents “agreed” or “strongly agreed” that they wanted to **get more involved in research** as a result of attending their Field Lab, although the same proportion “neither agreed or disagreed”.

**Figure 3.7 I want to get more involved with research because of the Field Lab**



More people “disagreed” than “agreed” with the statement that the Field Labs had helped them to design useful farm trials or experiments (Figure 3.8). Some of the respondents commented that their Field Lab did not really have a trial element. Others commented that some of the trials lacked sufficient robustness in design to obtain meaningful results.

**Figure 3.8 The Field Lab has helped me understand how to design useful farm trials or experiments**



For both these statements a high proportion of respondents “neither agreed or disagreed” suggesting that for them learning about research methods was not something they had considered as relevant.

## **4 The nature and extent of farmer learning as a consequence of participating in Field Labs: Results from detailed interviews**

### **4.1 Improved knowledge, skills, practices and understanding**

Interviewees were asked to what extent they had gained new knowledge and information; learned new farming skills and practices, and come to understand some of the underlying principles beneath these practices.

**Gaining new knowledge/information from the researcher or other farmers at the Field Lab** was mentioned by most of the interviewees who agreed that they had learned new facts about the topic of the Field Lab. However, the extent of learning depended on the baseline knowledge of the participant. For a few more informed participants the extent of learning was not that pronounced. For some it was more about “joining the dots” rather than picking up specific information about the topic.

Participants agreed that the format of the Field Lab in most cases allowed a good combination of technical, practical and financial information to be discussed. In particular they valued the opportunity to explore financial consequences of changing practices. As one said:

“Yes we have talked continuously about the figures. The costs per ha against benefits per ha. If it did take-off what would be the cost to a mainstream farmer? What would be the break-even cost of the equipment?” Respondent 4 (Compost tea)

The wood chip compost Field Lab provided comparable figures for different composts which were transferable to other farm settings. Although for the antibiotic group an interviewee (Respondent 2) said “The focus was on technical issues and they did not discuss finance or business matters”.

**Learning about new farming skills and practices (techniques/best practice)** was mentioned by some participants, although this depended on the Field Lab topic. This appears to be most apparent amongst the antibiotic Field Lab participants. One participant (Respondent 1) felt the Field Lab had made him “more enthusiastic to go down the homeopathic route”. He has learned how much of udder mint to use and how to rub it in and for how long. Furthermore these acquired skills gave some in this Field Lab the confidence to manage change on their farm. For example, one interviewee said he had learnt to manage Mastitis more effectively by being “brave enough” and this sometimes involved learning when not to treat it in certain circumstances. Also he claimed to have become more skilled in supporting others when using the homeopathic treatments, as he said it can be “really difficult” to make changes (Respondent 2).

**Understanding of the underlying principles underpinning the new techniques/measures associated with the Field Lab** was described as enhanced by four interviewees. For example, for Foam Weeding Field Lab, one (Respondent 10) said “Yes we did learn more about the underlying science behind the technology, particularly the role of the foam as a wetting agent, and the role that played”. In another example a participant of the Weed control in cereal crops Field Lab described how the outcome offered some rules of thumb:

“It gave us a scale of crops that we could use looking at different weed situations. If we had very bad black grass then we would choose winter oats, if the black grass was not so bad then plant triticale, if quite bad then barley. We could look at different crops and judge how severe the black grass was. Spring cropping was an obvious answer for a very bad situation. So there were lots of variables you could use as management tools on a field basis to combat weeds.” Respondent 6

He went on to say that at a wider level the Field Lab had helped them to look at the management in more detail:

“I was trained as a conventional farmer and we spent a lot of time looking at detail, for organic farmers the temptation is to think that you can’t do anything other than sow your crop and hope for the best. This brought us back to the details which I think has been missing in many organic situations. What happens is that you think things are so huge, subject to so many vagaries, and out of your control, but this helped remind us there are things you can control.” Respondent 6

In some cases Field Lab participants felt they had been given the tools, and the confidence, to go away and try things for themselves, as this comment demonstrates:

“It was more theoretical, we walked and talked and had a look at things, although we did handle compost, and the final mix etc. We got the basic recipe to go away and experiment with. We would have been confident to try it out.” Respondent 3 (Wood chip compost)

## **4.2 Learning as a group – sharing, confidence building and empowering**

Interviewees were asked about their experiences of learning as a group. Learning as a group was highly valued as “People were very free with their own knowledge” as one interviewee commented. Participants said that they learned from other people’s experiences and ways of doing things. One respondent talking about the Shropshire Sheep grazing in fruit orchards Field Lab commented:

“It provided a fertile forum for discussing these things. Also there was some interesting expertise there, a guy from Cranfield University and from Bulmers Foundation, and people who had looked at what the French were doing in terms of sheep grazing. There was a good healthy breadth of views and experiences which produced an interesting discussion. The fact that people have an open mind meant that no one was judging anyone else. People weren’t afraid to ask questions because that was the nature of it.” Respondent 7

Younger growers in particular valued the input from more experienced growers who they felt had a great deal to offer about management and the merits of different techniques. Learning from other farmers in the same locality was also seen as an important element of the Field Lab as one interviewee remarked “The more organic farmers I can meet the better, especially in the Suffolk area”. This is also a reflection of isolation some farmers experience. For this reason some felt that sometimes the venue or even the topic is less important than the general conversation, as one interviewee commented “It’s more about chatting and sharing as most of the time they are on their own in a field full of pouring rain so they want to talk to people”. Others concurred saying:

“One of the problems of being a grower is the isolation, you can quickly lose confidence and imagine that everyone is out there with a much better way of dealing with problems. If you can get together it ‘empowers you a bit’ your confidence grows as more people get involved and you can share your experience.” Respondent 3 (Wood chip compost)

“Yes the main interest of going along was to find out the results. It was the first thing we’d been to for years so the main impact for us was that it gave us confidence that something was going on in organic farming and that people were learning together.” Respondent 8 (Building fertility with leys)

Size and continuity of the group was felt to be important in achieving this group learning. As this participant noted:

“I’ve been to a few other events. It was very good I was very impressed. It was well organised, facilities good, the information was well prepared and presented and crucially had a large enough group to be dynamic and helpful, enough people to do that sharing of information, if 5 people had turned up we have got less out of the day.” Respondent 3 (Wood chip compost)

In this respect others said they had attended a meeting where only two farmers turned up and they felt this had not been effective. Whilst it is not possible to prescribe an ideal group size, 10 or more would appear to be a good target. The choice of host farm is also important, where the host is well established and recognised as a good farmer with suitable facilities, this is appreciated by participants.

“It was clearly at the right place, X had been doing it for so many years, he had an idea of different material what worked and what didn’t. His facilities were on par with what you would find on other farms, it was a realistic environment ....he’s a typical example of an average grower.” Respondent 3 (Wood chip compost)

Although Field Labs were described as fairly similar to organic discussion groups by some, others rated them as better as there was hands-on research. One interviewee who had attended the Compost tea Field Lab (Respondent 4) remarked “Basically we were physically doing the trial ourselves, actually doing it, not a researcher doing it and reporting back.” The only potential disadvantage with this envisaged by some is that the trials might not “be proof enough” to convince others to adopt the method.

Surprisingly, although farmers appreciated meeting together, the interviewees felt they could not comment on the learning impact of the Field Labs on their fellow attendees. When asked whether other participants had undertaken research on their farms most did not know and some suggested that there should be more collective feedback at Field Labs to explore this.

### **4.3 Learning about research methods**

Interviewees were asked if they felt they had gained practical research skills to help run their own on farm trials; started to think differently about finding solutions to problems and their own research needs; and were inspired to undertake their own on farm trials.

Some interesting points were raised about the level of understanding of research amongst participants. The point was made that a number already had a good level of understanding (and higher educational qualifications) already and were familiar with the process and interpretation of research (see Table 2.1). This led some participants to question the research approach adopted in the Field Lab. In the antibiotic trial, for example, one participant commented that, for the trial of udder mint they thought the group was “muddling a little” because they had never conducted trials before. The group had started by focusing on cows with mastitis and high cell counts but there were a lot of other factors that make it hard to compare results. The interviewee suggested a change of focus to those cows that had just calved; this meant that there would be much more similarity and comparability. They found that they “really enjoyed the research part of it”.

Another interviewee (Respondent 8) similarly voiced some criticisms about the Building fertility with leys Field Lab saying “It could have done with a bit more planning as to how they were going to measure the growth rates of the different leys-even if they used plate meter you would have some idea.”

However, not all participants interviewed had research experience. For example, in the foam weeding Field Lab the facilitator noted that when it comes to framing

appropriate research questions only “some of them can do it”. He noted that two of the participants have post-graduate qualifications in science and were able to frame questions quickly, whereas others had taken a more ad hoc approach.

**Farmers gaining practical research skills to help run their own on farm trials** –this was less clear. There were mixed responses from participants, some described how they had been practising the relevant skills, as one describes for the Controlling weeds in cereal crops Field Lab:

“He [researcher] showed us how to plant count with quadrats, how to structure and assess the trial. He came up with ways to assess the trials and give tools to do that, quadrants, methods which was new to the farmers.”  
Respondent 6

For him practical hands-on measuring made it different and was a distinctive element of the Field Lab and this was confirmed by another interviewee for that Field Lab. Whilst other Field Labs had involved some explanation of research practices, this did not always involve a practical exercise. For example, for the wood chip compost Field Lab an interviewee (Respondent 3) remarked “The researcher did talk about randomised trays and trials, they explained it all, why they were doing and how you could set it up.” Others, however, felt that they had not been involved with the research elements or learned any skills, as one (Respondent 1) in the Antibiotics Field Lab said “I didn’t see much of the research really”, he was involved in the practical side but left the researcher to deal with the data.

**Farmers thinking differently about finding solutions to problems and their own research needs** - on the whole there was little response to questions about whether farmers were thinking differently about their own research needs.

**Field Lab inspired farmers to undertake their own on-farm trials** – only a few of the interviewees mentioned that they planned to undertake research as result of attending a Field Lab. One participant in the Compost tea Field Lab explained that he intends to run a trial on his farm, he just needs to work out which area to do it in. He explained that he would be following research design and sampling protocols demonstrating his understanding of research methods saying:

“Ideally the trial should be in a small size field of around 5 ha then within that the plot should be subdivided and in these subdivisions there is a treated area and non-treated area, followed by another treated area.” Respondent 4

He said that there seems to be a lot of interest in the technique in this Field Lab and that three other people are going to participate in a trial. In another example, a participant of the Shropshire Sheep grazing in fruit orchards Field Lab said that the knowledge has taken him to a point that he would like to trial a different breed of sheep in this orchard but he did not have the sheep infrastructure or know-how and felt he had lost some time waiting for a response to his queries. In other Field Labs

some are inspired but envisage limitations to their own capacities, for example, one said:

“I would be inspired but I’m restrained. They were definitely looking for people to do it [research] but I know with my boss it’s a no, in terms of dedicating ourselves to it. We’re cheeky, we like to go along but we won’t participate afterwards.” Respondent 3 (Wood chip compost)

Another farmer who attended the Weed control in cereal crops Field Lab felt he was constrained by lack of access to high-tech machinery which he believed was vital for carrying out credible research saying:

“I would love to be in a position to relate the trials to end results. I would love to have a sophisticated combine which does yield mapping and relates the yield to the trial activities accurately. But I have not got the kit to be able to do it accurately. Accuracy is important.” Respondent 5

## **5 The nature and extent of farmer learning as a consequence of participating in Field Labs: Results from facilitators’ discussion forum**

### **5.1 Difficulty in providing evidence of change**

The participants found it very difficult to produce evidence of changed farmer learning and behaviour, and this relates in part to the ways in which the Field Labs have developed, reporting and feedback, the topic and stage of the Field Lab, the nature of learning and questions of attribution. Understandably, as evidence of change was not routinely collected and the facilitators were responsible for the delivery of the Field Labs, they had more to say about the Field Lab process and the limitations. However, facilitators were able to identify some aspects of learning which could be linked to Field Lab attendance. These, together with the difficulties in providing evidence, are explored in the next two sections.

### **5.2 Learning to ask the right questions**

Facilitators felt that they could not attribute change in farmer learning or behaviours directly to Field Lab attendance as many Field Labs were at too early a stage or not sufficiently developed, as this comment shows:

“In terms of evidence of changing behaviour -a lot of our Field Labs haven’t gone that far. For Compost teas, at the first session nobody quite knew what they came together for, all they knew was they were interested in finding out about compost teas, now there is some coalescing around an idea of what they want to do. They were kind of interested but didn’t know how to use



that interest, it [the Field Lab] gave them the chance to come together to test this out”.

However, arguably the whole Field Lab process is one of learning. In the early stages, for example, farmers learn how to formulate and agree to ideas to test, as one facilitator remarked learning involves “knowing to ask the right questions”. It is also a case of identifying the nature of research needed, as the facilitator explained for a particular Field Lab “we have been asking ourselves - what are we actually seeking to do? Full blown research or an initial sift [of information]?” Other facilitators suggested that early discussions in Field Lab are an opportunity to move forward and to prove the farmers’ interest is valuable or in some cases learning that it is not worth pursuing.

### **5.3 Farmer understanding of research**

According to the facilitators, farmers’ understanding of research develops as the Field Lab process develops. The early processes in a Field Lab appear to entail some negotiation and some education about the principles of research. Facilitators described how some farmers are inclined to just test “with and without” rather than setting up randomised trials. As one said “that’s because they are not researchers, they say ‘if I do this what does it look like?’ So it’s [the Field Lab] about understanding that does not mean anything”. Another facilitator commented that farmers’ research ambitions and expectations need to be tempered. In the Field Lab researchers explain what is possible and critically “what to test and what the results mean”, one facilitator explains the process:

“They come up with all these things ...I say it’s you who will have to do the assessment. We know we can only do two factors, it’s taking them through this process, and the how do you measure it? What are the parameters you are measuring? Its saying to growers how are we going to do it then? It demonstrates to them that doing research isn’t like falling off a log. Growers realise a trial isn’t something just added at the edge of the field”.

This realisation is part of the Field Lab learning process that farmers *should* go through, although the extent to which different farmers do so is unclear and hard to gauge or measure directly. Facilitators mentioned that some farmers were more comfortable with talking about research as a result of being involved in Field Labs. Overall, rather than point to specific learning achievements, facilitators said that Field Labs were more about “taking them [farmers] on a journey to understand how to look at their farms”. This highlights the importance of building up continuity within groups, which facilitators noted was absent in many Field Lab. They stressed that, while there were very positive learning outcomes for the host, this was not always the case for the participants. This was attributed to insufficient continuity within groups to develop learning amongst the participants to get them thinking in the same way. As one said “it’s not just a farm walk – you need to shift that thinking”. One example was given of a Field Lab which turned out to be a

demonstration rather than a learning activity, as the facilitators explained there was not the opportunity to build up group learning

“we didn’t get anybody who came back apart from the host so there wasn’t the continuity, the host had to go through the same process again each time, so it was more of a demo”.

## **5.4 Farmer understanding of Field Labs**

The previous comments link to concerns voiced by facilitators that farmers do not always understand what a Field Lab entails and this needs to be communicated better. Several had clear examples of farmers not understanding what they were participating in:

“Is it what they thought it was when they signed up? It is clear in the information but still people who turn up, and they don’t understand the concept of the Field Lab –and why should they? It’s the topic that’s drawing them in, not the process.”

Farmers had attended clearly expecting a farm walk, and this had been complicated by some early Field Labs (Foam Weeding) being demonstrations:

“We talked at the research end about managing expectations, we have one chap turn up thinking that it was going to be a farm walk and was disappointed that was not what it was going to be, so it is about managing expectations.”

The management of expectations had two facets, as above those of the farmers, but also those of the researchers:

“There is a perception that farmers expect to get spoon-fed by researchers and once they understand it is not like that then are much more likely to get involved in lots of things.”

In the more successful Field Labs there was an opinion that those perceptions are changing, that barriers between farmers and researchers are being broken down.

## **5.5 Facilitator understanding of Field Labs**

There was also discussion amongst the facilitators about the scientific ambitions of the Field Lab and it was apparent that they had different interpretations of the rigour of research undertaken and the extent of scientific understanding farmers were expected to achieve. Some facilitators felt that the strength of the Field Labs was the interactive learning which they see as more important than the science, as one facilitator remarked:

“I don’t think that the Field Lab is forefront science to me and never has been for me...I’ve never tried to do good science it is an interactive learning process and if along the way if we can do some better, some reasonable, data then ok, but the way we collect the data, the way we use the farmers it can never be robust but I can sort of live with that, I think yeh ok, but the learning between each other is great.”

Another facilitator, who argued for the importance of demonstration, reinforced this view saying that, “the fact is they don’t understand the science and they don’t understand the research, the statistical component of it and seeing is believing.”

Others, however, emphasise the importance of the scientific approach, as one said:

“I always keep in the back of my mind about trial rigour and there is rigour and then there is rigour, it still has to be statistically significant to a level, ok we might not get to 95% because there are other things involved in it but for there just to be one reference is pointless. ...That can be frustrating and you can come across as a bit of an old nag.”

There was agreement that the best Field Labs had identified a gap in the scientific literature and worked with engaged farmers who were prepared to sustain the trials necessary to test the case. This required an engagement from the farmers in working in a manner that they would not necessarily find comfortable, more carefully structured trials than they might otherwise elect to do. Simultaneously the researchers had to be prepared for the farmers to lead the process, which might take more time and be dependent on the key people such as the hosts.

## **5.6 Farmer implementation of research on their own farms**

All agreed it is hard to attribute learning about research skills and principles to Field Lab attendance. This is further complicated by the fact that many of the farmers are already experimenting, frequently trying out new ideas to improve their farming system. It can be hard to assess the added value of the Field Lab for these so called “serial triallists”. This can be an opportunity as it means engaging these farmers is easier, however, it is also potentially a barrier as these farmers can get excited and over ambitious in their research aims but also often want pragmatic solutions rather than results that might be judged as rigorous. However, it was agreed that the Field Lab could help to improve their research practice and in one case at least it was clear that attendance at a Field Lab had helped to improve research skills. A poultry farmer, although trying out ideas previously before the Field Lab “hadn’t done any measuring, nothing systematic” but had started to measure and compare flocks according to research protocols so according to the Field Lab facilitator “he definitely improved those activities”.

Facilitators also agreed that, although specific learning could not be identified, the Field Lab gave farmers increased confidence to try things, as one said “May be it

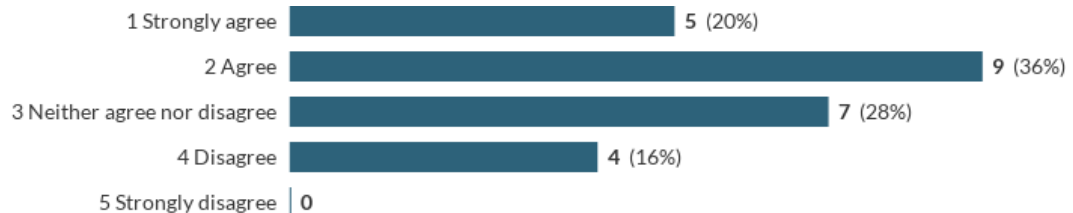
gives them confidence to try different materials, e.g. for composting, even if they don't replicate the exact practice that has been trialled".

## 6 Extent of farmer behavioural change: Results from telephone survey

### 6.1 Implementing different practices on the farm as a result of the Field Lab

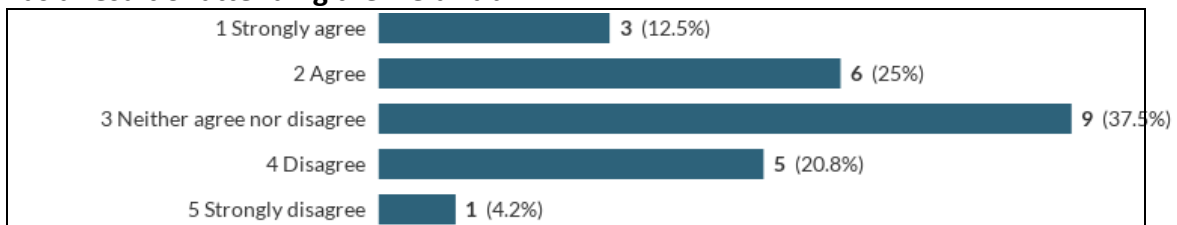
The majority of respondents (56%) were **inspired by the Field Lab** to do something new or differently on their farm (Figure 6.1). This mainly involved thinking about trying new products or management techniques. However, 28% neither "agreed" or "disagreed" that they had been inspired and 16% did not agree.

**Figure 6.1 I was inspired by the Field Lab to do something new or differently on my farm**



As Figure 6.2 shows some 37% responded that they "agreed" or "strongly agreed" with the statement that they **have changed or are planning on changing** some of their practices on their farm as a result of attending the Field Lab. The same proportion, however, could "neither agree nor disagree" with this statement, whilst a quarter (25%) of respondents "disagreed" with this statement mainly suggesting that the changes required were not suitable for their particular farm or circumstances.

**Figure 6.2 I have changed or I am planning to change some of my practices on farm as a result of attending the Field Lab**

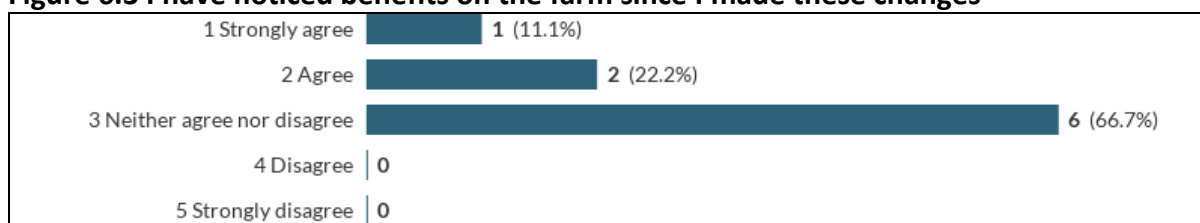


### 6.2 Impact of changes

When asking questions about the outcome of changes made since attending the Field Lab for many it was too early to tell and the response rate for these questions dropped from around 30 to 9 (Figure 6.3). Only 3 respondents had actually noticed

benefits on the farm since implementing the changes, whilst 6 stated that it was too early to notice any benefits.

**Figure 6.3 I have noticed benefits on the farm since I made these changes**



Again a high proportion of respondents “neither agreed or disagreed” with these three statements suggesting that for a number of participants changing practice was not relevant or an immediate consideration.

### **6.3 What makes a Field Lab effective and suggestions for improvement**

An open question at the end of the survey asked respondents to comment on one key feature of their Field Lab that had made it effective. The 17 responses to this question can be grouped into 4 main responses:

- The discussions and pooling of different experiences with people in the group (8)
- Learning specific skills and knowledge (4)
- Having specialised, good quality speakers (3)
- The openness and honesty of the host farmer (2)

Finally, respondents were asked an open question to suggest how the Field Labs could be improved. Suggestions included:

- Better facilitation of some events to ensure that the discussions keep to the topic
- Holding some events that are targeted at the smaller producers.
- Offering more events to increase chances of busy people being able to attend events
- Ensure events occur at the right time of year to observe changes
- Better promotion of events
- Better dissemination of the results to a wider audience through the website etc.
- Greater involvement with researchers to set up more robust trials

## **7 Extent of farmer behavioural change: Results from detailed interviews**

Participants were asked about doing or planning to try some different practices on the farm as a result of attending the Field Lab, the impact of this change, the financial impact of the change, and any wider environmental impact.

### **7.1 Implementing different practices on the farm**

With respect to doing or planning to try some different practices on the farm not many interviewees had made immediate changes as a direct result of attending a Field Lab. For many it was too early in the Field Lab process for useful results to be available, also as one remarked for the Building fertility with leys Field Lab:

“You don’t just go home and implement it, we might do things differently in the future or look at things differently as a result but there wouldn’t be anything immediate.” Respondent 8

One participant referring to the Shropshire Sheep grazing in fruit orchards Field Lab remarked that it was more about understanding the possibilities than encouraging change:

“It [the Field Lab] is by its nature quite research based. It is not about encouraging farmers to adopt certain practices it is more about a conceptual understanding of what might be possible out there.” Respondent 7

In some cases results might not be transferable to other farms. For example, for the Controlling weeds in cereal crops Field Lab the interviewee (Respondent 6) noted “On clay soil I would say we are fairly typical, so yes [results are transferable] but it might not work on different soil types”.

For some Field Labs it is clear that little change would have resulted, notably the Foam weeding Field Lab which was a demonstration of equipment. As one participant (Respondent 10) remarked “Everyone had a go with the equipment but it was quickly apparent that it was just too expensive for most of those people taking part”.

Some interviewees said they were considering changes but still looking for suitable plots and resources, as one interviewee (Respondent 3) for the Wood Chip compost Field Lab explained:

“We are looking for the right material, we have talked to tree surgeons and want to identify potential sources of wood chip and find the space to do it. So there is potential.”

One participant in the Shropshire Sheep grazing in fruit orchards Field lab (Respondent 7) remarked that if he had had information about the financial impacts of the practices being tested he would have been able to make a faster decision about changing. He needed to know before committing to a sheep flock whether it would make economic sense.

## **7.2 Impact of changes**

With respect to any benefits from the changes made interviewees found it hard to comment. Also it is clear that not all changes are problem free. One participant of the Weed control in cereal crops Field Lab described how he had moved to spring cropping partly as a result of talking to farmers at the event but that brought some unintended consequences due to extreme weather. He found that the soil did not dry out sufficiently so he could not get a good seed bed without a power harrow to “knock the soil into shape” after which a contractor drilled with a big drill and the result was that the soil became really compacted.

## **7.3 Financial impact of changes on the farm**

Given that few interviewees had implemented practice changes, not many were able to talk about the financial impact. For the antibiotic Field Lab there was a mixed view, as one (Respondent 1) explained they were not sure of the financial benefits of using less antibiotics, as udder mint itself is expensive. He explained that he sees the benefits are being antibiotic free rather than any savings per se. They also think that they had called the vet less but do not have evidence of that. Another farmer in the group had also halved his antibiotic usage and this would have been a considerable saving for him as he had a large herd and used antibiotics more regularly.

There are more insights from host (trial) farm data about financial savings. In the Compost tea Field Lab the interviewee (Respondent 4) noted that the host farm was able to cut his fertiliser bags by half and was able to reduce his fungicide rate and get the same yield as his neighbouring plots, giving a higher gross margin overall. Similarly in the Wood Chip compost Field Lab figures were presented to show how wood chip, compared to bought-in compost, helped the business. Others pointed out that there was financial information in some Field Lab reports. However, for some topics, such as Weeds in cereal crops, interpretation of figures needs to account for fluctuating crops prices. For example, one interviewee (Respondent 6) pointed out that the financial impact of black grass in a year with high cereal prices was less significant. In some Field Labs, Shropshire Sheep grazing in fruit orchards for example, there was limited discussion of financial impacts of the practices being tested.

## **7.4 Wider public benefits of the Field Lab**

Not many interviewees could identify any wider benefits from the Field Lab apart from one interviewee who suggested that there should be an environmental benefit from reduced pesticide and chemical fertilizer usage reported in the compost tea trial. Also the public benefit of using fewer antibiotics was noted as an outcome of the Antibiotics Field Lab.

# **8 Extent of farmer behavioural change: Results from facilitators' discussion forum**

## **8.1 Implementing different practices on the farm**

As with learning, facilitators found it hard to attribute on-farm change of practice directly to Field Lab attendance. As one remarked "It is hard for people to know whether they are doing things differently, sometimes they want to reframe it as their idea". This participant raised the important problem of the perception of the change having taken place and attributing that change to participation in the Field Labs. One facilitator pointed out impact can be measured in different ways:

"It would be an A1 impact if they were doing things differently, but it's also an impact if they learned about something and perhaps had the intention to change in the future or made a conscious decision not to change".

It can also be measured in term of farmers acquiring the confidence to try things out on their farms. This can be especially the case, where Field Lab results are convincing, as this example shows:

"There will be benefits from the wood chip Field Lab, the last meeting they were looking at significant results. They were saying that plants growing in the wood chip compost weren't better than the others grown in commercial compost but if it shows that you can have as good a result using home made compost as you can with some commercial peat ones then that is an important result and gives people confidence to try something".

Translating that interest into change was viewed as part of the process of the more successful Field Labs where engagement and participation were characterised by commitment and continuity in group learning. Facilitators agree that continuity in Field Lab participants leads to a better chance of uptake of ideas. For example, at the last woodchip compost Field Lab there were people who had attended at least 2 or 3 events and that was a useful exercise that had allowed some group learning to develop and had enhanced confidence.



Facilitators pointed out that the nature of farmer commitment and engagement varies, for example:

“You also need commitment - some make a small charge to commit people. Some farmers are doing it as a favour to us rather than realising they can gain. That is happening and each individual needs to go through that process.”

## **8.2 Financial impact of making changes on the farm**

With respect to financial impact of on farm change, it was not possible for facilitators to comment specifically, however, they did note that it was hard to differentiate financial from business impacts as a whole, as one explained:

“Finance is only a part of business impact, it’s much fuzzier. The actual things we are looking at like the effect of udder mint on cows - if it works there is a practical solution and financial benefit, it’s integrated”.

## **8.3 Wider public benefits of the Field Lab**

It was also not possible for the facilitators to identify specific public benefits from any Field Lab induced change, although they were confident that there would be some public benefit as very often Field Labs are trialling sustainable practices, such as building fertility in leys, as one remarked:

“Public benefit we have discussed very briefly, but most of the Field Labs are about agro-ecological techniques which if they are successful will deliver environmental benefits and hence public benefits. We haven’t been asking participants but I’m sure there are public benefits”.

## **8.4 Evaluating success and suggestions for improvement of Field Lab**

What constituted success for a Field Lab divided the facilitators, as it tended to reveal both their professional backgrounds and implicitly ideas about the progress of the sector. Broadly, it was agreed “the success of a Field Lab would be the farmers wanting to go it alone”; a Field Lab focused on oats was held up as the exemplar of that success. In another example, the Field Lab group discussing alternatives to antibiotic use had just decided: “they have said right we are going to have a wrap up meeting in November and they have said we want to keep going in some form”. This would lead to self-sustaining groups, similar to the private discussions already in existence as described by one facilitator “I run groups and we charge for all of them, what you do is define what they cover, it is my time, it is so many meetings, it is lunch, you pay once a year”.

### **Monitoring and feedback**

Currently evidence of change is not routinely collected, as one facilitator noted:

“We haven’t asked them about the outcomes. We’ve just done Field Labs. It would be helpful to know what the impact is. No feedback is sought from the Field Lab. We have an evaluation at the end of the session but not months later.”

Facilitators were clearly interested in monitoring change, one commented for example

“The first Field Lab I did there were two apprentices- I would be interested to see how much they took away..... Also whether they can take it forward into their farming careers.”

### **Engaging farmers**

It was clear to some that Field Labs had not always been promoted in a way that built their success, through targeting and building the size of the group, nor had they at explained their true purpose, for example, some felt that calling Field Labs “events” was to misrepresent them:

“Maybe we should improve our processes... if farmers have an idea and we need enough people to come to the session we need to promote it, we also have a target to meet so there is an incentive to get people. We need enough critical mass for discussion and engagement but we are wondering if there are other ways like using social media for example to attract people at the beginning. This would help where growers are geographically dispersed.”

The comment on gaining a critical mass for discussion and engagement concurs with comments about farmer group commitment made earlier.

In terms of engaging farmers, the facilitators felt that more active and engaged type of farmer was becoming more common, but that more passive and hard to reach remain, also that there is a divide between those who engage with social media and those that do not who are “being left behind”. All of the facilitators were mindful that at present most participants are certified as organic. There were suggestions about partnering with others, levy bodies, farming organisations and producer groups to deliver the Field Lab model.

With respect to hosting Field Labs the levels of support available mean that those who host, and as such may be the principal beneficiaries of the Field Lab also have to be prepared to provide considerable support to it:

“That means that you are in the hands of a farmer to do a lot of stuff for you, do loads of stuff and record loads of stuff for you and that means you can only do Field Labs with people who have that nature.”

## 9 Conclusions and Recommendations

### 9.1 The evidence of farmer learning

It is apparent that significant learning has occurred as a result of attending Field Labs. Good correspondence between the three data sources confirms that topic knowledge, practices and understanding, and research understanding has been enhanced. Most evident is the enthusiasm for group learning.

Farmer learning is enhanced by the Field Lab experience although there are differences in the nature of this learning. Most distinctive is the reported increase in understanding of the topic while learning skills and practices is less discernible. For example, the majority of survey respondents (86%) agreed that their understanding of the topic had been enhanced by attending the Field Lab while some 37% agreed that the Field Lab gave them the chance to learn new skills and practices. In many cases learning appears to be more about a wider understanding of the subject than about learning specific skills and practices. In this respect learning is described as “joining the dots”, understanding the underlying science, being given the tools and the confidence to go away and try things, as well as introducing a different way of thinking about a problem. This is very much in line with the Field Lab aim to enhance critical thinking.

Some 40% of survey respondents agreed or strongly agreed that they wanted to get more involved in research as a result of attending their Field Lab, although there was less interest amongst the detailed interviewees in undertaking research on their own farms. It is clear that, while a good proportion are inspired to do research, often they are were not sufficiently equipped or resourced. Aligned to this, more survey respondents disagreed than agreed that Field Labs had helped them design useful trials on their own farm. With respect to acquiring research skills this depends on the Field Lab topic and whether the event included a practical research element. As described for topics and skills, learning about research appears to be more about formulating ideas. The facilitators noted that many Field Labs were still in early stages and as such learning is a case of identifying the nature of research needed. It is more about agreeing and formulating ideas to test, and “knowing to ask the right questions”. Farmers’ understanding of research (and its potential) develops as the Field Lab process develops. The early processes entail some negotiation and some education about the principles and the realities of research. However, a number of respondents already had a good level of understanding about research and formal trials and were carrying out experiments on their farms. The added value of the Field Lab experience was hard to discern in these cases. This accords with facilitators’ comments on the difficulty of attributing learning about research skills and principles to Field Lab attendance.

## **9.2 Evidence of farmer behavioural change**

Evidence of the impact of Field Labs is less clear with respect to farmers changing practices. Likewise making a direct link between the learning reported by respondents and changed behaviour as a result of attending a Field Lab was difficult to ascertain. Whilst it is clear that Field Lab participants are inspired to do something new or differently on their farm (just over half of survey respondents), actual change or plans to change were less evident (37% of respondents). This was backed up by responses in detailed interviews. However, translating interest into change is seen to be part of the Field Lab process. Commitment and continuity in group learning and good demonstration of outputs in Field Labs is more likely to give participants the confidence to make changes. For those who had changed practices, it was too early to identify any impact of these changes. Only three survey respondents agreed that they had noticed benefits on the farm since making changes.

## **9.3 The Field Lab concept**

The fact that the majority of respondents (80%) wanted to continue to attend Field Labs is testament to their popularity amongst the farmers consulted. The majority of survey respondents (>64%) agreed that the Field Lab format was a better way of learning than farm demonstrations or farm walks. The special attributes they identified included: the intimacy of a Field Lab and allied to this that fact that people “have more of a stake”, and access to well-respected specialists. Some liked the focus the Field Lab offered while others appreciated the time to explore a wider range of topics. However, these sentiments were not universal, some found the Field Lab experience to be no different to that of a farm demonstration or walk.

Working as a group is a distinctive element of Field Labs and is highly valued, some 62% of survey respondents felt they worked well together. The openness and sharing ethos were highlighted as important in instilling confidence and a sense of empowerment. This was enhanced when groups were larger (>10) and had a good mix of participants, including some experts, as this enabled a “good healthy breadth of views and experiences” and provided the most “fertile forum” for discussing things. The commitment, enthusiasm, honesty and expertise of host farmers was also seen to generate effective group learning and inspire confidence.

A further attribute is the opportunity Field Labs provide for developing participatory learning over time. This, however, relies on sufficient continuity within groups to develop and build on learning amongst the participants and to “get them thinking in the same way”. Poor attendance (due to time pressures and distance to travel) and poor commitment to Field Lab groups can mean that there are positive learning outcomes for the host, but less so for one-off participants.

The unique characteristic of Field Labs is the opportunity to discuss, and carry out, research under the guidance of experts and, through this, to develop some research capability or literacy. Whilst some respondents alluded to this latter aspect, it is clear

that not all appreciated that this is what a Field Lab entails or aspires to, with “the topic .. drawing them in, not the process”. This is apparent from the respondents’ differing understandings of, and expectations from, the Field Labs. Linked to this is the finding that facilitators have differing interpretations about the level of scientific rigour of the research undertaken at Field Labs; and about the extent of scientific understanding farmers are expected to achieve. Some felt that the strength of the Field Labs was the interactive learning while others emphasise the importance of good quality science. Furthermore there were some concerns amongst farmers and facilitators that some of the trials lacked sufficient robustness in design to obtain meaningful results. In part this reflects differences in understanding about what constitutes useful results.

Thus Field Labs offer a distinctive approach to farmer engagement which is appreciated by participants. The strength of the approach, beyond others (e.g. demonstration, walks) is the opportunity to explore and research topics of interest in the company of experienced and expert participants, and the interactive nature of learning this involves. This learning can be optimised when farmers show commitment and understanding of the Field Lab aims, and researchers and facilitators agree on a common understanding and approach. The reliance on collective farmer engagement, however, can be a weakness; if some farmers do not engage or have ‘a stake’ in the Field Lab process the interactive aspect is undermined and this can impact the group as a whole. In this respect the Field Lab approach appeals to farmers who are willing to invest time and effort in the process and be comfortable in interacting and sharing information with other farmers, and not to those who prefer a more top-down style of dissemination. A further issue with an approach that requires ‘buy-in’ from participants is that of managing expectations.

With the aspirational aims of Field Labs and the diverse nature of the topics and the participants, inevitably aligning and managing farmer, researcher and facilitator expectations is difficult. Whether this is necessary for more effective delivery needs further exploration and those involved need the opportunity to meet and discuss these aspects. For example, some standardisation in the process (e.g. early targeting, delivery, event format, dissemination of outputs, between event communication, Field Lab life-span) as well as evaluation and identification of indicators for success might be considered.

#### **9.4 Comparing Field labs with other approaches**

The importance of practical experience-based learning involving groups of farmers, as opposed to knowledge transfer, has long been recognised by those concerned with dissemination in agriculture. Approaches that follow these principles that might be compared to Field Labs include: Demonstration Farms (implement tried and tested technology in a commercial environment and allow farmer-farmer interaction); workshops (combined expert presentations and field demonstration); farm walks (used as method for demonstrating conservation and compliance

practices); Monitor Farms (MF) (group members with a facilitator agree a range of commercially oriented improvements on a selected MF with intention that changes will be adopted by the group and a wider community of farmers); farmer discussion groups (informal groups who meet regularly focusing on a particular issue often with facilitator or agronomist support); and farmer networks (facilitated connection between farmers often based around practical activities encompassing new and innovative ways of doing things).

As with the Field Labs, studies of these approaches have shown that farmers particularly value the practical element of these approaches and the opportunity to interact with, and learn from, other farmers. Where evaluations of the impact of these approaches are available they suggest similar experiences and impact to the Field Lab approach. For example, studies<sup>3</sup> found that some 40-47% of respondents surveyed had either made changes or were intending to make changes as a result of their attendance at a demonstration event. Similarly the MF approach has been found to be beneficial in bringing about increased efficacy in the farm business in the MF and amongst group members, as well as bringing about changes in farmers' mind-sets and in their general approach to farming<sup>4</sup>. However, compared to Field Labs, demonstration events and MFs have a focused approach and as such it is easier to monitor and demonstrate uptake of specific practices or farm changes. They also have a commercial appeal to farm and attract good attendance. They do not share the collaborative research element characteristic of Field Labs. Field Labs have more in common with farmer discussion groups which due to regular meetings are highly regarded as they encourage belonging, trust, bonding, 'enjoyment' and the likelihood of a closer interchange of farm experiences. However, some studies rank discussion groups as low in terms of popularity with farmers and see the benefits as limited to progressive farmers. This has some resonance with Field Labs which tend to appeal to organic farmers who are already 'engaged' in information seeking, particularly the hosts who are innovative and often already active in research. Studies of farmer networks have identified the importance of facilitation and of farmer leaders in establishing, sustaining and retaining active farmer network members. This supports Field Lab findings which show that the enthusiasm and experience of the host is highly valued.

Comparison of Field Labs with other models is difficult since studies of dissemination and knowledge exchange have shown that there is no 'one size fits all' approach. Information needs, sources and uses vary according to farm type, size, age of farmer and other characteristics. Similarly, each communication mechanism has its own distinct characteristics and merits according to topic, audience, objective and overall context. In terms of comparing the impact of different approaches, studies are limited, particularly with respect to learning. However, it would appear that the unique approach of the Field Lab model is especially suited to farmers willing to experiment, act collaboratively and share knowledge, characteristics often associated with organic farmers.

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3 (see Burton et al., 2006. Influencing positive environmental behaviour among farmers and landowners – a literature review. Report for Defra)

<sup>4</sup> ADAS. 2008. An investigation into the role and effectiveness of Scottish Monitor farms

## 9.5 Attributing learning and behaviour change to Field Lab attendance

It is clear from the research reported here that it is difficult to produce evidence of changed farmer learning and behaviour which can be directly attributed to the Field Labs. This is largely because:

- Field Labs are at different stages, a number have not developed sufficiently to result in measurable learning and change in practice
- The majority of respondents had only attended one meeting and as such their perspectives about, and opportunities for, learning and translating that learning into changed practice were limited
- There has been limited monitoring by facilitators to assess changes in learning and practice
- Field Labs have different topics, ambitions and formats and as such respondents have diverse experiences and opportunities for learning and changing practice
- Learning, where it does occur, depends on the Field Lab topic, as well as the participants level of understanding
- A number of respondents already had a good level of understanding about research and formal trials and were carrying out experiments or trialling new practices on their farms. The added value of the Field Lab experience was hard to discern in these cases
- 'Soft' learning tends to predominate with gains in confidence and wider understanding of topics, and in research possibilities, which is harder to evaluate than learning specific skills and practices
- Learning and any associated change in behaviour takes time, it rarely occurs immediately after attending Field Labs. It is therefore too early in most cases to identify changes in behaviour on participants' farms and any impact of these changes. For this reason inspiration and intention to conduct research or change practice can be taken as indicative

## 9.6 Recommendations for enhancing farmer learning and behavioural change

The Field Lab process (promotion, format, venue, follow up etc) has a direct effect on the extent and nature of learning and prospective behaviour change. The following recommendations suggest ways of enhancing the Field Lab so that more farmer learning and behavioural change can be achieved.

**Improve targeting** at the promotion stage to explain to farmers clearly about the aims of Field Lab, this will ensure that farmers engage and commit to the Field Lab.

**Improve farmer commitment** to Field Labs and continued attendance as this enhances learning (larger groups also enhance learning). The majority of survey respondents had only attended one meeting. Suggestions for improving attendance and interest include: levy a small charge; offer more events to increase chances of busy people being able to attend; hold virtual online meetings to allow farmers to connect if they are geographically dispersed; and encourage communication between events through online activities.

**Continue to ensure** events occur at appropriate venues, with the right host and expertise and at the right time of year to observe changes. A respected host and expert are important to inspire confidence and support group learning.

**Widen participation.** Participants appreciate diverse groups. Conventional farmers should be encouraged as their perspectives and experience are valued. Consideration should be given to partnering with other organisations, such as levy bodies, farming organisations and producer groups to deliver the Field Lab model.

**Improve dissemination** of Field Lab outputs to participants with distribution of research reports and possible development of Fact Sheets summarising outputs. **Dissemination to a wider audience** should be also encouraged through the farmers' own networks and through the website.

**Compensate Field Lab hosts** adequately. Although they are the principal beneficiaries of the Field Lab, they have to be prepared to provide considerable support and should be sufficiently compensated.

**Provide opportunities for facilitators to meet** on a regular basis to share best practice; and to share their understandings of: what the Field Labs are trying to achieve; what constitutes a successful Field Lab; and how this can be accomplished. The Field Labs are a learning experience for the facilitators too. Some standardisation in Field Lab delivery could be considered, although this discussion needs to consider the diversity of Field Lab topics and participants.

**Agree on a suitable time span and strategy for completed Field Labs.** Some Field Labs can produce effective results after 3-4 events others require more time and resources to allow promising ideas to develop and consolidate. At the completion of Field Labs a dissemination plan and strategy for a farmer self-supporting group might be considered.

**Monitor and evaluate** Field Lab progress from the start, facilitators should encourage feedback from farmers and be able to assess the extent of their learning and changes on participants' farms. This monitoring and evaluation would need a methodology (with suggested indicators) and could be conducted by an external organisation to ensure objectivity.



# Appendices

## Appendix 1 Detailed interview schedule

### Evaluation of Future Farming Field Labs In-depth questionnaire – participating farmer

Name:

Role within business:

Interview length:

#### Background information:

1. Please can you tell me a bit about you and your (farm) business
  - how long the business has been running,
  - size of business (ha, number of people employed);
  - what you produce
  - conventional/organic
2. What sort of farmer would you say you are? (e.g. Smallholder, commercial farmer, traditional hobby farmer, technical, efficient, innovative?)
3. Can you describe your approach to information seeking –do you attend events regularly, network with other farmers, use farmers organisations, read research articles?

#### Field Labs –the approach

4. How did you first hear about the Field Labs and what had you heard about them? (What did you know about the Field Lab approach before you attended an event? (ie what is your understanding of the 'Field Lab approach'?)
5. What was the motivation for you and your business to become involved in the Field Lab? (Was it the particular topic or the opportunity to meet with other farmers?)

#### Event Evaluation

6. What has your involvement been in the Field Lab programme? How many events have you attended?

7. Can you tell me briefly about the topic?
8. Who and how many attended the event(s)? Did you know any of those who attended the event beforehand?
9. Can you talk me through how the event/s was run? Explore level of practical work/talking/listening. Was this mix satisfactory?
10. Was there a good balance of technical and financial/business discussion/information?
11. To what extent was there a sharing of knowledge by those attending the event?
12. What was the role of the researcher?
13. Did you have an opportunity to express your own views/ideas within the group? If so, did you feel comfortable doing this within the group?
14. Learning as a group is a key part of the programme. What, if any are the benefits/disadvantages of learning in this way?
15. Was there anything in your opinion that made the event stand out as being particularly good or effective?
16. Were you kept well informed of the Field Lab activities following the event? Did you keep in touch with the group/host?
17. If you attended more than one event how did they differ in terms of what was discussed/achieved/participants/group dynamics?

### **Learning impact**

18. Did you gain any new knowledge/information from the researcher or other farmers at the Field Lab events?
19. Why do you think this topic was particularly suited to the FL approach? (or perhaps it wasn't?)
20. Did you learn any new farming practices (techniques/best practice) or skills from attending Field Lab events? If yes, what did you learn? (single loop learning)

21. Has the Field Lab helped you to understand some of the underlying principles beneath the new techniques/measures that you looked at? (double loop learning)
22. One of the aims of the Field Labs is to enable farmers to gain practical research skills that help them to run useful trials on their own farms. Did you learn anything new about running field trials from the Field Lab? If yes, what did you learn? (triple loop learning)
23. Has the Field Lab inspired you to undertake your own farm trials or are you planning any in the near future?
24. Has attending the Field Lab event made you think differently about finding solutions to problems or issues you have come across in your farming practice and your own research needs?
25. Having attended a Field Lab event/s do you now have a better understanding of the best ways to obtain and express any research assistance you may need in the future?
26. What about other participants-how do you think they benefited?
27. Have you shared your learning with other farmers? (wider dissemination- does the FL have an impact beyond the group of participants?)

#### **Behavioural change impact**

28. Have you tried or are you planning to try some different practices on your farm as a result of the Field Lab event? If yes, please give details. If not, why not?  
Lack of viability for farming system/didn't seem useful/relevant
29. If yes, what was the outcome? Beneficial/detrimental to your system/output?  
Will you continue with the new practice?
30. What about other participants-have they made any changes?

#### **Financial impact**

31. Was any financial information about the Field Lab topic shared with you, was the level of information acceptable, how was it done and could it have been done better?

32. What percentage (or £) increase/decrease in annual financial performance (e.g. Profit) you expect to achieve (or have achieved) as a result of the changes you have already made/are currently making as a result of information gained from the Field lab?

**Other impacts**

33. Do you think there are any wider public benefits of the Field Lab? E.g environment, social

34. Do you think the Field Lab has made a good contribution to the wider understanding the FL topic? (the body of knowledge)

**Overall evaluation**

35. How do you rate the value of the Field Lab approach compared to all of the other forms of information/advice that you receive regarding changing farm practices?

Better/same/worse/different

36. What if any are the key benefits of the Field Lab approach versus others? To what extent did it help address the issue/FL topic?

37. How might the overall programme evolve for the future? How could it be improved? What would be your advice to a new Field Lab?

38. Do you have any ideas for future Field lab topics?

39. Would you consider taking part in another Field Lab in the future?

40. Any other comments on the Field Lab programme?

**Thank you**

## Appendix 2 Telephone survey questionnaire and data

Attitudinal statement	Strongly agree		Agree		Neither agree nor disagree		Disagree		Strongly disagree	
	No.	%	No.	%	No.	%	No.	%	No.	%
1. The field lab gave me a clearer understanding of the topic we were investigating	13	44.8	12	41.4	4	13.8	0	0	0	0
2. The field lab gave me a chance to learn new skills and practices	2	6.9	9	31	14	48.3	2	6.9	2	6.9
3. The field lab was disappointing , I was expecting to learn more about the topic	0	0	2	7.1	4	14.3	13	46.4	9	32
4. I want to get more involved with research because of the field lab	2	7.4	9	33.3	11	40.7	3	11.1	2	7.4
5. The field lab has helped me understand how to design useful farm trials or experiments	3	11.1	5	18.8	9	33.3	9	33.3	1	3.7
6. I was inspired by the field lab to do something new or differently on my farm	5	20	9	36.0	7	28.0	4	16.0	0	0
7. I have changed or I am planning to change some of my practices on farm as a result of attending the field lab	3	12.5	6	25	9	30.0	5	20.8	1	4.2
8. I have noticed benefits to the farm business since I made these changes	0	0	3	42.9	4	57.1	0	0	0	0
9. Meeting and talking with other farmers was of more interest to me than the topic	0	0	2	7.4	12	44.4	13	48.1	0	0
10. I have noticed benefits to the farm business since I made these changes	0	0	3	42.9	4	57.1	0	0	0	0
11. The field lab is a better way of learning about a topic than a farm demonstration or farm walk	2	7.1	16	57.1	9	32.1	1	3.6	0	0
12. The FL group has worked well together and we have learned a lot (or we are confident that we will learn a lot)	2	7.7	14	53.8	8	30.8	1	3.8	1	3.8
13. The people attending the FL events changed too much to allow any continuity in the learning	0	0	2	9.5	8	38.1	5	23.8	6	28.6
14. There isn't very good communication after the FLs about what has been learnt	2	7.4	5	18.5	6	22.2	11	40.7	3	11.1
15. The field lab reports are a good way to communicate the outcomes	1	4.8	12	57.1	8	38.1	0	0	0	0
16. I stopped attending/hosting the field lab as I wasn't learning very much	2	7.7	2	7.7	5	19.2	9	34.6	8	30.8
17. I will definitely keep attending/hosting the field lab to learn more	7	26.9	14	53.8	1	3.8	3	11.5	1	3.8

## **Appendix 3 Format for facilitators' discussion forum**

The forum comprised two interactive sessions which posed the following questions to the facilitators.

### **1 Evidence and examples of learning and changed behaviour**

To what extent have FL participants enhanced their learning about the topic? And improved their skills in relation to the topic?

To what extent have FL participants improved their approach/practices as a result of attending the FLs?

To what extent have FL participants learned research/ skills, critical thinking and how to engage in research?

### **2 Suggestions for improving FLs (particularly with respect to learning and changing behaviour)**

How could the FL approach be improved to enable more learning and change in practice? Lessons for the next phase.

How could the FL approach be improved to enable learning and changed practice? Lessons for the next phase - the topic

How could FL approach be improved to enable more learning and changed practice? Lessons for the next phase - the approach

How could FL approach be improved to enable more learning and changed practice? Lessons for the next phase – measuring impact