



HELPING FARMERS ADJUST TO POLICY REFORMS THROUGH DEMONSTRATION FARMS: LESSONS FROM A PROJECT IN ENGLAND

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ABSTRACT

Market pressures and policy changes have heightened interest in knowledge and technology transfer in English agriculture. A government funded project, Forward Farming (2002-2004) established three separate pilots to test different ways of using demonstration to encourage change at farm level: a network of monitor farms covering the arable and livestock sectors; farms demonstrating integration between agriculture and the local community, landscape and markets; and a web-based virtual demonstration farm for the pig sector. This paper reports the results of a government-commissioned evaluation of the project. The methodology for the evaluation is described: quantitative and qualitative methods were used to collect information from host farmers, a wide array of stakeholders and farmers who attended and those who did not attend Forward Farming events. Data were then compared with six case studies of monitor and demonstration programmes. The evaluation found that the monitor farms were successful in attracting farm businesses that already access sources of advice and information and in stimulating ideas for change. However, while there is a strong economic argument for public funding of demonstration, this does not necessarily require a permanent network of fixed farms. Funding to support demonstration activities from a wide range of providers, and to stimulate demand for them among farmers, will provide a more flexible option for the future.

Key words: Knowledge transfer, demonstration farms

KNOWLEDGE TRANSFER IN GOVERNMENT POLICY

Agriculture within the EU has seen many changes over its 50 year history, the most recent being the current Common Agricultural Policy (CAP) reform moving towards the full decoupling of support from production activity. Farmers and their businesses have had to adapt to these changes and have done so in many different ways. Knowledge transfer mechanisms (Garforth, Rehman et al. 2004) are one set of instruments to facilitate change in farmers' approaches to the management of their businesses. They address a number of areas, including helping farmers to maintain and update their production expertise, identifying opportunities for diversification, and advising on environmental requirements and opportunities.

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Knowledge transfer has often been conceptualised as the passing on of new research-based knowledge to farmers in the form of advice and recommendations for changes in the way they farm and manage their enterprises. Recent thinking on how change occurs at farm level emphasises adaptation and co-learning as more realistic ways of conceptualising the process by which farmers acquire new knowledge and put it into practice (Leeuwis 2004) (Engel 1997).

Notions of learning rather than transfer recognise that opportunities for observation, interaction and discussion play an important role in farmers' decisions, prompting interest in both on-farm demonstration activity and monitoring of farm businesses as potentially effective knowledge transfer interventions. Research on the adoption and diffusion of innovations has consistently confirmed that one of farmers' most commonly cited sources of information and ideas is other farmers (Rogers 1995).

FORWARD FARMING – A PILOT DEMONSTRATION FARM PROJECT

Recent UK government intervention in agricultural knowledge transfer has included the Department for Environment Food and Rural Affairs (Defra) cross-cutting Learning, Skills and Knowledge (LSK) programme (Defra 2004).

A key concept within the LSK programme was helping rural businesses to learn from each other (Defra 2004). A pilot Demonstration Farm network, implemented by the ELITE consortium of land-based further and higher education colleges under the label "Forward Farming" from mid-2002 to mid-2004, was one of the elements of the programme aimed specifically at the farming sector. Defra's decision to initiate a pilot Demonstration Farm network was a response to a recommendation of the Policy Commission on the Future of Farming and Food (Cabinet Office 2002). The Commission recommendation was based on the perception that the current range of information and advisory services available to farmers was fragmented and of variable quality.

Forward Farming was set up after extensive consultation within the industry on the desirability and form of such an initiative. This consultation led to the decision to test three types of demonstration farm, which became Pilots 1, 2 and 3. Pilot 1 'monitor farms' were to provide economic and environmental benchmarking for the arable, dairy, beef and sheep sectors through on-farm events and the establishment of "business clubs". Pilot 2 'demonstration farms' were designed to illustrate the benefits of closer links between producers and their markets, local communities, local landscape and the environment. Pilot 3 was a web based virtual demonstration farm for the pig sector. Two associated pig industry seminars were also held.

To learn lessons from this initiative, Defra commissioned an evaluation of the Forward Farming pilot and the establishment of a blueprint of principles for the processes required to set up and run a successful demonstration farm/network. The remainder of this paper outlines the theoretical framework and approaches used in the evaluation and summarises the findings, before concluding.

METHODOLOGY

Theoretical framework

Evaluating the impact of extension and advisory services is notoriously difficult because of the problems of attribution (Purcell and Anderson 1997). Evaluation models based entirely on quantitative indicators and quasi-experimental research designs have been criticised in the literature for not delivering findings that can inform the design of improved processes (Engel 1997). More informative are approaches that use a combination of quantitative and



qualitative methods: the latter allow an evaluation team to explore associations in depth from the perspective of the various stakeholder groups. The evaluation of Forward Farming used a range of techniques and frameworks which have proved useful for this type of analysis, including Logical Framework Analysis (LFA), actor linkage analysis, the Theory of Planned Behaviour (TPB), and information mapping (Angell, Garforth et al. 2004). This multi-method approach emphasises the importance of the perceptions and perspectives of different actors (Madsen and Adriansen 2004).

LFA was used to provide a basis for monitoring the implementation and evaluating the impacts of the pilot. LFA captures the essential structure of a project or network in terms of inputs, activities, outputs, purposes and wide goals, and can be used for both monitoring implementation (the transfer of inputs into outputs) and evaluation (assessing the achievement of purposes and goals). Information for the indicator values came from ELITE's own monitoring work (conducted by Land Use Consultants (LUC)) and surveys and discussion initiated by the evaluation team.

Actor linkage analysis (Biggs and Matsuert 2004) is used to evaluate how well the institutional relationships within a programme are working. Actor linkage analysis was used to locate the demonstration farms within the broader agricultural knowledge and information system using qualitative data from a series of interviews and a written consultation.

TPB (Ajzen 1991) is a social-psychology framework for understanding and predicting behaviour by measuring the underlying determinants of that behaviour: attitudes, subjective norm and perceived behavioural control, i.e. the extent to which individuals are able to put their intentions into practice. A questionnaire, based upon TPB, was used to generate quantitative data on farmers' attitudes and intentions towards demonstrations and their reasons for (i) attending/not attending, and (ii) using/not using information gained from the demonstration farms.

Information mapping explores how farmers and others view a particular source of information in relation to all their other actual and potential sources of information (Garforth 2001). The mapping process is used to illustrate the extent of immediate interaction with each source and the level of influence that that source has. Information maps, using data from farmer and other interviews, were drawn up to explore how farmers view the demonstration farms in relation to all their other actual and potential sources of information.

Approaches

First, interviews with local stakeholders, facilitators, and host farmers involved with the pilot were conducted. Second, to capture a wider range of issues, in depth interviews were conducted with five key national stakeholders. Issues covered included the role of demonstration farms, alternative models of knowledge transfer, ownership and funding, initial set-up, selection and management of host farms, selection and management of events, outcomes and links. Third, letters soliciting written feedback were sent to a further 41 named individuals in stakeholder organisations, ranging from agricultural colleges to professional and trade organisations, government bodies and NGOs.

Fourth, using the questionnaire based on TPB, telephone interviews were conducted with attendee and non-attendee farmers of the Forward Farming events. Two interview schedules were used, one for Pilots 1 and 2 and one for Pilot 3. These were piloted on 14 attendee and non-attendee farmers, and then used to develop a brief fully structured questionnaire (adapted slightly for Pilot 3) capable of being administered by telephone in a 10-15 minute interview. The target for the survey sample, stratified according to size, type and location, was 360 individual farmers/farm businesses, comprising 180 attendees and 180 non-attendees. These were

further split between Pilot 1, Pilot 2 and Pilot 3.

To complete the evaluation case study comparisons of six other demonstration farm networks, four from the UK and two from overseas, were then undertaken to compare the objectives, nature and level of outputs, including activities and participation, and cost against the Forward Farming pilot. The structure for analysis and reporting used a logical framework to be comparable with the structure used in the Forward Farming evaluation. Data were compiled from existing evaluations, papers and reports, and telephone interviews with key informants involved with the networks.

Table 1: Case studies selected for comparison with Forward Farming

	Case study	Description
1	Linking Environment and Farming (LEAF) Demonstration Farms	40+ volunteer farms throughout the UK demonstrating Integrated Farm Management to LEAF members, other farmers and members of the public.
2	Farming Connect Wales Demonstration Farms	Network of 3 development centres, 11 development farms and 23 demonstration farms, to facilitate technology transfer from research and encourage best practice and improved business performance.
3	Inside UK Enterprise – Farming	Programme of one-day visits to 29 selected farms in England that have improved their business and/or environmental performance, which clients of the Farm Business Advisory Service can join free of charge.
4	The Arable Group (TAG)	Field days (c. 100 per year) to 24 centres in the main arable areas of the UK where trials of varieties, agronomic practices and farm inputs are conducted on behalf of subscribing farmers.
5	Teagasc Monitor Farms	120+ monitor farms throughout Ireland, providing the focus for 500+ discussion groups who meet on each other's farms to discuss the performance of new technology and practices and their potential application on their own farms.
6	Wool and Meat Innovation (WMI) Monitor Farms, New Zealand	c. 30 monitor farms in the main livestock regions of the country, each supported by a local facilitator, through which community groups analyse and learn from a three year process of planned change on the farm

Finally, the integration of findings from all strands of work allowed the development of the blueprint of principles. This was then tested with farmers in two focus groups and subsequently with national stakeholders in a consultation workshop.

RESULTS³

The LFA showed that Forward Farming shared with the six comparator networks (Table 1) an overall goal of sustainability, although there were different emphases on the individual farm business, the agriculture sector and the rural economy as a whole. The immediate outputs expected from demonstration and monitoring activities, in all cases, were a blend of awareness, knowledge of how to implement changes and motivation to effect change.

Data on participation from ELITE/LUC covering attendance and event evaluation and feedback, supplemented by the evaluation interviews and consultations, provided informa-



tion on the levels of participation in the demonstration farm events and associated activities including the business clubs. For Pilot 1, the attendance at demonstration farm activities averaged 19 attendees. Repeat attendance increased over time. Pilot 2 attendance averaged 17 attendees. The target agreed with Defra was 15 farmers per event. Awareness and use of the Pilot 3 website were low, although increasing. Seventy one farmers attended the first pig seminar: although direct comparison is not possible because it was a very different kind of event from an on-farm demonstration, the ability to attract farmers to the seminar appears greater than for the other pilots.

Table 2: Likelihood of change following Forward Farming event

	P1A	P1D	P1B&S	P2	P3 ** Sem1	P3** Sem2
Change farm management/trading patterns*	+0.25	+0.25	+0.41	+0.22	+1.1	+0.63
Increased use of benchmarking*	+0.28	+0.54	+0.38	n/a	n/a	n/a
Increased environmental awareness*	+0.25	+0.44	+0.33	+0.25	n/a	n/a
Take up advice/training*	+0.90	+0.98	+0.67	+0.46	+1.1	+0.88
Will definitely attend future FF events	54%	58%	54%	42%	79%	62%
Sample base	114	124	117	43	36	71

Data from ELITE/LUC

Notes: *Mean score based on Yes = +2, probably = +1 and No = -1

**Sem 1 = first pig seminar and Sem 2 = the second pig seminar

In comparison with other networks, attendance at Forward Farming events was low. Direct comparison should be treated with caution, however, as the comparator networks have been running longer and therefore have had more time to build the confidence and trust required for increased attendance. Further, the numbers attending the Pilot 1 monitor farm events are appropriate for monitor activities, where interaction within a small group is a key feature of the process. However, the numbers involved in monitoring through the business clubs are lower than those reported from other monitor farm programmes, and few farmers have become involved in formal benchmarking as there are widespread negative perceptions and misunderstandings of what it involves and its potential benefits.

ELITE's own monitoring data on actual and planned changes show that most farmers had positive attitudes towards changing their farming practices after attending Forward Farming events (Table 2). Attendance at all the events led to referrals to other activities, and in this respect, it should be noted that demonstration farms and events are but one part of farmers' overall knowledge and information system. They will only contribute to significant levels of change in farm businesses if they support and are supported by other sources of information and advice.

The subsequent evaluation survey found that 16% of the farmers who attended an event had made changes to their farms or farming practices, and a further 31% were considering making changes in the future. The changes made or proposed encompassed both technical approaches as well as applications for funding.

Figure 1: Strength of linkages in Forward Farming Demonstration Farm Pilot Project

Actors	Host farmer	Facilitator	Stakeholder group	Elite, Colleges	Defra	Attendees	Non-attendees	Business Club members
Host farmer	1	3	2	2	1	2	1	2
Facilitator		2	3	3	1	2	0	2
Stakeholder group			2	2	1	1	0	1
ELITE, Colleges				2	3	2	0	2
Defra					3	0	0	0
Attendees						3	1	0
Non-attendees							0	0
Business Club members								3

Notes: (1) Shaded cells are links where good communication and frequent interaction are essential to the successful running of a demonstration farm network on the Forward Farming model; (2) numbers indicate the evaluation team's assessment of the strength of the linkage in Forward Farming: 0= none; 1=weak; 2=moderate; 3=strong

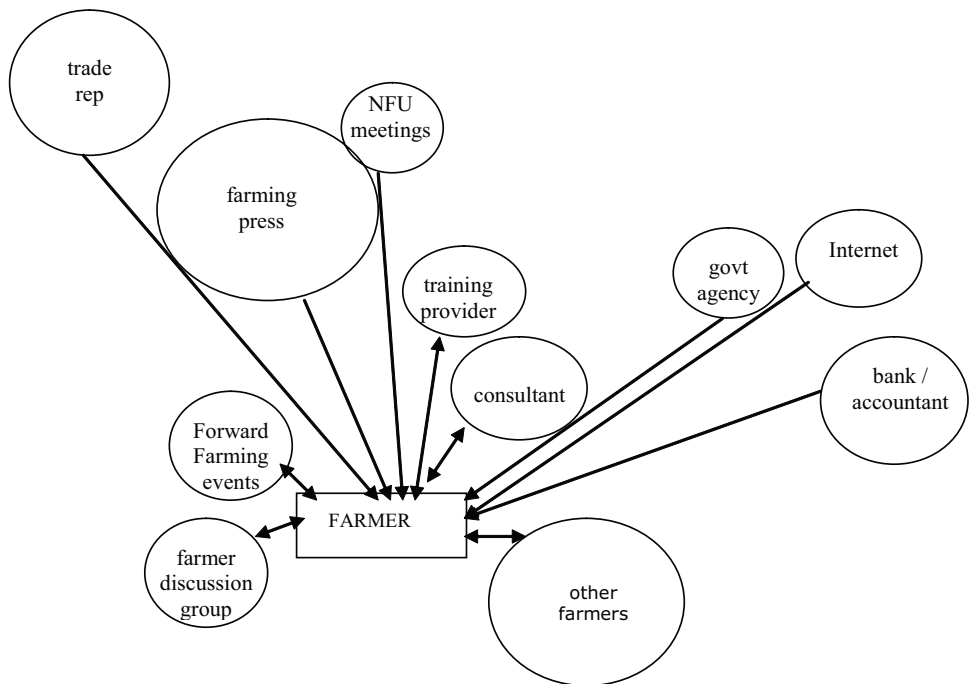
The evaluation survey also showed that the majority of attendees at Forward Farming events had attended other demonstration-type events within the past year; the majority of non-attendees at Forward Farming events had not. Analysis of the survey data within the TPB framework showed that attendees have more positive attitudes towards attending future demonstration events than non-attendees and the latter were less likely to believe they would derive any benefit from attending. On the other hand they did not have any strongly held negative attitudes that are acting as barriers to their attending future events.

The Actor-Linkage matrix was drawn up from data collected during the face to face and telephone interviews. Eight sets of actors were identified: host farmers, facilitators, local stakeholder groups, the colleges, Defra, attendees, non-attendees and members of the business clubs. Analysis of the matrix suggested that the purpose and objectives of the pilot project could have been communicated more effectively at local level, that links between non-attendees and all other actors were very weak and that at least initially there was a lack of trust among the potential members of the business clubs which inhibited monitoring and group benchmarking.

Information maps were developed for attendees and non-attendees using data from the telephone survey. They were then presented to the two farmer focus groups for discussion and comment. Comparison between the two maps, confirmed by the focus group discussions, suggested that demonstration farms are a means of intensifying the interaction farmers have with other farmers, both in one-to-one interaction and in discussion groups. From this perspective demonstration farms are not substitutes for the other activities and sources from which farmers gain information and advice on technical and business improvements: however they do add a valued dimension to farmers' knowledge and information systems, in particular the opportunity to look around the farm. Non-attendees rely more heavily on the farming press and trade representatives than attendees.



Figure 2 Information map for Forward Farming attendees



Note: The size of the circles in the map is approximately proportional to the percentage of respondents who reported the respective source or activity as one with which they communicate or in which they participate, in the context of making decisions about changes in their farming practices. The distance from the farmer represents the extent of immediate interaction that farmers can have with the other party/ies in the activity.

DISCUSSION AND CONCLUSION

At its simplest, the notion of ‘on-farm demonstration activity’ stimulates the process of learning. At a demonstration event, farmers can see particular technologies or management practices in operation on a working farm not too dissimilar to their own. If a specialist in a particular technology or management practice is present at the demonstration, the event brings together two complementary sources of information and ideas, the credible expert and the practical experience of farmers. If appropriately planned and structured the demonstration provides an environment where active learning can take place through visualisation and discussion as well as through listening. Whilst monitoring data may be available, the focus is frequently based on the premise of a one off interaction.

Monitor farms on the other hand are based on the premise of ongoing interaction with and within a defined group of farmers. They can therefore demonstrate the application of a specific technology or combination of technologies over time, which allows monitoring and comparison in a specific context. Monitor farms may not necessarily demonstrate best practice, but are farms with the potential to demonstrate improvement over time. Farmers, both the host and an associated discussion group, learn from the process and impact of change.

Under Forward Farming, Defra in effect invested in increasing the supply of demonstration

activities and of opportunities for monitoring. The evaluation suggests that this did not lead to a substantial increase in the total number of farms attending demonstration type activities. To deploy the Forward Farming model nationally would require a relatively dense network of new host farms to meet the needs of different sectors and provide reasonable accessibility for farms in each sector to a demonstration farm of a relevant type. Given the evidence from the evaluation, a more efficient and flexible approach would be to establish a regional capacity to allocate public funds for facilitating both the demand for and supply of demonstration and monitoring initiatives to meet both national policy goals and take account of regional gaps in provision to meet identified needs. This is consistent with the increasing trend in the UK towards regional management of development initiatives. Part of the resources could be used to fund facilitators who would work with local groups of farmers to identify their own needs, source activities from those already available, and arrange to fill in gaps in existing provision.

The need for clear objectives which are relevant to all stakeholders and which can be communicated clearly is fundamental. Recruiting or selecting the right facilitators or co-ordinators is crucial. Further, involving stakeholders in the setting up and management of demonstration farms is important in achieving accountability to the industry and the wider public.

In choosing host farms, the criteria and process will differ for one-off demonstrations, a fixed site demonstration farm, and a monitor farm. For the latter two, the process should be bottom up, with a facilitator working with the local industry to identify one of their number to be a host farm for either demonstration or monitoring or both. For one-off demonstrations, the main criterion is the appropriateness of the farm for demonstrating the particular practice or system. Further, host farmers need incentives. As in the case of Forward Farming, this will usually be some combination of money and the benefit they expect to gain from access to expertise and advice. Farmers may also need training in presentation and communication skills, as well as in the issues to be demonstrated.

Evidence from the comparator case studies suggests that farms should remain demonstration and/or monitor farms for a limited lifetime, possibly a maximum of five years; and within any project or scheme there should be opportunity for groups to go to other farms for one off events if they can better demonstrate a particular issue. Arranging different types of effective off-farm activities may also be beneficial.

There is no clear indication from the pilot project, nor from the case studies, of the best option for who should host a demonstration event. There is a trade-off between the continuity of a consistent presence (host farmer or facilitator) on the one hand, and expertise (consultant) specific to the issue being demonstrated on the other. The evaluation confirms that farmers value credible sources such as independent consultants, other farmers with experience of the issues, veterinary surgeons and other professionals. Involving them in events will add to their impact.

For business clubs and monitoring activities, the facilitator's role is even more critical, both in helping the group develop the degree of trust and commitment that is necessary before they will feel able to share and discuss financial details of their businesses and in compiling the data that are the raw material for the group's discussions. It is clear that benchmarking, in any formal sense, is not central to most farmers' perceived benefits from demonstration farms, but that ideas of generally comparing their performance with those of others are widespread and seen as beneficial.

Subject matter is a further consideration, as are event titles. In choosing issues to address on the farm, the challenge is to balance local demand and interests with the national interest implicit in a centrally-funded initiative that seeks to achieve public policy goals.

Finally, the evaluation shows that appropriate promotion and marketing is vital. The target



or minimum number of attendees will vary with the nature of the event. For a demonstration that aims to spread awareness of a new practice or system, a carefully planned event should be able to cater for several hundred attendees and within that, if carefully planned, smaller discussion groups can be accommodated. However for an activity for which the primary focus is discussion-based, a minimum of 10 with a target of 15-20 is the optimum. More than this is too many: farmers get more out of smaller groups, and serial attendees will get to know each other and are a lot happier to ask 'daft' questions than in a larger, impersonal group. This facilitates interaction and participants learn more.

Although farmers clearly value the opportunity that demonstration on a working farm offers to see and discuss possible future strategies for their own farms, increasing the supply without at the same time doing something to stimulate new demand is likely to lead to those who already take advantage of demonstration opportunities doing so more frequently. Particularly challenging is to raise demand for demonstration and monitoring activities related to improved business management: as the Forward Farming experience shows, English farmers are on the whole still more interested in how to improve technical performance. With the CAP reforms in place from 2005, however, farm subsidies are no longer linked directly to levels of commodity production but to farm area and the production of public environmental goods and services. For those in the business of providing education and advisory services to farmers, this represents both an opportunity and a challenge: demonstration of changes and strategies to respond to the new subsidy regime will certainly be needed, but so too will action to stimulate demand through innovative promotion and local facilitation.

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