

The value of a boundary organization in mediating knowledge on sustainable farming systems

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Abstract

What is the value of a boundary organisation in offering the “space” for farming systems research (FSR) and local knowledge to interact? Can it offer a space that allows for non-linear discussion of research findings and the potential for farmer experimentation/expressionism of FSR to test its performance “in time” and “in place”. Scientific research demands that the realities of time and place are kept under control to allow for replication and scientific rigour. However, when it comes to performance criteria of a farming system then time and place are important variables that need to be tested through local application. Local adaptation of FSR is often required to test its true worth since most research is undertaken under circumstances and conditions different to those found locally. The ability to transform scientific knowledge to specific contexts is often highly dependent on willingness of farmers to co-operate, to take an idea on and place it into action. Can a boundary organisation mediate between FSR and local farmers to improve the level of practice change based on FSR? We analysed 8 field days (about on-farm research) and 1 forum with a total of 138 participants (57% farmers, 11% agribusiness, 12% researchers, 17% NRM and 2% other) to examine if we are creating the “space” for such discussion of FSR “in time” and “in place”.

Key Words

Farm sustainability, farmer experimentation, farming systems research, local knowledge, scientific knowledge, interaction

Introduction

Research published by Carr and Wilkinson (2005) explains the role of a boundary organization (like Catchment Management Authorities or producer-led research and development groups) in bridging the often perceived gap between farmers, scientists, and others working in natural resource management. The boundary organization works at the interface between science and practice and exemplifies the “blurring and blending” of farmers’ and scientists’ knowledge and roles. The role of a boundary organization is to create a “space” where farmers and scientists can meet and interact with knowledge produced by participatory (science -in-action model, local and contextual) or linear (ready-made-science, global and generic) models. Hence it is a “space” that blends and blurs the distinctions often made between the farming and scientific communities in regard to their knowledge generation and delivery styles, and is a “space” where knowledge is contextual, socially produced and is not completely global or local. In this paper we examine our role as a boundary organization in a National R&D program – Grain and Graze II - whose overall aim is to make a significant contribution to “increasing knowledge, capability, respect and confidence of mixed farming communities, thus enabling them to manage a more viable and environmentally sustainable mixed farming system that can adapt quickly to changing climatic, market and policy conditions” (Project Specification Document DEEDI/GRDC DAQ00162, p2). The northern New South Wales component plans to deliver on practice change by increasing farmer adoption in: planting perennial species; maintaining ground cover at 40% (cropping) and 60% (grazing systems); diversifying crops/pastures and forages; planting of ley pastures and use of reduced/zero tillage, largely in priority sub-catchments of the Border Rivers-Gwydir Catchment Management Authority (BR-G CMA). How effective we have been as a boundary organization or mediating structure in promoting these activities, and forming local networks with local farmers, with some of those farmers also co-operating in conducting on-farm research, has been assessed through evaluations of the 8 field days and 1 forum held in 2011-2012.

Methods

Data collection

The monitoring and evaluation approach and survey was approved by the University of New England's

Human Ethics Committee (approval code HE10-212). The research team designed an entry and exit survey that can be used repeatedly at all field days and forums to address the key objectives of the Grain and Graze II programme. A number of field days and forums were held over the 2011-2012 that collected both entry and exit data (Table 1). All of the field days were focussed on a co-operator (farmer) who was conducting paddock-scale experiments of particular practices that address the sustainability of the mixed farming enterprise. The forum, specifically addressed the nature of an ideal farming system for the Delungra area. The field days and forum are summarised in Table 1. The monitoring and evaluation examined 4 key questions through a combination of likert questions and accompanying follow-up open-ended questions with a written response. Several responses to likert questions were combined to address the 4 key monitoring and evaluation questions which are:

- Did the event achieve its objectives?
- Was the event useful for participants?
- Did it contain new information?
- What is the likelihood of implementation?

The likert scale was from 1 to 5 with a value of 1 suggested low level of agreement with the statement whereas a value of 5 indicated high level of agreement with the statement. To reflect on the meaning of the likert responses the follow-up open-ended question allowed for farmers to clarify their response. In some of the field days the attendance was too low to be worthwhile in terms of analysis, and the other difficulty we had was that some people still returned an incomplete form, while others make no attempt to provide written feedback. In future field days we made more certain that evaluation surveys were returned complete to reduce the incomplete survey percentage and increase the level of written feedback.

Table 1. Field days and forum as part of Grain and Graze II Northern NSW in 2011-2012.

Location	Topic	date	No of Agribusiness participants	No of Farmers	Respondents to entry survey	Respondents to exit survey	Total attendance at event
Glenwood, Gravesend, Chris and Heather Robinson	Effect of gypsum, and nitrogen on pasture production	29 Mar, 2011	1	4	4	4	7
Weegowrie, Inverell, David and Alex Mason	Role of summer cover cropping with Lab Lab.	6 Apr, 2011	1	4	4	4	7
Claire, Elsmore, Bob and Michelle Jamieson	Effect of gypsum, potassium and nitrogen on pasture production	6 May, 2011	1	5	5	6	10
Weegowrie, Inverell, David and Alex Mason	Manure on forages	15 Sep, 2011	1	3	0	3	6
McMaster Field Day	5 topics including compaction, pasture-crop transitions and legume varieties	22 Sep, 2011	5	16	14	20	35
Nullamanna, Inverell, Peter Lane	Phosphorus and sulphur on legumes	25 Oct, 2011	1	9	7	7	14
Forest Hill, Inverell, Neil Kauter	Using Coolatai Grass	27 Oct, 2011	1	14	10	10	20
Utah, Delungra, David La Fontaine	Soil nutrition specifically magnesium	22 Mar 2012	3	10	9	10	19
Delungra Forum	What is an ideal farming system for the Delungra area?	30 Mar 2012	1	12	9	8	20
TOTAL			15	77	62	72	138

Also the first three field days in 2011 did have fewer likert questions, and relied more on qualitative responses. The survey was modified from June 2011 and data reported accounts for the change in survey design.

the question, farmers who responded this way indicated the field day was “re-affirming” their current management or understanding so they felt it had little impact in relation to question two, three or four. Most suggested they are already making “good progress” and “I basically know where I should be going - gained more information to help”. The potential for these days to provide a “space” for discussion and interaction was confirmed by a number of farmers who commented in their survey along the lines of:

*great discussion environment,
 Locally based studies very pertinent to our style/methods of farming, hard to find such targeted information anywhere else,
 because it is very informative and it provides the opportunity to discuss issues with people who know solutions,
 a good way to exchange ideas, and keep up with new developments,
 it was interesting and allowed everyone to talk and give their opinion,
 good to get such great local knowledge appropriate to our climate and soil,
 exchange of expertise with locals,
 good learning environment,
 the best part was being able to see theories in action and hear speakers explaining their trials,
 conversation with the other farmers very informative*

Table 2. Likert responses to the 4 key evaluation questions from Grain and Graze II field days and forum in 2011-2012 (n=72).

Field day /Forum	Q1. Did the event achieve its objectives? (rate from 1 to 5)	Q2. Was the event useful for participants? (rate from 1 to 5)	Q3. Did it contain new information? (rate from 1 to 5)	Q4. Likelihood of implementation and potential for practice change (rate from 1 to 5)
Weegowrie, Inverell	4.1	4.0	3.7	4.7
Weegowrie, Elsmore and Gravesend Field days (n=3)	3.7	4.1	4.0	4.0
McMaster, Warialda	4.1	3.6	4.4	3.1
Nullamanna, Inverell	4.5	4.2	4.0	4.0
Forest Hill, Inverell	4.0	4.1	4.1	4.7
Utah, Delungra	4.3	4.0	3.4	3.9
Delungra Forum	4.4	4.1	4.1	4.5
TOTAL	4.16	4.01	3.96	4.13

The forum on farming systems asked participants whether it caused them to question their current thinking on what an ideal farming system is for the Delungra area, on a scale of 1 to 5, with 5 indicating a high agreement with the statement, and on average they were 3.8. So for the most part the audience did question what is an ideal farming system for the area? The areas of the farming system they questioned their management of the most was undoubtedly first soil and fertility management followed very closely by pasture and its management through grazing practice. Inevitably the two - soils and pasture - were mentioned in tandem, and were never unhinged but coupled in their responses to this question. When asked what part of the farming system are you now more appreciative of than you were before attending the forum, most responded with soil fertility or soil nutrients, and are more determined to undertake soil testing to know what limits their plant growth. In terms of how confident they feel in adapting farming systems research to their own farm the forum participants were equally divided between those who thought it could be done and those who thought it was not easy to adapt research findings to their circumstances – their soils are “unique”. Nevertheless after hearing the panel speak most forum attendees said they would implement the findings they had heard about at the forum to their own place. When asked specifically what particular part of the farming system do you feel most confident in changing forum participants usually responded with the soil fertility or more generally pasture and crop management. A few were more specific in what they may try such as undertaking pasture and winter cropping for the winter feed gap. Interestingly these are the same areas that they are now more appreciative of after attending the forum. Most of the forum attendees felt they had learnt something new and rated it as 4.1 out of 5. We can identify from the survey responses (Table 2) that those farmers who attend the field days find the experience very positive, and 96% (n=72) would recommend the field day to others. The success of a programme that seeks to use boundary organizations for the purpose of interaction, discussion and promoting practice and behavioural change needs to recognise that sustained effort over multiple occasions is required to gradually build trust and attendance numbers. Our own experience has recorded repeat attendance by individuals which is a sign that trust is being built, because as the farmers say once they are there the results are “obvious” and very rewarding.

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