final report

Project code: B.FDP.0008

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Date published: January 2013

ISBN: 9781741919776

PUBLISHED BY
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NORTH SYDNEY NSW 2059

Developing and implementing participatory R&D

Meat & Livestock Australia acknowledges the matching funds provided by the Australian Government to support the research and development detailed in this publication.

Abstract

The primary objective of this project was to take the generalised concept of participatory research and develop the practical details needed to implement the process within the Feedbase Investment Plan. Industry consultation with researchers, leading producers and advisors was used to develop the practical details and ideal attributes of participatory R&D. In conjunction with the producer meetings, this has led to development of broad industry interest from researchers and producers for the participatory process. The goal for participatory R&D is to add value to research through the input of leading producers throughout the research and development phase and it is likely that this will accelerate adoption of project outcomes. An implementation plan for participatory R&D was developed, building on the industry consultation, which outlines a series of steps for implementing participatory activity which involves advisors facilitating collaboration between researchers and leading producers. Producer meetings conducted with one of the feedbase projects confirmed the suitability of the implementation plan and highlighted the value of closer interaction between leading producers and researchers. The value of participatory activity will be enhanced through development of a network of producers, advisors and researchers and this network may have high value for ultimate rates of adoption of MLA activity. The project team are confident that participatory activity will be a valuable process for MLA R&D projects and for accelerating the rate of adoption of project outcomes.

Executive summary

The objective of this project was to take the generalised concept of participatory research and develop the practical details needed to implement the process within the Feedbase Investment Plan. The approach to achieving the objective of developing an implementation plan for participatory R&D included (i) interviewing the leaders of previous and existing projects that had a component of R&D engagement with producers; (ii) interviewing producers and advisors who had involvement with these R&D projects; (iii) reviewing relevant documents and published literature; (iv) interviewing leaders of contracted feedbase projects; (v) conducting an industry workshop to discuss attributes and operations of participatory activity; and (vi) testing of the implementation plan with producer groups involved with the feedbase project "B.PSP.0001 – Increase feedbase production and quality of sub-tropical grass based pastures".

The goal for participatory R&D is to add value to the research through producer input throughout the research and development phase. The participatory R&D goal is achieved through engagement, facilitated by advisors, between researchers and leading producers (or existing producer groups) providing benefit for the research activity and for farm businesses. Participatory activity will likely vary among projects and over time within a project and may include producer industry committees or participatory sites. These sites will extend the research knowledge by addressing questions of if and how the technology (research) works and fits within variable farming systems. They are aimed to allow participating producers to (potentially) scale the research to an area that meets their risk profile, implement the new research to suit their particular circumstances and provide feedback to the researcher (and MLA) in a two-way dialogue to improve the outcomes of the R&D process. Participatory R&D is not extension activity in that it will harness and coordinate the activities of researchers and leading producers investigating issues of common interest. In this manner, the participatory sites have an element of risk because activities will be generating new information rather than confirming what is already known. Leading producers interviewed for this project are attracted to this level of engagement and exploration.

Implementation of participatory R&D is proposed to occur in 4 steps. Firstly, identifying leading producers, producer groups and advisors to take part in the activity. Establishment of a register of approved advisors, in response to a public call for expressions of interest, will make this an easier process. Secondly, defining the scope and details of participatory activity at an initial meeting attended by researcher and producers and facilitated by an advisor. Thirdly, preparation of a detailed project plan by advisors as part of the proposal process to MLA. Lastly, monitoring and evaluating success through reporting the benefits and costs of the project and the process for researchers and producers.

Eventually the advisors and producer groups involved with participatory activity will form a network around the country. It is proposed that the network be managed by MLA and this will likely require appointment of one or several coordinators (fractional appointments with geographic coverage and increasing as need demands) to service the network and participatory sites. This network can be the conduit to bring different producer groups together, provide opportunity for producers to visit other participatory sites, deliver webinars or other events and accelerate the rate of industry adoption of emerging technologies.

Meetings with producers groups in Albany and Esperance in WA and at Parkes and Manilla in NSW were used to test the effectiveness of the implementation plan. No major changes are recommended to that proposed in this report. There was enthusiastic support from producers

for the purpose of participatory R&D and they welcomed the opportunity of involvement with research activity. There was a sense with the NSW groups that participatory R&D will play an important role in helping to maintain their local groups. For some groups, the importance of Landcare has diminished as producer interests have broadened beyond the Landcare remit and participatory activity will serve as a new purpose. This is a good opportunity for MLA to capture group interest and leverage benefit through the networking of groups and advisors.

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1. Background

The primary strategy for engaging leading producers into R&D projects in the feedbase program is based on the concept that groups of leading producers will be encouraged and funded to participate in the R&D, including the establishment of on-farm sites that trial, test or extend what is happening at the core research sites. This project will develop this concept into a practical process with wide support across the industry, and then implement the process within one of the R&D projects that have already been contracted or are in the process of being contracted.

2. Project objectives

1. To take the generalised concept of participatory research sites described in the terms of reference and develop the practical details needed to implement the process across all the major R&D projects within the southern feedbase program.
2. To build support (from leading producer groups and from the researchers involved in the southern feedbase program) for the process.
3. To outline a process that stimulates interaction between producer groups associated with participatory sites across the feedbase R&D program encouraging the exchange of ideas and knowledge and refinement of research outputs.
4. To begin implementing the process in at least one of those R&D projects that has already been contracted.

3. Methodology

The methodology used in this project was determined at a meeting (27th March 2012) attended by the Project Team (Jim Shovelton, Erin Gorter, Mike Stephens, Lewis Kahn) and Warren Mason, acting as a representative of MLA. The tasks to achieve the project objectives are described in Table 1.

Table 1: Tasks to achieve project objectives

Task no.	Task
1	Meet with MLA team to confirm the approach to the project and confirm the scope of works.
2	Review existing and previously developed models of R&D engagement. a. By interviewing (telephone) leaders of previous and existing projects that had an R&D engagement component. Discussion included: • Processes to engage leading producers • On-farm testing of innovations (data collection, site management, how integral to research, grower ownership) • Feedback into the R&D process and the level of research/participant interaction • Demonstration of the R&D outputs • Areas of the approach that worked really well • Areas that didn't work so well and why b. By reviewing relevant documents such as the Feedbase Investment Plan (FIP), Feedbase Research and Development Plan (FR&DP) and select published literature. c. By interviewing (telephone) advisors and producers who have had involvement with R&D projects.
3	Interview project leaders for the five contracted projects to understand their needs and expectations and likely level of involvement. Review the contracted projects to understand the project scope (not a detailed scientific review), zone of application, deliverables and existing demonstration and/or extension plans.
4	Integrate information gained from tasks 2a, 2b, 2c and 3 to prepare a draft report available to MLA. Through that process confirm the proposed engagement model (including discussion with MLA) between research and participatory sites and between R&D projects to provide an interconnected R&D network.
5	Test these principles and processes at a one day workshop with research leaders of the five projects (and other researchers to provide a fresh assessment) and a small group of leading producers with experience in participatory R&D, who have been identified as likely to become "champions" of one or more of the projects.
6	Develop the Implementation Plan and once approved complete the Work Plan in at least one of the R&D projects within the FIP
7	Deliver the final report which will include lessons learnt during the implementation of the process.

Details for Tasks 2&3

The approach included telephone interview and literature review. Telephone interviews were seen as the primary strategy because it allowed the Project Team to engage in conversation with key informants and gain a deeper understanding of the strengths and weaknesses of previous models of R&D engagement.

Interviews were conducted with project leaders of the following projects: Sustainable Grazing Systems (Ian Simpson, Warren Mason), Grain & Graze I/II (Cam Nicholson), EverGraze (Warren Mason, past review experience), Sustainable Grazing from Saline Lands (Warren Mason), Enrich (Jason Emms), Lifetime Wool (Andrew Thompson), Prime Pastures (Mike Keys), Paired Paddock Productivity Program (Jim Shovelton), MLA Producer Demonstration Sites (Gerald Martin), Agronomy and Management of New Annual Legumes (Belinda Hackney).

Questions discussed with project leaders included:

- How did you seek to engage leading producers?
- What was the model for engagement (data collection, site management, how integral to research, grower ownership)?
- How did you provide feedback into the R&D process?
- How did you demonstrate R&D outputs on participatory sites?
- How well were the objectives achieved?
- What was the level of research/participant interaction?
- What worked?
- What didn't work and why?
- What would you do differently next time?
- What was the greatest frustration of the process?
- What gave you the greatest satisfaction from the process?

Interviews were also conducted with leading producers (P) and advisors (A) (some P and A requested anonymity) including: Chris Vanzetti (P), Don Nairn (P), Ashe Briscoe and Dougal Young (P), Tom Dunbabin (P), David Robinson (P), Geoff Sandilands (P), Andrew Roberts (P), Bill Sandilands (P), Geoff Fosberry (A), John Lucey (A), Cameron Weeks (A). In total 26 producers and advisors were interviewed.

Questions discussed with producers and advisors included:

- Why did you get involved with participatory R&D?
- What were the purposes for joining the process?
- Did it start with "You need" (push) or "I want" (pull)?
- How relevant was the project to you?
- Did the project convince you to adopt/change practices?
- What worked? In the practice change or in the project getting you to try it?
- What didn't work and why? As above.
- What would you do differently next time?
- What was the greatest frustration in the process?
- What gave you the greatest buzz from the process?
- What were your experiences in collecting data for the project?
- Did you feel that your views on the project were taken into account by the scientists involved in the project? Did this result in the project being modified to improve research outcomes and applicability to industry?
- At what stage were you included and were it too early, about right, too late?
- What is the best way to engage other local/regional farmers in participatory R&D in their district?

- Do you think that it is best to approach existing groups or famers individually to engage in R&D?
- Does the level of engagement affect the extent to which these farmers adopt the technology in the trial?
- What did your neighbours and farmer mates think about you being involved in this research? Did you become a source of information for them?
- If yes was it because they asked or you told?
- What types of activities need to be run at sites to interest other farmers?
- Should farmers be collecting the data on these sites or relying on the scientists to do it?
- How important is economic assessment of the research results for adoption?
- Would you do it again?

Literature was also accessed and suggested through the interview process (Table 2) and has contributed to the formation of ideas.

Table 2: Literature read with relevance for R&D engagement

Title	Reference
Farms and Learning Partnerships in Farming Systems Projects: A Response to the Challenges of Complexity in Agricultural Innovation	Journal of Agricultural Education and Extension (2007) 13; 191-207
Reconceptualising extension to deliver triple bottom line outcomes	RIRDC Publication No 03/ RIRDC Project No UM62-A
Evaluating participatory extension programs: challenges and problems	Australian Journal of Experimental Agriculture (2000) 40; 519–526
Feedbase Investment Plan	MLA report
Feedbase R&D Plan	MLA report
Key features of the regional producer network for enabling social learning	Australian Journal of Experimental Agriculture (2003) 43; 1015-1029
The SGS regional producer network: a successful application of interactive application	Australian Journal of Experimental Agriculture (2003) 43; 673-684
A research-extension model for encouraging the adoption of productive and sustainable practice in high rainfall grazing areas	Australian Journal of Experimental Agriculture (2003) 43; 685-694
Grain and Graze Project Management Report	A report of the grain and graze national operations coordinator
Agronomy and management of new annual legumes	RIRDC Publication No 11 RIRDC Project No WP 190
Successful research with local farmers to improve native grasslands	Australasian Journal of Environmental Management (2005) 12; 68-70

Leaders of the five projects within the Feedbase program that were nominated by MLA were interviewed (telephone) to understand their project activity and needs, expectations and likely level of involvement in R&D engagement. The five projects and nominated project leaders were:

1. Richard Simpson; plant root disease and P efficient legumes.
2. Martin Barbetti; developing soil biology / plant health.
3. Andrew Moore; step change via grazing crops in NSW, and WA.
4. Sue Boschma and Geoff Moore; improving the subtropical feedbase in NSW and WA.

5. Clinton Revell and Belinda Hackney; legume stability in NSW and WA. Note that Clinton and Belinda were not interviewed as they indicated that the project is still too early in development.

Questions asked during the interview of project leaders included:

- What is the zone/s of application for the project?
- What are the anticipated deliverables?
- What are existing demonstration and/or extension plans?
- How could participatory sites add value to your project?
- What would your project need from these sites?
- Are there "must haves" and "must not have" elements of a participatory site?
- What likely number and location of participatory sites is required?
- What requirements would you have for data collection and feedback?
- What is your preferred mode of operation for participatory sites?
- What time involvement do you envisage for participatory sites (both how long do they need to run and project staff involvement)?
- What are your estimates for the cost of establishing and maintaining participatory sites to meet your project needs?

Details for Tasks 4&5

The purpose of the workshop (Sydney 18th June 2012) was to reach an agreed recommendation about the appropriate use of participatory R&D. Participants (Table 3) were sent, prior to the workshop, a summary of interview responses concerning principles and processes to guide the implementation of R&D engagement. Participants were asked to nominate their response to the issues in the summary in order to identify issues where agreement was equivocal and determine the issues most needing discussion at the workshop.

Table 3: Participants attending the workshop

Project Leaders	Leading Producers	Advisors	Researchers	MLA
Sue Boschma	Troy Missen	Cam Nicholson	Ralph Behrendt	Cameron Allan
Geoff Moore	Bob Wilson	Neil Ballard	Ronald Smernik	Warren Mason
Richard Simpson	Mike O'Hare	Lester McCormick		Jane Weatherley
Andrew Moore				
Belinda Hackney				
Martin Barbetti				

4. Results

Tasks 2-5

Records of telephone interviews are provided in Appendices 1-3 and a summary (Table 4) is provided which is segmented into four areas that reflect (i) the overarching ethos of R&D engagement; (ii) establishing the engagement between researchers and leading producers; (iii) conducting R&D activity with leading producers; and (iv) evaluating the success of the R&D engagement. These four areas are:

1. Desirable attributes of the R&D engagement process
2. Processes that could be used to establish engagement between leading producers, researchers and advisors
3. Approaches to the design, conduct and data collection required for on-farm testing of innovations
4. Measures that demonstrate success of the R&D engagement

The summary of interview responses incorporates responses from researchers, producers and advisors. There was considerable overlap in responses among these sectors with producers and advisors highlighting the importance of their involvement at the start of the planning phase, a long term approach to participatory R&D projects which are adequately funded, economic analyses of significant treatment effects and the role of advisors in facilitating producers and researchers through the R&D engagement process. Researchers highlighted issues of experimental design at participatory sites and the difficulty (and cost) of replication in studies involving grazing livestock.

Attendees at the workshop provided comment on the attributes of participatory R&D identified from telephone interviews (Appendix 4). There was general agreement with the proposed attributes but opinion varied over a few matters. Firstly, support was equally split between small group qualitative meetings or large scale quantitative surveys to confirm the project objectives would be of interest to producers. Secondly, there was disagreement over the experimental design (and need for replication) required for participatory sites where grazing livestock are required and the consensus was for this to be considered on a case by case basis.

Table 4: Summary of responses about the conduct and attributes of participatory R&D.

Desirable attributes of the R& D engagement process
1. Based on mutual respect and strong personal relationships with clear agreement on objectives, operational plan (to manage or avoid clashes with farm operations) and mutual responsibilities.
2. Process must start with open, honest discussion to share ideas and experiences and provide opportunity to influence both parties (i.e. researchers and producers) through exchange of ideas, knowledge and experiences.
3. The engagement process needs to be a long running commitment that must be maintained throughout the life of the project and provide (sufficient and regular) opportunities for bringing together producers, researchers, consultants and related agribusiness.
4. The research must be work that is of value to the farmer's own business enterprise, meet their desire to learn and stay abreast of new research, increase their confidence in the practice/technology and offer solution/s at the farm, region or national level. Do not assume benefit and do not assume that the benefit seen by the producers is the same as seen by the researcher.
5. Involve producers who can champion the project and host producers (of participatory sites) with a genuine interest in the research.
6. Be respectful of the space and privacy of the producer and their facilities and preferences.
7. Build positive relationships with interested parties.

Processes that could be used to establish engagement between leading producers, researchers and advisors
1. Approach farmers and existing functional grower groups to discuss and exchange ideas (through posing questions, listening to answers and sharing ideas) for research at the formative stages of the work, at a time and location that is suitable. These sessions must build relationships, be condensed, timely (producers are time poor) and relevant. Use these meetings as opportunities to ascertain any existing work in the area that has been/is being done. The process should help producers identify issues that need exploring.
2. Conduct market research (using meetings with groups of 10-15) by speaking with producers and advisors to identify research needs and to test project ideas.
3. Conduct meaningful survey (hundreds of responses) before starting the project to make sure the research is likely to be of interest to the community.
4. Advisors play the role of facilitating researchers and producers through the process and acting to interpret the language and needs of researchers and producers.
5. Utilise personal established relationships and work with producers and grower groups that you know are good farmers/livestock managers, interested in the project and whose needs, interest, ethos and enthusiasm match the project and its aims.

6. Select leading producers (champions) from survey or meeting opportunities (public or letter of invitation) within targeted communities whose interests coincide with project interests. Also rely on consultant groups to access leading producers as many of these producers have a research budget and are already "out there" looking for advantage and identifying constraints.
7. Establish rules of engagement relating to property access, privacy, use of farm infrastructure, dogs, etc. to maintain relationships over the period of the project. Communicate the needs and expectations of the whole project with the selected producers at the beginning of discussions.
8. Provide opportunity for leading producers to travel to other districts and regions (but there are limits to how far they will travel) to engage with like-minded leading producers, tighten bonds within the group, gain better reflection of local issues and speak on the R&D with which they are engaged.
9. Promote awareness of the research ideas through media as early as possible in the process to give producers and advisors the chance to think about the possibilities.

Approaches to the design, conduct and data collection required for on-farm testing of innovations
1. Be implemented on participatory sites at the scale that is relevant to the research and the producer's needs to generate a valuable outcome within their farming system. (*Participatory sites are located on farms of leading producers*)
2. Participatory sites must provide benefit for researchers (though possibly in ways different from primary research design and activity) and for producers.
3. Be designed so that participatory sites implement a sub-set of the technologies that emerge from testing at the research sites, to investigate and demonstrate their impact within commercial farming operations.
4. For innovations involving data collection with grazing livestock, replication will conflict with a restrained budget and animal ethics may be problematic. Using a regression approach to establish associations between factors where causation had been determined at research sites, will give research access to data from many more animals or farming situations and greater assuredness in general applicability of results.
5. Sites adequately funded to achieve the level of data collection required and appropriate level of management.
6. Have multiple participatory sites to manage risk of a site "failing" and to get more producer involvement.
7. Incorporate an element of 'whole of system' research/evaluation to include areas such as reasons for decision making and risk management.
8. Run for a minimum of 4-5 years in order to build strong interest and knowledge base over a number of seasons.
9. Provide economic data that is meaningful and quantifiable to producers, advisors and bankers, which demonstrate a return or aids decision making in some way which acts to convince the host that the technology works and for extension to other producers. The level of precision should be relevant to the question and the party (research or producer). Economic analysis should be undertaken

when treatment effects are significant, deal with capitalisation and risk and by an independent source and not necessarily solely by a government agency.
10. Data collection should be designed to address both producer and research needs (these may differ) and be conducted with the accuracy required by each party.
11. "Should data collection be undertaken by producers?" received widely contrasting comments. These include "data collection should not be conducted by producers" to "consider part funding a full or part time local employee rather than having a host or departmental staff coming and going".
12. Where producers (or any adult members of their business) or grower groups collect data, they need to be adequately trained and remunerated and interested in being involved. Remember that when working with producers, commercial imperatives and time constraints may mean compromises on data collection. Data collection forms part of the learning cycle but include researchers for data analysis.
13. Advisors play the role of facilitating researchers and producers through the process and coordinating project activities and acting to interpret the language and needs of researchers and producers. They may also undertake data collection and receive training where required.
14. Feedback into R&D process through regularly updating leading producers to explore, evaluate and question findings as the project progresses, to create a culture of continuous learning across the project and to keep interest higher and maintain involvement.

Measures that demonstrate success of the R&D engagement
1. Where researchers and producers have met on an equal basis, developed strong mutually respected relationships, shared ideas and gained from the process.
2. Got the subject matter right, contributed to the research program and solved a problem of interest to producers within the context of managing a whole farm.
3. The ultimate test will be leading producers having the interest and willingness to show other producers what can be achieved and demonstrating the scale of improvement. Participatory sites will also add to the effectiveness of extension.
4. Adoption of the technology with measurable practice change within the core group and the wider farming community.
5. The formation and/or fostering of a culture of learning amongst producers and researchers.
6. Research findings actively incorporated into advisor information and services to their clients with development of good extension products and materials including relevant economic analysis.
7. Additional extension activities developed as a spin off from participatory R&D site(s).
8. All parties want to do more participatory R&D.

Task 6

Task 6 required development of an implementation plan for participatory R&D which describes a process leading to successful outcomes and which contains the nominated attributes of participatory R&D. The implementation plan (Table 5) describes the process of participatory R&D in the form of five steps and also provides details of how participatory activity could be coordinated through establishment of a network.

Table 5: Steps for implementing participatory R&D

What is participatory R&D?	The goal for Participatory R&D in the Feedbase Investment Plan (FIP) is to add value to the research through producer input throughout the research and development phase. The participatory R&D goal is achieved through engagement between researchers and leading producers (or existing producer groups) providing benefit for the research activity and for farm businesses. Participatory activity will likely vary among projects and over time within a project. For example, activity may include producer industry committees without on-ground activity, or with on-ground activity commencing in later years, or the early establishment by producers of sites where participatory activity will be undertaken. The most suitable type of participatory activity will be negotiated between researchers and producers. Participatory sites will extend the research knowledge by addressing questions of if and how the technology (research) works and fits within farming systems. These sites will have demonstration value but this is not the primary purpose for participatory sites. It is useful to think of participatory R&D as a joint venture between researchers and producers to extend research and add value for both parties. Participatory R&D sites are not to be used as simply another treatment for the main research. They are aimed to allow participating producers to (potentially) scale the research to an area that meets their risk profile, implement the new research to suit their particular circumstances and provide feedback to the researcher (and MLA) in a two-way dialogue regarding the suitability of the new R&D for their enterprise.

The Parties	There will be two parties to participatory R&D, namely producers and researchers.
Step 1 **Identifying leading producers and/or producer groups and advisors**	• Researchers will either directly identify producers or producer groups or identify a third party advisor (private or public) who will identify producers or producer groups to engage in participatory R&D. Producers will have farms that are located within the agro-ecological region that is relevant for the research. • Connections with producers and advisors should rely (though not exclusively) on personal and established relationships with groups likely to share interest in the research activity. • Advisors will play an important role in participatory R&D by connecting producers and researchers and helping to broker interactions between parties. • An Expression of Interest (EOI) will be called by MLA inviting advisors to nominate for a role in participatory R&D. The EOI will be promoted through Feedback Magazine and other networks available to MLA. The purpose of the EOI is to establish a network of advisors available for researchers and producer groups. Application by advisors for acceptance into the advisor network should remain open to encourage ongoing interest. • Selection criteria on which MLA will assess the suitability of advisor submissions will include: a. Demonstrated experience in working with producers and producer groups and interacting with researchers b. Ability to engage leading producers for this process c. Sound and integrated understanding of Feedbase components (e.g. soils, pastures, livestock) as demonstrated by professional experience d. Provision of two referees • It is important (but not obligatory) that potential champions exist within the producer group to assist eventual broader scale adoption of participatory activity. Champions will be those producers willing to speak at field days, contribute to public forums and provide producer credibility. • The distribution of participatory projects among advisors, and more importantly among producers, should be managed to avoid undue overlap. For example, the number of producers involved in more than one participatory project (e.g. soil phosphorus and dual-purpose crops) should be minimised in order to engage with as many leading producers as possible. Management of distribution will lie with MLA project coordination (see later Step on Network Coordination). • The opportunity for producers is to derive value for farm businesses from a new technology, improve confidence in the technology and to stay abreast of new research and hence opportunity. • Where the proponent is a producer group then a reciprocal process should be followed. • Success is defined as producers (≥7) identified to be actively involved in the project.

Step 2 **Defining the scope and details of participatory R&D (*meeting 1*)**	**a.** The initial meeting will be facilitated by the third party advisor to guide interaction between researchers and producer groups seeking to establish participatory R&D. The third party will follow the steps in this Implementation Plan. **b.** With both parties present at the meeting the researcher or a representative (someone from the same organisation or an advisor or project officer who has been well briefed by the researcher) presents (could be a physical presentation or delivered over the internet if distance is a barrier) to the producer group the reason/s for undertaking the project, key researchable issues (questions/hypotheses), planned activities, time scale and their view of where the participatory group can make the greatest impact for the research. **c.** The third party advisor is to encourage discussion among producers about the research background and questions with the purpose to identify (and record) relevance and interest (for the needs of producers). The researcher needs to remain for this discussion to contribute (but not dominate) required information. The advisor needs to take care to ensure that the discussion does not go off on a tangent but remains focused on the research issues. **d.** Output; Researchers and producers define the types of activity for the **first year** (i.e. industry committee or participatory sites). **e.** If industry committees are the agreed activity then the role is to oversee industry application. That is, the producer industry committee (not a technical committee) provides comment about (among other issues) the commercial relevance and potential fit for the research outcomes into farming systems. (Note: when a separate Pillar Advisory Group of scientists is established for a project, then it will oversee the scientific elements of the research). Meeting frequency (suggest 1-2 meetings a year), protocol (producer chair, meeting procedure, administrative assistance), reporting, sitting fees, travel costs and length of commitment need to be agreed. The industry group will report to the Advisory Group and MLA. If the decision is made to (after some time) implement participatory R&D sites then the on-going need for the producer industry committee will be reviewed by all parties and MLA. **f.** If development of participatory R&D sites is the agreed activity then the group will need to decide the activity. This discussion will start broadly (define issues) and then focus on design of the activities and appropriate data collection procedures. The researcher is an important person in this discussion because the participatory activities must add value to the research project. The advisor is brokering collaboration between researchers and producers such that the agreed activities meet the needs of both parties. This is likely to be an iterative process to address the specifics of appropriate design and data collection. During this discussion the facilitator should be considering the following approaches for participatory R&D: • Implementation at participatory sites of a sub-set of the technologies being investigated by the research team. • The merits of multiple participatory sites to extend observations across soil type, land capability and livestock units and to improve assessment of the “fit” within farming systems. Multiple sites will also help manage the risk of a single site “failing” and will increase producer involvement. • Implementation that is on a scale that is relevant for producers.

	• Determination of what data collection is required for participatory sites and who undertakes the data collection on participatory sites. A strong recommendation is that data collection should be undertaken by a trained person (training may be required as part of the participatory R&D) who is paid for the activity. Producers should not be relied upon for the data collection (without training, incentives and a formal agreement) with the possible exception where the data is defined as being part of normal farm activity. • Consideration of compelling indicators (in addition to typical scientific indicators) that producers use to make decisions related to the particular area to be included as part of the data collection. • Consideration of an appropriate statistical approach to the analysis and use of participatory data. Researchers may or may not decide that a quantitative statistical approach is required to add value to their existing projects. • Reporting (to MLA) – both parties will need to contribute to reporting from their perspective. This is not simply a technical report, but will reflect the realities of implementation and the value of participatory R&D. Researchers are to respond to the value provided by closer relationships with producers and participatory sites and producers to indicate perceived value of the process including how they view the responses by researchers to areas / ideas for improvement (more detail on reporting is provided in Step 3). • Participatory activity and data collection needs to permit economic analysis at a level that is relevant to the question and to producers (as a guide for subsequent broader extension activity and ongoing evaluation of the FIP projects).
Step 3 **Preparing a detailed project plan (*meeting 2*)**	Once the participatory activity has been agreed it may be timely to close the meeting and reconvene in 2-4 weeks to conclude the discussion and agree on project details and management. During that period, the advisor is expected to prepare a document which captures the agreed activities and also drafts responses to the following which are finalized at the second meeting with producers. **i.** Project objectives for each participatory site which acknowledge the link with the research activity **ii.** Benefits of the research activity for producers and researchers **iii.** Operational plans (project design, how the project will be implemented, types of data to be collected, who will implement and collect the relevant data, etc) **iv.** Milestones and dates **v.** Budget **vi.** Project management and roles and responsibilities within the project and with the research project (including meeting frequency with research project/researcher and administration) **vii.** Risk (identifying and managing, risk of failure) **viii.** Operational matters (access to producer sites, biosecurity, use of farm infrastructure, working dogs, privacy, Work Health and Safety) **ix.** Animal ethics to be submitted through the Researchers' Animal Ethics Committee of their organisation **x.** Project reporting on a 6-monthly basis. This report to cover three main areas: • Progress towards project objectives and milestones • Benefits for the research activity from the perspective of producers and researchers • Benefits and costs of the participatory research process from the

	perspective of researchers and producers. That is, part of the reporting is monitoring and evaluation of the effectiveness of the engagement and participation process from the perspectives of both researches and producers • The inputs of producers and researchers to reports will be captured in the same exercise. Reports to be submitted to MLA who may forward to relevant committees (for example, Pillar Advisory Groups)
Step 4 **Application using MLA project proposal template**	• Project proposal templates will be completed by producer groups (or their advisor) to undertake participatory R&D. Information and documents prepared for Step 3 of this process will be used to complete the application. • Proposals will be required for all participatory activities (industry committee or participatory sites) to be submitted to MLA for approval or otherwise. • The annual budget for participatory activities will not exceed $80,000 per research project and it is recommended that the number of participatory sites does not exceed four. The period of activity should be well aligned with the need of the research project. Flexibility remains within the research project to allocate the funds to participatory sites in a disproportionate manner (i.e. not all sites will need to have an annual budget of $20,000) but it is expected that all sites will receive appropriate levels of support as determined by consultation between researchers, producers and MLA. • The budget request will need to be commensurate with the proposed work, and the proposed activities commensurate with the development stage of the project. Producer groups or their advisors (as long as they have a relevant ABN) will be the contract holder for participatory activity. • Where participatory R&D (only when this occurs after research agreements have been signed) is established with producer sites and this is not included in existing research agreements, researchers may be eligible to claim an annual payment from MLA to cover costs associated with any intensive engagement with producers and participatory sites. Intensive engagement is defined as activity in excess of two meetings (including field days where this is not an already identified activity within the research agreement) in the year and any associated costs of extra travel and accommodation.
Step 5 **Monitoring and evaluation**	The success of participatory R&D will be monitored on a 6-monthy basis and will be based on progress reports submitted to MLA (detailed in Step 3). Evaluation will take two forms – qualitative and quantitative in relation to participatory sites, research activity and benefit of the participatory process. • Quantitatively, success from the producer's perspective will be measured against the initial objectives for establishing the participatory R&D. From the researcher's perspective, success is described as validation or enhancement of the current research outcomes (was there added value for research) at commercial scale and/or identification of other aspects for future research. • Qualitatively, the benefit and cost that has accrued from the participatory process (itself) for researchers and producers will be assessed by each party. Qualitative determinants of success will include enhanced knowledge and confidence in the research outcomes by both producers and researchers and changes (or confirmation) in researcher and/or producer perception about the fit of the technology for farm businesses that has emerged as a result of the participatory process. Importantly, the qualitative evaluation must provide more than tokenistic feedback about the process of participatory R&D, from the perspective of both researchers and producers.

	Capturing the benefits in the form of case studies may be appropriate. Industry consultation nominated the following as industry measures of success for participatory R&D. • Adoption of the technology with measurable practice change within the core group and the wider farming community. • Research findings presenting a more complete message around a technology than just reporting the science. That may include capitalisation, workload, labour efficiency, management skill required, fit with other enterprises. • Research findings actively incorporated into advisor information and services to their clients and presented at industry events such as Pasture Updates and Grassland and Animal Society Conferences. • Additional extension activities developed as a spin off from participatory R&D site(s). • All parties wanting to do more participatory R&D.
Networks	Eventually the advisors and producer groups involved with participatory groups/sites will form a network around the country. The value of this network will be increased by establishment of an electronic resource which lists these people and groups, thereby making it easier for researchers to access these contacts and for MLA to track activity. Submissions by advisors to the EOI for involvement in participatory R&D will provide the basis for establishing the database. The network database will be managed by MLA and will likely require appointment of one or several coordinators (fractional appointments with geographic coverage and increasing as need demands) to service the network and participatory sites. This network can be the conduit to bring different producer groups together, provide opportunity for producers to visit other participatory sites, deliver webinars or other events and accelerate the rate of industry adoption of emerging technologies. The coordinator/s will have responsibility for: I. Establishing a database which records contact and location details of producers (including their producer group) and advisors; II. Matching participatory activity against producer details to provide a map of activity and interaction among projects; III. Recording of professional expertise of industry advisors; IV. Providing opportunity for interaction among producer groups and advisors (circulate project reports/summaries, webinars, travel among sites, conference, newsletter); V. Linkage with broader extension activity within MLA

The implementation plan was conducted with the project “Increase feedbase production and quality of sub-tropical grass based pastures (B.PSP.0001)” with Dr Sue Boschma and Dr Geoff Moore as Principal Investigators. This project has activity in Western Australia and NSW and was allocated four participatory groups (by MLA). Meetings were held with leading producers at Albany and Esperance in WA and at Parkes (Cook’s Myalls Landcare Group) and Manilla (New Mexico Land Management Group) in NSW. The purpose of the meetings was to (i) gauge interest from producers in participatory R&D; (ii) identify R&D issues of interest to producers; and (iii) assess the implementation plan and capture improvements for the process. In

essence, these meetings covered Steps 1 and 2 of the implementation plan. Participatory sites were the chosen form of participatory activity at all meetings.

Meetings were well attended (9-15 producers/meeting) and a member of the Project team gave a brief explanation as to the background and intended purpose of participatory R&D. The research project was described to producers before producers were encouraged to discuss and nominate their related interests. A brief description of these interests (Table 6) demonstrates good linkage with research activity. It was clear from the NSW meetings that participatory activity would likely develop to include in later years, the grazing management of the sub-tropical legumes.

Table 6: Key R&D interests of producers

Western Australia
Winter feed gap
Legumes and persistence
Pasture cropping into kikuyu
adding forage canola, barley etc to legume trial site
chemical options for use in perennial systems
Machinery options for cropping into kikuyu and establishing perennials
what is the right type of machine for sowing into kikuyu x age of kikuyu stand (i.e. degree of thatching)? May need to develop different strategies for kikuyu stands of various age/thatching
NSW
Identify best bet sub-tropical legumes and grasses (Parkes)
adaptation to variation in soil type
Establishment techniques for sowing into sown and native pastures
Effects of subtropical legumes on soil health (carbon, biology)

The implementation plan for participatory R&D worked very well with NSW groups and no major amendments were suggested. These meetings were convened (by Lester McCormick, NSW DPI) for the sole purpose of participatory R&D, and in two hours the groups successfully completed Steps 1-2f. The feedback from WA was for the first meeting to conclude at the end of Step 2c allowing producers time to consider key issues discussed in Step 2f. However, these meetings were convened for multiple purposes and only one hour allocated to participatory R&D. It is recommended that two hours be allocated to the first meeting to complete Steps 1-2f.

There was comment from all producer meetings that they would prefer a brief application template (2-3 pages) when proposing their project to MLA and for reporting to be conducted on an annual basis. Proposals that refer to annual operating plans developed during the life of the project may be easier and more meaningful for this activity.

5. Discussion

The process leading to the development of the implementation plan for participatory R&D had strong involvement from researchers, producers and advisors. The implementation plan was tested with four producer meetings and no major changes are recommended. There are however, a few key issues that need to be considered when moving to Steps 3 and 4 of the process. Advisors for the producer groups did not attend any of the meetings. In NSW, the intention was for the advisor of the Parkes and Manilla groups to be a NSW DPI agronomist or technical expert but the restructuring of the organisation and loss of extension services means this will not be possible. In WA, advisors were not in attendance because the meetings were scheduled as part of the research activity (rather than specifically for participatory R&D) and these groups indicated that they want to choose their advisor. The absence of the advisor will make it more difficult to transition from Step 2f to Step 3 in the preparation of the research proposal. This is not a major problem and one that can be overcome but it would be better if the advisor was able to attend and facilitate the first meeting. The advent of the advisor list developed through the proposed EOI will make this easier for producers and researchers.

There was enthusiastic support from producers for the purpose of participatory R&D and they welcomed the opportunity of involvement with research activity. There was a sense with the NSW groups that participatory R&D will play an important role in helping to maintain their local groups. For some groups, the importance of Landcare has diminished as producer interests have broadened beyond the Landcare remit and participatory activity will serve as a new purpose. Rather than being of concern that producers may use participatory R&D to 'shore up" existing groups, this is a good opportunity for MLA to capture group interest and leverage benefit through the networking of groups and advisors.

In conclusion, the activities of this project have addressed the project objectives. Firstly, there has been industry consultation which was used to develop the practical details and ideal attributes of participatory R&D. In conjunction with the producer meetings, this has led to development of broad support (from leading producer groups and from the researchers involved in the southern feedbase program) for the participatory process. Secondly, an implementation plan was developed, building on the industry consultation which outlines a series of steps for implementing participatory R&D. The value of participatory activity will be enhanced through development of a network of producers, advisors and researchers and this network may have high value for ultimate rates of adoption of MLA activity. Thirdly, producer meetings (4) conducted with one of the feedbase projects confirmed the suitability of the implementation plan and highlighted the value of closer interaction between leading producers and researchers. The project team are confident that participatory activity will be a valuable process for MLA projects and for accelerating the rate of adoption of project outcomes.

Appendix 1: Interviews with Project Leaders of previous or existing projects

Ian Simpson

Speaking of experiences with projects such as Sustainable Grazing Systems, Supporting Site network with EverGraze, Making More from Sheep and More Beef from Pastures.

Opening remarks

- People do things when they can afford it and so innovations need to be available for adoption.

Engaging leading producers

- Access producers by going to targeted communities and working with respected producers. These producers become the media tool as they socialise at sport, church or other events.
- Send out letters of invitation to formation meetings to identify key producers who often self-identify at these meetings and co-opt others to the project. SGS held 45 meetings to start the Regional Producer Networks. Attitude of researchers was that of being terrified of producers having control.

On-farm testing of innovations

- Supporting Sites are local trials or demonstrations where farmer groups implement a sub-set of the pasture and grazing management technologies being applied at the Proof sites, to demonstrate their impact on increasing productivity, profitability and better land management outcomes within commercial farming operations. That is, farmers showing other farmers what can be achieved and demonstrating the scale of improvement that is possible at farmer initiated research sites.
- Supporting Sites model makes the R&D program look more 'real world' to farmers, provides a reality check and feedback for the research, provides the basis for targeted extension (delivery) activities and reduces the gap between research, development and adoption of new technology.
- Facilitators of producer activities are key to successful outcomes. Unusual but desirable to have technical and facilitating skills.

What has worked really well?

- National Farm Walks where 3,500 people in a one week period visited Research and Producer sites.

Approach to avoid

- Greatest disappointment in SGS was 40% of regions that did not fire, mostly because of poor facilitation or less commonly because of vested interest.

Cam Nicholson

Speaking of experiences with projects such as Grain & Graze.

Opening remarks

- An innovation must be a good value proposition to be able to "sell" to busy leading producers. It has to have an obvious relative advantage or solve a problem. Do not assume benefit.

Engaging leading producers

- Conduct market research by speaking with producers and advisors to get ideas and to test project ideas. These meetings would be with groups of 10-15.
    - As an example leading producers were grazing crops (cereals) and nominated the greatest benefit arose from spelling pastures which led to greater animal production. In contrast, researchers saw the benefit as forage yield. Therefore the value proposition from grazing cereals was increased livestock production from pastures.
- Rely on consultant groups to access leading producers as many of these producers have a research budget and are already "out there" looking for advantage and identifying constraints.

On-farm testing of innovations

- Rely on consultants working with clients (leading producers).
- Design and analysis of site by skilled person (probably neither consultant or producer) and data collection by consultant. Consultants are paid by project for involvement even though working with clients.
    - As an example of what emerges has been spring-sown Canola being grazed over summer, autumn and then harvested the following spring. This has led to research activity with John Kirkegaard and demonstration of feedback loop.
- Data collection by consultants or other skilled staff (not producers).
- Feedback into R&D process is informal through meetings

What has worked really well?

- Farmer interaction (leading Producer field days, seminars, etc). Real test is how well a Producer can explain what is going on at the site to others.
- Consider risk analysis and the impact on profit.

Approach to avoid

- Not meeting real Producer need and then being less selective and accepting producers who are not committed.

Mike Keys

Speaking of experiences with projects such as Prime Pastures.

Opening remarks

- Original idea for Prime Pastures came from Industry (Incitec) who approached NSW DPI.

Engaging leading producers

- Worked through departmental contacts and industry contacts to select sites for pasture establishment comparisons.

On-farm testing of innovations

- Mike and staff established all sites and collected data. Where grazing details were required this meant reliance on producers.

What has worked really well?

- An industry-based program (Incitec, Monsanto, Wrightsons, Tillage company)

Approach to avoid

- Working with cooperators who don't collect data or manage site.

Warren Mason

Speaking of experiences with projects such as Sustainable Grazing from Saline Lands, Sustainable Grazing System, Supporting Sites with EverGraze.

Opening remarks

- Project approaches/actions at times determined by RDC directives.

Engaging leading producers

- Original survey work (meetings) came away with some Producer names (n=20) who were used (n=10) as the basis for a planning committee for SGS and most became the inaugural Chair of a Regional Producer Committee.
- Word of mouth via key informants who may co-opt.
- Took leading producers on a trip to NZ to learn and discuss grazing management but also to better form connections.
- SGSL was developed in isolation from producers with producers only engaged after the project had been developed and approved. Paper advertisements ran to identify cooperators and issues which would answer producer questions about salinity. SGSL provided funds for site development and monitoring.
- Each state had a coordinator and they connected groups and in some cases completed monitoring of sites

On-farm testing of innovations

- SGSL had about 100 sites around country with about 60 in WA.
- Researchers were not originally happy as felt most questions were already solved but came round to seeing the sites as a better way of attracting producer interest at field days and having a forum to discuss matters with producers.
- Producers collecting data does not work, even when data recording sheets, cameras and other equipment stored on site in weatherproof sheds.
- Payments were made up front for administrative purposes and so there were limited ongoing obligations to undertake measurements.

What has worked really well?

- Where researchers and producers both have something to share and they meet on an equal basis.
- Across-state coordination at program level.

Approach to avoid

- Very slow rate of adoption even with cycles of leverage.
- Producers will not collect data.
- Contracts with producers that sought to spend without the means to verify impact.

Gerald Martin

Speaking of experiences with projects conducted as PIRD or PDS.

Opening remarks

- Subject matter must be valued by proposers because the issue is not set by researchers or consultants.
- Too much research done without enough contact with producers to define the problem.

Engaging leading producers

- Producers submit applications.

On-farm testing of innovations

- Multiple sites are important to manage risk on a site “failing” and to get more producer involvement.
- Need to pay to get better data collection/quality.
- Better to have fewer adequately funded projects than more less funded projects.

What has worked really well?

- Teaching producers to learn to learn.
- Getting the subject matter right to make sure it solves a problem of interest to producers.

Approach to avoid

- Poor disbursement of project knowledge aside from Final Report. Not much interaction between producers and researchers.
- Avoid droughts.

Jason Emms

Speaking of experiences with projects conducted as Enrich.

Opening remarks

- Into the third phase of a project which started in 2005.
- Producer champions of the project have sought and obtained their own funding for some work on their farms.

Engaging leading producers

- Survey of producers who already had forages with telephone follow-up and then picking champions from this list. Five champions invited to the project of which two have had sites.
- The research team conducted a media program about their work and were contacted by catchment management, landcare and other organisations to help them establish and set methods for monitoring of sites.
- Had ten groups with 17 sites over four states where the project team planted out the design but Producer group paid for operating costs.

On-farm testing of innovations

- JE set up research protocols.
- Don't rely on producers to collect more complex data that moves beyond their basic original questions.
- This type of activity (Enrich) does not attract mainstream producers.

What has worked really well?

- In 2011 completed six full day field days at different sites across four states linked to Producer groups.

Approach to avoid

- Insufficient budget to manage sites over the time period required.
- Too much unpaid time commitment requested of researchers by producer enthusiasts.

Andrew Thompson

Speaking of experiences with projects conducted as Lifetime Wool (LTW) and Wean More Lamb Projects.

Opening remarks

- Leading producers want to access early information.
- Need producers who can champion the project rather than just collect data.

Engaging leading producers

- With LTW there were 20 demonstration sites and these were located through existing contacts. In other words work with producers that you know are good farmers/livestock managers and with whom you already have built an established relationship.
- Make sure you choose producers whose interests coincide with project interests. For example, Andrew mentioned some disappointment when a producer was really into genetics yet project had a focus on pastures and management of condition score.

On-farm testing of innovations

- Used the demonstration sites to compare only two treatments from the research sites. These were weight maintenance and loss.
- Collected data over 2-3 years and used a regression approach to establish associations between factors (e.g. condition score and reproductive success) where causation had been determined at research sites. This gave the team access to data from 10-20K animals and greater assuredness in results.

- LTW was very well resourced ($) and had a second phase (after 3 years) where surveys and marketing were conducted.
- In contrast the More Lamb project (activity on 5? farms) was not as successful. Producers were allowed to choose their own treatments which meant that it was more difficult to look across sites and harder to extract value by scientists. Producers did the data collection (paid $10K each for site establishment – fencing, etc).

What has worked really well?

- Making good linkage between consultants, producers and scientist peers very early in process.
- Stressed the importance of engaging peers (i.e. other researchers) to make sure research community is aware.

Approach to avoid

- Be very selective on the people involved in the project and make sure their interests coincide with that of project.
- Don't expend too many resources on trying to convince everybody of the merits of the project. Estimated may have spent tens of thousands of dollars trying to convince a single consultancy of merit.

Belinda Hackney

Speaking of experiences with projects conducted as Agronomy and management of new annual legumes.

Opening remarks

- Get out there and sell the ideas.
- Researchers need to do the ground work and make sure their ideas are of interest and relevance to producers. Still room for blue-sky research where this is less applicable.

Engaging leading producers

- Used existing farmer groups, agronomist groups, any existing groups.
- Conduct meaningful survey before start project to make sure the research is likely to be of interest to the community. At the same time, start selling the ideas through media to give producers and advisors the chance to think about the possibilities.
- Meaningful survey means not speaking with 10 producers and not expanding beyond these producers. Belinda surveyed 300 farmers and about 30 advisors every year to determine needs and level of adoption. Survey was conducted within Producer meetings (non-random) but ensured greater completion rates.

On-farm testing of innovations

- All trials done with small scale replicated plots on commercial properties but the team then gave the Producer enough annual legume seed to sow 5 ha and did not constrain what they tested/did with the seed. Some then involved local agronomists to do a +/- trial.
- Mixture of small scale plots and larger scale sowings was great for producer interest.
- Some producers are now streets ahead in innovation.

- Very important to have local validation to make sure technology works as expected and to overcome issues of “won’t work in my area”. Some important difference found between WA and NSW in terms of seed softening and chemical interaction with sand/clay soil types.

What has worked really well?

- Get out there and speak with large groups of producers (got to be > 10) and go to the places where producers want the technology.
- Make sure you have scale somewhere in the design.
- The research and the needs of producers have to be aligned.
- Make sure the technology deals with timeliness of practice within the context of managing a whole farm with multiple enterprises and demand for labour.

Approach to avoid

- Never lose sight that applied research has to meet a need of the market (producers and advisors).
- More basic research will not have same constraint.

Appendix 2: Interviews with producers and advisors

Summary of interviews where interviewees requested anonymity

1. Why did you get involved in participatory R&D?
   All producers interviewed had a desire to learn and stay abreast of new research in their particular enterprises. This came from a culture of learning, often passed down from previous generations. In some cases they sought research to be done on their own farms and other times were approached to see if they were interested, often due to past involvement in hosting trials.

2. Purposes for joining the process
   The participatory process was seen as a way to access new options for particular use on their own farm e.g. pasture species. All producers participated in the research in order to find answers for use on their own farms or that had relevance to their own situation.

3. Relevance of the project
   All the work the producers had been involved in had relevance to their own businesses – all agreed that they would not have been involved if they had not seen that the project could add value to their own situation. In some cases, the work was something the producer had been investigating, but needed help to 'get the science right'.

4. Adoption/change of practices
   In some cases, the project helped confirm and/or reinforce what the farmers had thought or were already doing, hence giving them the confidence in the direction they were heading. So, although they may not have 'changed' their practice, they were more confident in their conviction to pursue the 'technology' and maybe more likely to invest more heavily in it.
   In another case, the project definitely had an impact for change and adoption, because those farmers involved in the project had chosen to take part and had been actively involved throughout.

5. What worked?
   In all cases, the personal approach by the researcher(s) and willingness to listen to their ideas on the project was highly regarded. In some cases this was done in an individual manner, in others a group (farmers, industry and researchers) approach to planning of the project was effective where questions could be posed and ideas shared. Building relationships between all parties (including industry) was seen as central to a successful project. This process was of greatest benefit when done at the beginning of the project. In addition, the preparedness of the researcher to work in with the existing farming system and operations was crucial.
   The fact that the project was conducted on farm was viewed favourably and created local interest.

6. What didn't work?
   It became evident that at the root of all issues was lack of communication and unrealistic expectations, which developed due to inadequate communication. Time needs to be spent by proponents of the project, looking into any work already being done in that field, often by farmers or grower groups. Grower groups must also be consulted where necessary and not

expected to do work for the project for no cost and certainly not be written into projects without any consultation. Failure to address these issues will impact on adoption and credibility and interest in project. 'Management' of all people involved in the project must be executed carefully and in a transparent and approachable manner.

7. What would you do differently next time?
   Insist that the project is run for a minimum of 5 years in order to have a valued result. Short term projects are not ideal in most cases due to the changing environmental conditions experienced on a year by year basis. It was felt that next time around they would not like to have to rely on other farmers to be actively involved voluntarily. Their time is valuable and should be valued by offering reimbursement for time and resources utilised.

8. Greatest frustration
   Lack of dollars was viewed as a frustration and barrier to good research being better. Animal measurements being costly and time consuming should not stop it from happening in on farm research and projects should be of a decent length of time to be valuable to farmers.
   In addition to the dollars issue, it became apparent there was a real frustration with what research should be. Research projects must be testing something that is not known. If doing a trial to show what you already know, then that is extension. Too often in particular projects, trials are put on the 'good country' in order to get a positive result – to get a result to demonstrate what is already known. Find out what the farmers want to know and research it.

9. Greatest buzz
   Different farmers had different experiences. Some were to do with the value of the results of the project for themselves and others e.g. economic data, new species; some were about meeting and interacting with researchers; and others to do with learning about how good research is conducted.

10. Experiences collecting data?
    For those that had been involved in collecting data, they found the experience simple and easy as were only collecting data that they did as part of their normal farming operation. There were no experiences of collecting any other data.

11. Views on the project taken into account?
    In most cases they felt they were being heard and changes being made when feasible. It was felt that in some cases, monetary restrictions on projects prevented some changes being pursued, which was disappointing. Individual views were important to seek, not just whole of group as you may miss the valuable contributions of the more introvert farmers.
    It was strongly apparent that views and constructive input should be sought from the very beginning, in fact, the research should be ground driven from the start. It was no point bringing farmers in half way through a project and expecting adoption and credibility. It was suggested by one producer that it was like suggesting bringing the father in just at the birth, not at conception.

12. Engaging others in district
    Beer
    It was suggested doing some (or using existing) farmer benchmarking at the very beginning of a project as a way to help farmers identify their issues – find out what it is that they need

to have researched that is impacting their business. This may help engage them as the project rolls out.

Once the project is up and running, having short, relevant field walks with people on hand that can answer questions, with the appropriate 'hook' to get them involved and attending was seen as valuable. However, there must not be a focus on getting large numbers to events to demonstrate 'success'. Quality not quantity.

13. Approaching groups or individuals
    Generally, the responses were that both should be approached to allow for different personalities i.e. not everyone will speak up in front of a group. However, at the end, a response was that farmers should be approaching the scientists/researchers.

14. Nil

15. Local interest
    Local farmers were interested and often asking questions of the work being done – not necessarily of the project as such, but what is actually happening in the paddock. Interest not necessarily an indication of the intention to adopt – sometimes just curiosity.

16. Activities on site
    Hands on activities on farm were the strong preference with visual stimulation rather than too much theory. Machinery and/or stock are always interesting, especially if some activity is taking place. Take home notes and contact details of people to contact after the event were valued. Keep it short, honest and subjective.

17. Farmers collecting data
    It was seen that this really depended on the type of research activity and the use of the data. If someone else was going to be relying on the data, a third party must be included.

18. Economic assessment
    It was found that economic assessment was important to some and not so to others. It depended on the actual research being conducted. If done though, it must be meaningful and quantifiable. In some cases it will be the key to adoption.

19. Scale
    The opinions on this varied widely. However, generally farmers preferred the larger scale work, although recognised there is still a need for small, plot sized trials for certain purposes such as species trials. Farmers want to see how to fit into their own system and across soil types. There was comment on the severe lack of 5 ha plots sized trials for pasture research.

20. Would you do it again?
    Two responses received summed up the general consensus
    "Cant' see myself ever pulling out of it"
    "Absolutely"

Interviews with named producers and advisors

Ashe Briscoe and her husband **Dougal Young** hosted a participatory R&D site with the Lifetime Wool Project.

1. Why did you get involved with participatory R&D?
   - Had previously been involved with other on farm R&D
   - Participation is important for self-education
   - Keeping in touch with researchers
   - Important for the industry

2. Was it a push or a pull that got you involved?
   - Lifetime Wool approached us, but we were already aware of the project
   - We were probably approached as a result of our previous involvement in other projects
   - Ashe was working at DAFWA at the time

3. How relevant was the project to you?
   - Highly relevant

4. Did the project convince you to adopt/change practices?
   - Yes we changed the way that we managed and fed ewes
   - A different feeding regime coming up to lambing
   - Changed the CS profile across the year

5. What worked and influenced you to change practice?
   - Seeing the increased lambing percentages
   - Pregnancy scanning showed us the opportunity to increase lambing percentages by increasing the survival of twins

6. What didn't work and why? What was your greatest frustration?
   - There was nothing that didn't work technically but some of the feeding regimes were too high to be commercially feasible
   - From a project management perspective – the researcher did not have enough support for the on farm work that was required. A female researcher and a female technician, they often struggled to cope with the physical workload and Dougal would have to help them a lot with manual tasks. Sometimes they were too busy to get to the site and he would have to do jobs for them. The project was not adequately budgeted or resourced in this regards
   - The work and effort that these women put into the project has never been adequately recognised in publications or extension activities that have occurred subsequently

7. What would you do differently next time?
   - Have an adequate budget for labour and technical support
   - Ensure that there is adequate recognition for those that contributed

8. What was the greatest frustration in the process?

- The lack of labour
- Managing animal ethics issues. This would be a major limitation to doing a project of this kind now

9. What gave you the greatest buzz from the process?
   - Not a lot of R&D happens on sheep meat and wool. This was a focussed investment at the cutting edge with a production focus
   - That was exciting for the industry

10. What were your experiences in collecting data for the project?
    - Yes, we collected data when the researchers were too busy and could not get to the site and assisted with data collection at other times
    - No problem with collecting data because of previous experience, but need clear instructions. Producers can cut corners and not understand the consequences for statistical analysis etc

11. Did you feel that your views on the project were taken into account by the scientists involved in the project? Did this result in the project being modified to improve research outcomes and applicability to industry?
    - Yes our views were taken into account and there was always open discussion
    - Can't think of any examples of when the project was modified as a consequence of feedback from us

12. What is the best way to engage other local/regional farmers in participatory R&D in their district?
    - Small groups trialling things for themselves
    - Mini field days and workshops
    - Seeing someone else doing it has a major impact on adoption
    - Farmers learning from farmers

13. Do you think that it is best to approach existing groups or famers individually to engage in R&D?
    - Not many existing groups in sheep
    - OK in other industries such as cropping and pastures to use existing groups
    - The R&D must be focussed on the major interest of the group – hard to get a cropping group interested in sheep R&D
    - It is more important to gather together like minded people rather than an existing group

14. Does the level of engagement affect the extent to which these farmers adopt the technology in the trial?
    - Yes definitely
    - Those that trial things themselves e.g. PPP will have greater levels of adoption than those that just attend a field day or farm walk

15. What did your neighbours and farmer mates think about you being involved in this research? Did you become a source of information for them?
    - They were certainly interested but there levels of adoption varied

- Our old WoolPro group were very interested and asked questions and participated in field days etc

16. What types of activities need to be run at sites to interest other farmers?
    - Groups trying things for themselves
    - Field days, mini workshops

17. Should farmers be collecting the data on these sites or relying on the scientists to do it?
    - Yes if it is an on farm commercial trial – they will learn more and have greater adoption, greater ownership
    - If a more complex trial, they will need more technical help

18. How important is economic assessment of the research results for adoption?
    - Yes it is important, but can't really remember much about the economic analysis in Lifetime Wool, except that it showed that pregnancy scanning was only an economic proposition in certain seasons

19. How important is scale
    - Practical paddock scale is important
    - Need to prove that the technology is transferable from the replicated plot scale
    - Small plots won't convince farmers – complexity increases with scale

20. Would you participate again?
    - Yes

Tom Dunbabin and his family have been involved in numerous participatory R&D projects on their farm in Tasmania on natural resource management, pastures, pasture pests, grazing management, fertiliser trials etc. Tom has also sat on a range of advisory committees for national RD&E programs such as Land Water and Wool and SGS.

1. Why did you get involved with participatory R&D?
    - Interested to understand the direct financial benefits of new knowledge/technology to the business
    - General interest
    - Because these programs need to have the producers perspective incorporated
    - SGS was exciting because it was fully engaging with producers

2. Was it a push or a pull that got you involved?
    - Difficult to say – it was more of an iterative discussion between me and the researchers to define the issue and the project
    - PPP took off in Tasmania. It was designed well, engaged producers and was modified over time to meet their needs

3. How relevant were the projects to you?
    - Mostly relevant, but we have been involved in projects that were marginal to my interests. Even in these projects I have generally learnt something. E.g. A project monitoring grazing pressure on native grasslands at our run off block. The research

showed that the native grazing pressure (from wallabies etc) was so great that there was no point in spelling paddocks and rotationally grazing.
- A regional/national benefit rather than a personal one, would still encourage my participation

4. Did the project convince you to adopt/change practices?
   - Yes practice change as a result of participation
   - Attribution of practice change to a particular program is always difficult
   - Adoption occurs as a result of messages and information from a range of sources rather than just one

5. What works in participatory R&D?
   - Identifying the need
   - Don't always listen to the squeaky wheels,
   - It is not always obvious what the solution is
   - Need to ask the right questions of the right people

6. What doesn't work in participatory R&D?
   - It won't work if the objective has not been clearly defined at the start and agreed upon
   - It won't work if the project/program is too broad e.g. Grain and Graze 1

7. What would you do differently next time?

8. What was the greatest frustration in the process?
   - Understanding the timeframes of researchers, their need to publish and the bureaucracy they operate within
   - Often the methodologies that researchers use seem time wasting and expensive to producers, who do not understand the need for a design and data collection protocol that meets the requirements of the statistician

9. What gave you the greatest buzz from the process?
   - Getting robust data
   - Involvement in the process
   - Writing and reviewing papers with researchers
   - Applying the new knowledge in the business

10. What were your experiences in collecting data for the project?
    - Haven't done much data collection for projects
    - Producers struggle to understand the purpose and importance of methodology at times
    - Should not expect producers to collect too much data

11. Did you feel that your views on the project were taken into account by the scientists involved in the project? Did this result in the project being modified to improve research outcomes and applicability to industry?
    - Yes, generally they have been taken into account, especially about the practicalities of how the trial/research will work

12. What is the best way to engage other local/regional farmers in participatory R&D in their district?
    - Firstly it has to be of value and interest to them
    - Personal contact phone call or personal approach either from the producer or someone in the team
    - Will only get a small amount of traction with newsletters and emails

13. Do you think that it is best to approach existing groups or famers individually to engage in R&D?
    - Always start with existing groups, even if their purpose is not well aligned with the project
    - Don't just rely on group approach – put effort into individuals as well

14. Does the level of engagement affect the extent to which these farmers adopt the technology in the trial?
    - Yes definitely
    - SGS got great adoption because of the suite of activities that were available
    - The committee was also very active

15. What did your neighbours and farmer mates think about you being involved in this research? Did you become a source of information for them?
    - They are generally interested to find out what is happening
    - Some are intimidated by the level of engagement required to host a site
    - The neighbours generally approach us and ask what is going on

16. What types of activities need to be run at sites to interest other farmers?
    - There are two levels – large field days and small group activities
    - Field days will attract large groups and need to be very well planned and executed with good speakers
    - Smaller groups of like-minded people is where you get the real discussion and engagement
    - Smaller groups will exchange ideas

17. Should farmers be collecting the data on these sites or relying on the scientists to do it?
    - No generally leave it to the researcher

18. How important is economic assessment of the research results for adoption?
    - The level and type of economic assessment is critical
    - Farmers need to understand that there is a commercial benefit from the technology
    - Outcomes need to be analysed and written up for extension to a wider audience
    - The analysis must be believable and with an appropriate level of precision
    - We often invest too much in complex modelling and analysis when simpler economic analysis and rules of thumb would be more appropriate
    - Often a new technology will provide multiple benefits e.g. buying live weight scales. Each producer will assess the potential for their own business scenario. It is important to identify all the potential benefits and costs and place a value on them.

19. Would you participate again?
    - Yes

David Robinson had the core research site in the eastern states for the Lifetime Wool/Ewe project.

1. How did you get involved?
   I got involved because Graeme Lean rang me and told me this was a good project and suggested that it was worthwhile having a look at. I agreed to talk to him and then to Andrew Thompson.

2. Why did you get involved with participatory R&D?
   Because I could see particularly with this project, that there was likely to be a benefit to the industry, the district and a benefit to me. I could see that it could be very worthwhile from a local level and so it turned out to be. I had never been involved at the coal face of R&D before and thought it would be a worthwhile thing to do. It was great working with a scientist like Andrew Thompson who was always asking pertinent questions. He was able to sell the project. It was important because the scientist and the farmer saw things differently. While he was interested in dividing sheep into low and high conditions score to look at the difference in wool production particularly through foetal follicle development, I noticed that the worm burdens followed the score. High worm burden, low condition score and vice versa. Very quickly we started to see a broadening of the scope of the project. What we soon found was increased body weight, increased conception rate, increased lambing percentage.

   Old research had said for every 1 kilogram increase in body weight of ewes lambing percentage goes up 1%. We found that we got a 30% increase in lambing from going up 1 condition score – flocks respond differently to increases in condition score.

   The engagement process could have been better in that although we had a significant contract to wade our way through, important things were not in the contract. There were issues of privacy, relating to shared space and amenity of the property, and lifestyle. We didn't understand how they would impact upon us. There were also issues in sharing yards, shearing shed and other facilities. The impact of these issues was not adequately thought about in the beginning. We paid $8,000 to $10,000 for some improved genetics. We were quite willing to do that, I am not sure that it was of value. Our greatest return from the project was through improved management and ewe nutrition. I didn't ask for any but there was no compensation for any use of facilities.

   The AI joining process also needs to be tightened up so people know exactly what they were getting into. There are many aspects of mating a large number of ewes through AI that I was not prepared for, as I had no experience with AI.

3. What were the purposes for joining the process?
   Did it start with "You need" (push) or "I want" (pull)
   Definitely I want.

4. How relevant was the project to you?
   I will give it 11 out of 10.

   The project aligned strongly with my interests and what I saw as a potential way to increase productivity. If I was asked to participate in a project on soils or fertiliser applications or cell grazing – I would probably decline. But this project had such a potential to make a substantial difference.

5. Did the project convince you to adopt/change practices?
   Emphatically yes and in the following ways:
   - To condition score
   - To have feed out bins with scales
   - To understand the value of green feed
   - To develop areas of lucerne
   - To scan for twins, singles and dries
   - To manage twin ewes differently
   - We tried hedge rows for shelter but without much success
   - To target weaning weight
   - We reduced our joining to 32 days
   - We now have two mobs of maidens before scanning, high and low conditions and two mobs of the rest of the ewes high and low condition.

6. What worked?
   Some issues with AI. We hadn't had experience with AI and should have got somebody out to take us through the pitfalls of an AI program particularly in relation to the fact all the lambs are born on two or three days as happened to us in the second to third year when those two or three days were awful weather we knew the lambs were coming, we knew the weather was coming but we weren't in a position to do anything about it. We didn't have enough sheltered areas.

   One of the reasons that project worked was that I maintained my interest in the project. I heard of another project where the farmer lost interest and didn't support it and the outcomes were far less successful or meaningful for industry.

   The experience and capability of the research staff is critical to success as is close monitoring of the trials.

7. What didn't work and why?
   Protocols developed particularly around things like dogs. On the first day, three blokes arrived with utes and they each had three dogs. We only like to use two dogs in the yards at a time, so protocols need to be developed. Also there were some issues, a couple of bad incidents one where we lost some lambs that smothered at water. It could have been avoided had people thought more about the area of trough that would be required and we lost some sheep at the extremities of the stocking rate treatments with poor food on offer.

8. What would you do differently next time?
   I would have a definite protocol for the way people share facilities for the way they work stock and some sort of management structure in case anything went wrong.

9. What was the greatest frustration in the process?
   Some lack of protocol as above and that when we first went on the road to talk about the project we were underprepared. Also it was disappointing that such a big project $9mill had such a small extension budget $20k, in the early stages. Note: This was rectified by subsequent project investments.

10. What gave you the greatest buzz from the process?
    Seeing the results, seeing how much we could learn, seeing what it did to the bottom line and being able to hear producers starting to talk not in terms of how well the stock look but in terms of real lambing percentages, real condition score, real death rates, talking in terms of kilograms of dry matter per hectare rather than talking in generalities. Also although not particularly experienced and not particularly looking for jobs as a public speaker. Enjoyed being able to get out and spread the word. Although when we first did it we were ill prepared.

11. What were your experiences in collecting data for the project?
    Very few and didn't have to collect much data. I would not have had the time or capacity to collect the quantity and detail of measurements that were required.

12. Did you feel that your views on the project were taken into account by the scientists involved in the project?
    Definitely yes

13. Did this result in the project being modified to improve research outcomes and applicability to industry?
    Definitely yes and I think broadened the project.

14. At what stage were you included and was it too early, about right, too late?
    About right.

15. What is the best way to engage other local/regional farmers in participatory R&D in their district?
    To make sure that it's a multifaceted project where you're looking at combining a whole lot of outcomes. Best with best with best. Best pastures with best animal health with best type of lambing and measuring the results and making sure that the effect on the bottom line is shown.

    The farmer hosting the site must have "passion" for the project.

16. Do you think that it is best to approach existing groups or famers individually to engage in R&D?
    Approach groups.

17. Does the level of engagement affect the extent to which these farmers adopt the technology in the trial?
    Yes but they have to be able to see it on farm rather than on a research station. If it is on a research station they can deny it, if it is on farm they pretty much have to accept it.

18. What did your neighbours and farmer mates think about you being involved in this research? Did you become a source of information for them?
    Yes I got a bit of ragging but mostly people were generally interested and some neighbours tied me down and asked me to go through specific parts of the project with them.

19. Is this because they asked you or because you told them?
    No I didn't tell anybody they definitely asked.

20. What types of activities need to be run at sites to interest other farmers?
    Multi-disciplinary activities.

21. Should farmers be collecting the data on these sites or relying on the scientists to do it?
    Probably best that they are relying on scientists.

22. How important is economic assessment of the research results for adoption?
    Absolutely fundamental. Until we had done the economic modelling in Lifetime Wool we could not clearly demonstrate the value proposition. The extension message changed completely once the economic analysis had been completed.

23. Would you do it again?
    Yes.

Geoff Sandilands had the core research site in Western Australia for the Life time wool/ewe project and work started there some time before the formal project started.

1. How did you get involved?
   I had always been involved with scientists trying to keep up with the latest, have a background in agricultural science and believe that the only way to keep up is to be involved with scientists. We sell rams, run about 20,000 sheep, most of the work that we are involved in is to do with genetic improvement and but it seemed natural to be asked to become involved in this.

2. How did you get involved with participatory R&D?
   Chris Oldham asked me to become involved and as already discussed we talked to a lot of scientists mainly on genetics but also on production. We try and ensure that we are involved where there is a good meeting of minds. We had also been working with Mike Hyder and together, when Chris talked to me and I knew that Mike would be involved it seemed a natural fit.

3. What were the purposes for the joining process? Did it start with you need, push or I want, pull?
   I think in reality it was a bit of both. I certainly had an enquiring mind and a relationship with the scientists where I was always looking for something new, here was the something that was new, they came and discussed it and were suggesting that it might be useful and I wanted it. So there was both push and pull.

4. How relevant was the project to you?
   All the things they found as a result of this project are in my view the only interesting and worthwhile things that have been found for sheep in the last 10 years. Most of what we do now came and became developed out of the project. During the period when they talked to us most people weren't interested in projects around sheep. People are now becoming interested again.

   Very relevant we were running a lot of sheep. Sheep were a major part of our income and when we look back there were a number of things that we needed to improve, so very relevant. The project would get 10 out of 10 for relevance.

5. Did the project convince you to adopt change your practices?
   Yes we do a lot more condition scoring and then drafting on condition score is a real stand out of the project. Following the project we had a number of very difficult years and we dealt with them much better than I think we could have if we had not been involved in the project. So emphatically yes, and because of condition scoring.

6. What worked?
   We started off condition scoring but we now find that down the race drafting into three mobs works for us. We don't still condition score but we do draft three ways and treat our three mobs differently and feed accordingly. The running down the race is done with automatic drafting so it's very accurate.

7. What didn't work and why?
   As previously stated we no longer actually condition score although we draft three ways. There are some things that are absolutely essential, as the producer you need to put a lot of time into the project and it has quite a big impact. Keeping the dialog going over time to ensure that you are on the same page with the scientist is important and often it's not the principle scientists who are on the farm, its other people sometimes less considerate, sometimes brash and they manage to upset people. The team needs to ensure that whoever they have on the farm understands the inconvenience that the project is causing to the farmer.

8. What would you do differently next time?
   I would ensure that the expectations on me were well sorted out. Sometimes I believe they expected too much and both the producer and the scientific team need to be right up front about what needs to happen and the impact that it will have on the farm. That's the impact on stock movements, on the shearing of facilities and the way the trial will fit into the whole farm system. I don't believe there was enough consideration of that.

9. What was the greatest frustration?
   The inconvenience and the fact that so many people were coming and going. In future it could be worth thinking about paying or part paying for permanent labour on the farm instead of having a lot of departmental staff coming and going.

10. What gave you the greatest buzz from the project?
    Being able to be involved, seeing the advantages, being able to assist with the collection of data. Because of our stud we collect a lot of data and it was enjoyable and useful to be able to be part of that.

11. What were your experiences in collecting data for the project?
    As already answered above we were involved in collection data and got a big buzz out of it.

12. Did you feel that your views on the project were taken into account by the scientists involved in the project?
    Absolutely Mike Hyder and Chris Oldham are genuinely good blokes and really interested in what we were doing. They also are really good scientists and understood the journey we are all embarking on. So I have no doubt that my views were taken seriously.

13. Did this result in the project being modified to improve research outcomes and applicability to the industry?
    Definitely yes and I think added to the value of the project.

14. At what stage were you included and was it too early, about right, too late?
    Included at the very beginning and about right.

15. What is the best way to engage other local/regional farmers in participatory R&D in their district?
    Not sure about this I used to go to a lot of group meetings and nothing much changed as a result of those meetings. The *Sheep's Back* program might be a good way to get the information out. Although I think it's very slow and people either want to pick it up or they don't. If people want to pick up this research they will with or without group meetings.

16. Do you think that it is best to approach existing groups or famers individually to engage in R&D?
    As already discussed from where I sit a lot of the group activity is a bit of a waste of time. Although if can get farmers to engage by talking to other farmers and they are likely to learn but maybe the group thing is being overdone a bit.

17. Does the level of engagement affect the extent to which these farmers adopt the technology in the trial?
    Yes, but if you have got good enough scientists and good enough farmers who are running the trial, who are passionate enough about the project and you have got good data coming out of it, people will probably engage.

18. What did your neighbours and farmer mates think about you being involved in this research? Did you become a source of information for them?
    Yes, for those people who wanted to look and listen.

19. Is this because they asked you or because you told them?
    No because they asked.

20. What types of activities need to be run at sites to interest other farmers?
    Any project where there is more than one aspect of management being trialled or researched.

21. Should farmers be collecting the data on these sites or relying on the scientists to do it?
    Some farmers can collect some data if they are adequately trained to do it.

22. How important is economic assessment of the research results for adoption?
    Economic assessment is the bottom line, if there is no assessment you don't prove that it is worth doing. From the farmer point of view the work that you do and anything you adopt has to either give you a result which is cheaper or give you a result which increases the top line to increase the bottom line or makes you happier about what you're doing. For most people that will still come back to cost.

23. Would you do it again?
    Geoff's original response was no, but then as he kept talking it became a conditional yes.

    Yes if I was at the same stage of personal development and of the same age and my father was of the same age, but to do it again now, to take on a five year project with both of us older and very busy I am not sure. We would think about taking it on if we could have some help with labour and if the project can look at different ways in order to help the project maybe with labour, maybe with money. Perhaps a farm employee would make a big difference. "

Andrew Roberts had the core research site in Western Australia for the Life time wool/ewe project and work started there some time before the formal project started.

1. How did you get involved?
   Through my wife's work with Chris Oldham in previous tagasaste projects. My wife had been working on those projects for a number of years and when Chris wanted someone in this area to become involved with lifetime wool/ewe he approached me through my wife.

2. How did you get involved with participatory R&D?
   I became involved initially because of the involvement of my wife (Pauline Outley).

3. What were the purposes for the joining process? Did it start with you need, push or I want, pull?
   It wasn't our initiative nobody said you need. I had been to a seminar where some of the concepts of lifetime wool were talked about and started to show some interest. Then there was an opportunity to get involved with Chris Oldham so it was neither push nor pull but gradually just drawn towards the project.

4. How relevant was the project to you?
   Most of what we have changed is a result of the project and particularly the importance of condition scoring. We have also done some significant changes on the way we use faecal egg counts. The project certainly scores highly.

5. Did the project convince you to adopt change your practices?
   We used to try and keep sheep in condition score three but we were overfeeding in trying to keep them at that score. The project has certainly influenced the way we run sheep. We try to set stock just prior to lambing. Until then we have a rotation and set stocking at lambing still causes us a problem, we can't lamb in mobs of a 1,000 and rotationally graze because you lose too many lambs. So the rotational grazing and the feeding through the rotation and

maintaining condition score works really well. Once we divide them up for lambing it becomes more difficult.

6. What worked?
   Condition scoring. It is really difficult to work to get sheep from 2.5 to 3 we have actually tried feeding up to a kilogram of lupins a day and not had them gain weight once we are really down in paddock feed. Condition scoring certainly worked.

7. What didn't work and why?
   Trying to bring sheep up to condition score rather than holding them at a higher weight. Is easier than bringing up.

8. What would you do differently next time?
   There were some clashes in the need to use yards so there were some areas of logistics that we would need to think about in future. For instance both wanting to use laneways or yards at the same time. Would need more consideration next time.

9. What was the greatest frustration?
   My greatest frustration was that lambing percentage didn't actually rise probably because we are working off a very high base and close to 100% now. We would have been feeding less if it hadn't been for the bad seasons. We certainly now the tailor feed to the used requirements, but it was frustrating that we couldn't increase lambing percentage.

10. What gave you the greatest buzz from the project?
    Working with the people, the girls from the department were great and the scientists were great. I like working with people with a passion for what they do. It gave a great personal buzz although it probably didn't give much of a buzz to the businesses.

11. What were your experiences in collecting data for the project?
    No we didn't collect data although we could have as long as we had enough notice.

12. Did you feel that your views on the project were taken into account by the scientists involved in the project?
    Definitely yes.

13. Did this result in the project being modified to improve research outcomes and applicability to the industry?
    Probably not because it was reasonably set by the time we joined.

14. At what stage were you included and was it too early, about right, too late?
    It was certainly late, because we were a sort of add on to find a farm in this area, but I was still happy and I don't know that they could have contacted us much sooner.

15. What is the best way to engage other local/regional farmers in participatory R&D in their district?
    I like personal approaches. I understand that that is difficult and probably inefficient but I think it's the way it works best. Approaches through other organisations like the national agricultural catchment management group are also appropriate.

16. Do you think that it is best to approach existing groups or famers individually to engage in R&D?
    I don't have enough involvement with other groups to be able to comment.

17. Does the level of engagement affect the extent to which these farmers adopt the technology in the trial?
    I think it probably does but the nearest group meeting to us was 2.5hrs away and so it was with a five hour round trip it had to be a pretty special group meeting for me to want to go. We managed quite well without being involved in groups. If we had been closer it may have been different.

18. What did your neighbours and farmer mates think about you being involved in this research? Did you become a source of information for them?
    Some people are always too busy to have a look other people were really keen to look. Particularly people who are new to sheep or new to the district, they came with an open mind.

19. Is this because they asked you or because you told them?
    I did some telling to one bloke who was new to the district but generally speaking we only really talk to people if they asked. This area has been a bit too comfortable, the seasons have been reasonable, it's like Victoria but without the frost and it has been reasonably easy but now it's tightening so there is more interest and there is more interest in sheep.

20. What types of activities need to be run at sites to interest other farmers?
    I don't think you need a research station for much at all. We have seen ET work AI work, reproduction, and extensive work on cropping. There are very few things that I can think of that wouldn't be better done with participatory R & D than they are on a research farm.

21. Should farmers be collecting the data on these sites or relying on the scientists to do it?
    It depends on the individual some people are interested in data and would be able to do it and some would not. If you have the process well organised it's probably ok.

22. How important is economic assessment of the research results for adoption?
    Very important. One of the highest priorities, we have to learn how to do things better and cut costs in relation to output.

23. Would you do it again?
    Absolutely and that says a lot about the blokes involved. I enjoyed doing research; it's nice to be at the cutting edge.

Bill Sandilands had the core research site in Western Australia for the Life time wool/ewe project and work started there some time before the formal project started.

1. How did you get involved?
   I was part of Kevin Bell's sheep production group.

2. How did you get involved with participatory R&D?

I first became involved with the Great Southern Research Institute looking at staple strength for wool, then the sire reference scheme, then a scheme bred to be breed and all of these issues I found interesting and just wanted to remain involved.

3. What were the purposes for the joining process? Did it start with you need, push or I want, pull?
   I was interested; Mike Hider had been doing feed on offer work with weathers and wanted to extend it to ewes. We were really interested to see how that would work.

4. How relevant was the project to you?
   Extremely relevant. We were running about 5,000 ewes at the time and were looking for ways to run them more efficiently. I would give the project 9 out of 10.

5. Did the project convince you to adopt change your practices?
   Yes and to get food on offer to 1,000 kilograms. We found sheep do really well at 1,000 kilograms. Also we found that we had to wean early enough to get the ewes in condition to get back in lamb for the next lambing.

6. What worked?
   Ensuring that we had enough food on offer for the sheep, getting a real handle on food on offer and weaning in time for ewes to recover to join well for the next years lambing. I thought there might have been a bigger effect between food on offer over here and food on offer in Victoria. So here sheep at 600kg per hectare food on offer survive quite well, whereas in Victoria they didn't. I thought it might have had a greater effect on fibre diameter as well. The really big impact was lamb survival. It was the outcome that really impressed us. High food on offer, higher condition score, higher lamb survival.

7. What didn't work and why?
   Getting satisfactory lamb survival at very low food on offer 600kg.

8. What would you do differently next time?
   At some stages we ran out of ewes. Because we ran mostly ewes and we had a lot of ewes committed to the project we found that after we had used them in the first year we couldn't use the same ewes the same way in the second year so we had some challenges between bringing ewes into the project and maintaining ewes for our own ram breeding flock. Although I was really impressed with the people doing the work looking at a whole flock with mostly ewes I think we didn't understand just how many sheep we were going to need to have involved.

9. What was the greatest frustration?
   Finding in the middle of the trial that we may not have had enough ewes and that we needed more sheep.

10. What gave you the greatest buzz from the project?
    Getting some useful results both for industry and for us and then working with Bob Hall and the Kevin Bell groups and talking amongst those groups. It was very educational for us, my son now 40 was then about 30 and had recently done agricultural science so for both of us and for him in particular the contact with researches and good cooperation with them, with the department and CSIRO was a wonderful opportunity for a great learning experience.

11. What were your experiences in collecting data for the project?
    We didn't actually have to collect but I did help particularly at lamb tagging. I was keen to get the records; it was no hardship because we were dealing with really good people.

12. Did you feel that your views on the project were taken into account by the scientists involved in the project?
    Yes good scientists who had their finger on the pulse and were prepared to listen.

13. Did this result in the project being modified to improve research outcomes and applicability to the industry?
    Not really it was pretty well set up and I don't think we changed anything much as a result.

14. At what stage were you included and was it too early, about right, too late?
    Involved right from the beginning. They were keen to get something on the highway where it would be very visible. In the end we moved it a bit back from the highway but the people at Albany were really good to work with and I should also mention how great it was to work with Mark Ferguson.

15. What is the best way to engage other local/regional farmers in participatory R&D in their district?
    Via the consultants, who by and large know who the people who are likely to want engage are. A group attached is very useful.

16. Do you think that it is best to approach existing groups or famers individually to engage in R&D?
    Approach the consultants who have groups attached to them.

17. Does the level of engagement affect the extent to which these farmers adopt the technology in the trial?
    Yes but if they are already working with the consultant and part of a group they will become engaged.

18. What did your neighbours and farmer mates think about you being involved in this research? Did you become a source of information for them?
    For the clever ones yes, the clever ones look over the fence, the clever ones ask questions, others don't, don't know what happened and don't know anything's happening.

19. Is this because they asked you or because you told them?
    No definitely because they asked.

20. What types of activities need to be run at sites to interest other farmers?
    Sire evaluation worked on farm, this project worked on farm. I think most things could work on farm. We have actually moved the sire evaluation to the research station at Katanning but only because they didn't have anything else to do. Most things can work on farm.

21. Should farmers be collecting the data on these sites or relying on the scientists to do it?
    They probably need to have the department people working alongside them.

22. How important is economic assessment of the research results for adoption?
    Quite important. I would say 7.5/10 for importance although we had good assessment through Midas which is a really good program to understand the relationship between profitability and input.

23. Would you do it again?
    Yes. I like reading the farmer articles. I like watching what other farmers, farmers learn from other farmers they learn to take notice from other farmers.

Chris Vanzetti – Farmer from Moora and host of an EverCrop Pasture Cropping Trial Site

Opening remarks
- keen to host a trial site so as to influence the direction of the R&D
- and to ensure its relevance (ensuring management of the trial reflects local farmer practice

Engaging leading producers
- best way is to locate trials / demos on their farm
- the leading producers usually belong to grower groups so going through groups can achieve this

On-farm testing of innovations
- paddock scale trials / demos can be good but they need researcher input to ensure data analysis is rigorous
- co-locating a number of trial / demos on the one site can make it easier for more farmers to see them (e.g. via large Spring Field Days)
- Chris has been telling other farmers about the results of the trial (whether asked or not!), so the host farmer can be a very good extension agent

What has worked really well?
- the research results are challenging everyone (i.e. they are surprising)
- the LAG (Local Adaptation Group) is learning and sharing information about perennial pastures
- the researchers have taken on board the farmers feedback

Approaches to avoid
- taking trial / demo results and turning them into Gross Margins etc when the differences aren't statistically significantly different
- wasting too much time convincing the farmers involved in Research Advisory Groups in the merits of the technology (E) as opposed to time effectively focusing on getting their feedback on trial design and management (R&D) (farmers are very time poor so need to be very efficient when seeking their input)

Don Nairn – Farmer from Binnu and host of ENRICH fodder shrub trial site and Grain & Graze Grazing Crops Demo Sites

Opening remarks

- farmers often need a multitude of technologies to make their system work (in Don's example fodder shrubs + grazing crops)

Engaging leading producers

- grower groups are a good way
- on more niche topics (where there is not widespread interest – like fodder shrubs), approach people individually

On-farm testing of innovations

- some trial sites located in remote areas (like Binnu) are difficult and expensive for researchers to get to regularly. In this case farmers need to collect some data. This data will be "rougher" in quality than researchers' data but can still be good enough to give enough confidence to make decisions about adoption.
- scale is important and when people see for example 50% of a very large wheat or canola paddock grazed and then there be no subsequent yield penalty that gives great confidence to everyone. Costs go up though as the scale goes up.

What has worked really well?

- working with researchers and advisors on trial and demos has helped greatly with technology adoption through support, mentoring, and thinking through all the issues.
- Involvement of a range of researchers and advisors over a period of time.

Approaches to avoid

- set up trial sites and then not have the resources to monitor them effectively. This happened to some of the ENRICH sites in the NAR.

Geoff Fosberry – Farm Management Consultant (ConsultAg) and works with the Kellerberrin Grower Group

Opening remarks

- in this case, advisors donate their time to a local group in order to be involved in local R&D
- participatory R&D brings researchers and farmers closer together which is a very good thing

Engaging leading producers

- To be a member of the Kellerberrin group the farmers must host at least 1 trial per year

On-farm testing of innovations

- the farmers collect 70% of the data in the Kelleberrin group, but an advisor coordinates this
- this gives the farmers better ownership of the trial and most importantly they learn a lot quicker by collecting data

- when researchers approach the group with a research topic, they all sit down and see if they can collaborate. A few changes might be made, which then enables twice as much value to be generated from the research.

What has worked really well?

- Advisors understand the "lingo" of both researchers and farmers and acts as an "interpreter"!
- Working with farmers and advisors makes researchers more efficient – they go down less blind alleys and it keeps them grounded

Approaches to avoid

- only turn statistically significant trial results into an economic analysis

John Lucey – DAFWA Dairy Extension Officer and involved in the Greener Pastures project

Opening remarks

- The Dairy industry has RDP's (Regional Development Programs) which helps to identify and fund local R,D&E priorities

Engaging leading producers

- Greener Pastures had a management committee – traditionally membership was influenced by farm politics to some extent – new project the committee is handpicked based on skills and experience in the technology at hand rather than trying to cater for every stakeholder group

On-farm testing of innovations

- The lead researcher reckons that 50% of the findings came from small plot trials and 50% of the findings came from the farmers (and the interaction between the farmers and the researcher)
- Need to use different approaches when conducting component vs. system research

What has worked really well?

- Farmers are good at interpreting research data and extension. They can also be helpful with research design at the start of the R,D&E process.
- Farmers hosting Demo Sites (and small plot trials within farmer's paddocks) put the technologies to test under real life conditions
- The Dairy industry in WA has a very good benchmarking system (RedSky) in place, and this can be used in the R,D&E process

Approaches to avoid

Cameron Weeks – Farm Management Consultant with PlanFarm and regional coordinator for GRDC Regional Cropping Solutions project and ex Mingenew-Irwin Group EO

Opening remarks

Engaging leading producers

- Too many people say “you **have** to work with Grower Groups”
- Some grower groups aren’t as “grower driven” as you might think. Staff do most of the driving (with knowledge of farmer members of course)
- Need to keep giving farmers something back along the journey, so they did get weary and jaded with the process

On-farm testing of innovations

- Advisors can be crucial as they have lots of clients and therefore have a good feel for local farming systems
- Individual farmers can have unique farming systems and it’s important these unique features don’t overly sway the research direction
- Participatory R,D&E process can easily get waylaid with busy, busy people

What has worked really well?

Approaches to avoid

- handpick people based on skills, knowledge and skills rather than politics
- don’t involve farmers at the start of an R&D project and then forget about them along the way
- keep economic analysis as simple as possible, and only make it complex when capital or risk is involved

Appendix 3: Interviews with Project Leaders of nominated MLA projects

Martin Barbetti

Soil Biology and Plant Health

Objective

- Increase legume production from control of root and foliar diseases

Agro-ecological region

- High rainfall (> 450 mm annual) regions of temperate Australia

R&D engagement discussion

- Participatory sites would be fantastic to make work visible to industry. Would want other research activity co-located on same sites
- Difficult involving producers too early in the research process as projects can still be broad and may also deal with increasing capacity of researchers. Would be interested in producer involvement in Years 3-5 but not earlier.
- Wants field sites located at not great distance to minimise costs.
- No capacity to monitor extra sites within project budget.
- Wants participatory sites only for research and any involvement of producers is Extension and not Development. Further discussion brought Martin round to a more positive view of participatory sites.

Number and cost of sites

- Wants two sites in each of four states but if participatory sites closer to researcher then could manage five sites.
- Annual cost of $30-$45K per site with another $30K for salaries = $60-$75K/site each year.
- Sites must provide replication to provide valuable data.

Richard Simpson

P efficient legumes and plant root disease

Objective

- Increase P efficiency of legumes by finding legumes (species) that have a lower critical requirement (soil P) for P and/or extract a greater proportion of fertilizer P as plant P.
- Understand root damage on sub clovers and impact on P efficiency.
- Develop decision support systems (5-easy steps for P nutrition).

Agro-ecological region

- Almost all of temperate Australia

R&D engagement discussion

- Thinks P efficient project is too early in its progress for participatory sites.

- Doesn't like the idea of producers getting access to information too early in the process. Needs two seasons of demonstrated data to have enough confidence and extend.
- Sites would look at grazed paddocks at different P levels.
- Would work through existing farmer groups and district agronomists.
- If got participatory sites running then could also collect other data such as sub clover bioassay to increase awareness of root disease and protection from fungicides.

Number and cost of sites

- Sites don't have to have replication as can use a regression approach.
- Probably would need 2-3 sites.
- Collect herbage mass 5-6x/year and may use walk-over-weighing with a set stocked flock on pasture. Simpler technology may be more beneficial in engaging farmers.
- Annual cost of $15K per site with another $25K for salaries = $40K/site each year.

Andrew Moore

Step change via grazing crops in NSW and WA

Objective

- In essence investigating how to make the most from the extra feed provided by crops.
- Four strands with:
    - Strand 1: Based at Canberra looking to increase lamb production by holding lambs to heavier weights or grazing with pregnant/lactating ewes. Each treatment has six plots composed of pasture, pasture, then rotation of – pasture, pasture, canola, wheat. Total area = 1.5 ha with 6 ewes per treatment.
    - Strand 2: Looking at cattle grazing of dual purpose crops in WA.
    - Strand 3: Dual purpose spring-sown summer-grazed spring-harvested canola.
    - Strand 4: Dorper versus Merino comparison.

Agro-ecological region

- Almost all of high rainfall (> 550 mm ?) temperate Australia where crops are grown

R&D engagement discussion

- Conducted some market research early in planning phase with group/s of 8-10 advisors and producers. This was led by John Kirkegaard and High Dove.
- Project planned to utilize conventional approach to extension with reliance on field days and media print.
- Concerned that if the engagement is research conducted by producers then it won't work as greatest weakness is the person accountable for data collection.
- He conveyed a strong message that investment in research on farms is not good value for money.
- Considered that it was an untested method "test if it works rather than assume".
- Wonders if we underestimate the community of pasture agronomists and livestock officers to feed ideas to research (and vice versa) and so questions the value of the R&D engagement.
- MLA would need to request this model of R&D engagement before project contracts were finalized in order to accommodate.

- If there were expectations for participatory research, then the design of the experiments may/would be different.
- Project design would need sign-off by the researcher.

Number and cost of sites

- If he had interest in the R&D engagement process then would need sites to have activity that covered just a single season so producers don't need to over invest; would need some level of replication; ensure that there was not too much demand on scientist time – perhaps scientists could take a stop/go role in assessing the feasibility prior to contracting sites.
- Expect no more than 1 site (speaking about Canberra strand) although there could be a new site each year.
- Would need confidence and accountability of the producer group or some agent of the producer group.
- Annual cost estimate of hundreds of thousands of dollars ("six figures") probably because he wants the replication of a grazing experiment.

Sue Boschma and Geoff Moore

Improving the subtropical feedbase in NSW and WA

Objective

- National project to develop management guidelines and recommend legume species for tropical pastures with activity NW slopes and Central West NSW and South Coast and Northern Agricultural region WA.
- Three themes:
    - Theme 1: Tropical legume options – agronomy, sowing, annual vs. perennial, persistence, seed softening, etc)
    - Theme 2: Temperate legumes as companions for tropical grasses – agronomy (as above), hydrology and economics.
    - Theme 3: Feasibility to manage seasonality of forage supply in WA to increase winter feed supply on kikuyu pastures.

Agro-ecological region

- Wide application probably temperate highlands, temperate slopes and plains, subtropical slopes and plains and wet temperate coast.

R&D engagement discussion

- Engaged a technical advisory group in each node with 5-6 producers and 1-2 agronomists. producers supplied via EverGreen, Matt Ryan's Beef Profit Partnership groups (WA), Paul Sanford's EverGraze group (WA) or Lester McCormick's contacts (NSW)
- Uses existing groups (see above). Also looked for producers who want to engage with SB.
- Conducted surveys in WA (and NSW?) to determine attitudes to tropical pastures and assess outstanding information needs.
- Investment in replicated research on farms must ensure quality of data and timeliness as essential as replication.

- Very open to the idea of information flowing in both directions (research to farm and vice versa). Example being development of furrow sowing of tropical grasses in WA on sands came from a Producer (Grant Bain). Another example was storage of tropical grass seed in a car boot at high temperature leading to reduced germination.
- Sue nominated that in the area of subtropical grasses, the problems encountered/raised by producers moved from establishment to management to legume stability over time. The focus of much of the current project is consequently on improving the legume component subtropical grasses.
- Facilitator to provide linkage between producer and researcher. Must have facilitation and technical skills.
- Timing of engagement needs to target short list of big hit topics.
- Important that E leads on from D.
- Need real engagement with farmers not presentation of *fait accompli*.

Number and cost of sites

- Almost all trials will be conducted on commercial properties and be replicated.
- All data collection planned to be conducted by project staff with engagement of part-time assistants. Envisaged a facilitator (Matt Ryan, Lester McCormick) to work with producers
- Annual cost estimate of $20K-$30K per site (about half salary) with the probable need for 3 sites, clustered in 1 group area.
- Was looking for 3 participatory research sites per location.

Belinda Hackney and Clinton Revell

Legume stability in NSW and WA

Project too early in planning phase for researchers to consider value from interview

Objectives

- To benchmark the current status of legume pastures within the major regions and systems of Western Australia by surveying 70-100 paddocks within each of 2-3 local government areas per year.
- To monitor pasture paddocks and management of those paddocks over five years in three to five regions to cover performance of the range of pasture systems in use. May be 4-6 growers in each region with 3-5 paddocks on each farm. Information collected will include management history, seasonal conditions and data such as pasture density, nodulation, composition and production. Nitrogen fixation may also be considered here depending on resources.
- To use benchmarking, paddock monitoring and research data to develop thresholds or trigger points to guide when intervention is required to improve legume content for pastures in a range of farming systems (e.g. long phases of pasture compared to short phases).
- To understand the whole farm implications of pasture composition interventions and other farm practices that will add to or detract from their use.
- To determine the value of increasing legume content and production on livestock productivity by using decision support tools such as MIDAS, AUSFARM, GrassFeed and GrassGro to interpret project results in a wider context.

- To collate and research the seed ecology and population dynamics of subterranean clover (and to a less extent biserrula, bladder clover and gland clover), capeweed, ryegrass and silver grass and their relative competitiveness in a pasture phase. If required small plot and glasshouse experiments will be conducted examining competition in a pasture context rather than a crop context.
- To include seed population information from paddock monitoring and seed ecology research into a decision support tool like Weed Seed Wizard so that seed banks of legumes and weeds species can be modelled over time. Validate with grower groups where possible.
- To examine the re-introduction of improved rhizobial strains on the production of subterranean clover based pastures. Likely to incorporate a split paddock (paired treatment) approach.
- To conduct research into herbicide manipulation (including spray-graze and spray-topping options) for the major alternative pasture legumes. Endeavour to include interaction with grazing where possible. Likely to incorporate small plot and paddock level experimentation.

Appendix 4: Summary of responses concerning principles and processes to guide the implementation of R&D engagement

Desirable attributes of the R& D engagement process	***Barbetti (R)***	***O'Hare (P)***	***Ballard (A)***	***Nicholson (A)***	***Simpson (R)***	***Boschma (R)***	***Missen (P)***	***Behrendt (R)***	***Ryan (A)***	***Moore (R)***	***Hackney (R)***	***McCormick (A)***
Based on mutual respect and strong personal relationships with clear agreement on objectives, operational plan (to manage or avoid clashes with farm operations) and mutual responsibilities.	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
Process must start with open, honest discussion to share ideas and experiences and provide opportunity to influence through exchange of ideas, knowledge and experiences.	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
The engagement process needs to be a long running commitment that must be maintained throughout the life of the project and provide (sufficient and regular) opportunities for bringing together producers, researchers, consultants and related agribusiness.	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Neu	Disagr	Agree	Agree
The research must be work that is of value to the farmer's own business enterprise, meet their desire to learn and stay abreast of new research, increase their confidence in the practice/technology and offer solution/s at the farm, region or national level. Do not assume benefit and do not assume that the benefit seen by the producers is the same as seen by the researcher.	Neu	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Neu	Agree	Agree	Agree
Involve producers who can champion the project and host producers (of participatory sites) with a genuine interest in the research.	Agree	Agree	Agree	Neu	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree

Desirable attributes of the R& D engagement process	***Barbetti (R)***	***O'Hare (P)***	***Ballard (A)***	***Nicholson (A)***	***Simpson (R)***	***Boschma (R)***	***Missen (P)***	***Behrendt (R)***	***Ryan (A)***	***Moore (R)***	***Hackney (R)***	***McCormick (A)***
Be respectful of the space and privacy of the producer and their facilities and preferences.	Agree	Agree	Neu	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
Build positive relationships with interested parties.	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree

Processes that could be used to establish engagement between leading producers, researchers and advisors	***Barbetti (R)***	***O'Hare (P)***	***Ballard (A)***	***Nicholson (A)***	***Simpson (R)***	***Boschma (R)***	***Missen (P)***	***Behrendt (R)***	***Ryan (A)***	***Moore (R)***	***Hackney (R)***	***McCormick (A)***
Approach farmers and existing functional grower groups to discuss and exchange ideas (through posing questions, listening to answers and sharing ideas) for research at the formative stages of the work, at a time and location that is suitable. These sessions must build relationships, be condensed, timely (producers are time poor) and relevant. Use these meetings as opportunities to ascertain any existing work in the area that has been/is being done. The process should help producers identify issues that need exploring.	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
Conduct market research (using meetings with groups of 10-15) by speaking with producers and advisors to identify research needs and to test project ideas.	Neu	Agree	Agree	Agree	Neu	Neu	Agree	Agree/ Disag	Neu	Agree	Disagr	Agree
Conduct meaningful survey (hundreds of responses) before starting the project to make sure the research is likely to be of interest to the	Disagr	Neu	Agree	Disagr	Disagr	Neu	Agree	Agree/ Disag	Neu	Neu	Agree	Agree

Processes that could be used to establish engagement between leading producers, researchers and advisors	***Barbetti (R)***	***O'Hare (P)***	***Ballard (A)***	***Nicholson (A)***	***Simpson (R)***	***Boschma (R)***	***Missen (P)***	***Behrendt (R)***	***Ryan (A)***	***Moore (R)***	***Hackney (R)***	***McCormick (A)***
community.												
Advisors play the role of facilitating researchers and producers through the process and acting to interpret the language and needs of researchers and producers.	Neu	Neu	Neu	Agree	Neu	Agree	Agree	Neu	Agree	Neu	Disagr	Agree
Utilise personal established relationships and work with producers and grower groups that you know are good farmers/livestock managers, interested in the project and whose needs, interest, ethos and enthusiasm match the project and its aims.	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Neu
Select leading producers (champions) from survey or meeting opportunities (public or letter of invitation) within targeted communities whose interests coincide with project interests. Also rely on consultant groups to access leading producers as many of these producers have a research budget and are already "out there" looking for advantage and identifying constraints.	Agree	Agree	Agree	Neu	Agree	Neu	Agree	Agree	Neu	Agree	Agree	Disagr
Establish rules of engagement relating to property access, privacy, use of farm infrastructure, dogs, etc. to maintain relationships over the period of the project. Communicate the needs and expectations of the whole project with the selected producers at the beginning of discussions.	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
Provide opportunity for leading producers to travel to other districts and regions (but there are limits to how far they will travel) to engage with like-minded leading producers, tighten bonds within the group, gain better reflection of local issues and speak on	Agree	Agree	Agree	Neu	Agree	Agree	Agree	Neu	Agree	Agree	Agree	Agree

Processes that could be used to establish engagement between leading producers, researchers and advisors	***Barbetti (R)***	***O'Hare (P)***	***Ballard (A)***	***Nicholson (A)***	***Simpson (R)***	***Boschma (R)***	***Missen (P)***	***Behrendt (R)***	***Ryan (A)***	***Moore (R)***	***Hackney (R)***	***McCormick (A)***
the R&D with which they are engaged.												
Promote awareness of the research ideas through media as early as possible in the process to give producers and advisors the chance to think about the possibilities.	Agree	Agree	Agree	Neu	Agree	Neu	Agree	Disagr	Neu	Neu	Agree	Agree

Approaches to the design, conduct and data collection required for on-farm testing of innovations	***Barbetti (R)***	***O'Hare (P)***	***Ballard (A)***	***Nicholson (A)***	***Simpson (R)***	***Boschma (R)***	***Missen (P)***	***Behrendt (R)***	***Ryan (A)***	***Moore (R)***	***Hackney (R)***	***McCormick (A)***
Be implemented on participatory sites at the scale that is relevant to the research and the producer's needs to generate a valuable outcome within their farming system. (*Participatory sites are located on farms of leading producers*)	Disagr	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
Participatory sites must provide benefit for researchers (though possibly in ways different from primary research design and activity) and for producers.	Agree	Agree	Agree	Agree	Neu	Agree	Agree	Agree	Agree	Agree	Neu	Neu
Be designed so that participatory sites implement a sub-set of the technologies that emerge from testing at the research sites, to investigate and demonstrate their impact within commercial farming operations.	Agree	Neu	Neu	Agree	Agree	Agree	Neu	Agree	Agree	Agree	Neu	Agree
For innovations involving data collection with grazing livestock, replication will conflict with a restrained budget and animal ethics may be	Disagr	Agree	Agree	Agree	Agree	Neu	Neu	Neu / Disag	Agree	Agree	Neu	Agree

Approaches to the design, conduct and data collection required for on-farm testing of innovations	***Barbetti (R)***	***O'Hare (P)***	***Ballard (A)***	***Nicholson (A)***	***Simpson (R)***	***Boschma (R)***	***Missen (P)***	***Behrendt (R)***	***Ryan (A)***	***Moore (R)***	***Hackney (R)***	***McCormick (A)***
problematic. Using a regression approach to establish associations between factors where causation had been determined at research sites, will give research access to data from many more animals or farming situations and greater assuredness in general applicability of results.												
Sites adequately funded to achieve the level of data collection required and appropriate level of management.	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree
Have multiple participatory sites to manage risk of a site "failing" and to get more producer involvement.	Neu	Agree	Agree	Disagr	Agree	Agree	Agree	Neu	Agree	Agree	Agree	Agree
Incorporate an element of 'whole of system' research/evaluation to include areas such as reasons for decision making and risk management.	Neu	Agree	Neu	not	Neu	Agree	Agree	Agree	Agree	Neu	Agree	Neu
Run for a minimum of 4-5 years in order to build strong interest and knowledge base over a number of seasons.	Neu	Neu	Agree	Neu	Agree	Agree	Agree	Agree/ Disag	Agree	Disagr	Agree	Agree
Provide economic data that is meaningful and quantifiable to producers, advisors and bankers, which demonstrate a return or aids decision making in some way which acts to convince the host that the technology works and for extension to other producers. The level of precision should be relevant to the question and the party (research or producer). Economic analysis should be undertaken when treatment effects are significant, deal with capitalisation and risk and by an independent source and not necessarily solely by a	Neu	Neu	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree

Approaches to the design, conduct and data collection required for on-farm testing of innovations	***Barbetti (R)***	***O'Hare (P)***	***Ballard (A)***	***Nicholson (A)***	***Simpson (R)***	***Boschma (R)***	***Missen (P)***	***Behrendt (R)***	***Ryan (A)***	***Moore (R)***	***Hackney (R)***	***McCormick (A)***
government agency.												
Data collection should be designed to address both producer and research needs (these may differ) and be conducted with the accuracy required by each party.	Disagr	Agree	Agree	Agree	Agree	Agree	Agree	Disagr	Agree	Agree	Agree	Agree
"Should data collection be undertaken by producers?" received widely contrasting comments. These include "data collection should not be conducted by producers" to "consider part funding a full or part time local employee rather than having a host or departmental staff coming and going".												
Where producers (or any adult members of their business) or grower groups collect data, they need to be adequately trained and remunerated and interested in being involved. Remember that when using producers, commercial imperatives and time constraints may mean compromises on data collection. Data collection forms part of the learning cycle but include researchers for data analysis.	Disagr	Agree	Agree	Neu	Neu	Agree	Disagr	Disagr	Agree	Agree	Not	Agree
Advisors play the role of facilitating researchers and producers through the process and coordinating project activities and acting to interpret the language and needs of researchers and producers. They may also undertake data collection and receive training where required.	Neu	Neu	Neu	Neu	Neu	Agree	Agree	Neu	Neu	Neu	Disagr	Agree
Feedback into R&D process through regularly updating leading producers to explore, evaluate and question findings as the project progresses, to	Neu	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree	Agree

Approaches to the design, conduct and data collection required for on-farm testing of innovations	***Barbetti (R)***	***O'Hare (P)***	***Ballard (A)***	***Nicholson (A)***	***Simpson (R)***	***Boschma (R)***	***Missen (P)***	***Behrendt (R)***	***Ryan (A)***	***Moore (R)***	***Hackney (R)***	***McCormick (A)***
create a culture of continuous learning across the project and to keep interest higher and maintain involvement.												

Measures that demonstrate success of the R&D engagement	***Barbetti (R)***	***O'Hare (P)***	***Ballard (A)***	***Nicholson (A)***	***Simpson (R)***	***Boschma (R)***	***Missen (P)***	***Behrendt (R)***	***Ryan (A)***	***Moore (R)***	***Hackney (R)***	***McCormick (A)***
Where researchers and producers have met on an equal basis, developed strong mutually respected relationships, shared ideas and gained from the process.	Neu	Agree	Agree		Agree	Agree	Agree	Agree		Agree	Agree	Agree
Got the subject matter right, contributed to the research program and solved a problem of interest to producers within the context of managing a whole farm.	Agree	Agree	Neu		Agree	Agree	Agree	Agree		Not	Agree	Agree
The ultimate test will be leading producers having the interest and willingness to show other producers what can be achieved and demonstrating the scale of improvement. Participatory sites will also add to the effectiveness of extension.	Agree	Agree	Agree		Agree / Neu	Agree	Agree	Agree		Disag	Agree	Agree
Adoption of the technology with measurable practice change within the core group and the wider farming community.	Agree	Agree	Not		Agree	Agree	Agree	Agree		Agree	Agree	Agree
The formation and/or fostering of a culture of learning amongst producers and researchers.	Neu	Agree	Neu		Agree	Agree	Agree	Agree		Neu	Agree	Agree
Research findings actively incorporated into advisor information and services to their clients with development of good extension products and materials including relevant	Agree	Agree	Agree		Agree	Agree	Agree	Agree		Neu	Agree	Agree

Measures that demonstrate success of the R&D engagement	***Barbetti (R)***	***O'Hare (P)***	***Ballard (A)***	***Nicholson (A)***	***Simpson (R)***	***Boschma (R)***	***Missen (P)***	***Behrendt (R)***	***Ryan (A)***	***Moore (R)***	***Hackney (R)***	***McCormick (A)***
economic analysis.												
Additional extension activities developed as a spin off from participatory R&D site(s).	Neu	Agree	Agree		Agree	Agree	Agree	Agree		Agree	Agree	Agree
All parties want to do more participatory R&D.	Agree	Agree	Agree		Agree	Agree	Agree	Agree		Agree	Agree	Agree