



Extension Design Project

Year one summary and results

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Executive Summary

The extension design project is part of the Red Meat Profit Partnership programme. The objective is to drive sustainable productivity improvements in the sheep and beef sector to deliver higher on-farm profitability.

The extension design project will test a range of extension approaches on-farm. The purpose of this is to determine which approaches are effective in supporting practice change in a real-world environment. Armed with this knowledge, an extension system will be developed which will increase the amount and the rate of practice change. This will support farmers to confidently refine their farm systems on an ongoing basis leading to increased performance and profit.

One year into the extension design project there are a number of positive outcomes emerging. This points towards a willingness by farmers to try different practices on-farm when they have confidence in themselves and the support structures around them. Significantly, a facilitated rather than ad hoc process of engagement between farmers and these structures appears to be important. These structures include farmer groups, specialist experts, tailored information channels, and system consultants, amongst others.

A structured evaluation process is in place which examines the extension, behavioural and financial aspects of the farm businesses within the project. This will provide evidence of the most effective extension approaches, the impact of a value chain approach and the value to the farmer of an aligned network of information and its impact on practice change.

PART ONE: An introduction to the extension design project

The uptake of knowledge and its application in sheep and beef farms is hugely variable. There is a widening profit gap between top performers and the mid-tier which reflects the top performer's focus on timely and informed decision making and practice. Widespread uptake of knowledge and the resulting changes on-farm will lead to sector-wide improvements in productivity and profitability.

The red meat sector has invested heavily in farmer knowledge and practice change over the years with varying success. There is limited formal evaluation around why some ways of acquiring knowledge are more successful than others. This has meant that well used ways to provide information are continuing to be used but with little understanding as to whether farmers are actually benefitting at all.

There are six projects within RMPP. Three of these projects; Extension Design, People Capability and Data and Systems, have a high level of interdependence and have a shared goal. This goal is to support farm business innovation and good management practice through a co-ordinated network. This will be done by equipping farm teams and their trusted advisors with the right skills and tools to increase farm performance.

The extension design project has involved over seventy farm businesses, currently participating in a three-year pilot. These pilots will test different extension approaches through an action research approach. Action research involves actively participating in a change situation, while simultaneously conducting research. The purpose of this is to determine the best ways to support farmers in practice change on-farm. A structured evaluation process is being used to collate and analyse the research findings. A nationwide collaborative extension network will result from the research.

Background research within the RMPP extension design project

The first part of the research was to explore successful published extension programmes to draw out critical success factors. For more details on this research can be found at www.redmeatextension.co.nz. In addition segmentation analysis of sheep and beef farmers was undertaken. The results of this research revealed several key factors for determining an extension approach. These were:

- Identifying participants and their roles;
- Understanding the context for the extension programme; and
- Monitoring and evaluation considered part of the implementation of the programme

From there, an extension programme was developed with the meat processor partners. The building blocks will be familiar to those involved in extension, i.e. farmer groups, workshops, seminars, but there are a number of significant differences in this project compared to the typical extension approaches. The differences are as follows.

Proof of impact

The extension design project has and continues to undertake evaluation through several formally structured channels. The purpose of this is to gather evidence that demonstrates

which approaches are most effective in achieving practice change. The aim of the evaluation is to identify both the rate of change and the amount of change. Key areas of study are shifts in farmer attitude, changes in farm management practice, and changes in farm financial performance.

Involving the meat companies: a value chain approach

The extension design project is operating through groups of farmers who have been brought together by the RMPP partner meat companies. Part of the evaluation is understanding farmer responses to this approach and how it impacts on the amount and rate of practice change. This value-chain approach is uncommon in extension practice.

Connected knowledge and information

The extension design project also is attempting to evaluate the effectiveness of a coordinated pathway of knowledge and information. The project will align sources and channels of information to simplify how farmers gather knowledge. This will be achieved through a connected knowledge network where information on topics of interest are provided on a step by step basis, rather than as isolated pockets of information. This should help guide farmers towards the 'next steps' when gathering information. The effectiveness of this approach will be the subject of examination through the evaluation process.

PART TWO: The on-farm impact of the extension design project

The effectiveness of the project for farmers

The farm pilots have been well received with the significant majority of farmers stating that they have been effective (43%) and very effective (47%) in supporting on-farm improvements.

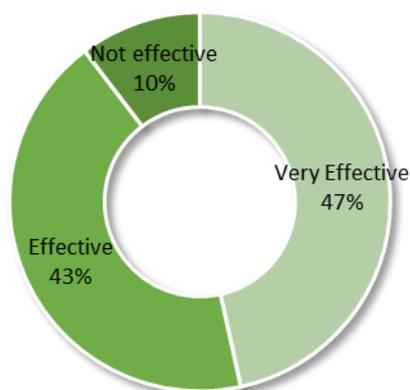


Figure 1 The effectiveness of the farm pilots

The most frequently cited reasons why the project was considered to be effective are access to independent experts that they would not otherwise have had (40%) access to project-funded resources (expertise, equipment, services), that had assisted them in achieving their goals (36%); aspects of examining issues in a group environment that provided support and encouragement (19%); and the opportunity to try new practices which they had been considering before their involvement in the project (17%).

The impact of the project on practice change

The year one behavioural evaluation shows that a significant amount of practice change has occurred across the farm pilots. Table 1 shows the rate of that practice change.

Table 1 Break down of on-farm practice change

Rate of on-farm change	Percentage of farm businesses
Faster than planned rate of practice change	51%
Entirely new practices implemented	31%
Similar to planned rate of practice change	14%
Confirmed that current practices are on-track to achieve targets	3%
No practice change	3%

Across the farm pilots, 82% of all farms identified some form of practice change because of their involvement in the project. This is made up of those that implemented change which was planned and occurred at a faster rate, and those that implemented entirely new practice change. This is a very significant figure and suggests an effective mechanism for practice change is occurring within the farm pilots. A further 14% of farmers identified practice change

occurring but at a rate similar to what is typical for them which suggests that the RMPP pilot process is having little impact on these farmers approach to practice change. A small percentage, 3%, stated that they had not implemented any changes but that the pilot process had validated their current course of action and no change was necessary at this point. Finally, a further 3% identified no practice change had occurred on-farm because of participating in the RMPP pilot process.

It is interesting to note that of those who implemented change which was planned but occurred at a faster rate, the faster timeframe shortened the change by an average of 2.9 years earlier than would have occurred. This figure is based on a small sample (N=6 specifically indicating timeframes) so caution is urged but it nonetheless highlights the potential gains from accelerating existing plans and not just introducing entirely new plans.

As noted previously, many changes have occurred on-farm which have led to an increase in productivity and profitability. Below are five examples, one from each partner meat company (Blue Sky Meats do not have any research results to report on yet) of changes that have occurred on-farm. They include a summary of the on-farm impact, what the farmer has done differently, who has been involved and what learning and support tools have been utilised. These examples are representative of the changes that have occurred on-farm as identified through the behavioural evaluation.

Farm examples of the practice change, what changed and who was involved

Changed stock policy, Reduced drought risk		
What was done differently:	Who was involved:	Tools that were used:
<ul style="list-style-type: none"> Change stocking policy based on data Increased cropping Specific animal health treatment – Leptospirosis 	<ul style="list-style-type: none"> Meat company - connector Meat company - facilitator Consultant with Farmax tool 	<ul style="list-style-type: none"> Field days - precise and purposed Farmax modelling of scenarios

Increased lambing % by 10%, increased carcass by 3-4kg per twin ewe		
What was done differently:	Who was involved:	Tools used were:
<ul style="list-style-type: none"> Condition score ewes Improved feeding programme preferentially feeding poorer stock 	<ul style="list-style-type: none"> Meat company – connector Meat company – facilitator Veterinarian (expert) Mentor farmer 	<ul style="list-style-type: none"> practical workshop - condition scoring sheep farmer group measured pasture cover DVD & written resource

Increased lamb weights by 2kg, Increased winterfeed yield from 10,000 to 14,000kg, 45% increase in lambs away before Christmas		
What was done differently:	Who was involved:	Tools used were:
<ul style="list-style-type: none"> rectify a soil pan improved weed control changed sheep breeds 	<ul style="list-style-type: none"> Meat company - connector Meat company – facilitator Soil scientist Feed budget expert Seed representative 	<ul style="list-style-type: none"> Farmer groups Field day

Rotation graze benefit of \$547/ha, Increased pasture production by 2.21t/ha, 50% less pugging damage		
What was done differently:	Who was involved:	Tools that were used:
<ul style="list-style-type: none"> Trial - Set stock vs Rotation graze More robust research methods 	<ul style="list-style-type: none"> Meat company - connector Meat company – facilitator Farm systems consultant (expert) 	<ul style="list-style-type: none"> Farm trial

Increased lamb weights by 0.5kg/head,
Advanced plans by 2-3 years

What has been done differently	Who is involved:	Tools that were used:
<ul style="list-style-type: none"> • Sown fodder beet • Pasture measuring • EID tagging & weighing 	<ul style="list-style-type: none"> Meat company – connector Meat company – facilitator Other farmers Stock representative Fodder Beet Expert – not in pilot 	<ul style="list-style-type: none"> • Use of Farm IQ • Small groups • Fodder Beet Field day – not in pilot

The on-farm impact data cited in the tables are derived from the farmer’s descriptions given during the behavioural evaluation process, not from the financial evaluation process. The financial evaluation i.e. the farm account data for year one of the pilot, will not be available until first quarter of 2017.

The nature of practice change implemented

Farmers participating in the project have implemented a diverse range of practice changes, which have been broadly categorised under seven main types of change (see Figure 2). Eighty-eight per cent of those interviewed have implemented at least one practice change, and 43 per cent have implemented more than one. Some participants (21 per cent) reported that intended practice change has been delayed because of external factors including climatic and financial factors.

The changes most frequently implemented have been:

- Changes in the levels of monitoring and recording information (57 per cent of those who have implemented practice changes). The type of information now being recorded and monitored includes livestock weights, dry matter production and intake, and financial transactions.
- Planting different forage crops (41 per cent); and
- Improvements in soil management (20 per cent).

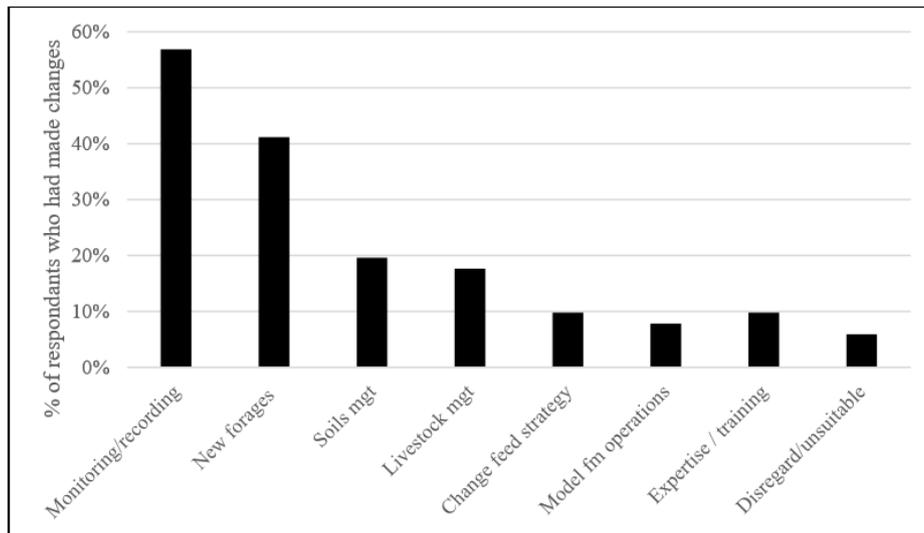


Figure 2 The nature of practice changes implemented

Measuring the impact of practice change

Thirty-five per cent of farmers who had implemented a practice change (31 per cent of farmers interviewed) could describe at least one outcome in quantitative terms, while 24 per cent (17 per cent of interviewees) could identify outcome(s) only in non-quantifiable terms. Most of the outcomes reported related to an increase in livestock production, or factors directly related to livestock production such as an increase in stocking rate, an improvement in animal health or stock being finished earlier. The development of a Land and Environment Plan or Health and Safety Plan was reported to be an outcome of involvement in the project by a small number of respondents.

Supporting on-farm change and the network

Rural professionals are important participants in the system as they provide expertise and support for farmers to implement customised knowledge at a farm level. The initial research indicated that professionals are useful channels for knowledge and the early evidence suggests that farmers are responding favourably to connecting with the 'right' expert for their business. The meat companies are playing an important role in facilitating these connections.

Through the pilot process, farmers have responded positively to both the meat companies and the experts that they have connected with. In Figure 4 and 5, the shift in perception and attitudes towards both groups is outlined.

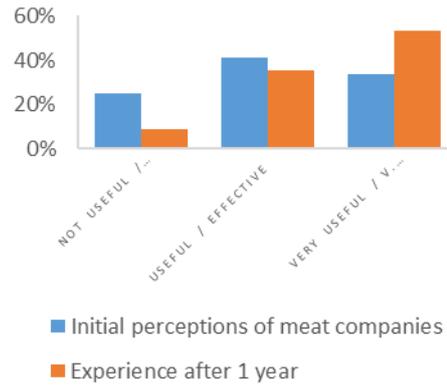


Figure 3 Changes in farmer perceptions of meat companies from baseline to year one.

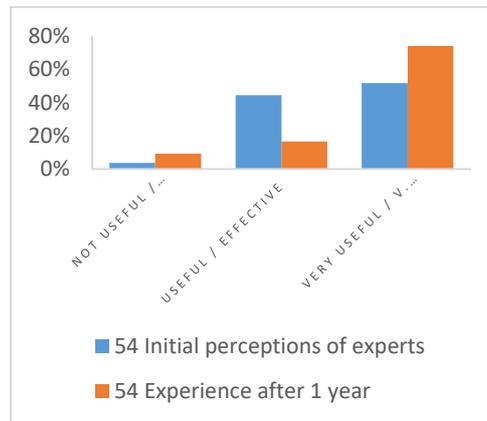


Figure 5 Changes in farmer perceptions of experts from baseline to year one.

The results show that the process of facilitating a connection between a farmer and an expert is proving important. Rather than the parties being joined by convenience such as proximity, the considered matching by the connector is enabling strong and quicker linkages. The research shows that 75% of all farmers identified would not have had contact with their respective expert without the pilot process, and 55% of farmers stated that the advisor helped drive practice change.

This is reflected in the following comments from the evaluations:

- *If it wasn't for the pilot it would be unlikely that they would be able to access quality experts*
- *The farmer feels that so far the consultants are encouraging him to take a risk that they probably would not take otherwise*
- *Her previous attitudes about using consultants have been transformed. Based on her experiences in the pilot she believes they are very valuable and can offer knowledge and advice that can increase farm performance.*

- *It is clear that for this couple having access to a farm advisor has been a critical relationship to help give them the confidence to try something different on the farm*

It appears that the considered approach to matching farmers and experts provides more 'tailored expertise' which gives rise to increased confidence in the farmers leading to greater willingness for practice change. Farmers are also responding more positively to expertise that is provided by way of coaching. A coaching style employed by some experts appears to create an environment that facilitates farmer learning and the farmers respond favourably to this rather than being told what to do.

PART THREE: The extension system

Key lessons learnt from the extension design project include:

- Having access to appropriate information, activities, and implementation support increases the effectiveness of the extension process
- Practice change occurs when the environment surrounding the farm business builds the farmer's confidence to act (rather than when the environment "pushes" a farmer to change)
- Information should be customised to the farm business, tested with other farmers and farmers need to be supported through to implementing changes on farm
- Rural professionals need to be matched both to the farmer's business needs and style of working
- Engagement and collaboration of all partners has been critical to the success of the pilot

These lessons have been captured in the extension model discussed next.

The extension system model

Using the evaluation results, and combining with the initial research, an extension model has been developed (see **Figure 3**).

Extension System Model

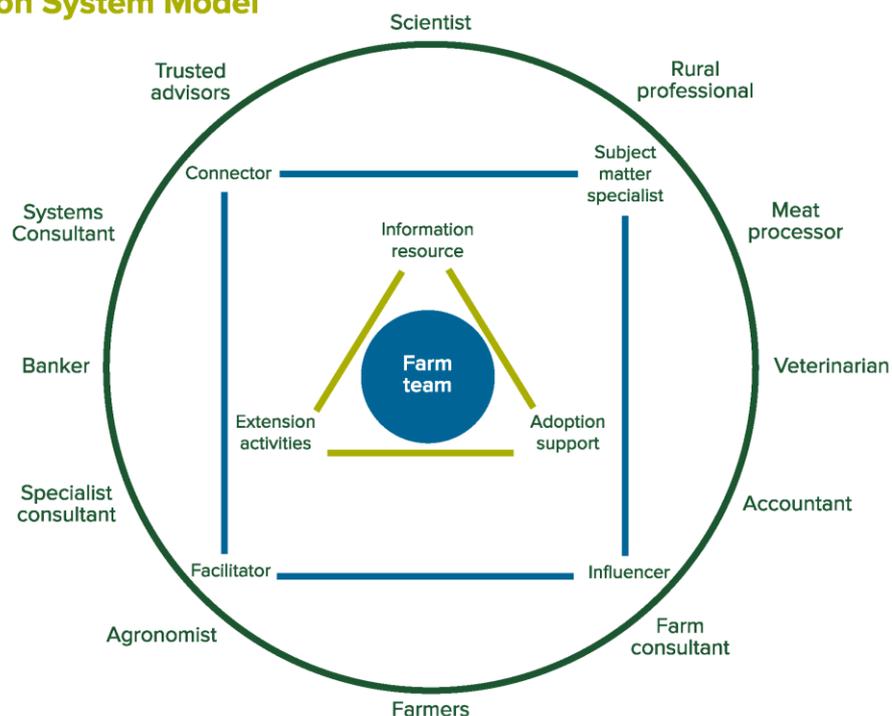


Figure 6 The extension model

The model has been developed through analysis of the evaluation results from the extension pilots, with input from the advisory group for the extension design project, and from the results of the initial extension research undertaken. The model which has at its centre the farm team, highlights four components for effective extension programmes. These are:

- **Well-developed information resources.** These are the physical and digital means of providing information on subjects to farmers. These can range from the more traditional written fact sheets to an interactive website.
- **Effectively facilitated extension activities.** Extension activities are the activities undertaken to provide opportunities for farm businesses to learn about a subject. Examples include field days, workshops, courses, and seminars.
- **Adoption support.** This is a means of providing follow-up from extension activities and information resources to help practice change to occur. Adoption support can take the form of mentoring, webinars, one-to-one consulting, accountability through a group of farming peers, or coaching.
- **Recognition of different roles in the extension system.** The four roles identified are connector, facilitator, subject matter expert and influencer/mentor. Connector is the role that brings farmer groups together, and/or helps identify the most appropriate subject matter expert for a group or individual. A facilitator is important for helping identify the topics to focus on (group and individual) and helps run extension activities. Facilitators also are integral to adoption support, helping to identify what is needed to help farmers make changes in farm. Subject matter specialists deliver information into different parts of the extension system. Influencers (or mentors) have a particular role in adoption support space to help build confidence when making changes on-farm. These roles are in the process of being described as it has become clear that they can be blurred and under-recognised.

From the research, we know that factors such as the trustworthiness of information as well as the context for its use and the skills needed to apply the knowledge are very important to farmers. The high levels of practice change occurring in the pilots suggest that these issues are being addressed through the structured interaction between farmers and experts. The research findings clearly demonstrate that practice change is an outcome of a dynamic system with a high level of interdependency between the various parts.

These roles are summarised as follows:

Connectors

At a glance:

- The connector role:
 - With the farm team, initiates the extension process
 - Their job is to identify the common purpose for being involved in the extension activities/group and sets up connections
 - May be an individual entity or may be an organisation with regional or national scale

The role of connecting individual farmers to the resources required to address the needs that have been identified has been undertaken by the processor representatives in the extension project to date. However, it may also be undertaken by a farm consultant or scientist who has been contracted to fill this role, in addition to guiding the progress of the group (facilitation) or

working with farmers on an individual basis. For example, the role of connector for farmer groups associated with Blue Sky Meats and Progressive Meats will be undertaken by the contracted facilitator during 2017, with the processor representatives assisting where possible.

The key skills required to fulfil the connector role include being able to:

- Access 'difficult-to-find' resources;
- Select relevant information for the farming systems and local environments with which they are working;
- Contact relevant people for individual farmers and groups;
- Be aware of research that has already been conducted;
- Identify genuine knowledge gaps.

Facilitators

At a glance:

- The facilitator role:
 - Needed for one to one extension and for farmer groups
 - Their job is mainly planning, organisation, communication and relationship management
 - Can be a connector, an influencer or a subject matter expert as well if they are clear about their different roles

The choice of facilitator has been determined by farmer preferences, and by the time available to, and skills of, the processor representatives. Meat company staff have been involved in facilitation of the process with groups and individual farmers to date, but two companies have recently employed a contract facilitator to undertake this role in the future. In this situation, the role may be shared between the facilitator and the representative, or undertaken solely by the contract facilitator. However, it is important that one person retains "ownership" of the project to ensure continuity and maintain the group momentum.

The skills and knowledge required for successful facilitation of group and individual processes include the ability to:

- Ask the right questions to help farmers articulate the issues that are affecting performance, or the factors that would lead to successful outcomes;
- Include all the members of the farm team, (partners and staff), when they are present;
- Judge the appropriate level of information provision for the meeting format and to understand farmers' existing levels of knowledge;
- Select technical experts with good communication skills;
- React to the way in which discussions are developing and adjust the format and content of meetings accordingly;
- Define objectives/outcomes for meetings and ensure that these are addressed.

The extension design project to date has been based on meat companies fulfilling the connector and facilitator roles. This appears to be creating value for some meat companies. For these companies, the value proposition is compelling enough to explore this as an option for the long term.

The role of connector and facilitator could also be fulfilled by other organisations such as accountants, banks, sheep and beef consultants, regional councils and veterinarians. The creation of value for the commercial partner may provide a strong enough proposition for them to organise and run one or several farmer groups. If this is the case, the cost of initiating and running the regular farmer gatherings may be carried by the commercial partner. This would reflect the value being created for the commercial partner in the extension role. If those parties are part of a national organisation or body, the ability to cost effectively extend and replicate the process is significant.

Influencers

At a glance:

- Must have credibility and be respected by farmers
- Their job is to guide or be a sounding-board for ideas
- Can be a farmer, or a rural professional

The influencer is likely to be a respected farmer, though it is not always the case; occasionally the influencer is a rural professional. When considering how the system can be resourced, it is difficult to state with absolute certainty whether a farmer would charge for their time in this capacity, but it is possible that they would not. Further research is required to understand this issue better.

The influencer role could be filled from locally based respected farmers who are likely to be shoulder-tapped to assist by a connector and/or facilitator. Notwithstanding that there may be a need to fund their time, there should be a reasonable supply of farmers to fulfil this role. The main point of contention may be the difficulty in determining who is a suitable candidate for this role; or if it is a role that emerges over time.

Subject matter experts

At a glance:

- An expert on the subject of interest
- Their job is to challenge, provoke or inform on the subject
- High level of technical competence

Once formed, the farmer group will access the expertise that they consider important for achieving their goals. The research findings to-date have demonstrated that this is likely to involve enlisting specialists as well as systems-based sheep and beef consultants. Often, specialist advice is associated with a retail company such as an agronomist or fertiliser representative and their advice is 'free' (notwithstanding the likely loss of independence). The farmer group should determine the merits of this approach.

Alternatively, the group members can contribute an agreed level of funding to cover the cost of the expertise with the cost spread evenly across everyone. This should provide significant cost advantages when compared to accessing expertise on an individual basis. The management of this should be the responsibility of the group.

Typically, there is a healthy supply of specialists across a wide range of topics. There is less confidence about the long-term supply of sheep and beef systems consultants. The implications of this are worthy of further study.