Lifetime Wool: Developing effective extension packages for farmers - A case study based on sustained behaviour change principles

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Abstract

Sheep and pasture extensionists have traditionally used a combination of written and verbal methods to effect behaviour change in farmers and have been either fairly non-prescriptive and highly variable in their recommendations to farmers on the optimum management of breeding ewes. The Lifetime Wool project set out to develop robust management guidelines that increase profitability and which take full account of the range of impacts on both the ewe and her progeny. The management guidelines, supported by tools to assist skills development and decision making, were tested with farmers from across southern Australia to identify barriers to adoption and assess their feasibility. Farmer feedback was used to further refine the tools and processes in a continuous improvement process. These guidelines and tools are being packaged and communication strategies developed to effect behaviour change in more than 3000 wool producers by 2008.

Introduction

Lifetime Wool (LTW) is a national project for the development of guidelines for the nutritional management of ewes. The guidelines are based on condition score (CS) and Feed on Offer (FOO) targets at key times during the reproductive cycle. The targets have been derived from five years of research taken place on commercial properties across southern Australia (Thompson and Oldham 2004). The project has an extension target that more than 3000 producers nation wide adopt a change of practice due to Lifetime Wool messages or related information by September 2008.

Agricultural extensionists have traditionally used verbal and written information to effect behaviour changes in farmers, with limited success in most cases (Howden *et al* 1998). Generally farmer management of ewe flocks in Australia is *ad hoc* and management targets during pregnancy are rarely set or followed. In combination with this, state extension agencies have either been non prescriptive or only generally prescriptive in the targets that they recommend for ewe management and there have been few appropriate tools to support these targets. More recently however, extensionists have used adult learning principles and strategies with greater success (Mortiss, 1993). Bennett (1976) suggested that in order for a change in practice and behaviour to occur, changes in Knowledge, Attitudes, Skills and Aspirations (KASA) must first happen. McKenzie- Moher (1999) goes further and adds that "Attitudes and knowledge have been found to be related to behaviour, but frequently the relationship is weak or non existent a variety of barriers can deter individuals lack of knowledge and unsupportive attitudes are only two of these barriers". The strategies he proposed include; identifying and dealing with the barriers to change through gaining commitment, using clear messages, the development of appropriate tools and the use of effective communication in the particular issue being worked on.

LTW set out to test the ewe management guidelines and associated tools with a group of farmers from across southern Australia in order to assess their feasibility and practicality. LTW used the feedback to improve the applicability and effectiveness of these for use in the broader farming community. The project applied a combination of the principles listed above to identify barriers to adoption and to develop i. Processes for adoption of the messages and ii. Appropriate decision tools to support practice change. This paper will focus on the development of decision tools and communication as key elements in causing practice change.

Materials and Methods

To develop ewe management packages that would be effective in bringing sustainable practice change across a range of environments, production systems and producer segments, different decision tools and processes for interaction with producers were used in WA and Victoria. This allowed the testing of a broad range of approaches and tools that we believed would best meet the needs farmers in different areas. Given that some of the changes that LTW wanted farmers to adopt were complex and new, an audience was selected from the 'top' 25% of wool-growers. Rose (2006) confirms that LTW targets innovators, the early adopters and the 'top' end of the early majority, (as described by Rogers, 1998). The early adopters being the group that were likely to adapt and improvise recommendations to fit their farming enterprises and make them more adoptable by the early and late majority. Lifetime Wool enlisted more than 120 farmers from within the identified target audience across southern Australia. Those selected were asked to participate in discussions on ewe management, 'road test' the guidelines and the decision tools under development and to ensure that these would be both effective and feasible. These tools and guidelines made up the basis of what Lifetime Wool calls 'Measure to Manage'.

The procedure used to develop the tools involved prototype development and testing, redesigning and then re-testing with the audience. Feedback from the farmers and their consultants was collected and used to assess the changes to be made to refine the tools and processes, and if additional tools were needed. Where practical, each of the tools developed and tested with our participants, were tested with other farmer groups, to ensure suitability of the tool for the wider farming community. There were three types of tools developed: pasture assessment, livestock assessment and feed budgeting (table 1). Pasture Assessment tools in the form of a suite of pasture photos was tested in Western Australia to assist farmers with estimates of Feed on Offer (FOO). Their value to assessment was tested using a 'before and after' test during 4 group meetings and feedback on their design and use was gathered. In Victoria a small number of pasture photos were provided and at monthly meetings, the project staff provided formal pasture assessment training.

The Condition Score models developed by Lifetime Wool (van Burgel *etal*, 2004) were assessed for value to farmer skill development through observations by staff and feedback from participants. Ewe profiles were given to each farmer (Figure 1.). They, and background information supporting the profiles, were presented orally and in pictorial format. Farmers were asked to record observed Condition Score and Feed on Offer against the targets on the chart and then present this information at the group meetings. Feed budget decision tools were provided to the farmers with training (either individually or in a group). The farmers then used these tools to make feeding decisions to ensure that their ewes met the profile or another agreed target. The computer based Decision Support Tools (DSTs) were tested with a group of consultants in Victoria where specific feedback on the use and quality of the information were gathered. They were also tested by project staff running one on one sessions with WA farmers.

Table 1. The provision of tools and training in the 'Demonstration Phase'

	Activity	WA	Vic.
Condition scoring	In-yard assistance	*	*
	CS models	*	*
Pasture assessment	In-paddock calibration		*
	Pasture photo gallery	*	
Feed budgeting	Feed budget matrix		*

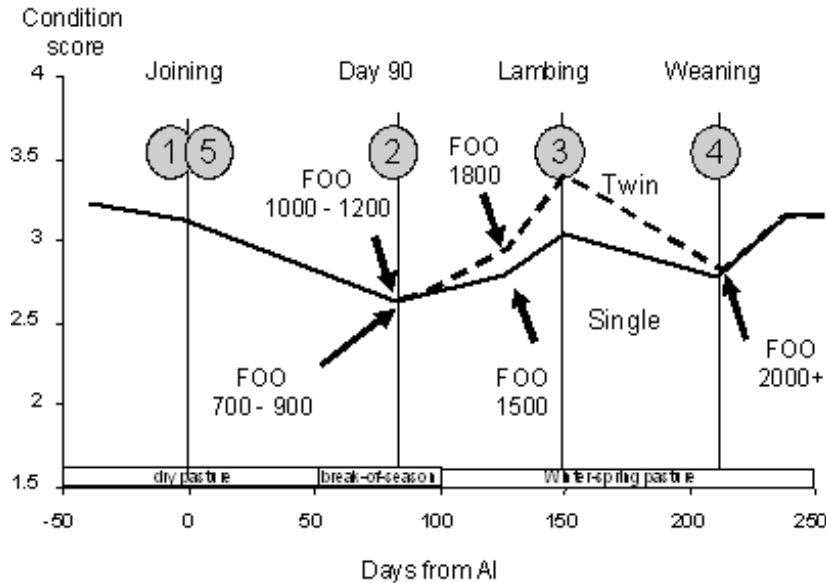| Managing to target | Electronic DSTs | * | * |
| | CS profile chart | * | * |
| | FOO targets | * | * |

Figure 1. A Ewe Profile chart (winter-spring lambing in WA), showing Condition Score and Feed on Offer (FOO) targets.

Results

A number of 'barriers to change' emerged through discussions with the participating farmers. These are; i. the complexity of the decisions required to effectively and profitably manage ewe nutrition ii. Information that was poor, conflicting or non-existent and there were inadequate tools to support it. iii. A time-effective method of monitoring that farmers could use with confidence (pasture assessment and monitoring condition of ewes were identified). iv. Incomplete economic analysis which didn't allow both farmers (and consultants) to take on higher stocking rates and supplementary feeding. This also was reflected in that v. Confidence in the current recommendations was limited.

The Ewe Profiles that were distributed to participants, either as a laminated sheet in the information kit or as a mounted chart for displaying on the fridge, formed the backbone of discussions and decisions on ewe feeding and pasture monitoring and management. Farmers commented that the simplicity and the clearness of the recommendations were excellent. Many comments at both the Victorian and Western Australian review meetings supported the overall view that being able to follow specific targets and record the flocks own performance against the targets aided the learning process and encouraged continuing monitoring throughout the season. In the SWOT Analysis conducted at the West Australian review, the value of the profiles was recorded as a key strength of the project.

Tools, such as the condition score models, were seen by the participants as useful in providing a reference or standard but many commented that the interaction with the facilitator at least initially, gave them the confidence in applying the skill of condition scoring. A comment by a participant was that they needed to have confidence in it's application as much as the actual score itself. By the end of 2005 those farmers that had initially been suspicious of the accuracy of condition scoring had understood the method

and had confidence in its application. In Victoria, participants were asked to rate their skills prior to and after participation and on average ability to implement change had doubled (Table 2.). Visits by project staff to support condition scoring was seen as a key element of the practice change recorded by farmers. "I now have confidence in my scoring – I didn't have it prior to LTW staff help" – Kojonup, WA

Pasture assessment methods currently used by most farmers (73.5%) were informal visual assessment or a guess (Rose, 2006) and that generally farmers did not carryout formal pasture assessments using calibration cuts. Given that most of the WA participants were already familiar with formal pasture assessments through involvement in 'Pastures from Space', the team asked for feed back from the participants on how they thought other farmers would use the pasture photo gallery provided. Interestingly, most WA participants adopted more advanced pasture assessment after participation (Figure 2.). Comments from farmers supported this; *"the pasture pictures are a great help in assessing FOO"* – Darkan, WA ,; *"Photos helped with my FOO estimates"* – Brookton, WA.. In Victoria, pasture assessment focussed primarily on carrying out a more formal pasture assessment with only a couple of photo standards provided as reference. Discussion and practice was important in acquiring better skills in assessment. Participants rated their skills in estimating FOO at 56% prior and 78% post being involved for 6 months. (Table 2.). A session using the WA pasture photos gallery gave favourable responses and interest in developing a set for Victorian pastures.
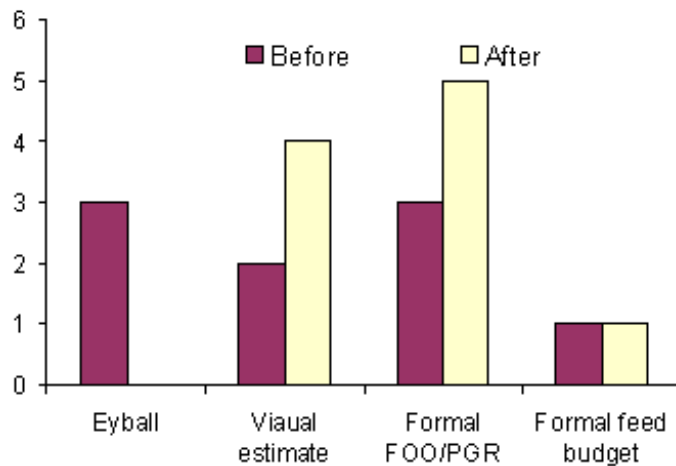

Figure 2. Practice Change in Pasture Assessment in WA Participants

Table 2. Victorian Participants rating of changes in skills and knowledge

Knowledge and Adoption (rating 1-10)	before LTW	after LTW
Understanding of 'measure to manage' concept	4.5	8.3
Ability to Implement LTW guidelines	4.2	8.4

" In nearly 40 years of farming this has been the most valuable set of skills I have acquired"
Victorian participant

A number of Feed Budgeting Tools were evaluated during the demonstration phase as previously there had been little reported formal feed budgeting amongst farmers, with many farmers using consultants or

state extensionists for advice. The complexity of many of the decisions led the project team to commission component analysis and the development of a decision support tool(DST) for specific phases which included extensive economic analysis. The DSTs were developed and then tested by the farmer participants and consultants with training from the project team. Feedback showed that although the tools were more simple than the whole year tool, they were still complex enough that individual training and follow-up support was needed for their successful use. Feedback from consultants showed that there was potential for them to use the tool with their clients. A simple paper based tool for feed budgeting was developed, the 'feed budget matrix' in response to requests from participants, and was used extensively in Victoria. Feedback on the matrix was very positive and participants reported that it increased their understanding and skill in feed budgeting (Table 2.). It's simplicity and use either in the office or in the paddock were considered as key benefits of the tool.

Discussion

Identifying and reflecting on the 'barriers to change' to ewe management allowed LTW to design more effective processes and tools for the demonstration phase. It was decided that the processes for overcoming these barriers would require a similar approach to that described by Mackenzie-Moher (1999) and involved development of clear (or at least clearer) messages, setting up effective communication processes and the production of appropriate tools. A continuous improvement loop was used adjust and redesign the program so that the final process and tools would be successful in the wider adoption of the guidelines and recommendations in subsequent years. The initial design of meetings, presentations and tools that were tested at the beginning of 2005 have been significantly altered and many new tools and methods have now been incorporated into LTW's communication and extension plans as a result.

A key barrier, the complexity of the series of decisions needed for effective ewe management, showed that the guidelines and recommendations along with the supporting information needed to be communicated in a way that was easily understood and followed without compromising the importance of the decision. The development and presentation of the guidelines as a series of targets on a display board in WA gave participants an opportunity to evaluate their own progress in ewe management and to adjust or make decisions that were applicable to their own enterprises. Clear, well organized presentation of the science supported the learning and gave confidence in the recommendations.. The opportunity to meet, discuss the targets and use the supporting tools reinforced participants learnings and skills. It was seen as the highlight of the project, particularly in Victoria. The opportunity to explore the balance between hard and fast recommendations, different environments and the objectives of the participants enterprises allowed valuable discussion to occur which then gave LTW useful feedback on the content of the presentations and tools and has improved the impact of LTW communication.

The tools, including the ewe target profiles, were seen as particularly important as they were to be the 'frontline' of the communication and extension effort post 2005, given that practice change was being sought across southern Australia with a limited project team. The most successful tools or processes were those that were simple to use, time effective yet the user retained confidence in the outcome. Condition scoring and pasture assessment were adopted once simple, time effective methods and tools were developed. These tools also needed to meet an immediate need of the participant. As monitoring and managing the ewes and pasture to targets became important, the tools needed to be available and ready to use.

Feedback from participants using the tools in the field was invaluable and significantly improved their applicability and value. Complex decision tools that support new technologies or decisions are useful for researchers, specialist consultants and innovative farmers but require significant training and support. Results showed the value of DSTs but for them to be successful in the wider industry where support and training isn't available, they must be simple enough to be used with confidence the first time they are tried and be as user friendly and portable as possible. Complex decisions may be broken up into components that are easier to digest and then as the user becomes more familiar with the outcomes can move onto more complex decision making or training when ready or if required.

The strategies incorporated in the demonstration phase included; identifying and dealing with the barriers to change; using clear messages; the development of appropriate tools and the use of effective communication. Gaining confidence in any method, recommendation or tool is a key parameter in the successful adoption of practices. Testing and retesting methods and tools to find what were the triggers for participants' confidence and ease of use enhanced the adoption of recommendations and practices.

Acknowledgements

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