

## Impacts of a winter feeding management on-farm extension programme in Southern New Zealand

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**Abstract.** The 'No More Bearings' Sustainable Farming Fund project investigated the impacts of different winter grazing managements on ewe nutrition and the incidence of vaginal prolapse in ewes in late pregnancy in Southland, NZ. A survey of farmers was conducted to investigate the level of awareness and potential uptake of the messages from the project. The survey was answered by attendees at two major field days, in July and August 2011. There were 140 replies to the survey of which 80% were farmers. The farm types mainly represented were intensive sheep (51%) and hill country sheep (35%). When asked about the official Sustainable Farming Fund project 'No More Bearings', 61% of the respondents had heard of the project, while 33% had not. More of the respondents had heard of 4-day shifting during the winter (79%) with 33% recognising the practice from the media coverage, 31% from field days and 26% recording a personal interaction with the team members. When asked whether they had tried the 4-day shifting, 56% of the farmers indicated that they had already tried the technology and 93% of respondents would continue with the practice. Source of information and its relative worth are also discussed. The Sustainable Farming Fund project and the concept of 4-day shifting were relatively well known after 3 years. This may reflect the type of respondent, as they were at specific technology transfer days. The project has had a positive outcome regarding the uptake of a 4-day shifting management in winter.

**Keywords:** risk, transaction cost, labour, personal interaction.

### Introduction

Improved understanding of the relationship between winter ewe nutrition, feed management, productivity and profitability is critical to the sheep industry. Many farmers focus on ewe management before mating and again around lambing but lose sight of the importance of the weeks in between. The 'No More Bearings' Sustainable Farming Fund (SFF) project investigated the impacts of different winter grazing managements on ewe nutrition and the incidence of vaginal prolapse (bearings) in Southland, New Zealand.

Traditional management of ewes from mating to scanning involving daily shifts onto a fresh allocation of pasture has often resulted in a loss of live weight and body condition score. The traditional winter management practice is to manage the feed supply from April until lambing (mid-August) using break feeding of pasture and available brassica crops. In some years this has an impact on ewe performance as the management focus is on rationing the feed supply rather than meeting the animal requirement.

The current project began when farmers involved in a Monitor Farm community group suggested from their observations that changing winter management for the ewe flock could decrease the number of bearings. Science input developed this into an on-farm trial where the aim was to maintain body condition score, thereby minimising true body weight loss of ewes during the period. The hypothesis was that significant loss of condition, or a series of physiological checks through temporary underfeeding, could be contributing to the incidence of bearings.

Over 2 years of demonstration on the original monitor farm the changed winter management resulted in a decrease in the incidence of bearings compared to the traditional winter management practice. These results were of interest to many farmers in the southern region where bearing incidence in some years can be as high as 10%, resulting in the loss, more often than not, of both the ewe and the lamb(s). However these results were on a moderate extensive hill country property which raised the question whether the results could be replicated on the more intensive sheep properties on heavier soils. The 'No More Bearings' project aimed to focus on determining the best feed management practices during early pregnancy to reduce bearings under intensive sheep farming.

An integral part of the project was to ensure ongoing farmer adoption of this different farm management system. This paper outlines some of the successful features of the project that assisted farmer adoption.

## Methods

Though this paper reports on an assessment of the impacts of agricultural extension on the wider farming community through an SFF project, it is important to define the actual science principles that were within the project.

### ***'No More Bearings' project description***

The 'No More Bearings' SFF project was a mix of on-farm demonstrations and science led workshops. The on-farm demonstrations involved 3-4 high performance sheep farms (with a bearing incidence >5% and a minimum ewe flock size of 2,000 mixed age ewes) per year over 2 years. The trial period was from ram removal (mid May) until weaning (late December).

On each farm the ewe mob was split into two management groups of at least 650 ewes per mob. The mobs were shifted either every 1-2 days or 4 days (the grazing management). Each mob was allocated the same daily ration of feed at each shift. Feed allocation was based on a feed budget and measurement of the feed on offer on each paddock. The period when the treatments were applied was the early pregnancy period (tupping to pregnancy scanning in mid-July) in the first year and until the lambs were born in the second year. At scanning the mobs were brought back together and treated similarly until lambing, including normal winter brassica crop feeding (if applicable).

Live weight and body condition score was measured regularly from the beginning of the trial until weaning. Bearings incidence was recorded by the farmer as they occurred. Lamb live weight was measured at tailing/marketing and weaning at approximately 90 days of age.

The objective was to test the concept of 4-day shifting on saturated soils to ensure this simple management approach achieved ewe live weight and body condition score targets while minimising pasture and soil damage. Technical support was provided throughout the trial period to ensure that the trial design and grazing management was both understood and followed and timely and robust data was collected.

The workshops focused on the scientific first principles of ewe feed management to achieve appropriate early pregnancy ewe nutrition from a simplified grazing management. These were delivered both at the beginning and during the three-year project.

### ***Planning for extension outcomes within the project***

As this was essentially a farm systems project that included both demonstration and discovery, the technical extension from the project was an integral part of the initial project plan and design. It included the following elements:

- Ensuring the project had a title that would both capture farmers attention and remind them of its intent.
- On farm demonstration of the hypothesis.
- Using farms in areas that covered the major intensive sheep production areas in Southland.
- Using different farms in each year to access a wider audience.
- Developing workshops that incorporated the key science principles and delivering these before the on-farm work began.
- Scientists, consultants and technical support worked alongside the farmers to ensure strong data was collected.
- The latest research (ewe nutrition, bearings and body condition score) was reviewed to ensure the current science was integrated.
- Develop key message factsheets to deliver the project outcomes succinctly.
- Deliver the information to farmer audiences through an annual field day during the project.
- Use a website to deliver information from the project and make it readily available.
- Target key media in the region (including rural radio).
- Survey farmers to assess how well the project team managed this over three years.

### ***Measuring the impact of the project***

As outlined one objective of the project plan was to survey the farming community to determine if the project changed any facet of their early pregnancy management and any reasons for this. To fulfil this there were two post project activities completed to see what the farmers' actions had been as a result of the project. One was a questionnaire where we wanted to understand how well the project and its outcomes were known in the wider farming community and this is reported here. The second was a more detailed assessment of farmer practice the following winter to see how well they had adopted some of the other practices highlighted in the project,

primarily body condition scoring (Casey et al. 2013). This was done on 23 farms and included both a questionnaire and physical assessment of ewes to record body condition score (BCS).

A short questionnaire (10 questions where the answers were selected from a range of options) was developed that could easily be utilised at a variety of events such as discussion groups, monitor farm field days and science seminars. The seminars were science focussed days for mainly sheep and beef farmers, held in July and August 2011. The objective was to investigate the level of awareness and potential uptake of the messages from the project.

Farmers, or attendees, were asked to complete the survey at several events in Southland and Otago. The questionnaire asked if prior to attending the event they had heard of the 'No More Bearings' project and had they heard of 4-day shifting or tried it, would they continue with 4-day shifting, and if they were sheep farming had they considered changing their winter ewe management. In addition they were asked how they accessed technical farm information and to consider how effective/available they felt the information on 4-day shifting had been.

The ten questions were:

1. Have you heard of the Sustainable Farming fund project for sheep farmers entitled 'No More Bearings' that has been running in Southland?
2. If so, select all of the sources of information
3. Please indicate your occupation
4. If you are farming please select farm type
5. Have you heard of 4-day shifting for winter feeding?
6. If so, where did you first hear about the practice?
7. Have you tried the 4-day shifting option in winter? Would you do it again?
8. How effective has the information available to farmers on 1 vs. 4-day shifting been? (by word of mouth, consultants, media or field day)
9. If you are sheep farming have you considered making changes to your ewe pregnancy management as a result of this programme?
10. How do you access technical farm information? Please rate how effective each source is for you.

The survey results were summarised from individual responses with no further analysis, as segmentation of the audience provided no further insight.

## Results

There were 140 questionnaires completed with farmers being 80% of the respondents, while 6% were agribusiness, 4% were agricultural consultants and 10% other (mainly people in education, journalists or retired farmers). There are approximately 2,700 sheep and beef farms in the region. The farm types represented were 51% intensive sheep, 35% hill country sheep, 6% dairy and 8% other (deer and mixed farming operations).

When asked about the official Sustainable Farming Fund project 'No More Bearings', 61% of the respondents had heard of the project, while 33% had not and 6% being unsure (Table 1). This indicated that project awareness was relatively high in the target regions of Otago and Southland after the first three years.

**Table 1. Awareness of the 'No More Bearings' project and uptake of the 4-day shifting grazing management option by farmers**

Question	Overall results (%)			
	Yes	No	Maybe	n
Have you heard of the 'No more bearings' project?	61	33	6	140 <sup>1</sup>
Have you heard of 4-day shifting?	79	14	6	140
Have you tried 4-day shifting?	55	45		105 <sup>2</sup>
Would you do it again?	93	7		57 <sup>3</sup>
Have you considered changing your winter ewe management?	69	31		105

<sup>1</sup> Total number surveyed

<sup>2</sup> Number of sheep farmers

<sup>3</sup> Number of farmers who had tried 4-day shifting

The majority of respondents had heard of the project through the media (55%), while 34% had been to a field day or seminar where it had been mentioned or featured. Other sources included

farm consultants (13%), email (12%) and newsletters (14%), while 4% had heard about the project from other farmers.

The survey then questioned farmers on the key management options that were being tested in the project and therefore whether farmers had heard of 4-day shifting during the winter (Table 1). A much higher proportion of the respondents (79% vs. 61%) had heard of the management concept compared with the official project, again indicating a high penetration of both the project and technology from the project to the target audience.

When only the target group of sheep and beef farmers was included in the analysis, 88% of farmers had heard of the 4-day shifting practice. This time the media was of lesser importance with only 33% recognising the concept from the media, while 31% were from field days and seminars. The percentage recognising field days is lower than the original response, but some respondents answered the question by putting some of the emphasis on more a personal level, identifying the team involved directly, with 26% recording a personal interaction. These were through discussion groups, with the project team or from other farmers. Approximately 10% of the farmers indicated that they had previous experience with the concept.

When asked whether they had tried the 4-day shifting, 55% of the farmers indicated that they had already tried the technology (Table 1). When asked if they would do it again, 93% responded yes. This suggests that the technology was beginning to be used and, once adopted, was becoming a regular approach to winter grazing management.

A further focus of the project was to highlight the need to ensure appropriate winter feeding management that maintained winter ewe body condition score. Respondents were asked if they had considered making changes to their winter pregnancy management as a result of the programme (Table 1). Of those that had heard of 4-day shifting, 69% of sheep farmers had considered making changes to their winter pregnancy management of the ewe flock. This suggests that both messages were being considered by the farmer. This is an important part of the project, as the findings suggest that 4-day shifting is most appropriate when winter feeding is aimed at maintaining ewe body condition score. The proportions of intensive sheep farmers and hill country sheep farmers responding positively to this question were similar.

Finally, the survey investigated how farmers view the information that they receive from different sources. In the first instance respondents were asked about the information on 4-day shifting (Table 2). The most informative option was the field day, with 42% rating it great, well above the average response for that category. The overall Media rating was average. Interestingly the rating of Consultants and Word of Mouth was quite varied and probably reflected the different exposure of individuals outside the project to the technology.

**Table 2. Effectiveness of sources of dissemination of information on 1 v 4-day shifting**

	Consultant	Field Day	Media	Word of Mouth	Average
Poor	18.5	8.8	9.6	13.4	12.6
Just OK	18.5	14	19.2	26.9	19.7
Average	33.3	35.1	56.2	40.3	41.2
Great	29.6	42.1	15.1	19.4	26.6
Responses	54	57	73	67	62.8

*n* = 140

The value of information sources was also rated (Table 3). The range of sources included 10 options ranging in technical difficulty from scientific publications to advertising and media articles. Interestingly, the average response rate for the question was high at 91 out of the 140 surveys completed and this only varied by approximately 10 responses. Scientific publication was rated by 83 of the respondents, suggesting that those answering the survey were familiar with many forms of technical information.

Of those sources rated untrustworthy and poor, advertising was the highest (17% and 26% of respondents), while the response for other groups was very low (0-3%). Rural agribusiness rated poor to average (18% and 65% respectively). The media, scientific publications and the internet were noted as average sources. Sources with a significant excellent status were scientists, vets, discussion groups, monitor farms and consultants.

**Table 3. Rating of technical farm information sources**

	Respondents ranking of each source (%)				Number of Responses
	Untrustworthy	Poor	Average	Excellent	
Research Scientist	0	6	39	55	91 (65%)
Discussion group	1	7	50	42	81 (58%)
Veterinarian	0	8	52	40	106 (76%)
Monitor Farm	0	14	52	34	91 (65%)
Consultant	1	8	59	33	87 (62%)
Scientific publications	0	13	60	27	83 (59%)
Media	3	9	67	21	103 (74%)
Internet	2	13	70	15	83 (59%)
Rural Agribusiness	2	18	65	15	95 (68%)
Advertising	17	26	54	3	93 (66%)
Average	2.5	12.3	56.7	28.5	91.3 (65%)

$n = 140$

### Impact of the extension

A key factor in the impact of the project was how we identify these projects so that they 'stick' in the farmers mind. The 'No More Bearings' title appealed to the strong focus by farmers on animal health issues even though we were targeting feed allocation and grazing management.

The overall responses of respondents indicated clearly that the Sustainable Farming Fund project and the concept of 4-day shifting were both relatively well known after 3 years. The final outcome of the project was different to the original intent of reducing bearings. The resultant shift in focus to 4-day shifting may have resulted in the greater recognition of the technology than the project per se.

Part of this response may be due to the type of respondent, as they were at specific technology transfer days such as field days or seminars. This indicates that they are either the type of farmer that is actively looking for information or one who enjoys interacting with the wider farming community and as a result takes on new information. This may also have been reflected in the high response rate to questions about sources and reliability of information, indicating an audience committed to learning.

An interesting observation from the surveys was that although a high number of the farmers had already heard of the project and tried the technology, they still attended the seminars. This may have been to find out more about it or to talk to other farmers who had tried it.

The option of moving away from intensive grazing management in winter provides a shift back to management practices that were used 20 to 30 years ago. However, the added information about meeting the maintenance requirement of the ewes, rather than rationing feed to 'get through' as was the reason for shifting to intensive winter grazing management 20 to 30 years ago, appears to have empowered farmers to choose a less labour intensive option while achieving their outcome of choice.

Farmer feedback added to the original objectives of the project by posing questions such as:

- Can we do this all the way through winter?
- How does this affect my feed utilisation?
- What is the impact on pasture regrowth in spring?

This has resulted in further core funded research on the impact of winter grazing management on spring pasture production.

Throughout the project there was an active effort to ensure that the science was linked to the farm system and the learning focussed on the why as well as the how. This generated more 'what if' questions from farmers experimenting with the management approach. This extended to the workshops and presentations where farmers, scientists and consultants presented different aspects of the technology which maintained overall cohesion and credibility of the message.

The project has had a positive outcome regarding the uptake of the concept of 4-day shifting, as the follow up questionnaire indicates that 55% of those who had heard of it had tried it, while 93% will do it again. These levels of uptake are well beyond those normally associated with new

technologies. While the project team made an active effort to engage the farming community in a cohesive and credible fashion, the final rapidity of the uptake of this technology may reflect the low risk, low transaction cost of entering and leaving the technology and the benefits of reducing labour costs.

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