



final report

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Twin Bearing Ewes

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2006/W02 - Facey Group

Twin Bearing Ewes

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MUTTON & LAMB

BUDGET \$15,000.00

Aim:

Increase survival rates of twin born.

Objectives:

To reduce the estimated losses of twin-born Merino lambs by 50% through improved management practises. Facey Group members currently participating in scanning for multiple births are known to have losses between 20-40% in twin born lambs. Through the development of this project we aim to reduce losses to 15% on average.

To obtain local trial data which permits Facey group members to make an informed economic assessment of the benefits and costs of increasing twin lamb survival.

To perform an economic assessment of the cost of increasing twin lamb survival.

Co-ordinator's Comments

27/07/2007 Groups program was compromised by a VERY dry year. Ewes on one site had all their nutrition from hand feeding. A lot was learnt by the members that will help them cope better with drought feeding but results of lamb survival were not conclusive. One sheltered paddock had 33% less lambs than an open paddock – 151% V 115%??? The unusually dry conditions would have help confound their results. Called group facilitator to discuss issues of lack of funding and work load.

11/08/2006 Group has only managed to have 2 sites set up during 2006 but given the record dry a pretty good effort. Group plan to have full compliment of 6 sites going in 2007.

2006/W02 - Facey Group

Twin Bearing Ewes

Improving the Survival of Twin born Merino Lambs

By Amie Bolton, Facey Group executive Officer and Tim Watts, Veterinary consultant

Abstract

Previous PIRD studies undertaken by Facey Group showed that only 55% of the potential increase in lambs weaned was achieved when ewes were fed to increase lambing performance. Most of the unrealized gain was due to loss of twin born lambs in the perinatal period from mismothering and/or hypothermia.

This PIRD trial series was aimed at attempting to improve the survival of twin born lambs through application of existing management recommendations – increased nutrition of ewes during late pregnancy and lactation, and provision of shelter. Inputs were to be measured to evaluate the economics of the management practices imposed.

The study was conducted at 2 sites in 2006 using adult twin bearing Merino ewes. Both sites looked at the response to ad libitum intake of a barley (70%) / lupin (30%) grain mix, compared to farmer trail fed grain supplementation during the lambing period. At one site it was also planned to compare the effect of shelter in the form of Oil mallee alley plantings, against normal open paddocks with only a few shade trees present.

Ewe and lamb bodyweight, condition scores, lamb marking numbers, and lamb autopsies were done on both trial sites. FOO assessments were also recorded.

The pasture growing season was very poor in 2006, such that little pasture growth occurred at the shelter comparison site. There was very little if any typical winter weather to challenge lamb survival at this site.

At the other site lambing commenced a month later in late July. A number of typical winter fronts occurred which would have challenged lamb survival, although grain feeding rates were atypically high due to the delay in pasture growth as a result of a late start to the growing season.

The main results obtained from these studies were:

1. The shelter did not appear to improve lamb survival. This is most likely due to the lack of cold wet weather.
2. An ad lib barley rich diet did not appear to increase lamb survival at either site. The trial results did not support the hypothesis that barley feeding can increase colostrum production in twin bearing ewes such that lamb survivability is enhanced. More work may be needed to determine how to reliably elicit this response.

3. In poor pasture growth years feeding twinbearing ewes to maintain condition is expensive – in this trial the cost ranged from \$7.50/ewe to over \$20/ewe according to amount of FOO and feeding method.
4. Farmer supplementation decisions for trail fed mobs resulted in a similar ewe and lamb bodyweight profile from prelambing to weaning. At one site ewes maintained condition throughout, except in one mob which suffered a mild case of acidosis.
5. The trial showed that farmers can make very accurate supplementation decisions for twin bearing ewes. In these trials the farmers used condition score and FOO information along with energy requirements tables to maintain ewes in strong condition during lambing.
6. The trials demonstrated that high starch diets can be fed to twin bearing ewes ad lib.
7. Twin bearing ewes may lose weight and condition in preference to increasing their grain intake. Ewes lost 0.4 condition score to marking at one site whether trail fed or fed from a self feeder. The reasons for this observation is not clear.
8. At one site where FOO comprised about 40% of the ewes intake, trail feeding and provision of a self feeder resulted in similar animal performance and grain intake (and cost). In such situations a self feeder may be an efficient means of supplementing ewes and minimizing disturbance of the mob during lambing.

Introduction

The Facey group offers a sheep enterprise bench-marking service to its members. Results in the last three years of bench-marking analysis indicate that a 10% improvement in lambs weaned is worth in Gross Margin terms about \$1.16/DSE, or an increase in operating profit of approximately \$6,000 for the average flock in the analysis.

A “Wean More Lambs” PIRD demonstration trial conducted by Facey Group in 2005 showed a 10% increase in lambs weaned as result of improved nutrition of the ewes during joining and increased ram nutrition and management prejoining. The increase in lambs weaned in this trial arose mainly an increase in the proportion of twin pregnancies. Analysis of scanning data and marking figures revealed that only 55% of the potential increase in lambs weaned by this nutrition regime was achieved mainly due to higher mortality rates in twin lambs.

Much past research work has shown the much higher lamb mortality in twins, and that most of the losses occur within a few hours of lambing due to hypothermia (cold stress) and/or mismothering (a broad category which includes maternal instinct, ability, milk production, ewe condition).

CSIRO and Department of Agriculture research into the problem of survival of lambs has shown that the following factors might be important in our environment:

- ewe nutrition in late pregnancy and lactation
- provision of shelter to reduce risk of hypothermia in neonates
- mismothering due to maternal instinct (in part nutrition related) and predation.

In our WML trial in 2005, hypothermia and mismothering were confirmed as significant causes of perinatal lamb mortality. Whilst ewe nutrition was considered to be adequate in this trial, there is considerable interest amongst members in further enhancing ewe nutrition to increase colostrums production. Closely controlled pen studies (Milton pers comm) have shown that high levels of starch-based feeding close to lambing can achieve this and it is hoped that this can result in an improvement of twin lamb survival. The paddocks used in the 2005 WML trial were typical of paddocks set up for broadacre cropping being relatively open to prevailing south westerly winds with a small number of trees providing limited shelter. A number of Facey Group members have significant areas of tree plantings designed to control salt encroachment, waterlogging and/or erosion. Some of these are alley-type (similar to agroforestry), others are areas of fenced off remnant vegetation with pasture areas downwind. Some of these areas have productive pastures and members are likely to utilise these “sheltered” paddocks if there is value in improving survival of twin-born lambs.

Aims of the Study

This trial series was aimed at attempting to improve the survival of twin born lambs through application of existing management recommendations – increased nutrition of ewes during late pregnancy and lactation, and provision of shelter. Inputs were to be measured to evaluate the economics of the management practices imposed.

Methods

Two trial collaborators were identified at a meeting of Facey Group members, and site visits made to ensure suitability with respect to study objectives. Ultrasonic scanning for multiple births was standard management practice on both properties and twin bearing ewes were separated and identified.

Site 1 – East Wickepin

The ewes were scanned on 11 May 2007. Twin bearing ewes of ages 3 and 5yo. were randomly allocated to one of the three mobs, weighed, condition scored and vaccinated with Glanvac 3S.

They were confinement fed as part of normal farm practice until the trial commenced on 8th June.

On 8th June the ewes received their booster Glanvac 3S and were weighed. Each mob was

allocated one of the following lambing period treatments:

1. Open paddock (typical of many lambing paddocks on the farm, farmers own supplementation decisions)
2. Sheltered paddock , farmers supplementation decisions
3. Sheltered paddock , mob fed to maintain condition score to lambing then high energy complete diet via self feeder.

The sheltered paddocks comprise 4-5 year old oil mallees planted in 4 row blocks at 60m intervals.

Pastures have been resown in both paddocks in the last few years.

Lambing commenced as expected on 15 June.

Mobs 1 and 2 were confinement fed from the season opening rains to 8 June with 700g/head/day of a Barley/Lupins mix. Both mobs were then put in their lambing paddock and fed up to 1200g/head/day. Mob 2 suffered an outbreak of acidosis in the first few days after being put in their lambing paddock, even though their ration had not changed. No ewe deaths occurred but the reduction in appetite was obvious for a few days. The ration for this mob was altered to lupins & hay only to assist in overcoming the acidosis.

Mob 3 was set stocked in its lambing paddock from the commencement of the trial and fed 900g/head/day of a barley/lupin mix as part of the farmers normal supplementary feeding program.

Site 2 – West Pingelly

All ewes were run together over 2 paddocks for 6 weeks prior to trial commencement.

This trial commenced on 8 July, and lambing started on 22 July. Twin bearing ewes (total 464) were drafted into their age groups (2-6yo) then allocated at random in proportion to one of two mobs such that one mob contains 215 ewes and the other 249 ewes. All ewes had Glanvac 3S as lambs (2 doses), hoggets and 2yo ewes.

The treatment groups were:

1. Standard feeding practice. Ewes were trail fed grain as required according to farmers plan to maintain condition during lambing.
2. High feeding practice. Ewes were introduced to a high barley diet slowly over 10 days in the period up to 22 July2007, then a self feeder containing 70% barley/30% lupins will be offered.

The trial paddocks are adjacent permanent annual pastures with similar historical carrying capacity, aspect and altitude.

Measurements

The following measurements were made:

- Grain fed to ewes from commencement of lambing until feeding ceased
- Ewe bodyweight and condition score – prelambling, marking and weaning
- Lamb mortalities recovered, a sample were autopsied to determine cause of death
- Lamb numbers at marking and weaning
- Lamb bodyweights at Marking and weaning
- Rainfall events and severe increment weather was recorded at both sites

- Feed on Offer was recorded in all trial paddocks as part of supplementary feeding decisions.

After marking the mobs of ewes and lambs at both sites were combined and run as one mob through to weaning.

Results

Seasonal Conditions and FOO

At both sites rainfall was well below average.

At site 1 there was no significant rainfall event until the end of the main lambing period (20th July).

Lamb mortalities due to poor weather at this site were considered to be minimal.

FOO levels at site 1 were very low (<200kgDM/ha) throughout the lambing period in both sheltered paddocks. In the open paddock FOO was approximately 300kgDM/ha at the start of lambing and increased to 500kg/ha by midJuly and 1100kgDM/ha by marking.

At site 2, commencement of lambing coincided with increased winter frontal activity and rainfall.

There were 3 major periods of wet windy weather of approximately 2 days duration and several shorter rainfall events.

FOO levels were 700kg/ha in both paddocks at the start of lambing and increased to around 1200 by mid-August and 1500 by marking on 28th August.

Supplementary Feed

Site 1

On 8 June the feeding rate of the high feed mob was progressively increased to 1200g/head/day over 5 days then access to a self feeder containing the same ration plus hay and a loose salt/calcium lick offered separately.

Estimates of feed intake over lambing are given below in table 1.

Table 1 Site 1: Feed Intake during Lambing

	Paddock Type	Nutrition Regime	Average Intake kg/head g/hd/day		Cost Estimate (\$/ewe)
Mob 1	Open	Farmer	49	930	\$11.80
Mob 2	Alleys	Farmer	39*	735	\$ 9.40
Mob 3	Alleys	Self Feeder	89 grain 33 hay	2300	\$26.35

*NB: appetite probably suppressed due to acidosis.

Mob 2 suffered the effects of acidosis for a 10-14 period from the commencement of lambing. The exact causal factors was not established. However the ewes diet in this mob was changed as soon as the problem was detected to lupins and hay, thus removing the cereal grains which contribute to acidosis. It then took about a further 10days for their appetite to fully recover.

Site 2

The high feed mob were given free access to a Barley 70%/Lupin 30% diet from a self feeder (the feeder was not allowed to go empty). Intake estimates were calculated every 8-10 days as the feeder was refilled. The ewes ate 900g/head/day initially and increased to 1100g/head/day in the period prior to marking. This equated to an average cost of \$7.00/ewe or \$0.19/ewe/day over the lambing period.

There were no health problems associated with feeding these high levels of grain on an ad lib basis. The 10 day introductory phase seemed to be a sufficient adaptation period and the ewes were accustomed to the paddock having run on these pastures prior to the start of the trial as one large mob.

The trail fed mob were supplemented with an average 800g/hd/day over the lambing period.

Feeding rates curtailed rapidly towards the end of lambing when grain wastage was noted on old trails. The cost of this regime was \$7.50/ewe or \$0.20/ewe/day.

All grain feeding ceased just prior to marking as FOO levels were high enough to sustain the ewes.

Ewe Bodyweight and Condition Score

Table 2 Site 1: Ewe Bodyweight and Condition Scores

	Pdk Type	Nutrition Regime	Prelambing 8/6/2006		Marking 8/8/2006		Weaning 15/9/2006	
			Weight	CS	Weight	CS	Weight	CS
Mob 1	Open	Farmer	67.9	2.8	60.7	3.0	59.3	2.9
Mob 2	Alleys	Farmer	66.3	2.9	58.7	2.7	57.5	2.9
Mob 3	Alleys	Self Feeder	69.0	2.9	61.3	3.0	64.0	3.0

The three mobs followed a similar bodyweight and condition score pattern, being the same at the start and end of the trial. Mob 2 may have had a slightly lower condition score at marking,

Table 3 Site 2: Ewe Bodyweight and Condition Scores

		Prelambing 8/7/2006		Marking 28/8/2006		Weaning 25/10/2006	
		Weight	CS	Weight	CS	Weight	CS
Mob1	Farmer	60.6	3.0	51.1	2.6	58.4	2.9
Mob 2	Self Feeder	58.1	3.0	54.3	2.6	56.5	2.9

The two mobs at site 2 had similar bodyweight and condition scores throughout all stages of the trial.

Lamb Marking

Table 4 Site 1: Lamb Marking Results

	Pdk Type	Nutrition Regime	Ewes at Start	Lambs Marked	Marking %age
Mob 1	Open	Farmer	105	159	151%

Mob 2	Alleys	Farmer	109	129	118%
Mob 3	Alleys	Self Feeder	97	143	147%

Marking percentages at Site 1 were depressed in mob 2 only.

Table 5 Site 2: Lamb Marking Results

	Nutrition Regime	Ewes at Start	Lambs Marked	Marking %age
Mob 1	Farmer	214	292	136%
Mob 2	Self Feeder	249	327	131%

Marking percentages at site 2 were similar.

Lamb Survival

A sample of lambs dying in the perinatal period was selected at the 2 sites for autopsy. The starvation-mismothering-hypothermia complex appeared to be the most common factor contributing to the deaths. Mismothering (lambs having walked but not fed) appeared to be more common at site 1. At site 2 hypothermia was a larger contributor to deaths, although mismothering was present.

Lamb Bodyweights

Table 6 Site 1: Lamb Bodyweights

	Pdk Type	Nutrition Regime	Marking 08/08/2006	Weaning 15/09/2006
Mob 1	Open	Farmer	14.4	20.1
Mob 2	Alleys	Farmer	11.0	17.7
Mob 3	Alleys	Self Feeder	12.3	20.2

Marking and weaning bodyweights of lambs from mob 2 appear lower at marking and weaning.

Lambs from the self feeder mob may be slightly lower than mob1 at marking.

Table 7 Site 2: Lamb Bodyweights

	Nutrition Regime	Marking 28/08/2006	Weaning 25/10/2006
Mob 1	Farmer	9.6	21.3
Mob 2	Self Feeder	10.0	20.3

There was no difference in mean lamb bodyweight at marking or weaning at site 2.

Discussion

Severe adverse seasonal conditions at both sites resulted in the ewes relying in large part on supplementary feed for their energy requirements. At site 1 ewes obtained close to 100% of their dietary energy from grain supplement. At site 2 the ewes relied on supplement for approximately 60% of their dietary energy.

Decisions on supplementation levels in the farmer fed groups were based on FOO assessments, knowledge of the ewes requirements for energy, and measurement of their condition score. The bodyweight and condition score data confirms that the supplementation decisions were quite accurate in maintaining the ewes in healthy condition.

The lamb marking percentages, ewe bodyweight and condition score patterns were very similar at site 1 for the self feeder mob (no FOO) and open paddock with a limited green feed. In practice this meant that feeding costs could be reduced by some \$17 per ewe for the same performance. Clearly a little green feed makes a huge difference!

At neither site did the provision of a barley rich diet available ad lib increase lamb survival or lamb growth rate. This is a similar outcome to a number of field studies done by Ag WA in 2002-2004.

The hypothesis that increased colostrum production in response to a high starch diet (in this case barley) should improve lamb survival and growth as proposed by Milton (pers comm.) was not supported in these field trials and additional work is required to determine how to elicit this response.

The ewe bodyweight response to the self feeder differed at the two sites. At site 1 the ewes maintained weight and condition score throughout the study, with a barley/lupin mix and loose hay available ad lib. At site 2 where more green feed was available, the ewes lost 0.4 of a condition score over lambing. Grain intakes were lower at site 2 and a simple mass balance suggests that the ewes chose to lose weight even though the grain was available to increase their energy intake.

The reasons for this are not clear.

Conclusions

1. Under severe adverse pasture conditions twin bearing ewes were fed adequate energy to maintain condition during lambing. At 50-100% of total energy requirements being derived from grain, the cost ranges from \$7.50 to over \$20 per ewes according to FOO and grain costs.
2. A barley rich diet can be successfully introduced to twin bearing ewes and fed ad lib during lambing.
3. An ad lib barley rich diet did not appear to increase lamb survival at either site.
4. Twin bearing ewes may lose weight and condition in preference to increasing their grain intake.

Events Held

A workshop was held on July 19th at site 1 East Wickepin with 20 participants attending. The

workshop covered an array of topics including

Learning how to FOO

PIRD Project Overview

Supplementary Feeding & Feed Budget Calculator

Pasture Insects

Lamb Post Mortem

Condition Scoring

The feedback gathered from this workshop has been included as Appendix 1.

Other Comments

Is the group interested in doing another project?

Yes, however, the drought is affecting morale and money is very tight, farmer contributions would be an issue.

Would you recommend other Groups run their own trials?

Yes, but it is a lot of hard work. The issues are explained in point 4.

How would the Members sum up their experiences in doing the MLA PIRD project? (What was the bottom line?)

It is local work done at a local level and that is what is important to Facey members
Comment on the organisation and management of PIRDs, this will assist MLA in better management of future projects.

PIRD need to have a greater understanding of farmer's time and the contribution they all ready make in terms of voluntary work within their communities. It was suggested that if we wanted PIRD to fund our project then we would have to add in a component where the farmers do more, thus instead of one main component it was suggested we add a second component which incorporated farmers at a higher level. For them to be participating in workshops was apparently not enough thus we included the second component. Although this second component was not our idea we felt our project was important and we wanted to maximize our chances of gaining funding. However, the group was unsuccessful in completing this component of the project. There were several reasons for this which includes 2 years of drought and a decrease in morale which reduced members enthusiasm to participate and that they did not suggest this component, therefore it was not a need identified by the farmers, therefore why would they want to participate? I strongly believe groups should only be encouraged to work to the level they feel suits them. By adding a component into a project that was not our idea was not wise and it should not be a surprise that it failed.

The available funding from PIRD is not enough to complete a project to a high standard to gain significant meaningful data. Consultants are an essential aspect of these projects and the available funding is not high enough for groups to do something highly worthwhile. We had to make many cutbacks as the amount of funding just did not allow us to do things as well as they could have been done. A lot of effort goes into these projects and PIRD needs to recognize this and allocate money appropriately to allow groups to a) do a project that is meaningful to them b) do it well.

Animal ethics is a significant problem and there are many costs associated with this that groups just cant afford when they only receive \$15,000 which barley covers

consultant fees. Animal ethics is a huge problems for groups like Facey, MLA & PIRD need to provide greater support in this area.

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Facey Group MLA/PIRD Evaluation July 19th 2006

Completed responses 15 out of 20 farmers

Sam Giles FOOing	Excellent	Good	Average	Below Average	Poor
Content	5	8	1	1	
Delivery/presentation	5	9	1		
Sam Giles Condition Scoring	Excellent	Good	Average	Below Average	Poor
Content	4	11			
Delivery/presentation	4	11			

Tim Watts	Excellent	Good	Average	Below Average	Poor
Supplementary Feeding					
Content	10	4	1		
Delivery/presentation	11	3	1		
Tim Watts Post Mortems	Excellent	Good	Average	Below Average	Poor
Content	11	4			
Delivery/presentation	12	3			

Peter Mangano Insects	Excellent	Good	Average	Below Average	Poor
Content	6	8			
Delivery/presentation	4	10			

2. Did you learn something new? If so briefly list.

- FOO Estimation x 3 responses
- Condition scoring x 3 responses
- Mite I.D and control methods (biological)
- Lamb death cause
- I got something out of every speaker
- The FOO Trial
- Lamb deaths x 2 responses
- Ease of FOOing with practice
- Supplementary feeding
- Everything x 2 responses
- Yes, cause of death in lambs
- Feed in paddocks
- Roughly estimating paddock feed
- How to cut up lambs

3. What was today's highlight?

- The hands-on things
- Seeing some green paddocks
- Post mortems x 4 responses
- Supplementary feed budget
- FOOing x 2 responses
- Mixing and informal discussions
- Good mix of practical/hands on work and the presentations in the shed
- I have only been in the Facey Group a short time and found the whole day to be very informative

4. Were there any lowlights/areas that could be improved?

- Not really
- Accurate FOO measurements-estimate FOO should have been done in conjunction with actually plant cuts that are oven dried
- No
- FOOing presentation
- Presenters talking for too long

5. Do you have any suggestions or ideas for other workshops?

- More on pasture management
- Spring time FOOing
- Growing better pastures
- Congratulations to the organisers