

# final report

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## Maximising Lambs Weaned

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## Introduction

The initial encouraging responses observed to the treatments trialled in PT3/08 required further investigation to verify that the observed responses to the treatments in PT 3/08 are able to be re produced in a range of locations that exhibit varying weather conditions (seasons) and therefore provide confidence that treatment recommendations can be widely adopted with a low risk of failure.

The treatments investigated in Prime Time 3/08 suggested that

- a). Considerable embryo loss is occurring in some flocks between scanning and lambing
- b). Ewe and lamb nutrition is compromising lamb survival in many flocks
- c). Inadequate protection of lambing ewes from inclement weather is contributing to significant lamb losses.
- d). Merino ewes can be successfully scanned identifying ewes bearing multiple foetuses and ageing those foetuses to enable the targeted feeding of the ewes to stimulate colostrum production and increased lamb survival.
- e). Further investigation of options for supplementation of ewes to enhance colostrum production that are less disruptive to the lambing ewe flock is required.

## Project Objectives

- 1) To define the areas of greatest reproductive loss that currently occur in the NAN members flocks.
- 2) To confirm the management techniques that will increase the likelihood of commercial merino flocks attaining weaning percentages in excess of 150%
- 3) The production of best practice management guidelines that outline the management techniques required for the commercial merino flock to attain the goal of 150% lambs weaned.

## Methodology

- 1) Compare the impact of utilising the use of the "ram affect" to compress mating to 30 days at different times of the year. Control and treatment mobs will be mated in December, January and February. Four different properties involved. Minimum numbers of mobs mated – four treatments and four controls. (*Russell Morgan, C Morgan, M Dodd and D Parker*)
- 2). Confirm the impact of increasing the ram % for ram effect synchronised ewes from 1% to 4%( AMS members generally use 1% rams for mating) Allow for 4 mobs of ewes.(1000 ewes) (*Russell Morgan*)
- 3) Compare the impact of the strategic feeding of lupins to ewes to increase ovulation rate, and hence twin pregnancies, at three different mating times.( Dec, Jan and Feb). Allow for 8 mobs of ewes .(*A Heitman, M Mincherton, Russell Morgan, C Morgan and D Parker*)
- 4) Compare the impact on lambing % and lamb survival of strategic feeding of the ewes to improve colostrum production by utilising different feeding methods (*C Morgan, M Dodd and A Heitman*)

5) Compare the impact on weaning % of separating twin bearing ewes from single bearing ewes and evaluating the impact of providing different options for strategic feeding and the protection to the lambing ewe from inclement weather. (C Morgan, M Dodd, A Heitman and Russell Morgan)

## Project Outcomes

Unfortunately the drought of 2006 and 2007 in the Mid West region of WA has severely impacted on NAN members achieving the projects goals. Some of the members have completely destocked their properties whilst many others have severely reduced their sheep numbers and sold off many of the trial lines of ewes and lambs.

However we are able to report some observations from treatments conducted –

- Many flocks scanned more than 140% embryos however severe losses occurred due to seasonal conditions (80% lambs marked)
- On one particular property the forced hand feeding of lupins to ewes and lambs during 2006 and 2007 contributed to exceptional lamb marking percentages in 2007 of 135% for maiden merino ewes. This result tends to support the current thinking that keeping ewes in score 2.5 and above at all times will increase life time productivity
- The feeding of late baled barley crop in round bales proved effective in supplementation to increase colostrum production whilst minimising disturbance to lambing ewes.
- The technique of the strategic use of lupin stubbles to flush ewes and increase conception rates proved feasible as an alternative to daily feeding of lupins over a 14 day period.
- For a 2.5 cycle mating (6 weeks) 1% AMS rams performed as well as 3% AMS rams. More work required to quantify the need for higher ram percentages as the mating period is compressed to 28 days.

## Summary

Members have benefited from involvement with the PIRD process as it has enabled them to evaluate their current management and trial possible changes to increase productivity.

Members believe that with greater knowledge and understanding the achievement of 150% lambs weaned from commercial AMS flocks is economically and technically feasible.

It will be several years before members' ewe numbers return to pre 2006 levels. Some members may not return to merino sheep production due to implications of the drought and the changing profitability of livestock production compared to grain production.

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**NAN PIRD 2005/WO1**

**GENERAL PROTOCOLS**

Mob sizes	300 ewes preferred minimum for each treatment group.
Controls	The normal farm practice in a mob with similar timings for treatments. Post scanning, all ewes remain together in the CONTROL group regardless of pregnancy status.
Colostrum feeding	Need to ensure that all possible efforts are made to minimise disturbance of the ewes when feeding the colostrum ration.
Introduction of colostrum enhancement mix	Twin bearing ewes – commence at 250 gms/hd/day of mix and build up by 100gms/hd/day until feeding at the rate of 750 gms/head/day (ie 6 days to reach 750 gms/hd/day);
	Single bearing ewes – commence at 200 gms/hd/day and build up to 500 gms/hd/day by 50 gms/day increments (ie 6 days to reach 500 gms/hd/day).
Testicle Mass	It is preferable for all rams to be assessed for scrotal circumference (at skin level) Rams to be assessed standing and scrotal circumference measured using a piece of string or flexible tape. Circumference to be measured at the point of greatest combined testicle size. Please record for each ram his tag number, age, preparation regime for mating and date of last shearing (especially of the scrotum)
Mating paddocks	Where possible, mating of ewes on cereal stubbles is the preferred treatment with the ewes being supplemented with lupin grain as required (mating on cereal stubbles will remove some potential between mob variation as a direct result of environment e.g. lupin stubbles).
Combining ewes	Following ram removal it is preferable for all ewes within a study (including controls) be run together until scanning.( ie days 45 to 85-90) Please ensure that discrete groups are identified prior to mixing eg the control group. If it is not feasible to run the entire group as one mob then it is preferable to run as two groups and alternate between the paddocks that they are running on.

<b>NAN PIRD 2005/WO1 DAY TIMETABLE FOR TREATMENTS</b>	
Day -7	Inject teasers if to be used.
DAY 0	Day of teasers (if being used) or ram introduction.
Day 12	Commence strategic feeding of lupins to the ewes as required.
Day 14	Addition of extra rams as required Introduce rams if teasers have been used.
Day 25	Finish strategic ewe feeding with lupins.
Day 45	Remove all rams. It is preferred to run all ewes together (including the controls) post mating and until scanning.
Day 85-90	Scan all ewes (40 to 45 days after ram removal) and age foetuses into two groups. Separate into required groups including CONTROLS
Day 85-90	Vaccinate ewes with 5:1 vaccine (Glanvac 6S) against clostridials. Essential for mobs that will be fed the colostrum mix.
Day 135	Pre lambing drench where necessary plus second vaccination with 5:1 vaccine. (Glanvac 6S).
Day 150	Commence feeding of cereal hay.
Day 155	Commence colostrum feeding for the ewes with the oldest foetuses (conceived between days 18-26 ). Take 1 week to build up to the full rate of feed.
Day 170	Commence colostrum feeding for ewes with youngest foetuses (conceived between days 34-44). Take one week to build up to full rate of feed.
Day 175	Cease colostrum feeding of oldest foetus ewes (conception between days 18 – 26).
Day 190	Cease colostrum feeding of youngest foetus ewes (conception between days 34 – 42).

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**[breakout box] At a glance:**

**Producer group: NAN Merino Group**

**Location:** WA mid-west wheat belt

**Enterprise:** Merino sheep

**Project:** Maximising lambs weaned

**Project coordinator:** Chris Richardson

**Project duration:** 2005 / 2006-2007

**[breakout box] Key points:**

- Scanning ewes confirmed significant lamb losses between conception and weaning.
- Scanning, supplementary feeding prior to joining and additional feeding for twin-bearing ewes is now standard practice for many participating producers.
- The 2006/2007 drought stymied attempts to further assess management options and examine the impact on colostrum production.
- Providing improved protection for lambing ewes from winter weather can improve lamb survival which can result in an additional weaning percentage of at least 30 lambs per 100 ewes in the twin-bearing mobs

**[heading] PIRD lights the way for increased lambing**

Craig Morgan's aim is simple – to maximise productivity and profitability on his family's sheep, cattle and cropping enterprise.

As a recent Producer Initiated Research and Development (PIRD) project demonstrated, achieving that is anything but simple.

Craig was one of about 10 producers in Western Australia's mid-west wheat belt who participated in two consecutive PIRD projects designed to help identify management options to increase lambing rates in local commercial flocks.

The Morgans – Craig, his wife Jocelyn and parents Ray and Lorraine – run a grain, beef cattle and dual purpose Merino stud and commercial Merino sheep enterprise on 5000 hectares near Three Springs, WA.

While the Morgan flock was achieving about 100% lambing, a one-off scanning of their stud ewes showed twins or multiples of up to 50%, Craig said.

“So we realised we were losing a lot of lambs, but we didn't really know at what point between conception and lamb marking, the lambs were being lost,” he said.

“It made us start thinking that we could be getting a lot more than 100% lambing.”

The consecutive PIRD projects ran in 2004-2005 and in 2006-2007 and were designed to identify and test different management options for commercial sheep producers to improve lambing rates.

Project coordinator Chris Richardson said the initial PIRD project compared a number of different “treatments” including:

- using different ram percentages on ewes synchronised using “teaser” rams;
- strategic feeding of lupins to ewes to increase ovulation rate prior to joining;
- the use of strategic feeding to improve colostrum production, and;
- separating twin-bearing ewes from single-bearing ewes prior to lambing and treating the ewes according to their different needs.

Chris said the first trial involved a number of different control and treatment mobs of about 200 ewes on the different participating properties.

“Initially we used pregnancy scanning to identify that most of the losses were occurring between scanning and weaning,” he said.

Scanning revealed that some producers in the trial were already achieving district average lambing percentages despite having a significant number of dry ewes.

Chris said the trial then clearly demonstrated pregnancy scanning could be worthwhile and cost-effective by allowing different treatment of ewes with multiple lambs, achieving at least an additional 30 lambs per 100 ewes where specific lambing paddocks were set up for these ewes to increase the chances of lamb survival.

“However the results also highlighted there is no silver bullet that will deliver significant gains in the numbers of lambs weaned but rather it’s the end result of small gains in several areas,” he said.

Group learnings from the initial project included:

- targeted daily feeding of lupins versus twice weekly feeding that demonstrated the potential to increase conception rates by up to 20 per cent;
- confirmation that for many participating producers there were significant lamb losses in twin-bearing ewes between conception and weaning;
- the percentage of dry ewes of similar genetic background varied from 3 per cent to 15 per cent, and;
- providing improved protection for lambing ewes from winter weather can improve lamb survival which can result in an additional weaning percentage of 30 lambs per 100 ewes in the twin bearing mobs.

Craig Morgan agreed there wasn’t one particular change that “stood out as the big winner” but rather a combination of a number of things.

“Supplementary feeding prior to mating definitely delivered much better results, and shelter for lambing was also a big one. We had one of our mobs lambing in a paddock of tagasaste and a second mob in a big open unsheltered paddock and the shelter certainly helped,” Craig said.

Most producers who participated, including Craig, now regularly utilise scanning to identify dry, single and twin-bearing ewes.

“Scanning allows us to split out the ewes with multiples and it also allows us to sell the dry ewes or re-mate them with Poll Dorsets,” Craig said.

“It also means we’re maximising returns from our inputs because we’re not supplementary feeding dry ewes.”



Twin-bearing ewes are fed lupins at almost twice the volume (300-400grams/day) as single lamb ewes.

“We try and maintain the ewes in condition score 2½-3 throughout pregnancy,” he said.

“We also try and wean the lambs early – from 8-12 weeks – so that we give the ewes the longest lead time we can to regain their condition before the next joining.”

Craig said they had made three key management changes – supplementary feeding of ewes in the two weeks prior to joining on a daily basis, shortening the mating period from six weeks to four weeks, reducing the corresponding lambing period and allowing them to wean early, and pregnancy scanning all ewes in the commercial flocks.

Project coordinator Chris Richardson said Craig was not alone in implementing management changes as a result of the PIRD.

However, the first project left some unanswered questions, particularly in relation to feeding of ewes to increase colostrum production and more robust quantification of the impact of the different management changes.

Funding for a second PIRD project was secured which began in 2006 to look at:

- “ram effect”, to confirm the impact of different ram percentages at mating, from 1% to 4%, in a 30 day mating period;
- the impact of strategic feeding of lupins to ewes to increase ovulation rate and hence twin pregnancies at three different mating times (December, January and February);
- compare the impact on lambing percentage and lamb survival of strategic feeding of ewes to improve colostrum production by utilising different feeding methods, and;
- compare the impact on weaning percentages from separating twin-bearing ewes from single-bearing ewes and providing different feeding and shelter treatments.

However, severe drought in 2006 effectively ended the project before it began, with some participating producers forced to de-stock their properties completely and others significantly reducing their sheep numbers.

Project coordinator Chris Richardson said some producers in the region had just 75-100mm rain for the year, compared to the usual annual average of 300-450mm.

Some aspects of the project went ahead with the following observations made.

- Many flocks scanned more than 140% embryos however severe losses occurred due to the seasonal conditions, with just 80% lambs marked.
- On one property hand feeding of lupins to ewes and lambs contributed to exceptional lamb marking percentages in 2007 (the following year) of 135% for maiden ewes.
- Grazing ewes on lupin stubbles prior to joining to increase conception rates was a feasible alternative to daily feeding of lupins over a 14 day period.
- For a six week mating period, 1% rams performed as well as 3% rams however it was felt more work was needed to quantify the need for higher ram percentages when the mating period is reduced to four weeks.

For Craig Morgan, the impact of the 2006/2007 drought and poor wool returns has made him look very closely at their sheep enterprise.

The family were forced to more than halve their dual purpose commercial Merino ewe flock in the drought to just 800 ewes and have not yet increased numbers.

However Craig said while they maintained the sheep enterprise they would continue to strive to improve lambing percentages and believed averages of 120% was achievable for their commercial flock.

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Ends.