

INSIDE

Liveweight and fat score at joining and foetuses scanned *in utero* for adult and maiden ewes.

Options for light weight spring drop lambs

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Light spring drop lambs create a dilemma for sheep producers during drought. But there are choices, you can either:

- sell them,
- feed them to a market weight or
- put them in a paddock and maintain them in the hope of an autumn break and a price rise, or
- humane euthanasia

Each of the above actions should be costed for your own particular situation.

Small Merino lambs provide the greatest challenge. Several studies have shown that the light 'tail' of the mob has a high mortality rate unless managed very skilfully. To ensure these lambs survive they need to be fed to grow at 1.0 kg per month. Given that they have little market value at the moment farmers with limited resources may have to consider the unpalatable option of humanely euthansasing those lambs with low chances of survival.

There is more flexibility with cross bred lambs but the current marketing environment is difficult.

Does it pay to feed light weight lambs?

Lambs between 18 kg and 32 kg are worth about \$1.00 a kg live weight although this market is limited. The finished lamb market requires lambs of a minimum 42 kg live weight (20 kg carcase weight). At a carcase price of \$3.00/kg, these lambs are worth about \$69.00 (20 kg x \$3.00 plus \$9 skin value). It is important to consider skin value as this is often the difference between a profit and a loss from a feeding program. It is important to allow about 8 weeks after shearing for 2.5 cm or 1 inch of wool regrowth to attain high skin prices. Off shears lamb skins are of much less value.

When our 22 kg lamb is worth about \$22.00, does it pay to feed it through to 42 kg under current prices? NSW DPI staff,

HIGHLIGHTS

**Options for light weight spring drop lambs
The Reproduction Response Calculator**

with funding from the Australian Sheep Industry CRC, have developed a feedlot calculator to examine all the variables associated with a feeding program.

When feeding a full feedlot ration based on barley at \$350 per tonne it will cost \$47.00 to add 20 kg live weight. This includes deaths and shy feeders but not labour. It should also be noted that a very high level of management is required to feedlot small, young lambs and labour costs will be a minimum of \$5.00 per lamb.

If we gain 20 kg liveweight, our \$22.00 lamb is now worth about \$69.00 with \$47.00 worth of feed. We have just broken even. Clearly, we need a price of more than \$3.00/kg carcase weight to make this pay and if our feed costs are more and we include labour, we will lose money. Heavy lambs are usually the most profitable to feed.

What if we put the lambs in the paddock with pasture and supplement them to grow slowly in the hope of an autumn break and a price rise?

With some paddock feed available a 20 kg lamb will grow slowly on about 2.0 kg of wheat per week. With wheat at \$350 per tonne this will cost us 70 cents per week or \$14.00 to feed our lamb for 5 months. If no paddock feed is available then more supplement will be required - about 3 kg per week is needed to keep lambs healthy and growing at about 50g/hd/day. Small lambs have high protein requirements, so feed testing grain that will be used to supplement weaner lambs should be considered.

In a recent experiment at Cowra Agricultural Research and Advisory Station crossbred lambs were fed to maintain live weight at 20kg. This proved difficult as young lambs are programmed for growth. They grew very slowly but lost condition in the process so this growth pattern cannot go on indefinitely and it is only a short term strategy. When these lambs were finished on a high quality diet following the period of restricted feeding, meat quality was no different to lambs that were not given a check.

With an early autumn break you would think our 22 kg lamb should quickly grow into something worth \$80, a margin of

\$44.00. The only problem is what are our chances of an autumn break?

With a late autumn break, lambs will have been fed about \$18.00 worth of feed for a 7 month feeding strategy giving a margin of \$40.00. However, enough time will have to be allowed to finish these lambs to market specifications before they cut their teeth next winter.

The seasonal risk and rigours of a long feeding program also makes taking the current \$1.00 a kg live weight for feeder lambs seem like an attractive option if it is available.

The other alternative is to hedge your bets and finish the heavier lambs, as the feedlotting margin is more attractive than light lambs, sell the medium weight lambs and feed the light lambs for just above maintenance.

There are no easy answers, but the Sheep CRC Feedlot Calculator will allow you to examine all variables associated with feeding programs and to come up with the best answers for our situation. The Feedlot Calculator is available at www.sheepcrc.org.au/feedlotcalc

This article was summarised from workshop notes created by Ashley White (NSWDPI) and Bruce Watt (CTRLPB). The workshop notes were prepared in October 2006 and reflect prices and expectations current at that time.

Liveweight and fat score at joining and foetuses scanned *in utero* for adult and maiden ewes

Dr Sue Hatcher, NSW DPI Senior Research Scientist

Previous issues of this newsletter (Volume 2 Issues 1 & 4) contained the results of the initial analyses of the relationship between fat score and liveweight at joining and the expected response in terms of foetuses scanned per 100 ewes joined for both adult and maiden ewes. The final modelling of this data is now complete.

Adult ewes

Liveweight at joining and foetuses scanned

Liveweight at joining had a significant impact on the number of foetuses scanned/100 ewes joined across the NSW Lifetime Wool project sites. Ewes with higher liveweights at joining conceived more foetuses than lighter ewes. The relationship between liveweight and conception rate was linear indicating that for every 5kg increase in liveweight at joining an additional 8 foetuses were scanned per 100 ewes (Fig 1).

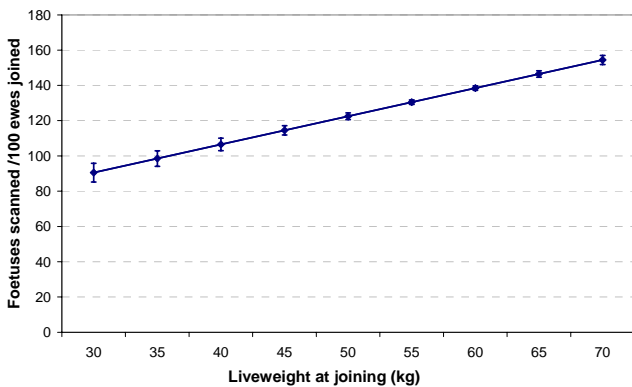


Figure 1: The number of foetuses scanned/100 ewes joined increases linearly with increasing liveweight at joining.

Fat score at joining and foetuses scanned

Fat score at joining also had a significant impact on the number of lambs scanned *in utero*. Like liveweight, the relationship between fat score at joining and foetuses scanned was linear (Fig 2). For every 1 score increase at

joining an additional 12-13 foetuses were scanned per 100 ewes.

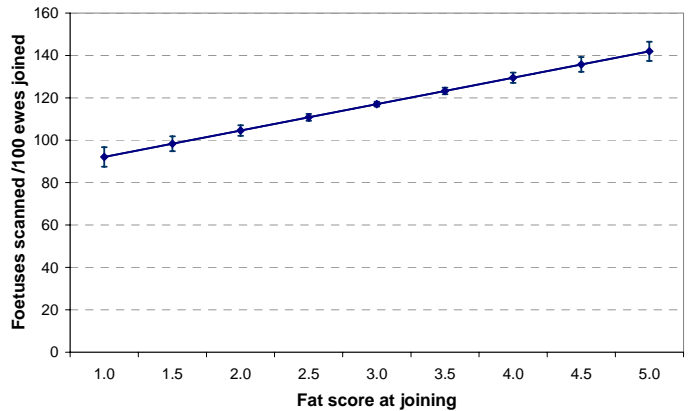


Figure 2: The number of foetuses scanned/100 ewes joined increases linearly with increasing fat score at joining.

However the relative response of an additional 12 - 13 foetuses for a change of 1 fat score was greater than expected given that 1 fat score generally equates to between 5 - 7kg liveweight. So how do we reconcile these two results?

The answer lies in the fact that within a flock for a particular liveweight there will be a range in fat scores (Fig 3). At a given liveweight every increase of 1 fat score will result in an additional 5 foetuses scanned per 100 ewes.

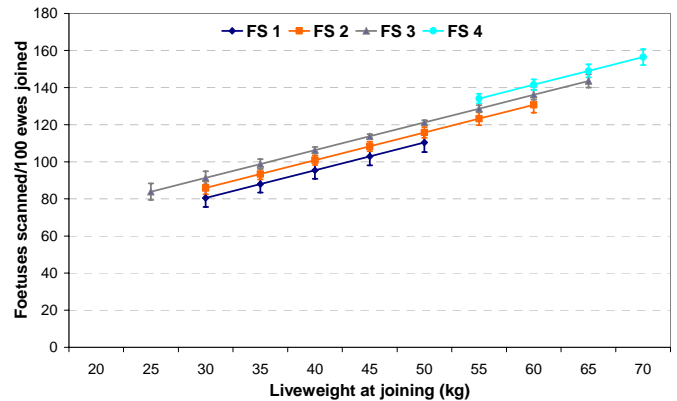


Figure 3: Across all liveweights an additional 5 foetuses will be scanned by increasing fat score at a given liveweight.

When both the liveweight and fat score relationships with foetuses scanned/100 ewes joined are taken into account, there is value in drafting the thinner ewes from the mob and giving them preferential nutritional treatment to allow them to increase their fat score prior to joining. Heavier ewes just require maintenance of their fat score.

What is driving this response for adult ewes?

The pregnancy scanning information of each ewe was used to calculate the probability of her being dry or having a single or multiple lambs. These probabilities were then used to determine what drives this response – is it more pregnancies or more twins or a combination of both?

For adult ewes at the three NSW Lifetime Wool sites liveweight at joining had a significant impact on the probability of a ewe either being dry or having a single or multiple lambs (Fig 4). Across all liveweights, the probability of an adult ewe being dry was less than 10%; however as liveweight at joining increased the probability of a ewe bearing twins increased.

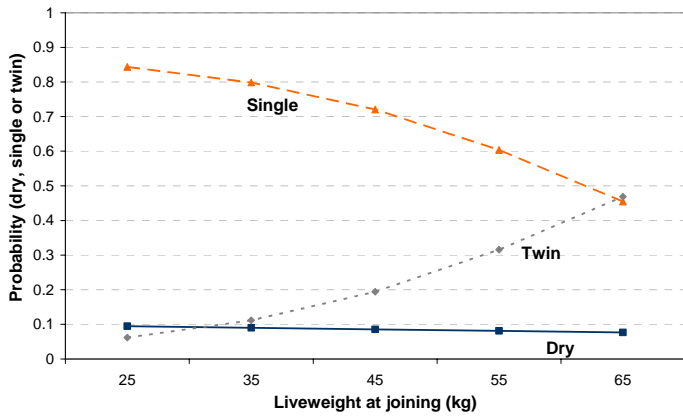


Figure 4: Increased foetuses scanned in utero with increasing liveweight at joining of adult ewes is due to a larger proportion of ewes having multiple lambs.

When liveweight is low at joining, at 35kg about 80% of ewes will bear a single lamb, 11% will have twins and 9% will be dry. But as liveweight at joining increases:

- the probability of a ewe being dry tends to stay consistently at 8-9% even at 65kg.
- the probability of a ewe having a single lamb declines to about 45% at 65kg.
- the probability of a ewe bearing twins increases to about 47% at 65kg.

So the increased number of foetuses scanned *in utero* with increasing liveweight at joining of adult ewes is due to a greater proportion of adult ewes in the flock having multiple births.

Even at high liveweights, about 10% of adult ewes will remain dry. This is most likely due to these ewes being infertile. As a result they were heavier at joining as they did not have the added nutritional pressure of lactation the preceding year.

This the general trend averaged over the three sites and the two joining periods. However, it is important to note that the probabilities differed between sites and years. At site 1 the proportion of dries reduced as the proportion of multiple bearing ewes increased with an increase in liveweight. At site 2 most ewes had singles, while at site 3 the proportion of dry and multiple bearing ewes both increased with increasing liveweight. Therefore producers need to establish the likely increase in twinning rate in their own flock – the Reproduction Response Calculator (see article on page 4) is a simple tool to allow you to establish this for your flock.

Maiden ewes

For maiden ewes, both liveweight and fat score at joining had a significant impact on the number of foetuses scanned per 100 ewes joined. But liveweight was the more important factor as it explained more of the variation in the number of foetuses than fat score.

More foetuses were scanned per 100 ewes for those maidens that were heavier at joining. For every 5 kg increase in the liveweight of maidens at joining an additional 8 foetuses were scanned (Fig 5).

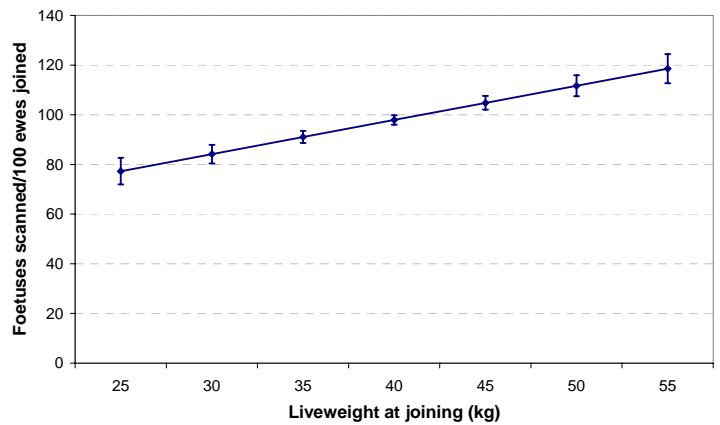


Figure 5: The number of foetuses scanned per 100 maiden ewes joined increases linearly with increasing liveweight at joining.

What is driving this response for maidens?

Fat score at joining had a significant impact on the probability of a maiden ewe being dry or having a single or multiple lambs (Figure 6). When fat score is low at joining, say score 2, about 61% of maidens will have a single lambs, 37% will be dry and only 2% will have twins. But as fat score at joining increases:

- the probability of a maiden ewe being dry drops from 37% at score 2 to 16% at score 4.
- The probability of a maiden to have a single lamb increase to about 68% at score 4
- The probability of a maiden ewe bearing twins increases to 14% at score 4.

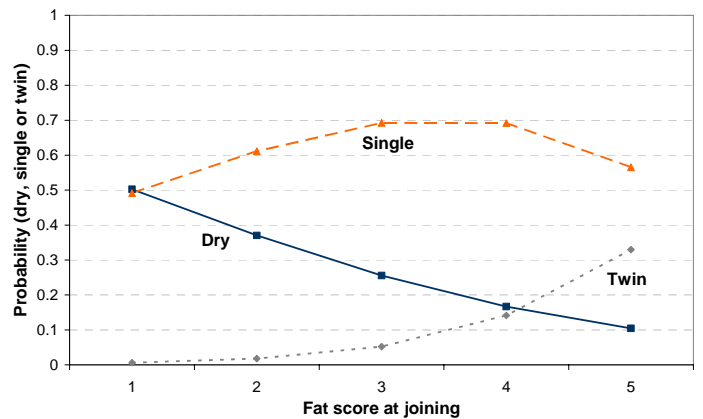


Figure 6: Increased foetuses scanned in utero of maiden ewes with increased fat score at joining is due to more maidens bearing twins and less being dry.

Therefore the impact of fat score at joining on the reproduction of maiden ewes is to increase the probability of a maiden ewe bearing twins and decrease the probability of a maiden ewe being dry.

Maiden ewe reproduction is strongly related to their liveweight at joining. For those maidens that do become pregnant the probability of them having twins is driven by their fat score at joining – fatter maidens at a given liveweight are more likely to have twins.

These trends are the average across four sites. The actual probabilities of a maiden ewe being dry or having a single or multiple foetus varied between each site as did the degree of change of each with increasing fat score at joining.

What does this mean for managing a Merino breeding flock?

Adult ewes

Improved body condition (either liveweight or fat score at joining) for adult ewes will result in more twin foetuses identified at scanning in your flock.

Dry adult ewes that were in score 3 or higher at joining are likely to be infertile and should be a priority for culling from your flock. Dry adult ewes that were in poor condition at joining may have successfully reared twins the previous spring through mobilising their body reserves and been unable to recover their body condition between weaning and their next joining.

Maiden ewes

For maiden ewes, liveweight at joining is critical for reproduction. A target liveweight for maidens is between 40 and 45 kg. Provided maiden ewes reach the target liveweight at joining their reproduction response will tend to be only about 10% lower than that of adult ewes.

Like adult ewes, improved fat score at joining for maiden ewes will result in more twin lambs being born into your flock. For maiden ewes the probability of being dry is driven by liveweight. Therefore dry maiden ewes should be given a second chance and retained for mating as a 2 ½ year old.

Remember

These results deal with the number of foetuses scanned at mid-pregnancy. The impact of maternal nutrition during late pregnancy and lactation will have an impact on both birth and weaning weights and hence survival of the progeny. This is particularly important for ewes carrying twins. It is therefore important to monitor ewes at critical stages of the reproductive cycle to minimise the difference between the number of foetuses scanned *in utero* and marking and weaning percentages.

Thorough planning and management following pregnancy scanning are required to ensure optimal survival and production from the additional twin lambs generated from improved liveweight and fat score at joining.

This article was summarised from two NSW DPI Primefacts: 151 Fat score of ewes at joining and 308 Maiden Merino ewe conception rates. These Primefacts can be downloaded from NSW DPI's website www.dpi.nsw.gov.au.

The Reproduction Response Calculator

Dr Sue Hatcher, NSW DPI Senior Research Scientist

An important finding from the analyses reported in the preceding article was a high degree of variability occurring between Merino flocks in the magnitude of the response to ewe liveweight and fat score at joining. Knowing the likely response in your flock is critical when making decisions about feed allocation to ewes leading up to joining. The Reproduction Response Calculator uses the fat score of ewes at joining and their mid-pregnancy scanning information to determine the responsiveness of your flock (Fig 7).

Fat score	Ones	Singles	Twins	Ewes	Foetuses	Reproduction Rate
1.0	67	1	0	1	1	100%
1.5	9	1	2	12	5	42%
2.0	83	143	78	323	318	98%
2.5	156	290	170	563	519	91%
3.0	149	1038	480	1669	2002	120%
3.5	98	624	408	1094	1462	133%
4.0	54	249	164	481	611	127%
4.5	5	28	3	34	32	94%
5.0	0	2	0	2	2	100%

Average reproduction rate	118%
Reproduction rate response per fat score per ewe	20%
Additional foetuses from a 1 fat score increase at joining/100 ewes	30.15

Figure 7: Reproduction response calculator output sheet.

All you need to do is to fat score about 200 randomly selected ewes from the mob and record each ewe's score against her tag number. At scanning record the number of foetuses scanned for each ewe (0, 1 or 2). Download the calculator, either enter or cut and paste your data into the spreadsheet and the calculator will do the rest!

Primefact 309 How responsive is the conception rate of your Merino ewes? details the use and operation of the Reproduction Response Calculator. Both the Primefact and the calculator can be downloaded from NSW DPI's website www.dpi.nsw.gov.au

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