

Maiden Merino ewe conception rates

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The NSW Lifetime Wool project has shown that there is a strong relationship between both liveweight and fat score at joining and the number of foetuses scanned *in utero* for adult Merino ewes (see Primefact 151). But do maiden ewes respond in the same manner and what is the mechanism that drives these responses? Does increased liveweight or fat score at joining result in fewer dry maiden ewes or more twin bearing maiden ewes or both? The answers to these questions will have an impact on your culling decisions and the management of your breeding flock.

Liveweights and fat scores of maiden ewes at joining, along with the numbers of foetuses scanned at mid-pregnancy, from four NSW Lifetime Wool sites were analysed to explore the relationship between these three traits in maiden ewes.

Maiden ewe reproduction – it's all about liveweight

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 scanned 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 at mid-pregnancy (Figure 1).

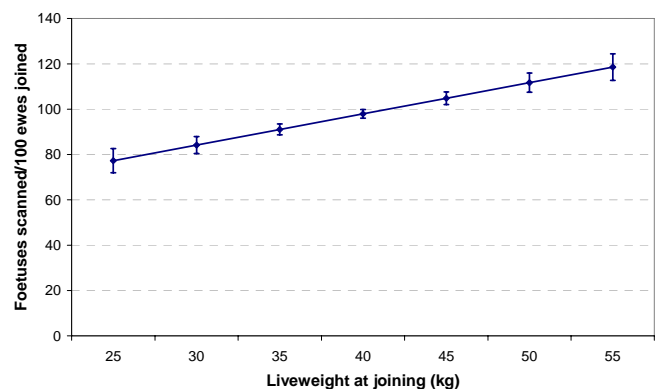


Figure 1: The number of foetuses scanned per 100 ewes joined increases linearly with increasing liveweight at joining.

What is driving this response?

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 fewer maidens being dry or more maidens bearing twins or a combination of both?

For maiden ewes, 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 2). When fat score is low at joining, say score 2, about 61% of maidens will have a single lamb, 37% will be dry and only 2% will bear 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 that maidens will have a single lamb increases to about 69% at score 4.
- The probability of a maiden ewe bearing twins increases to 14% at score 4.

Therefore the impact of fat score at joining on 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.

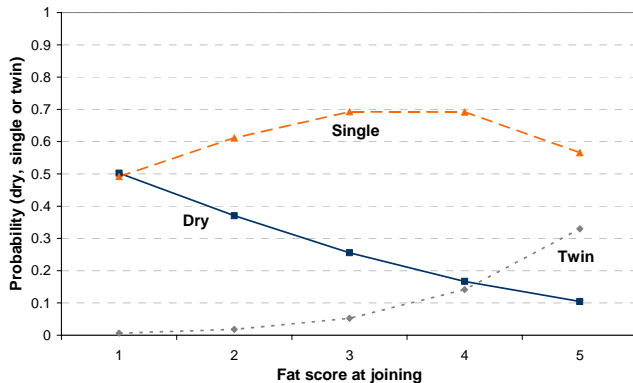


Figure 2: Increased foetuses scanned *in utero* of maiden ewes with increased fat score at joining is due to more maidens bearing twins and less being dry.

These trends were the average across the 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.

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.

So what does this mean for managing a Merino breeding flock?

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 (see Primefact 151). Producers need to develop a target liveweight for their hogget ewes to reach at 12 months of age; for example, in southern NSW, 28 kg. Such a target would allow producers to actively manage the liveweight and fat score of maiden ewes during their second spring to ensure the 40–45 kg liveweight target is reached at their first joining.

Improved fat score at joining for maiden ewes will result in more twin lambs being born into your flock. This will require thorough planning and management following pregnancy scanning to ensure optimal survival and production from these additional twin lambs.

For maiden ewes the probability of being dry is driven by liveweight. Therefore dry maiden ewe should be given a second chance and retained for mating as a 2½ year old.

Remember that these results deal with the number of foetuses scanned at mid-pregnancy. The impact of maternal nutrition (i.e. fat score) 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 during their reproductive cycle to minimise the difference between the number of foetuses scanned *in utero* and subsequent marking and weaning percentages.

Maiden ewe reproduction is variable between flocks

The data from this analysis has clearly shown that maiden ewes with higher liveweights at joining will have a higher number of foetuses scanned *in utero*. However the magnitude of the response to liveweight at joining can vary significantly between flocks of Merinos. For this reason it is important to know how responsive your flock is when making decisions about pasture availability and supplementary feeding of ewes leading up to joining.

See Primefact 309 for information on calculating how responsive the reproduction of your flock is to improved nutrition at joining.

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Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (February 2007). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of New South Wales Department of Primary Industries or the user's independent adviser.

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