

Magnificent Maidens

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Maiden ewes represent a large part of your ewe flock, at an average of $\approx 30\%$ of breeding ewes. They are your best genetics, however getting good reproductive outcomes from maiden ewes remains a challenge for many producers. The traditional maiden ewe is one that goes to the ram for the first time at 19 months of age. However, in a maternal composite, first-cross ewe or shedding ewe-based system it is more likely to be a ewe joined at 7-9 months of age. The principles are the same for whichever of these two classes you are working with.

The size of the gap

The difference between the reproductive rate of maidens and their older counterparts is usually around 20%. This can be considerably higher in some cases. The aim of management of maiden ewes is to close the gap between their performance and that of the older ewes. Research into the reproductive performance of ewes has largely focussed on mature ewes. There has been an increased focus on ewe lambs more recently, however limited work has investigated the reproductive performance of traditional maidens joined at 19 months of age.

The Magnificent Maidens Producer Demonstration Site (PDS)

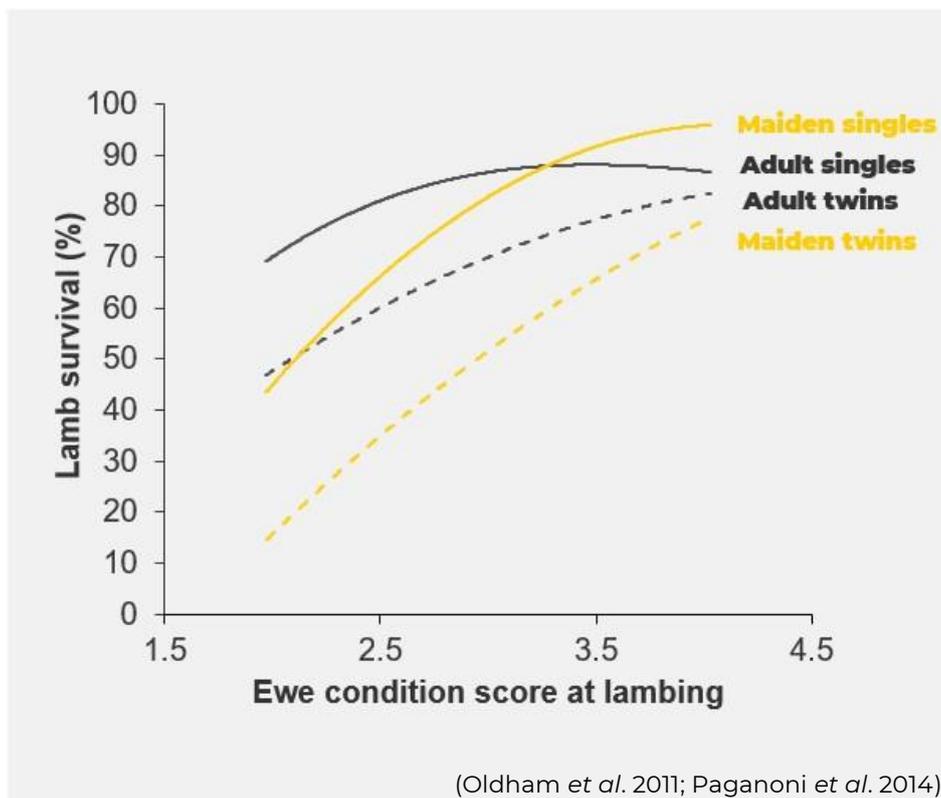
With the valued support of MLA, we are running a PDS project around the country to help understand and demonstrate the key factors that are required for achieving successful reproductive outcomes from maiden ewes joined at 19 months of age. Each host property involves two groups of at least 200 maiden ewes. One group of ewes is allocated to 'normal' treatment i.e. fed as per traditional management for maidens at the farm and the second group is allocated to 'best-bet' management, where ewes are fed 30% greater energy and protein than the 'normal' group. The 'best-bet' management group aims to demonstrate the value of adopting current best-practice management for maiden ewes. Data including weights and condition scores at key stages of the reproductive cycle plus pregnancy scanning results are collected until ewes are at least 2.5 years old.

Nothing left to chance

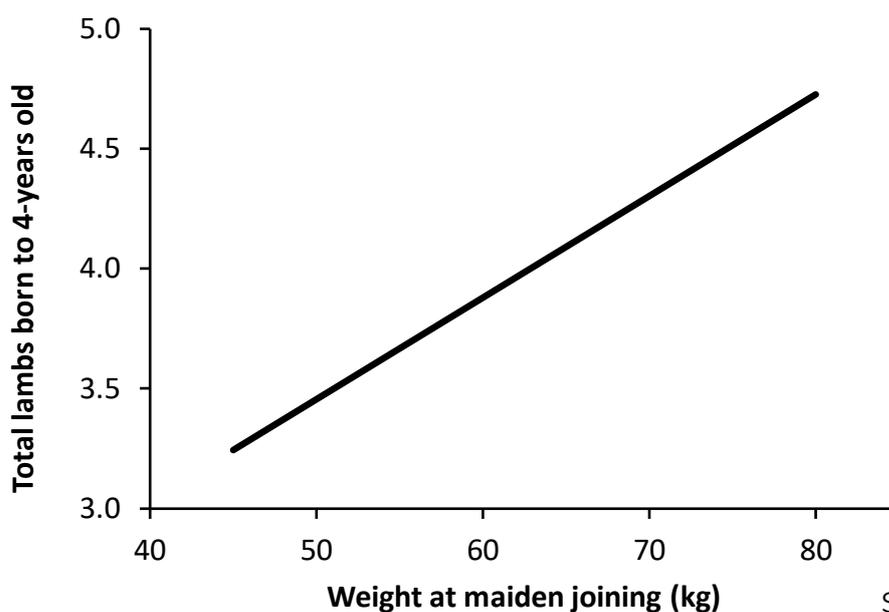
There are several principles that should be implemented to optimise the reproductive performance of maiden ewes, including breeding strategies, selection of ewe replacements and tailor-made nutrition to hit target weights. It is important that nothing is left to chance once you get to the point of lambing. The key strategies to optimise survival of lambs born to maiden ewes are the

same as those used for adult ewes, including managing ewe condition score, allocating your most vulnerable ewes (i.e. multiple-bearing ewes in the poorest condition score, especially old ewes) to your best lambing paddocks, lambing in smaller mobs, especially for multiples, and having effective shelter available in the paddock that protects the sheep from the prevailing winds. Shelter is most valuable for multiple-bearing ewes and their lambs in environments that consistently experience wet, windy and cold conditions at lambing, i.e. a high chill index. Having historical records of lamb survival in each of your lambing paddocks helps to identify those paddocks which consistently perform well so that you can allocate your highest risk mobs to these paddocks. If you don't have historical records, then now is a great time to start keeping records!

Survival of lambs born to maiden ewes is very responsive to condition score at lambing, as you can see in the figure below. Hence, not only is management of ewe nutrition at joining critical to achieve optimal reproductive rates in maidens, but tailored nutrition is critical throughout pregnancy and into lactation to maximise lamb survival.



Carryover effects of maiden nutrition



Source: A. Thompson

The figure above shows the relationship between the weight of ewes at their maiden joining and the total number of lambs born over their first three joining's using data from a single flock of Merinos. This data showed that, on average, ewes conceived 0.4 more lambs over their first three joining's for each extra 10kg heavier they were at their maiden joining (see figure above). Hence, there was a longer-term reproductive benefit of improving the nutrition of maiden ewes in this flock.

Site	Group	<i>n</i> ewes joined	Average joining WT	Average joining CS	Conception rate (%)	Reproductive rate (%)
Badgingarra	Best-bet	215	47.4	2.8	88.7	105.4
	Normal	221	46.1	2.8	85.0	95.8
Cavendish	Best-bet	93	46.4	2.9	95.7	133.7
	Normal	195	46.0	2.9	96.9	136.4
Dunkeld	Best-bet	-	-	-	91.6	101.5
	Normal	-	-	-	88.2	99.0
Newdegate	Best-bet	239	90.1	3.4	96.2	171.3
	Normal	252	89.8	3.4	93.2	168.3

Scanning results at the second joining have been collected at four of the Magnificent Maidens PDSs, with weight and condition score at joining recorded at three of the four sites. Ewes that were managed in the 'best-bet' and 'normal' groups as a maiden had similar weights and were in the same condition score at each site at their second joining. Conception and reproductive rates at the second joining were 3.0 – 3.7% and 2.5 – 9.6% higher for ewes in the 'best-bet' compared to the 'normal' management group at the Badgingarra, Dunkeld and

Newdegate sites. However, conception and reproductive rates were slightly lower for the 'best-bet' compared to the 'normal' management group at the Cavendish site. It is important to note that the 'best-bet' group had about half the number of ewes than the 'normal' management group at this site. Overall, the results showed that, in most cases, there was a small carry-over benefit of improved nutrition of maiden ewes on their scanning results at their second joining.

Project resources

If you haven't already, make sure to check out the 'Magnificent Maidens' space on [The Hub](#). Here you can find recordings from the three-part **online course** held for the project. The course presented the science behind joining maiden ewes plus early results and learnings from the project. You'll also find **case study videos** featuring our PDS host producers. The case study videos discuss how the producers manage their maidens, the gap between performance of maidens and older ewes on their farm, and what they've got out of participating in the PDS project.

The **Head Shepherd podcast** featured Charlie Wooton, who completed his Honours project utilising the Magnificent Maiden's PDS. Charlie's project investigated the impacts of weight and condition score at joining, and weight gain from pre- to post-joining on the reproductive rate of maiden ewes. You can find the podcast here: <https://headshepherd.com/episodes/improving-reproductive-performance-in-maiden-ewes-with-charlie-wootten-816>

Upcoming events

Keep an eye out for a general webinar that will be held in the coming months.