

# tips & tools

## ANIMAL PRODUCTION



## 45 x 7 - Joining ewe lambs for more profit

Crossbred ewe lambs can be successfully joined at 7–9 months of age if they achieve a minimum live weight of 45kg. This can significantly reduce the cost of growing out replacement ewes.

**Ewe genetics, nutrition and management are essential factors to focus on if you wish to maximise breeding success with this '45 x 7' approach.**

### Results from the Maternal Central Progeny Test

The impact of maternal sire breed and individual sires on the age at which crossbred ewe lamb offspring reach puberty was investigated as part of the Maternal Central Progeny Test (or MCPT). Ninety-one rams were mated to Merino or Corriedale ewes at three eastern state sites over three years, to produce over 6,000 first-cross progeny. These sires represented 20 different breeds and four hybrids.

Both the **breed of maternal sires** and **individual sire genetics within breeds** were found to influence the lambing percentage of their ewe lamb offspring. In general

### Key benefits

- Select rams as maternal sires more effectively using LAMBPLAN® Australian Sheep Breeding Values (ASBVs).
- Improve the productivity and profitability of your enterprise by joining crossbred ewe lambs at 7–9 months of age.
- Optimise ewe lamb joining success through good nutritional management and animal husbandry.

East Friesian, Finnsheep, Booroola Leicester and Border Leicester sired crossbred ewes had the highest lambing and weaning percentage when joined at seven months, while Corriedale sired crossbreds had the lowest percentage (see Table 1). Some individual sires had a much higher performance than others within the same breed, this emphasises the importance of LAMBPLAN ASBVs for producers who wish to successfully join ewe lambs.

Table 1: Indicative lambing percentages from different sires in the MCPT

Ewe lamb breed or cross (number of rams tested)	Ewes lambing (%)	Lambs/ewe lambing	Lambs weaned/ewe joined (%)
East Friesian (12)	71	1.29	67
Finnsheep (12)	64	1.43	62
Border Leicester (18)	62	1.25	59
Coopworth (9)	46	1.27	51
White Suffolk (7)	44	1.13	27
Corriedale (6)	24	1.09	19

## Are there any negative effects to joining ewe lambs?

No detrimental effects were seen in ewes that lambed at one year of age. In fact, ewes that successfully lambed and weaned at least one lamb as yearlings (12 months) went on to wean 12% more lambs (at two and three years of age) than ewes that were dry or failed to rear a lamb.

## Maximising success when joining ewe lambs

Producers who wish to join ewe lambs must consider a number of factors in order to maximise joining success. These include:

- expected lambing percentage
- selection of rams with the most appropriate LAMBPLAN ASBVs
- joining management
- the necessary growth rate targets for ewe weaners
- nutritional requirements to meet ewe lamb growth rate targets
- management of young pregnant and lactating ewes
- financial implications of targeting 45 x 7

## Expected lambing percentage from ewe lambs

The two overriding factors for successful joining of ewe lambs are **seasonality** and ewe **live weight**.

Sheep are seasonal breeders and their reproductive activity peaks in autumn as shown in Figure 1. Very few ewes under 12 months of age cycle naturally before January or February, so joining in March/April will be most successful as more ewe lambs will have reached sexual maturity and ovulation rates in individual ewes will be higher.

Crossbred ewes will generally reach puberty in their first autumn if they have achieved a live weight of 40–45kg. The heavier ewe lambs are during autumn, the greater the percentage that will successfully cycle, join and lamb. Age also has an impact on reproductive success as older ewe lambs of the same live weight have a higher lambing percentage and a higher proportion of twins than younger ewes.

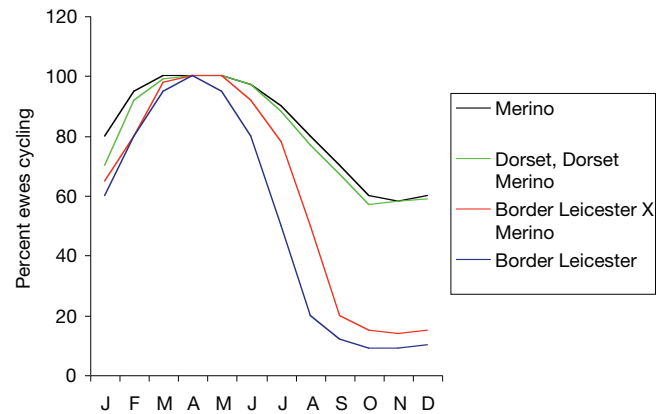


Figure 1: Seasonal ewe reproductive activity in various sheep breeds

## Selecting the right genetics

Selection of the right genetic background for first-cross ewes will improve reproductive success when joining ewe lambs. Results from the MCPT clearly show a wide genetic variation between maternal sires for early reproductive performance in their female offspring. Prime lamb producers can exploit this variation to improve flock productivity and profitability.

Significant differences in lambing performance of ewe lamb offspring were found to exist between different maternal sire breeds and also between individual sires **within** breeds. This highlights the importance of selecting sires based on the most appropriate LAMBPLAN ASBVs as shown in Table 2. The most important ASBVs to consider are **post weaning weight** (PWWT) and **number of lambs weaned** (NLW). PWWT will give fast growth to first joining while higher NLW will assist ewe lambs to reach puberty.

For more information on LAMBPLAN ASBVs refer to the Tips & Tools titles *An Introduction to LAMBPLAN*, *LAMBPLAN for maternal sheep breeders* and *Tapping into maternal genetics*.

The frame size, lambing rate and bloodline of the Merino ewe flock from which crossbred ewes are bred are also important factors to consider. In some cases information from MERINOSELECT may assist with the selection of Merino ewes.

Table 2: LAMBPLAN ASBVs for sires to produce first-cross ewe lambs at 45kg x 7 months

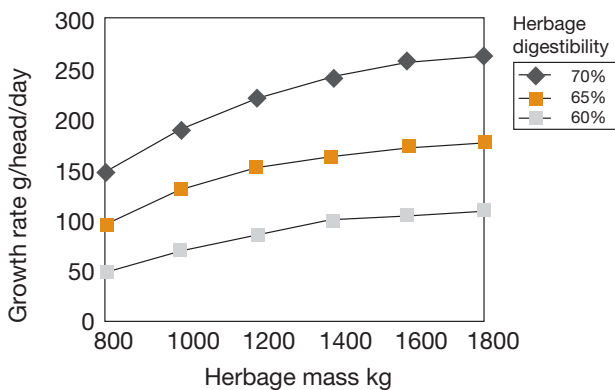
Breeding objective	BWT	WWT	PWWT	PFAT	PEMD	YWT	PSC	MWWT	NLW
Minimum liveweight of 45 kg at 7 months of age	<+0.5	>+2.5	>+3.5	-1 to 0	>0.0	>+3.0	>+0.5	>+1.5	>10%

BWT = birthweight; WWT = weaning weight; PWWT = post weaning weight; PFAT= post weaning fat; PEMD = post weaning eye muscle depth; YWT = yearling weight; PSC = post weaning scrotal circumference; MWWT = maternal weaning weight; NLW = number of lambs weaned.

## Nutritional requirements to achieve 45 x 7 joining

Good nutritional management is essential if lambs are to reach their target weight of 45kg for joining at 7–9 months of age. Moderate to high growth rates must be achieved. Lambs weaned at three months of age (12 weeks) with a live weight of 25kg (250g/day) need to grow at 167g/day to reach 45kg at seven months or 111g/day at nine months. Lambs weaned at lower live weights will have to grow even faster.

Growth depends on both the **quantity** of feed available and the **quality** or **digestibility** of that feed. Feed intake and lamb growth are highest on green pasture with about 1,500kg DM/ha. Growth rates drop considerably as pastures mature, due to decreased digestibility (see Figure 2).



The relationship between herbage digestibility and growth rates – second cross lambs

Figure 2: The relationship between herbage digestibility and lamb growth rates

Table 3 lists pasture benchmarks for lamb growth. For lambs to grow at 250g/day or better, a green pasture with 70% or higher digestibility and 1,500kg DM/ha is needed. Young green pasture is most digestible. Legumes increase palatability and digestibility and an ideal pasture for growing lambs should have at least 30% legume content.

Table 3: Pasture benchmarks for lambs

Percentage of potential growth rate	Minimum pasture required (kg green DM/ha)
30% (90g/d)	500–600
50% (150g/d)	700–800
70% (190g/d)*	900–1,000
90% (250g/d)*	1,500–1,600

For cross bred ewe lambs to be ready to join at 45kg in April in summer rainfall areas, the growth rates shown in Figure 3 will need to be achieved. The digestibility of pastures in these areas from December to April may not be of sufficient quality to achieve the target growth rate of 180 g/day after weaning and an energy based supplement would be required. In winter rainfall areas weaning may coincide with the drying off of spring pastures so even higher supplements levels would be needed to achieve a growth rate of 180 g/day.

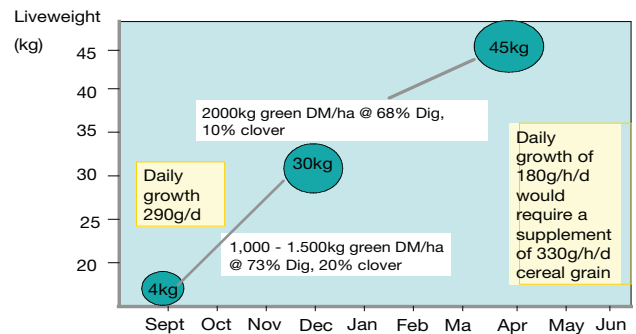


Figure 3: Growth targets for 1st X ewe lambs in summer rainfall areas

## Supplements

A balance of **energy** and **protein** is essential for lamb growth and feed supplements may be needed to meet growth targets.

Cereal grains are the most cost-effective energy supplements to extend the life of available green pasture and are usually fed at 300–500g/head/day.

As lambs grow their protein requirement decreases as shown in Table 3. Lambs grazing green pasture are unlikely to need a protein supplement; however, on dry or dead pasture, a 20% high protein feed/80% cereal grain supplement will increase growth.

Table 3: Crude protein (CP) and energy requirements of balanced rations for lambs\*

Energy content of diet (M/D)	Lamb live weight		
	CP % at 20kg	CP % at 30kg	CP % at 40kg
13	19.3	16.1	13.8
12	17.5	14.7	12.9
11	15.7	13.3	11.9
10	14.0	11.9	10.8
9	12.4	10.6	9.6

\*Assumes protein degradability in the rumen of 70%

## Tips for successful joining

Ewe lambs will be in “heat” or oestrus for a shorter time than older ewes and will not seek out rams to the same extent. Using a high proportion of rams (minimum 2%) will ensure greater ewe coverage. Use experienced rams and select the mating paddock to ensure good contact between rams and ewes. Extend the joining period to eight weeks or start a couple of weeks later than mature ewe joining to help improve joining success. Use of the ‘ram effect’ may also initiate puberty and cycling in ewe lambs.

## Managing young pregnant and lambing ewes

### Pregnancy

During pregnancy, nutrition must be maintained at an adequate level to allow the young ewes to continue to grow, as well as their unborn lambs. A minimum of 1,500kg green DM/ha (or equivalent supplementation) is essential in late pregnancy to ensure vigorous, good sized lambs, higher lamb survival rates and better milk production.

Scanning can be used to identify dry ewes which can either be sold as lambs or carried through for joining again at 18 months. Scanning can also identify ewes carrying twins or triplets as these ewes will need about 10% more feed during late pregnancy and 25% more feed during early lactation.

### Lambing

Move ewes into lambing paddocks as soon as the first lamb is born. Single bearing ewes can lamb in mobs of 200–300; however, multiple bearing ewes should be lambing in mobs of no more than 150. Up to 60% of lamb losses are due to starvation, mismothering or exposure during the first few days of life. Reduce losses by choosing appropriate lambing paddocks with a warm northerly aspect and adequate shelter.

During lactation, provide continued access to the best, actively growing, improved pasture with at least 1,500kg green DM/ha. In a dense sward this is equivalent to a pasture height of about 5–6cm. The pasture should ideally contain at least 30% legumes and should not be allowed to become excessively rank, otherwise supplements may be needed.

## Weaning

Wean lambs 14 weeks after the start of lambing. If ewes were at fat score 3 at lambing, they will probably have used at least one fat score during lactation. It is critical that hogget ewes be given enough time to regain this fat score after weaning to allow successful joining the following year. To achieve this, hoggets should have access to a minimum of 1,500kg green DM/ha (or equivalent supplements). Target fat and condition scores for breeding ewes are shown in Figure 4.

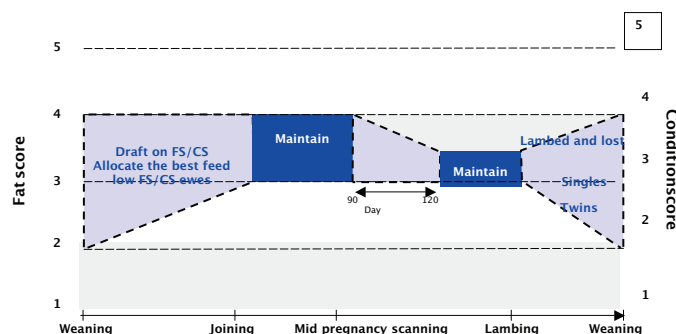


Figure 4: Fat score/condition score (FS/CS) targets for breeding ewes

## Does it pay to join ewe lambs?

The financial benefit of joining ewe lambs is estimated to result in a slight extra return compared to joining ewes at 12 or 18 months of age. This is based on a weaning percentage of 60% lambs weaned/ewes joined and profits could be increased if a higher lambing percentage was achieved. The MCPT found individual sires whose progeny achieved weaning percentages of over 90% which highlights the importance of selecting sires with genes for fast growth and early sexual maturity.

The major challenges in adopting a 45 x 7 breeding strategy will be to ensure that lambs reach target body weights by the autumn breeding season and that ewes which lamb as yearlings are able to regain their body condition between weaning and the next joining.

## Further information

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The ‘Wean more lambs’ - tool 2, module 10 of the *Making More from Sheep* manual.



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