lifetimewool

More Productive Progeny through better ewe management

In this section the topics covered are;
How ewe nutrition affects wool and liveweight of the progeny
Improved ewe nutrition in late-pregnancy increases progeny wool quality and quality
Improved ewe nutrition for better weaner growth and survival

The impact of nutrition on placental growth

Poor nutrition throughout pregnancy can affect lamb growth and development due to restrictions in the growth of the placenta (the channel that carries all nutrients to the developing foetus) and foetus.

The placenta and foetus are most susceptible to restrictions in the nutrition of the ewe during the periods when their growth is most rapid. For the first 50 days of pregnancy, growth of the placenta and foetus is minimal (early pregnancy). In mid pregnancy, day 50 – 100, foetal growth is minimal while growth of the placenta is rapid, and in late-pregnancy, day 100 – 150, growth of the placenta is complete and growth of the foetus increases rapidly until birth.

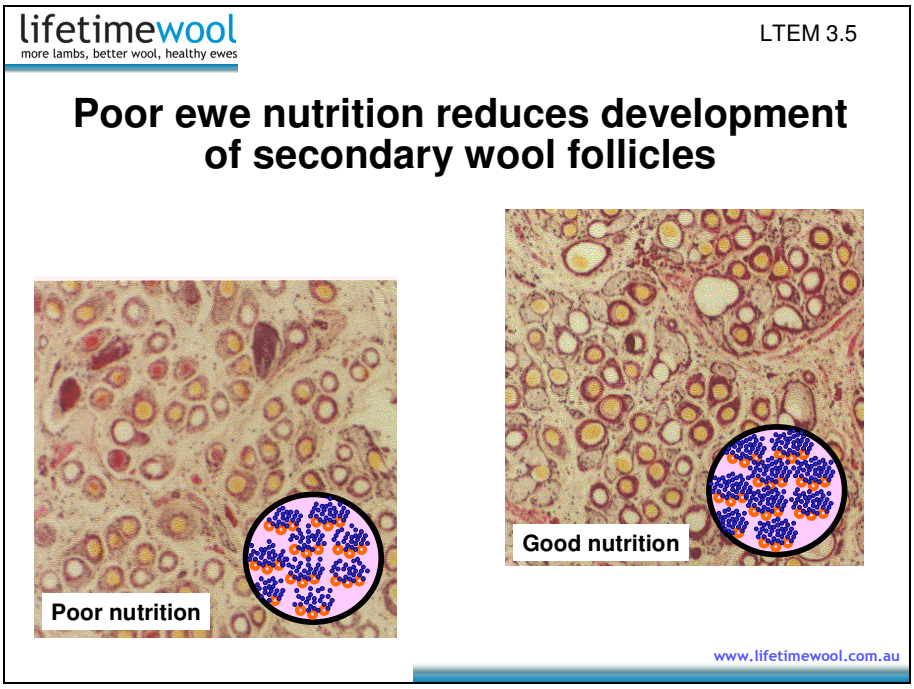
Reducing the nutrition of the ewe in mid pregnancy can reduce the size and functionality of the placenta and restrictions during late-pregnancy can reduce the growth rate and size of the foetus.

The development of wool follicles in lambs

The lamb's future wool production is affected by ewe nutrition during pregnancy. Primary follicle (large fibres) development occurs in the growing foetus from around Day 60 of pregnancy and is completed by around Day 90. Secondary follicles (fine fibres) are the most important part of the wool producing factory. They develop from around day 90 to birth, with some follicle maturation occurring in the first month of the lamb's life. The density of follicles is determined prior to birth and will not change for the entire life of the animal.

Secondary follicles are the most important part of the wool producing skin, having a direct influence on the density and fineness of the fleece. A reduction in nutrient supply to the developing foetus at this time (either because of poor nutrition or because there are multiple foetuses competing for nutrients) will significantly impact on the development and final density of secondary follicles.

Higher secondary follicle density is associated with lower fibre diameter and higher fleece weight and these effects persist throughout the lifetime of the progeny. The secondary follicles contribute the majority of fibres to the adult wool fleece. The number of primary compared to secondary follicles is often called the 'primary to secondary ratio'. The development of primary and secondary follicles in the lamb is illustrated in LTEM 3.5.



The impact of ewe condition in pregnancy on the progeny's performance

Lifetime wool production and quality are effected by ewe nutrition during pregnancy. There are linear relationships between changes in ewe condition and the amount and quality of wool produced by single and twin lambs.

The effects of changes in ewe Condition Score (CS) during early or late-pregnancy have a similar effect on hogget clean fleece weight and fibre diameter and the responses are linear.

- an increase of +1 CS equals +0.2 kg clean fleece weight and reduction of 0.4 micron.
- ewes that lose 0.5 CS and then gain 0.5 CS to lambing, produce progeny that will cut the same amount and fibre diameter of wool as those from ewes that maintain CS throughout pregnancy.

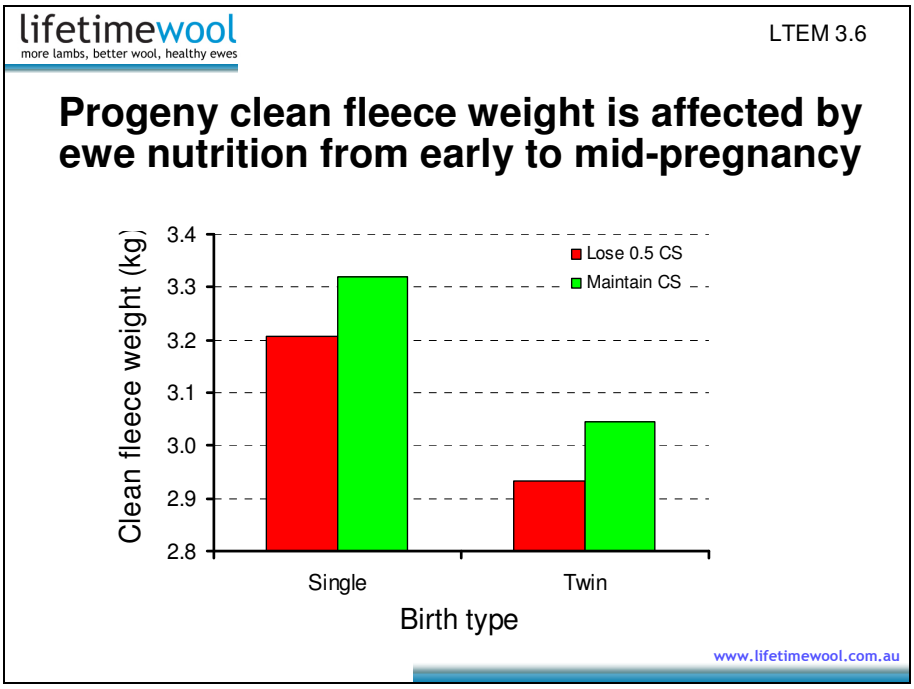
The effects of early and late-pregnancy nutrition on progeny wool production and quality are additive and permanent throughout the animal's lifetime. They cannot be fully compensated for by improved nutrition after birth.

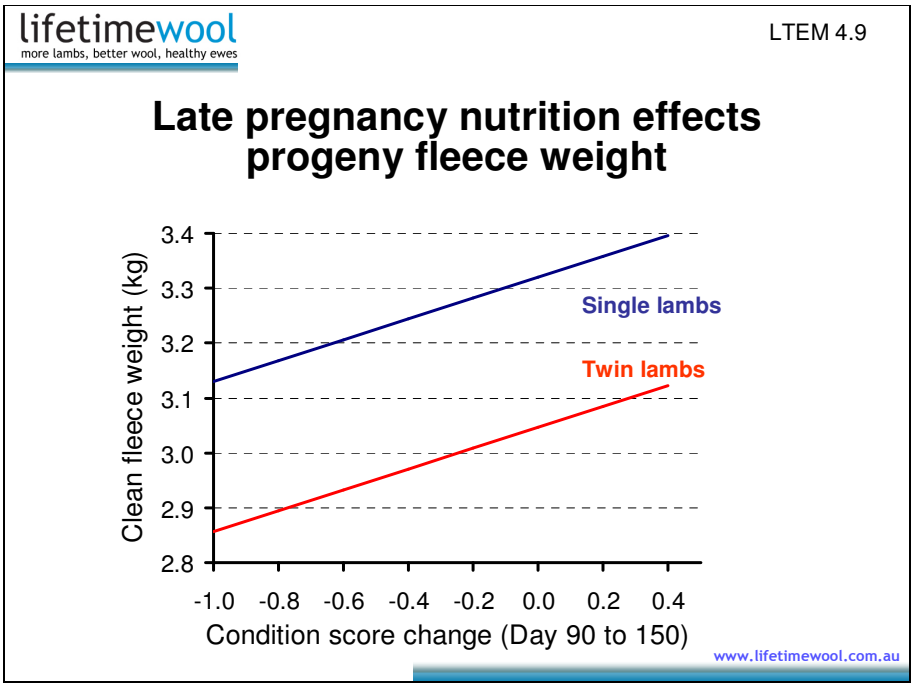
Improved ewe nutrition in pregnancy increases progeny fleece weight

The effect of nutrition in early to mid-pregnancy on progeny fleece weight is outlined in LTEM 3.6. A loss of 0.5 CS in early to mid-pregnancy reduces progeny clean fleece weight by 0.1 kg in both single and twin bearing ewes. Twin lambs produce 0.3 kg less wool than single lambs.

The effect of nutrition in late-pregnancy on progeny fleece weight is outlined in LTEM 4.9. A loss of 1 CS in late-pregnancy reduces progeny clean fleece weight by 0.2 kg in both single and twin lambs. Twin lambs produce 0.3 kg less wool than single born lambs.

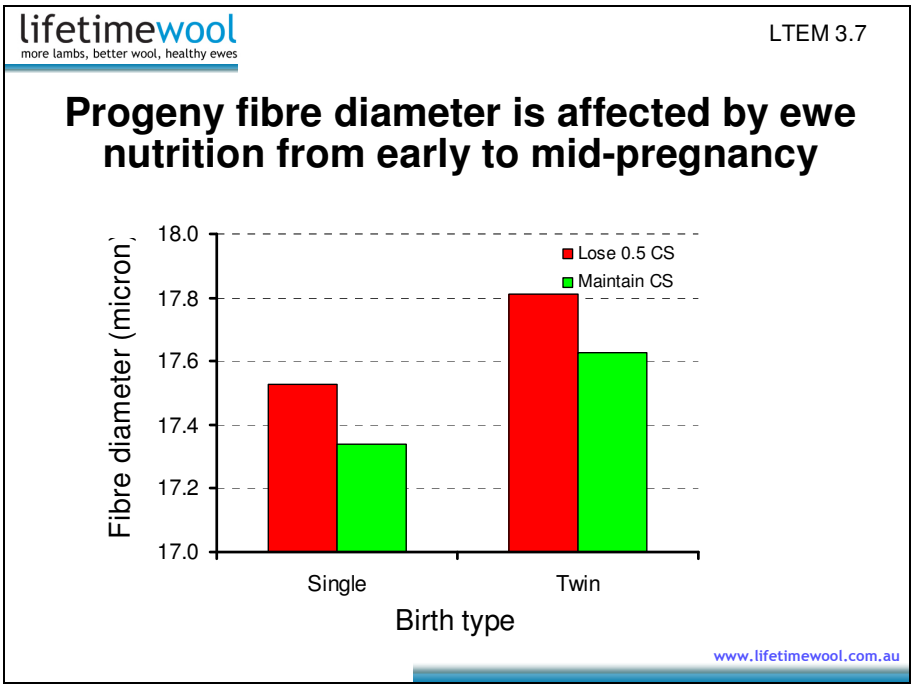
Increasing FOO in late-pregnancy will affect the progeny fleece characteristics by influencing up to a 200 gram increase in clean fleece weight.



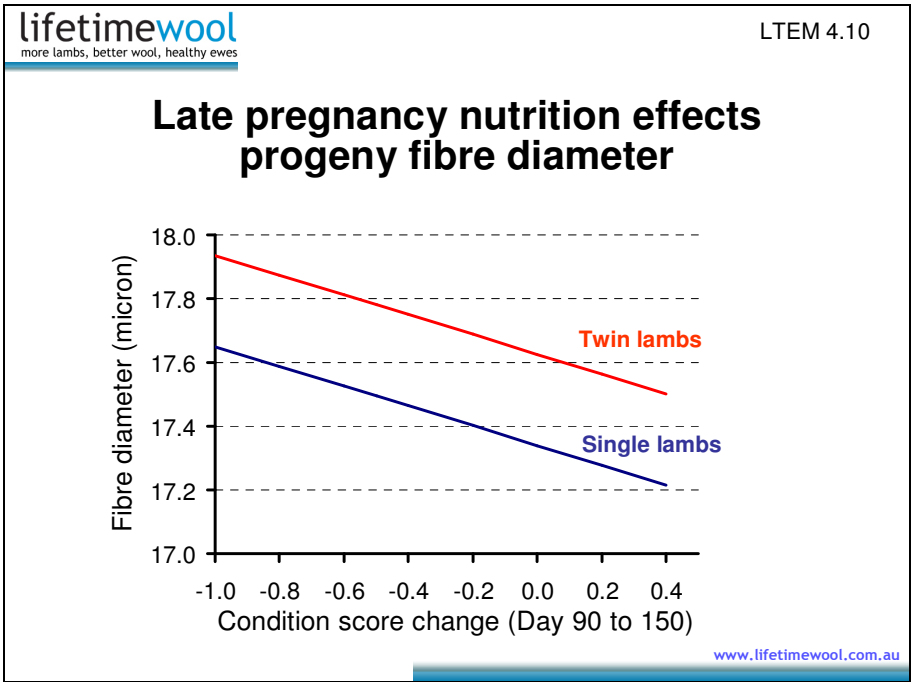


Poor ewe nutrition increases progeny fibre diameter

The effect of nutrition in early to mid-pregnancy on progeny fibre diameter is outlined in LTEM 3.7. A loss of 0.5 CS in early to mid-pregnancy increases the progeny fibre diameter by 0.2 micron in both single and twin lambs. Twin lambs produce wool that is 0.3 micron broader than single lambs.



The effect of nutrition in late-pregnancy on progeny fibre diameter is outlined in LTEM 4.10. A loss of 1 CS in late-pregnancy increases the progeny fibre diameter by 0.4 micron in both single and twin lambs. Twin lambs produce wool that is 0.3 micron broader than wool from single born lambs.



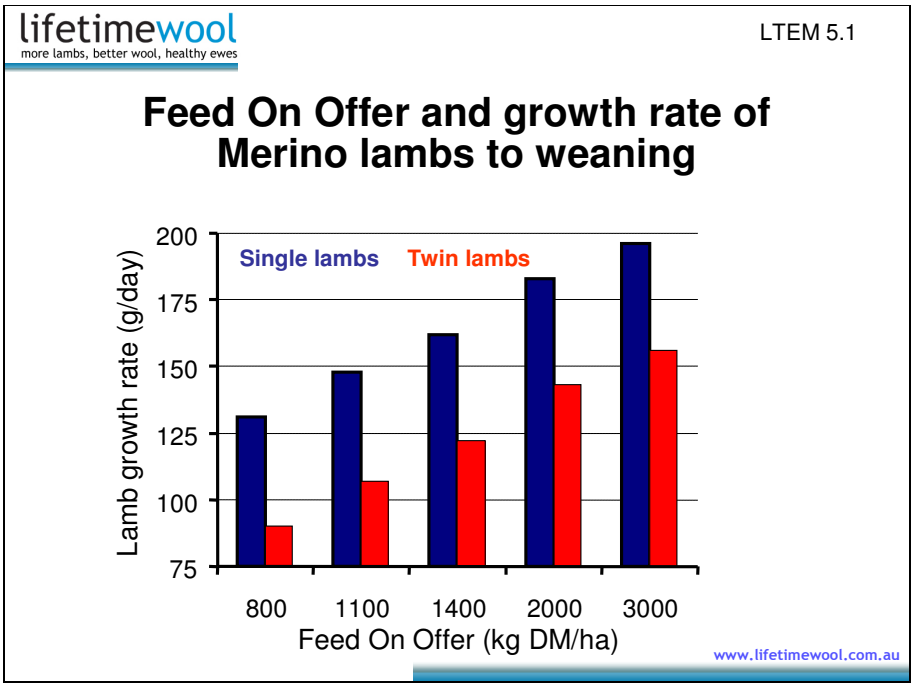
The impact of ewe nutrition on lamb growth rates and weaner quality

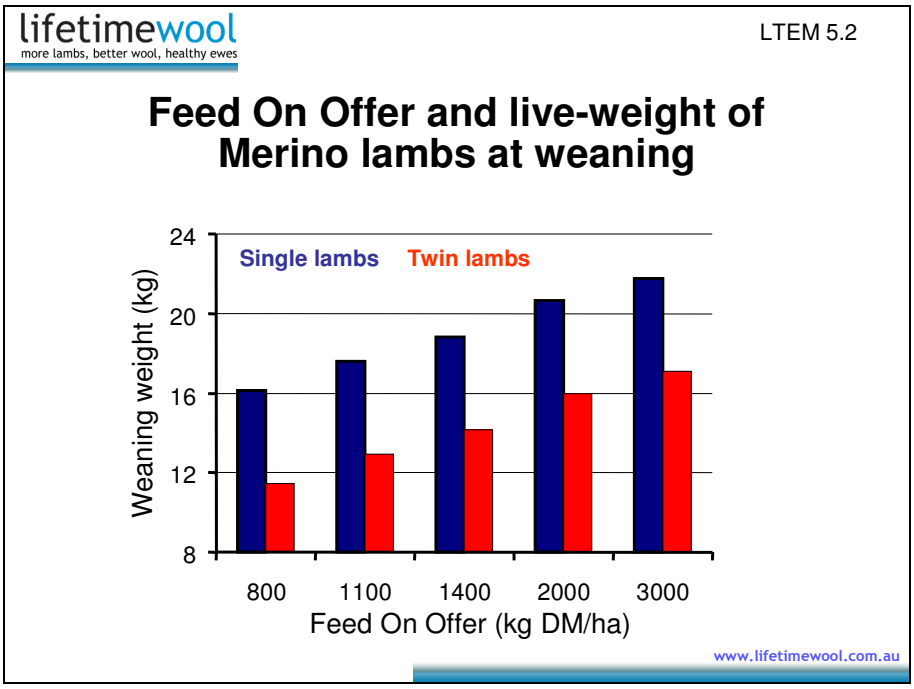
Improved ewe nutrition through lactation means bigger weaners and better weaner survival. A lamb born at 5kg that grows at 200grams per day (LTEM 5.1) will be about 20kg when weaned at 14 weeks (LTEM 5.2).

Feed-On-Offer during lactation is the main factor driving lamb growth rates. Lamb growth rates of 200 grams per day for single lambs are achieved when FOO is 1100 kg DM/ha or more.

The FOO targets for lactation to maximize survival **and** achieve weaner live weights of about 40% of SRW at 12-13 weeks are:

Singles: **1400 kgDM/ha**
Twins: **2000 kgDM/ha**





The impact of weaning weight on weaner survival

Live-weight at weaning explains 95% of the differences in weaner mortality. It is the most important factor for weaner survival. Weaner survival is best when the lamb is over 20 kg (for a small frame merino) or 25kg (for a medium frame merino) at weaning. Preferential treatment of lighter weaners post-weaning should be standard practice.