

lifetimewool

Improving ewe fleece weight and wool quality

Wool contributes about 70% (in a specialist wool system) and 30% (in a 1sr cross lamb production system) to the gross income of an enterprise. Breeding ewes make up more than 50% of the sheep flock. Ewe wool should not be considered a by-product.

Wool growth rates are influenced by nutrition and the partitioning of that nutrition into wool growing. Variable nutrient intake by grazing sheep leads to large differences in rates of liveweight change and wool growth in different months. Ewes have particularly variable wool growth rates due to the added burden of pregnancy and lactation. This affects fleece weight, fibre diameter, length and staple strength.

The Influence of Feed on Offer

Feed intake is usually not limited on Feed on Offer (FOO) above 2000 kgDM/ha. This means that wool growth is usually maximized irrespective of the stage of pregnancy or lactation. Liveweight and wool growth is sensitive to FOO less than 2000kgDM/ha.

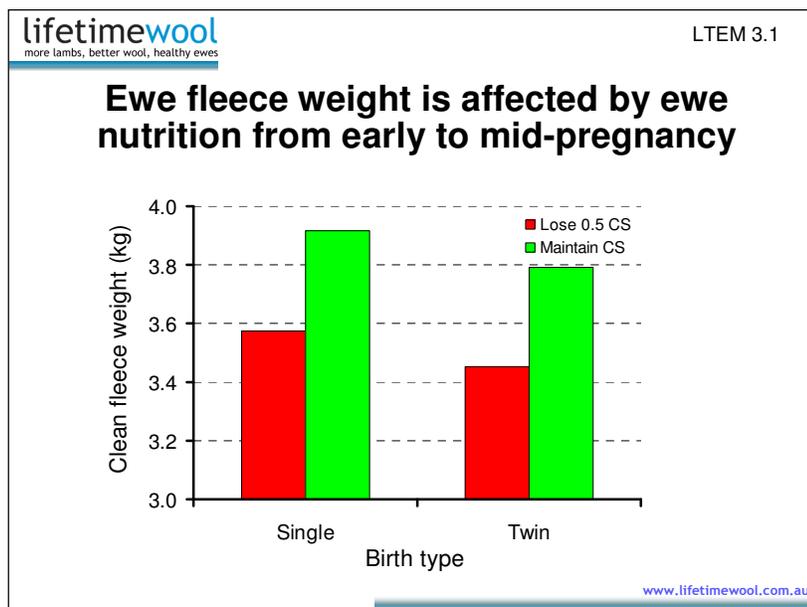
The Influence of Condition Score

Clean fleece weight and mean fibre diameter of ewe wool is closely related to their condition score changes over pregnancy and lactation. Together with ewe stocking rate the condition score profile over the year can be used to predict the value of the ewe wool clip in advance.

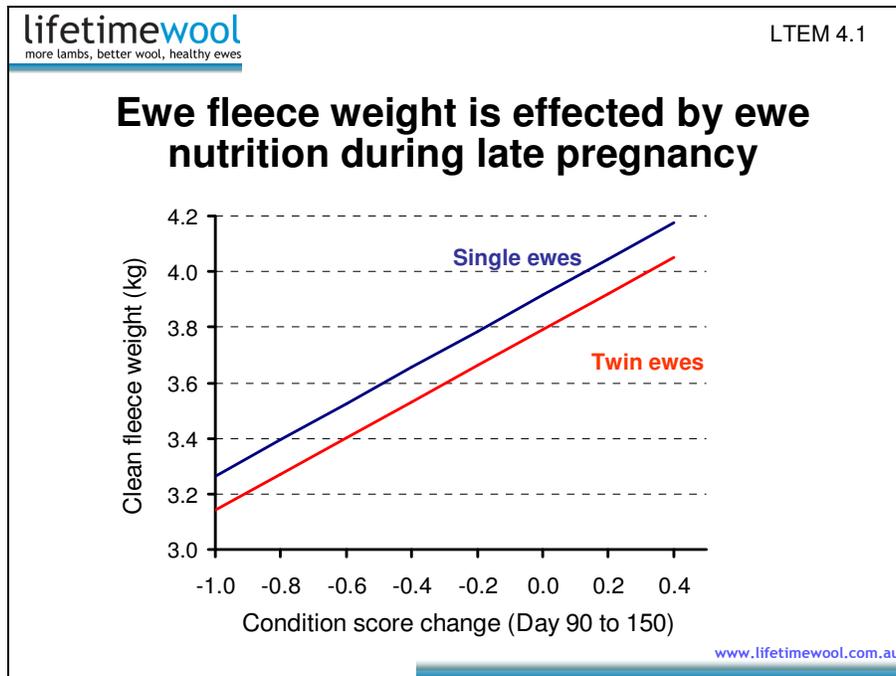
Ewes in higher Condition Score produce more wool, but is broader

The effects of changes in ewe Condition Score (CS) during early and late-pregnancy have a similar effect on ewe clean fleece weight and the relationship is linear.

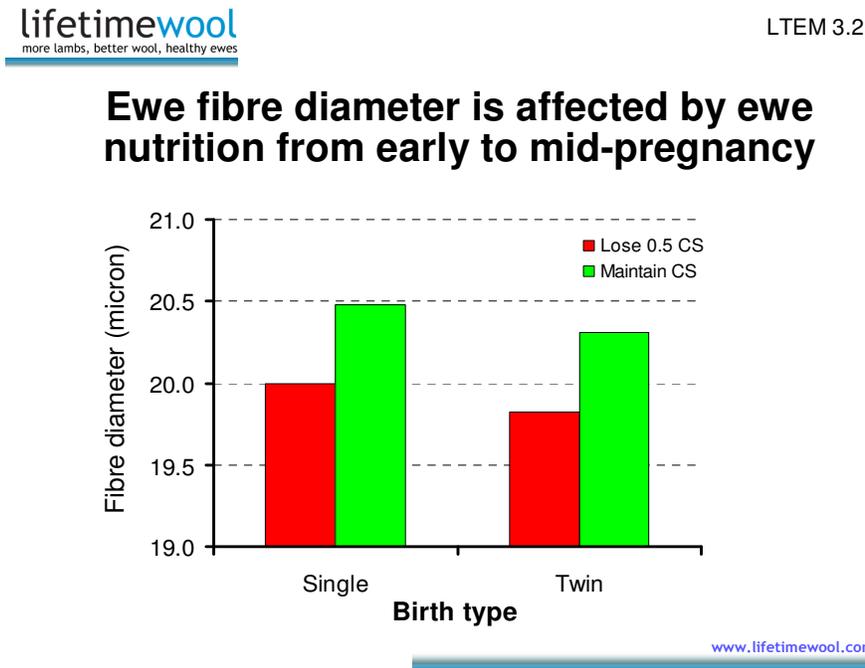
- An increase of 1 CS \approx 0.8 kg CFW. So ewes that lose 0.5 CS and then gain 0.5 CS to lambing will produce similar clean fleece weight as ewes that maintain CS through pregnancy.
- A loss of 0.5 CS in early to mid-pregnancy reduces the clean fleece weight by 0.4 kg in both single and twin bearing ewes (LTEM3.1)



- A gain of one CS in late-pregnancy will increase the clean fleece weight of ewes by 0.8 kg for both single and twin bearing ewes (LTEM 4.1)

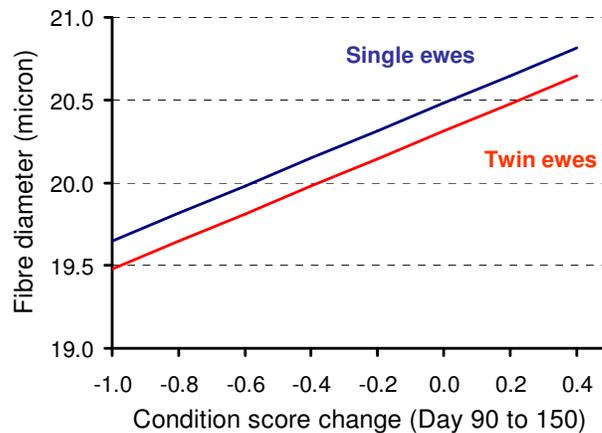


- A loss of 0.5 CS in early to mid-pregnancy reduces fibre diameter of both single and twin bearing ewes by 0.5µm (LTEM 3.2)



- A gain of 1 CS in late-pregnancy will increase the fibre diameter of the ewe fleece by 1.0 µm for both single and twin bearing ewes (LTEM 4.2)

Ewe fibre diameter is effected by ewe nutrition during late pregnancy



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**Early and mid-pregnancy from the point of joining to Day 90 of the pregnancy (Approx. Day 10 - 105 from rams in). Late pregnancy is Day 90 to lambing.*

The Effect of Condition Score changes on Staple Strength

The effects of nutrition on staple strength (SS) are largely explained by changes in the variation in fibre diameter along the staple, and the key determinant of staple strength is the **minimum** fibre diameter. A $1\mu\text{m}$ change in minimum fibre diameter is normally associated with a change in SS of about 4-5 N/ktex.

The effects of changes in ewe Condition Score (CS) on staple strength depend on the time of the nutritional treatment and the time of shearing.

For late winter/spring lambing ewes shorn in spring/summer, a loss of one CS during early and mid-pregnancy can reduce staple strength by 5 N/ktex. By contrast, gaining a CS in late-pregnancy after losing a CS in early pregnancy will reduce SS by another 2-3 N/ktex, so this wool can be 7 to 9 N/ktex weaker than that from ewes that maintained CS throughout pregnancy.

A loss of 0.5 CS in early to mid-pregnancy reduces staple strength of both single and twin bearing ewes by 2.5 N/ktex (LTEM 3.3).

Ewe staple strength is affected by ewe nutrition from early to mid-pregnancy

