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## Mohair Research Update No. 12

### Body condition scoring and management of Angora goats

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#### Introduction

Body condition scoring is a subjective method to assess the relative nutritional status of animals. Body condition scoring in goats has been shown to be related to goat live weight, milk production, carcass production, carcass fatness, reproductive performance and mortality. All of these production parameters are of commercial importance in goat production. Body condition scoring is therefore an essential practical skill for farmers, extension agents, meat buyers and researchers.

Body condition scoring has been used on sheep in Australia since at least the 1940s and was first explained by McClymont and Lambourne (1958) and Jefferies (1961). Body condition scoring has been applied with goats since at least 1982 (Figure 1). Body condition scoring can be used to:

Monitor the live weight change of goats when no objective method is available.

Monitor the nutritional state of goats. A decline in body condition score is a good indication of a decline in nutrition.

Assist in the selection of goats prior to slaughter.

Assess the risk of goats to mortality in adverse weather.

There are three methods of body condition scoring: body condition scoring of the short ribs; fat scoring the long ribs; and palpating the sternum. Palpating the sternum is the preferred method for use with dairy goats and is not covered here. This Mohair Update discusses body condition scoring of the short ribs in relation to managing Angora goats.

#### Body condition scoring of short ribs

Body condition scoring of the short ribs is the easiest method for farmers, animal buyers and researchers to use as it allows an easy “hands on” estimation of standing goats. Body condition scores give a direct assessment of the amount of tissue present over one of the prime carcass sites. Scientific studies have shown that body condition scoring to be reliable in predicting carcass weight when used with the live weight of goats. While goats may have less subcutaneous fat than sheep it is easier to gain a more reliable estimate of the body condition and carcass yield of goats using body condition scores than it is with sheep.

#### How to body condition score

The following descriptions are also summarized in Table 1 where the application to goat production is indicated.

For body condition scoring:

- a) The goat must be standing on all feet and “relaxed”, not tensed up or pushed into a corner. It is not possible to score if an animal is crouching under or jumping over other animals.
- b) Use the “balls” of the fingers and thumb rather than the tips.
- c) Feel the body along the backbone just behind the last long rib in the loin area. Feel for the prominence of the spine, its

- d) sharpness and the amount of flesh on each side of the spine. Now span the loin with the hand with fingers and thumb extended. Feel the ends of the spinal processes and press the fingers gently under the ends to assess the amount of flesh present.
- e) Finally feel the eye muscle by feeling the thickness and coverage of flesh between the backbone and the spinal processes. Use the open flat palm of the hand and gently push against the eye muscle to feel its shape. Is it rounded, flat or depressed?
- f) For animals with a dense fleece, the fleece should be parted to feel the skin more easily.

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Table 1. What body condition scores feel like and what the score means for goat production

Body condition score	What can be felt at each site			What the score means for goat production
	Backbone	Spinal processes	Eye muscle	
1	Prominent and sharp.	Sharp ends. Fingers easily pass under ends.	Very thin and feels hollow.	<b>Very lean.</b> Poor nutrition status and poor meat yield. Feed goats more. Further weight loss may result in death.
2	Prominent but smooth.	Smooth and rounded. Fingers pass under ends.	Some tissue present. Feels flat.	<b>Lean.</b> Moderate nutrition and meat yield for adults. Too low for prime kids.
3	Smooth and round over the top but still elevated.	Smooth. Need pressure to feel ends.	Full coverage to end of spinal processes. Feels rounded.	<b>Medium.</b> Ideal for prime kids and does. May be too fat for meat from adult goats where a slightly lower score is often preferred.
4	Only detected with pressure.	Cannot be felt.	Well rounded.	<b>Fat.</b> Too much feed has been used. Fat has to be cut off meat when processed.

### Reliability of body condition scores

Skilled assessors can assign body condition scores that are intermediate between the main scores. Many Australian farmers assign one score between each main category providing an 8 step range. For example: 1, 1.5, 2, 2.5, 3, 3.5. Research has been published where two scores were assigned between each of the main categories providing an 11 step range (e.g. McGregor, 1992, 2005, 2010a). For example: 1.7, 2.3, 2.7, 3, 3.3. The difference between these systems is not important. However Australian experience indicates that the very high body condition score of 5 for very fat sheep is not relevant to goats. This view is supported by the lower level of subcutaneous back fat deposits of goats compared with sheep (McGregor, 2005).

The reliability of body condition scoring improves with practice. It is recommended that scoring should be practiced whenever goats are handled, yarded or fed. Body condition scoring should be used at livestock shows and meat markets.

### Body condition score, live weight and carcass attributes

During a year a goat may experience an increase and a decrease in its body condition score depending on nutrition and live weight change (Figure 1). Within a mob of goats, it is usual to observe a range in body condition scores.

For grazing Angora goats the change in live weight associated with a change of 1 score in body condition is approximately 7.0 kg to 9.4 kg (Figure 1).

Body condition score of Angora goats accounts for 44-67% of the variation in carcass attributes (McGregor, 1992). This indicates that as a subjective method for assessing carcass attributes, body condition scoring can be a useful and practical aid for farmers without livestock scales.

### Other uses of body condition scoring in goat production

Body condition scoring has been shown to have important associations with other management issues of importance in goat production. In particular body condition scores are associated with risk of mortality in adverse climatic conditions and to reproductive performance.

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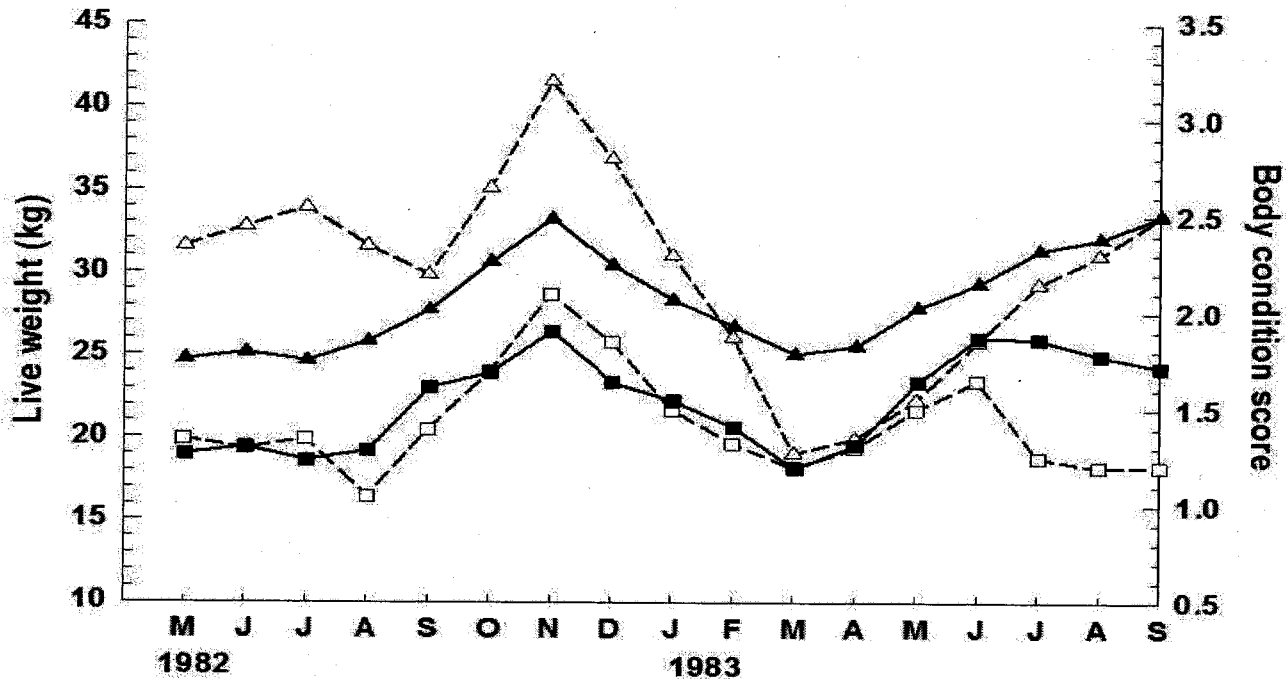


Figure 1. The relationship between the body condition score (r, □) and the fleece-free live weight (p, ■) of Angora goats grazed on annual temperate pastures from March 1982 to September 1983 at stocking rates of 7.5 animals/ha (r, p) and 12.5 animals/ha (□, ■) (modified from McGregor, 2010a).

### Mortality risk for goats

Mortality in flocks of Angora goats grazing pastures and subjected to adverse climatic risks was most related to the body condition score reached during the preceding two months (McGregor and Butler, 2008). For flocks of Angora goats there was no mortality at body condition score greater than or equal to 2.5 and mortality increased sharply at mean body condition score less than 2.0. For individual Angora goats, mortality increased as body condition score declined and stocking rate and grazing combinations were additive in effect on mortality. Grazing with sheep increased mortality of Angora goats at higher stocking rates. Live weight loss was not related to mortality rates of goats once body condition score had been accounted for. It was concluded that body condition score and stocking rate were highly significant determinants of welfare risk in Angora goats.

The analysis of the individual goat mortality rate indicated that these results were applicable in many situations. Consequently, farmers and animal welfare assessors can confidently use body condition scores to determine welfare risk in goats (McGregor and Butler, 2008).

### Reproductive performance

Body condition scores of less than 2.5 have been implicated with increased abortions and reduced kidding rates in Mexican native goats grazed under extensive conditions (Mellado *et al.*, 2004). Compared with all other does, the thinnest goats (body condition score < 1.5) were nine times more likely to abort. Body condition score was not identified as a risk factor regarding pregnancy in these goats.

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