

TechNote 27

Measure and monitor body condition score

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A key objective in late lactation is to set the cow up for the following season. This requires a focus on body condition score (BCS).

27.1 Ensure cows meet body condition score targets

Body condition score targets at calving have been defined from decades of research in NZ and internationally. To optimise milk production, reproduction, and cow health; mature cows should be BCS 5.0 at calving, with first and second calvers at BCS 5.5. Less than 15% of the herd should be greater than these targets, and less than 15% of the herd less than these targets. In order to meet these targets at calving, there must be BCS targets for when cows are dried off.



For more details see TechNotes 11: *Understand the transition cow*; 30: *Achieve body condition score targets at calving*; and DairyNZ *Body condition scoring - the reference guide for NZ dairy farmers* and DairyNZ *InCalf* resources.



Failing to plan is planning to fail. Ensure cows are on track in late lactation to reach BCS targets at calving.

27.2 Implement strategies for body condition score gain

To achieve BCS targets at calving, management strategies should be put in place in mid/late lactation. Once into late lactation, it becomes increasingly harder to significantly alter BCS; however, there are three strategies that can be used:

1. Dry-off at-risk cows early
2. Reduce milking frequency
3. Increase feed allocation.

It is important to understand the implications and effects of each of these.

27.2.1 Dry-off at-risk cows early

The length of the dry period required (Table 1), is based on the amount of BCS that the cow must gain to achieve targets at calving, in conjunction with the amount and type of feed that will be offered during the dry period. Dry period time frames must also consider the amount of feed a dry cow can consume and the amount of BCS that can be gained daily (approximately 0.5 BCS unit/month). In addition, cows often lose BCS in the first 10 days of the dry period and gain very little BCS in the month prior to calving, which means there are approximately 30 - 40 days where no BCS gain occurs.

Table 1. Days required from drying off until calving to achieve target calving BCS, based on cow age and BCS at dry off, when feeding pasture only or pasture plus a high quality supplement.

Body condition score		Days cow needs to be dry before calving	
Cow	Rising 3-year old	Autumn pasture only	Autumn pasture and high quality supplement
3.0	3.5	160	120
3.5	4.0	130	100
4.0	4.5	100	80
4.5	5.0	70	60

Includes 10 days when cows are being dried off and not gaining weight and 30 days when cows do not gain weight before calving

For example:

A mature cow at a BCS 4.0 being fed a pasture-based diet during the dry period should be dried off 100 days before calving.

A mature cow at a BCS 4.0 being fed pasture plus high quality supplements or ad-lib fodder beet during the dry period should be dried off 80 days before calving.

The critical factors in determining when a late lactation cow should be dried off are:

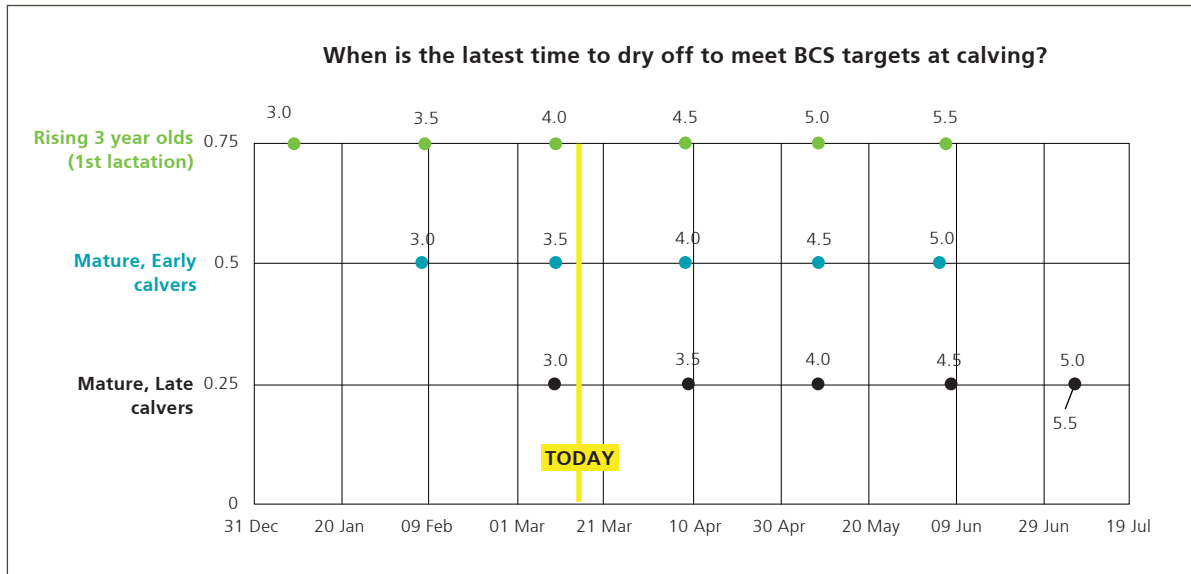
- current BCS and amount of BCS required to meet targets,
- predicted calving date,
- available feed (pasture cover, and quantity and quality of crops and supplements).

Calculations to determine dry-off dates are provided in Table 1, or alternatively use the DairyNZ dry-off-date calculator. This resource considers the above factors and produces a table or graph of when cows within the herd should be dried off (Figure 1). For the mammary gland to "reset" itself and for new mammary cells to develop, all cows, even if they are at target BCS, should have a minimum dry period of 42 days.



Consider current BCS, predicted calving date, and feed available when determining dry-off dates.

Figure 1. Example from DairyNZ “dry-off-date calculator” if planned start of calving was 18th July and cows were fed a pasture-based diet through the dry period.



For more details see TechNote 30: Achieve body condition score targets at calving.

27.2.2 Reduce milking frequency

Once a day (OAD) milking

Milking cows OAD for 3 months during mid/late lactation will increase BCS gain by approximately 0.25 BCS unit. However, this gain in BCS takes time and anything less than 1 month of OAD milking has minimal impact on BCS gain during this period. If dry-off decisions are based on BCS, OAD milking can potentially increase lactation length (DIM) while still enabling cows to reach BCS targets.



For more details see TechNote 25: Determine energy requirements.

16 hour milking (or 3 milkings in 2 days)

There is limited research on the impact of 16 hour, milking or 3 milkings in 2 days on BCS gain during late lactation. Predictions would be that energy partitioned to milk production would be similar, so any benefits would be due to less energy expended walking and potentially longer time available for grazing. Based on this, we would assume that there would be minimal (if any) improvements in BCS with 3 in 2 milkings during late lactation.



For more details see TechNote 25: Determine energy requirements

27.2.3 Increase feed allocation

Although a lactating cow requires 25% less energy to store fat or gain a BCS unit than a non-lactating (dry) cow, genetic selection over several decades has resulted in a lactating cow that partitions energy to milk production at the expense of BCS while they are being milked.

In addition, a lactating cow requires:

- 10 – 20% more energy for maintenance, and
- 5 – 10% more energy for activity (walking and grazing) compared with a dry cow.

Therefore, these extra energy requirements combined with the extra energy partitioned to milk production results in less BCS gain in lactating compared with dry cows for each kg DM feed eaten.

For example:

Information generated from research predicts that:

- Feeding an additional 150 kg DM grain over 100 days (1.5 kg DM/day), will increase BCS by 0.25 BCS unit in a late lactation cow.
- Feeding an additional 150 kg DM grain over 100 days (1.5 kg DM/day), will increase BCS by 1.0 BCS units in a dry cow.



For more details see *TechNote 30: Achieve body condition score targets at calving.*

Although supplementation only increases BCS slightly during this period, if available feed is less than required, providing supplements during late lactation will help prevent any loss in BCS. Ensure supplements are of good quality; however, the composition of supplement e.g. high starch compared with high fibre, does not appear to affect BCS gain.

In a research trial conducted in Waikato, cows were fed pasture plus the same energy as either PKE or maize grain. There was no difference in BCS gain between the two treatments.



For more details see *TechNotes 28: Use crops and supplements profitably and 30: Achieve body condition score targets at calving.*

27.3 Further reading

DairyNZ body condition scoring. The reference guide for New Zealand dairy farmers. www.dairynz.co.nz/publications/animal/body-condition-scoring-reference-guide/

DairyNZ Facts and Figures. dairynz.co.nz/publications/dairy-industry/facts-and-figures/

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Roche, J. R., N. C. Friggens, J. K. Kay, M. W. Fisher, K. J. Stafford and D. P. Berry. 2009. Invited review: Body condition score and its association with dairy cow productivity, health, and welfare. *Journal of Dairy Science* 92: 5769 – 5801.

Q: Do lactating cows gain more BCS than dry cows?

A: No. Dry cows gain more BCS per kg DM fed. While lactating cows do use energy more efficiently for BCS gain, they also have greater energy demands and partition most of the extra energy to milk production.