The transition period starts now!

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Summary

- Most people think of calving time when they hear the term 'transition period', but they need to consider it much earlier.

- Your cows’ body condition score (BCS) at calving is the single most important variable determining whether:
  - You have a lot of downer cows at calving,
  - Cows produce to potential, and
  - Cows cycle and get pregnant in the first 6 weeks of mating.

- Optimum calving BCS for mature cows is 5.0. First and second calvers benefit from an additional 0.5 BCS unit
  - Cows thinner than BCS 4.5 at calving are at an increased risk of infectious diseases and their blood profile suggests they are less healthy, less likely to cycle early, and less likely to get pregnant
  - Mature cows fatter than BCS 5.0 at calving are more likely to get ketosis, milk fever, and other health problems

- The effect of feeding during the month before calving is affected by BCS at the time
  - Cows thinner than BCS 5.0 before calving are at an increased risk of infectious disease after calving if feed is restricted pre-calving (e.g., because of bad weather)
  - Cows fatter than BCS 5.0 are at an increased risk of metabolic disease after calving if fed too much high quality feed before calving (e.g., more than 8 kg DM of fodder beet)

- Management of the transition cow needs to begin in March!
When most people hear the term ‘transition cow’ or ‘transition period’, they immediately think of short days and cold wet weather. However, research programmes in New Zealand and internationally have now identified that the transition period actually starts much earlier\textsuperscript{1,2,3,4}.

The most important management factor influencing the incidence of metabolic disease at calving, and milk production and reproduction success post-calving, is body condition score (BCS) at calving; in addition, calving BCS interacts with pre-calving feeding to influence cow health around calving. So, management decisions for calving BCS and feeding cows around calving should be considered at the same time. In effect, the transition period begins now!

**Optimum body condition score**

| The optimum BCS at calving for mature cows is 5.0. Heifers and second calvers should be 5.5 at calving. |

In an award winning review\textsuperscript{5}, optimum BCS was defined as the point from which:

- Most of the milk production and reproduction benefits are achieved,
- BCS loss post-calving is acceptable (BCS loss post-calving increases with calving BCS), and
- The risk of metabolic diseases (i.e., milk fever and ketosis) is minimised.

The age separation is because New Zealand data indicate that 2- and 3-year old cows are less likely to get mastitis or a uterine infection, and are more likely to get pregnant if they are half a BCS unit fatter than mature cows.

These optimum BCS values are remarkably consistent across the world\textsuperscript{5}, irrespective of whether cows are pasture-based or housed and fed a total mixed ration.

**Calving BCS and transition cow health**

Although the effect of BCS on milk production and reproduction has been accepted for decades, much less was known about the effect of BCS on transition cow health, because it was unclear whether poor health caused thin cows, or because thin cows were more likely to get sick. Recent experiments were designed to answer this question\textsuperscript{3,4}. Cows were selected in January, and were thoroughly assessed for health status using a full veterinary analysis of blood and changes to live weight and BCS. They were then managed to achieve a predetermined BCS at calving, ranging between BCS 3.5 and BCS 5.5. In this way, researchers could be sure that thin cows were healthy.

The results indicate that cows were healthiest if they calved between BCS 4.5 and 5.0. If thinner than BCS 4.5, their blood profile indicated reduced immune function and there was an increased risk of a uterine infection. However, if fatter than this (i.e., BCS 5.5), there was an increased risk of ketosis and other metabolic diseases, particularly if they were consuming more than 100 MJ metabolisable energy/day during the weeks before calving (i.e., fed a high quality feed).

Therefore, the cow’s calving BCS determines the effect of transition cow nutrition on the incidence of disease.
**Achieving optimum BCS**

From March, most cows are 120-150 days (North Island) or 150-180 days (South Island) off the planned start of calving. Generally, cows lose a little BCS during the two weeks following dry-off and **cows do not gain BCS in the month before calving**. Therefore, early calving cows only have 75 to 100 days during which they can gain BCS. Increasing BCS involves cows eating more feed energy than they need for maintenance, activity, milk production, and calf growth. Therefore, a cow will gain BCS if

- She eats more and does not produce more milk or
- She eats the same amount but produces less milk.

There are, therefore, three effective strategies for BCS gain:

1. Changing from twice-a-day to once-a-day milking
2. Feeding supplementary feeds to milking cows and dry cows
3. Drying off cows early

An effective strategy to achieve calving BCS generally involves a mix of all three.

**Changing cows from twice-a-day to once-a-day milking**

Cows milked once-a-day in late lactation gain about 0.25 BCS units more in three months than cows milked twice-a-day over the same period\(^6\). This can be part of an effective strategy to keep cows milking and gain BCS if once-a-day milking starts in January/February. However, cows must be offered the same amount of feed as if milked twice-a-day. At this stage of lactation (i.e., March), changing from twice-a-day to once-a-day milking is only an option if cows are BCS 4.0 or greater, as the amount of BCS that will be gained before dry-off is very small.

**Feeding supplement to milking cows and dry cows**

When fed supplements and presuming pasture is not wasted (i.e., grazing residuals are no higher than 3.5-4.0 cm or 7-8 clicks on the plate meter), cows will produce more milk. In fact, with improvements in genetics over the last 30 years, more of the extra energy consumed is partitioned to milk production. Therefore, less is partitioned to BCS. This means that providing supplements to milking cows is not a very effective strategy for gaining BCS\(^7\), although it can prevent BCS loss when grazing residuals are less than 3.5-4.0 cm (7-8 clicks on the plate meter).

Offering supplements to dry cows will increase BCS, but different feed types have different effects on the amount of BCS cows gain/100 kg DM of supplement fed. For more information on the effect of different supplements on BCS gain, refer to DairyNZ Body Condition Scoring – the reference guide for New Zealand dairy farmers ([http://www.dairynz.co.nz/publications/animal/body-condition-scoring-reference-guide/](http://www.dairynz.co.nz/publications/animal/body-condition-scoring-reference-guide/)).

**Drying off cows early**

It is often forgotten that **cows need time to gain BCS as well as more energy**. Therefore, drying off thin cows (i.e., less than BCS 4.0) at least 14 weeks before the planned start of calving is required to achieve BCS targets\(^8\). It is rare for cows to gain more than 0.5 BCS units per month. Although cows properly adapted to fodder beet can achieve higher BCS gains in a month, a long adaptation period to achieve the necessary intakes is required.

A maximum gain of 0.5 BCS units/month is a good rule of thumb for planning, taking account of no BCS gain in the final month of pregnancy.
The best strategy for BCS gain

To manage calving BCS targets, the herd must be assessed in early March. Once-a-day milking and feeding milkers are not effective ways to gain BCS in early calving cows at this time. To hit targets, cows should be dried off based on their individual BCS, their approximate calving date, and the amount of supplementary feed available for autumn feeding. A time line relative to calving date is presented in Table 1.

For later calving cows, once-a-day milking and supplementary feeds can form a part of the strategy for BCS management. But, the time taken to gain the necessary BCS must be considered. Particular attention must be paid to R2s and heifers finishing their first lactation.

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

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<tr>
<th>Body condition score</th>
<th>Days cow need to be dry before calving</th>
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<td></td>
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Note: Includes 10 days when cows are being dried off and not gaining BCS and 30 days when cows do not gain BCS before calving. For this strategy to work, dry cows must be allocated a minimum of 9-11kg DM/day (depending on breed).
References


