

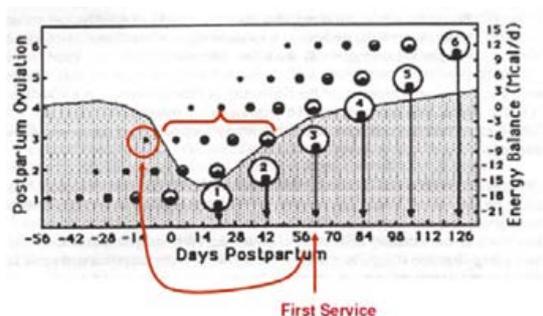
Managing Poor Conception Rates in the Breeding Period

The poor conception rate of dairy cows in the target breeding period (60-120 days post calving) is often associated with high producing dairy cows with selection for high milk production that is negatively correlated with poor fertility, resulting in high “empty” rates. However, a review of experimental data from published papers reveals that not all high producing cows experience low fertility during the target breeding period with both low and high producing cows experiencing variable conception rates (Britt, J. 1992).



One of the reasons proposed for this is the effect of early energy metabolism post calving on the quality of follicles destined to ovulate in the breeding period (3rd and 4th heat) as presented in Figure 1 below.

Figure 1: Predicted periods of growth for the first six follicles destined to ovulate during the post calving period.



Source: Britt, J. *The Bovine Proceedings* – No. 24, Jan 1992

In practice, what this means is that the follicles that produce the eggs that we plan to inseminate in the 3rd and 4th cycle, spend most of their development during the time of negative energy balance post calving. This is often explained as a cow “milking off her back” and objectively measured as body condition score (BCS). In fact, the follicle we mate on the third heat started its journey at 7-14 days pre-calving! Cows that have excessive weight loss in this post calving period expose these follicles to undue metabolic stress, resulting in follicles that produce lower levels of hormones (progesterone), resulting in lower fertility and higher empty rates.

What becomes extremely apparent from this follicle development figure, is that the effects of the cows feeding programme in the 2-3 weeks pre-calving and 4-5 weeks post-calving has a significant impact on her ability to breed at 60-80 days post calving. Managing BCS in this period becomes a key performance indicator in achieving subsequent reproductive performance.



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So how do we prevent cows from losing too much weight in this period?

- Use straw during the dry period to increase rumen capacity
- Use a specialist transition feed (Nutrimin® Springer Cow Balancer) in the 2-3 weeks pre-calving and energy drenches (JumpStart®) immediately post-calving to prevent metabolic issues that lead to the gateway diseases including ketosis.
- Maximise dry matter intake by introducing feeds with high energy dry matter (grains like wheat, barley or maize) or forages with a high energy content (maize or whole-crop silage) in combination with low dry matter (spring) grass
- Increase energy intake by feeding high energy dense product like rumen bypass fats high in C18 fatty acids (Golden Flake®)
- Optimise rumen function by balancing diets correctly and introducing rumen modifiers including live yeasts (Levucell®) that promote the favourable fibre digesting bacteria or ionophores (Rumensin®) that inhibit the less efficient bacteria in the rumen.

Table 1. Relationship between BCS loss in first 5 weeks after calving and reproduction.

Item	Body Condition Loss <1.0*	Body Condition Loss 1.0 to 2.0*	Body Condition Loss > 2.0
Days to first ovulation	27 ^a	31 ^a	42 ^b
Days to first heat	48 ^{ab}	41 ^a	62 ^b
Days to first service	68 ^a	67 ^a	79 ^b
First service conception rate, %	65 ^a	53 ^a	17 ^b
Services per conception	1.8	2.3	2.3

Means in a row with different superscripts differ $P < 0.05$
 Adapted from Butler and Smith, 1989;
 Journal of Dairy Science 72:767-783.
 *Adapted to NZ Body condition scoring system

It is evident from this work that cows that lost greater than 1 BCS in the first 5 weeks post-calving had a significantly higher probability of poorer conception rates. In areas with a seasonal calving pattern, like NZ, this can have significant economic consequences.

In conclusion, it's important to focus on the nutrition in this pre-calving (2-3 weeks) and immediate post calving periods (3-5 weeks) to optimise reproduction 60-80 days post calving.



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