

Rethinking the dry period by shortening or eliminating

Alvaro Garcia for *Progressive Dairy*

AT A GLANCE

Adjusting the dry period length can improve dairy cow health.

The dry period, usually lasting 60 days before calving, serves essential roles in preparing cows for lactation, promoting mammary cell renewal and facilitating treatment for subclinical mastitis. However, shortening or eliminating this period has become a strategy to manage milk production, redistributing energy balance and mitigating the risk of metabolic disorders like subclinical ketosis.

Research suggests that halving or eliminating the conventional 60-day dry period can significantly improve energy balance and metabolic health in dairy cows, leading to potential increases in bodyweight and condition score by the end of lactation. This approach aims to maintain positive energy balance, prevent overfeeding in later lactation and ensure consistent milk yield and lactation persistence. While this approach can reduce the need for ration adjustments, it presents challenges such as increased risk of intramammary infections.

Dietary management

To maintain optimal milk yield and composition when managing short to no dry periods, it is important to tailor the diet to match the energy requirements of the cow based on her expected milk production. This may require fine-tuning the balance of carbohydrates, fats and proteins.

Studies have explored dietary modifications to enhance the energy balance of cows during early lactation following a shortened or no dry period. Implementing a glucogenic diet in early lactation by increasing corn in the feed is helpful, since it is richer in starch and promotes energy balance by providing glucose precursors. This adjustment helps prevent excessive negative energy balance (NEB) and decreases plasma beta-hydroxybutyric acid (BHBA) concentration, and thus ketone bodies formation. It's crucial to minimize diets containing high levels of supplemental fat and simple sugars, as they are less effective at promoting gluconeogenesis.

However, a potential risk of the no dry period approach in mid- to late lactation is cows becoming overweight or experiencing reduced persistency in subsequent lactations. To address this, it's advisable to adjust dietary energy

levels and nutrient composition from peak milk yield onward, potentially lowering dietary energy to stimulate lactation persistency and prevent fattening. From this perspective, it is important to consider the genetic potential, breed and body condition score (BCS) of cows.

Certain cows, particularly those with higher milk yield potential and lactation persistency, may benefit more from these strategies. Moreover, lactation curve characteristics and milk yield influence the ability to sustain milk production and the potential for milk yield increases before calving.

Impact of short to no dry period

Omitting the dry period yields the most significant improvement in metabolic status in early lactation but also results in the largest reduction in milk yield. Shortening or omitting the dry period has been associated with an estimated 3% and 3.5% decrease in milk yield, respectively. Primiparous cows have shown no impact of dry period length on milk yield but had an increased number of lactating days. Multiparous cows with short or no dry periods have exhibited increased fertility leading to shorter calving intervals.



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Part of the milk yield per effective lactation was realized before calving, mitigating the negative impact of early lactation culling on milk yield. It has thus been suggested that customizing dry period length for older or high-yielding cows at risk of severe NEB may be beneficial to mitigate milk yield reductions while enhancing their metabolism.

The potential reduction in milk revenues due to customized dry periods must be analyzed considering decreased disease costs. For instance, experimental studies where the dry period was omitted reported no occurrences of ketosis compared to incidence rates of 4.8% to 25% in control groups with standard dry periods.

An experiment conducted by researchers with the department of animal and veterinary science at the University of Idaho evaluated the effects of shortened or omitted dry

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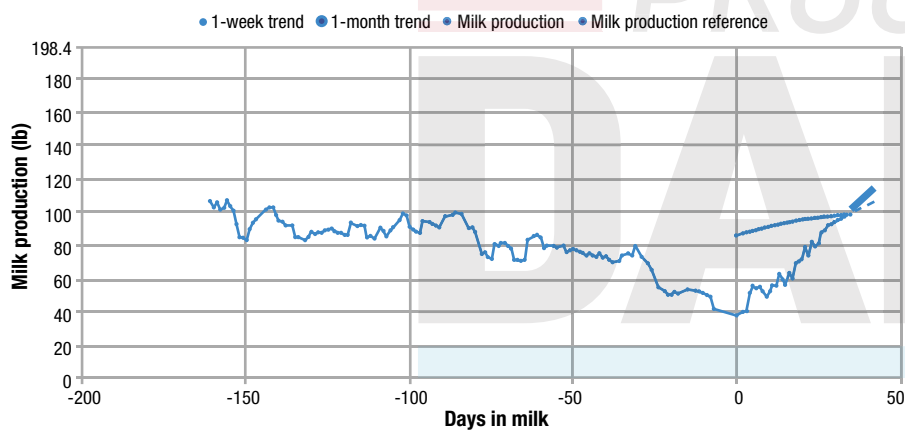
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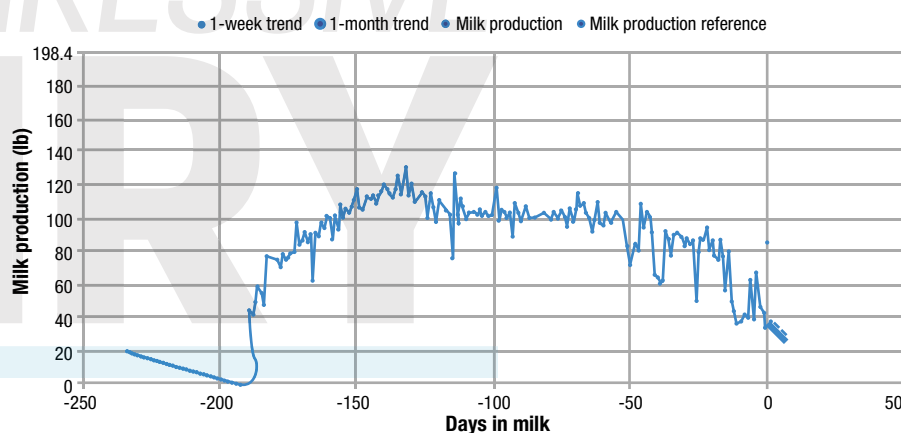
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FIGURE 1 Milk production during lactation – animal 285



BCS	Ideal BCS	BCS state[%]	BCS Trend 1-w[%]	BCS Trend 1-m[%]	BCS Trend DIFF 1-w[%]	BCS Trend DIFF 1-m[%]	Daily Milk [lb]
4.52	3.5	29.2	0	0.6	0	0.5	97.75

FIGURE 2 Milk production during lactation – animal 555



BCS	Ideal BCS	BCS state[%]	BCS Trend 1-w[%]	BCS Trend 1-m[%]	BCS Trend DIFF 1-w[%]	BCS Trend DIFF 1-m[%]	Daily Milk [lb]
3.64	3.5	3.9	0.4	0.1	0.4	0	33.88

periods in high-producing dairy cows. The experiment was conducted in five commercial dairies in Idaho and Arizona. Cows without a dry period lactated for most of the prepartum period. The study successfully met its objective of assessing the impact of shortened and omitted dry periods on milk yield with control cows reaching peak milk yields surpassing 99 pounds per day for primiparous cows and 110 pounds per day for multiparous cows. Primiparous cows in the treatment groups maintained substantial milk yields during late gestation, with a subsequent reduction postpartum, particularly in continuously milked cows. However, all treatment groups exhibited similar lactation curves and production levels during the first 17 weeks post-calving. The study also explored the economic implications and reproductive performance of the different treatments, suggesting similar reproductive outcomes across all groups and variations in cumulative net margins.

Current on-farm case

Let us look at the performance of a couple of cows milked continuously from a large European dairy that uses modern 3D imaging technology to monitor their Holstein cows. Sixty days before calving, Cow 285 was still yielding 84 pounds of milk per day, dropping to 37 pounds at calving (Figure 1). However, a month later, her milk production increased to 98 pounds per day, above her projected production (solid line in the graph below), and still on the rise as of this writing. Her

significant increase in milk yield indicates that she is adapting well to her new lactation without a dry-off period. It also suggests she is receiving adequate nutrition and management, contributing to her ability to produce milk efficiently. She needs to be followed closely, however, since she currently has a BCS of 4.5, one point above what would be desirable at this stage in her lactation.

Cow 555 is an excellent milking cow that produced 100 pounds 60 days before calving, decreasing to 41 pounds at calving without having undergone dry-off (Figure 2). Her BCS is currently 3.6, right on target for this stage of lactation. Monitoring her BCS closely and ensuring it remains stable can contribute to her health and productivity during lactation.

Implications

Modifying the length of the

dry period can have positive health outcomes for dairy cows. While the traditional 60-day dry period serves crucial functions, shortening its length has been proposed as a strategic management tool. Advantages are the redistribution of milk production, mitigation of negative energy balance during early lactation and reduction of the risk of metabolic disorders such as subclinical ketosis. Implementing dietary changes, such as incorporating a glucogenic diet rich in corn and aligning energy content with expected milk yield, can further optimize energy balance and metabolic health. While omitting the dry period

yields significant metabolic benefits, it also entails reductions in milk yield, highlighting the importance of customizing dry period length based on cow-specific needs. Overall, adjusting dry period length represents just another approach to dairy cow management, offering opportunities for optimizing health and well-being in lactating dairy cows.

Alvaro Garcia was formerly a professor and dairy extension specialist with South Dakota State University.



Photo by Jenna Hurty-Person.