

Dry period length affects components, breeding, and SCC

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OVER the last 20 years, a combination of improved management and genetics have resulted in substantially higher levels of production for U.S. dairy cows. Does this higher producing ability imply that shorter dry periods would be adequate to sustain production, health, and fertility in subsequent lactations? Or, do the greater demands of higher production actually warrant a longer rest period between lactations? A recent USDA study examined the answer to this question using DHI records on approximately 340,000 Holstein cows in roughly 3,600 herds from across the U.S.

What we found . . .

To make a long story short, a dry period of 60 days maximizes milk yield in the subsequent lactation, regardless of lactation. Figure 1 shows the milk lost with shorter and longer dry periods compared to 60 days. For instance, cows without a dry period (0 days) between first and second lactation gave approximately 5,500 pounds less milk in their second lactation than those given 60-day dry periods (shown by the blue line in Figure 1).

All dry periods less than 60 days resulted in a loss of production in the following lactation. However, dry periods less than 20 days were severely, and by far the most, detrimental. Cows with 10 or fewer days dry produced 5,000 pounds less milk yield in second lactation than those with 60 days dry.

Production losses with at least 45-day dry periods were fairly minor and might be easily offset by the milk yield gained in the previous lactation. Cows with 45 to 50 days dry, for example, produced only 760 pounds less milk in subsequent lactation than those with a 60-day dry period.

Considering a 60-day versus 45-day dry period, if cows average 50 pounds during the last 15 days of lactation, the additional 760 pounds of milk from first lactation would offset the loss in the subsequent lactation. Thus, while these results clearly show milk yield loss in the subsequent lactation for dry periods less than 60 days, dry periods shorter than 60 days still may be useful.

Perhaps the most surprising result in this study was that cows with excessively long dry periods also had slightly lower production in the subsequent lactation. Those with dry periods longer than 80 days had about 440 pounds less milk compared to cows with a 60-day dry period. The cause of this could not be determined by our research. Perhaps, cows with long dry periods gain excessive body condition during the extended dry period and have more problems after calving.

The study also looked at other

economically important traits. Fat and protein yields followed the same general pattern as that for milk yield. In contrast to **fat and protein yield**, a short dry period actually benefits **fat and protein percent**. Cows with a dry period of 10 or fewer days had, for example, 0.13 percent higher fat and 0.16 percent higher protein in second lactation compared to those with 60 days dry . . . and this was not due to lower milk yield.

Short dry periods, however, are detrimental for somatic cell score (SCS). The longer the dry period, the lower the SCS (Figure 2). All dry periods of 60 days or less resulted in a higher SCS in the subsequent lactation. Furthermore, dry periods of less than 10 days between first and second lactations were the most detrimental for SCS in lactation two. Those cows had a 0.18 greater SCS compared to cows with a 55- to 65-day dry period. Therefore, herds with mastitis problems should consider any decision to shorten dry periods carefully.

Results for days open indicate that short dry periods actually favor fertility. (See Figure 3.) However, as indicated by the solid lines in Figure 3, this apparent advantage is due entirely to the lower milk yield associated with short dry periods. When days open is adjusted for milk yield, short dry periods actually result in poorer fertility in the subsequent lactation.

After adjusting for milk yield, cows with less than 10 days dry have 14 more days open than cows with 60 days dry. However, after a minimum of 40 days dry, days open did not change significantly. Shortening dry periods should not be used to improve fertility because any "improvement" realized is just due to lowering milk yield.

While 60 days dry maximizes production in the following lactation on average, it is natural to ask whether high-producing cows need more (or maybe fewer) days dry than lower-producing cows. Likewise, does the length of dry period needed depend on days open, SCS, or, for a first-lactation cow, age at calving? If a heifer calves at a young age, would she need a longer dry period than one that calved in at an older age?

The bottom line answer to these questions is that 60 days dry maximizes production in the following lactation, regardless of milk yield, days open, SCS, or age at calving. However, the negative impact of shortened days dry is greater for some groups of cows than for others. Shortened dry periods have a larger negative impact on heifers calving at younger ages than on older heifers. For 0 to 10 days dry, for example, younger heifers lose 1,500 pounds more milk in the following lactation than older heifers.

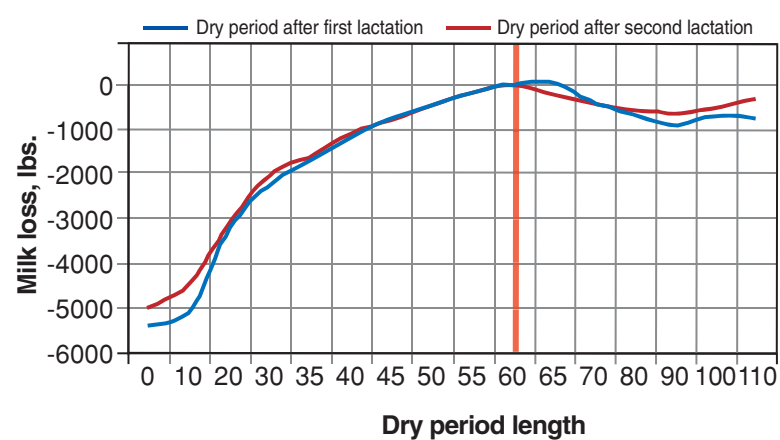
In regard to milk yield, higher producers are more affected by short dry periods than are lower producers. Cows that breed back early in lactation also experience greater losses with shorter days dry than cows with long days open. Cows with short days open, for example, lose about 1,100 pounds more production for 0 to 10 days dry than cows with shorter calving intervals.

Contrary to what might first be expected, cows with high cell scores actually lose less milk in the lactations following shortened dry periods than cows with lower cell scores. This probably is because mastitis causes damage to the mammary gland which makes high

cell score cows more indifferent to the benefits of a longer dry period. Overall, the worst combination, in terms of maximizing yield in the following lactation, is a short dry period for high-producing cows that conceived early in lactation. But, once again, 60 days dry maximizes subsequent lactation yield regardless of any of these factors. It's just that superior cows (those with high production, better fertility, and low cell counts) pay a larger price for shortened dry periods than their inferior counterparts.

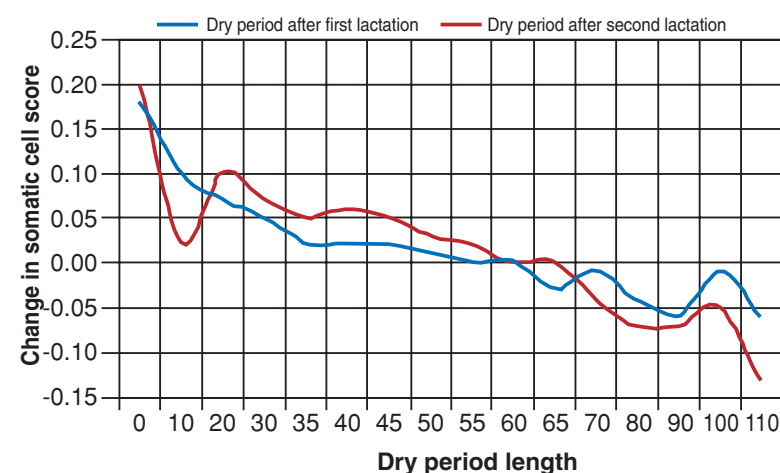
A look at lifetime production would be helpful. That will be the topic of the third and final article in this series.

Figure 1. 60 days gives you the most milk



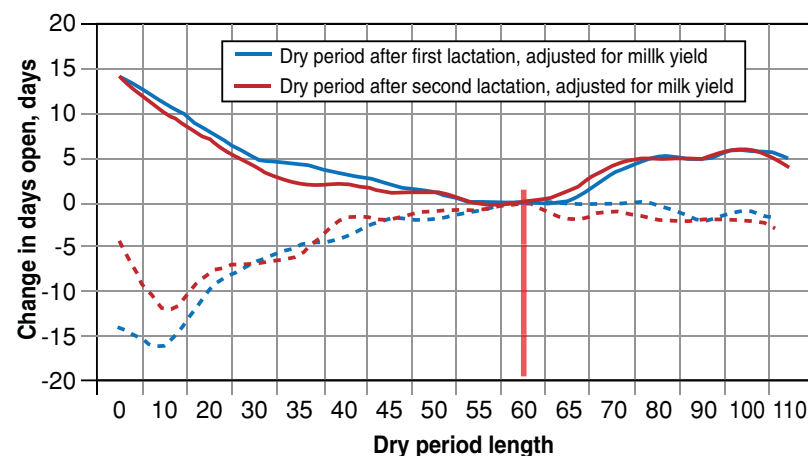
A DRY PERIOD OF 60 DAYS MAXIMIZES milk yield in the subsequent lactation, regardless of lactation or level of milk yield. (Animal Research, 54: 351-367)

Figure 2. The longer the dry period, the lower the SCC score



(Journal of Dairy Research, 73: 154-162)

Figure 3. Dry period and fertility



RESULTS FOR DAYS OPEN INDICATE that short dry periods actually favor fertility, shown by the dotted lines, for the dry period after first lactation (red) and after second lactation (blue). The solid lines are adjusted for milk yield. (Journal of Dairy Research, 73:154-162)

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