Over the last 20 years, a combination of improved management and genetics has resulted in substantially higher levels of production for US dairy cows. Does this higher producing ability imply that shorter dry periods would be adequate to maintain 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 US.

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 a 60-day dry period (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 in the 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 their 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 780 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 longer than 80 days had surprisingly little effect. Even days dry from 80 to 110 days produced, on average, only 100 pounds less milk 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 in the previous lactation. However, the negative impact of shortened dry days 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 lost 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 counts actually lose less milk in the lactations following shortened dry periods than cows with lower cell counts. 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.

The authors are a dairy scientist and research specialists at the Animal Improvement Programs Laboratory, USDA, Beltsville, Md.

RESULTS FOR DAYS OPEN INDICATE that short dry periods actually favor fertility, shown by the solid 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)

Dry period length affects components, breeding, and SCC

by Jana Hutchison, Melvin Kuhn, and H. Duane Norman

The authors are a dairy scientist and research specialists at the Animal Improvement Programs Laboratory, USDA, Beltsville, Md.