

Shortened Dry Periods: Research and Recommendations

by Robin R. Rastani, Rick D. Watters and Ric R. Grummer

Short dry periods are not a new concept. In 1805, R. W. Dickenson stated, "There was a difference among English farmers... some favoring a two-month dry period, while others believed periods as short as ten days were sufficient." However, producers have traditionally used a 60-day dry period for their cows, believing that dry periods less than 60 days would result in decreased milk production in the subsequent lactation.

This practice was primarily based on studies, which analyzed farm records (i. e. Dairy Herd Improvement Association data). Cows in these studies with less than six to eight week dry periods were probably not intended to have short dry periods and were probably not managed for short dry periods (e.g. cows carrying twins, cows with late term abortions, cows only fed the far-off diet). Therefore, it is not surprising such analyses would show short dry periods are associated with low milk production in the next lactation. However, data from farm records and planned studies are in fact quite consistent, showing approximately a six percent reduction in milk volume in the following lactation when dry periods were shortened from approximately 60 to 30 days.

Dry Period Length Comparison

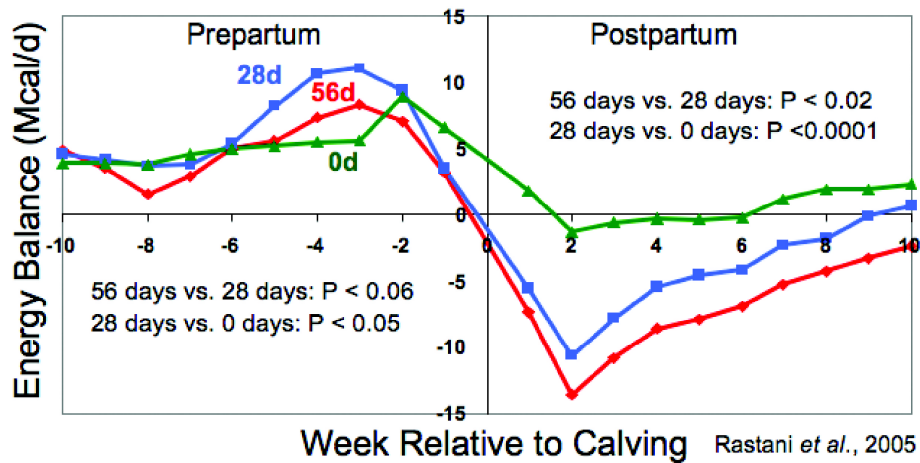
In research conducted at the University of Wisconsin-Madison, cows with a 28-day dry period produced 928 pounds more milk prepartum and cows with a no planned dry period produced 1628 pounds more milk prepartum compared with cows with a traditional 56-day dry period. There was no difference in body weight or body condition score prepartum, indicating the cows were not over-conditioned or under-conditioned with one management scheme compared with another. There was no difference in calf weight, and colostrum quality was similar for cows with 28- and 56-day dry periods.

Milk production through 70 days in milk was decreased by 10 pounds/ day for cows with a 28-day dry period, and was decreased an additional nine pounds/day for cows with no dry period. However, when postpartum milk production was adjusted for equal fat content, milk production was similar for cows with 28- and 56-day dry periods. This was due to higher milk fat percentage for cows having a 28-day dry period. Milk components must be considered when assessing the impact of shortening the dry period.

All cows were in positive energy balance before calving. Shortening or eliminating the dry period reduced the extent of negative energy balance (Figure 1) and body condition score loss following calving. Differences in energy balance have been related to postpartum health and reproduction; cows in a negative energy balance for a shorter amount of time are less apt to experience metabolic

disorders and begin ovulating sooner. In fact, cows with no dry period did ovulate 19 days sooner

Figure 1. Effects of dry period length on energy balance



(Figure 2).

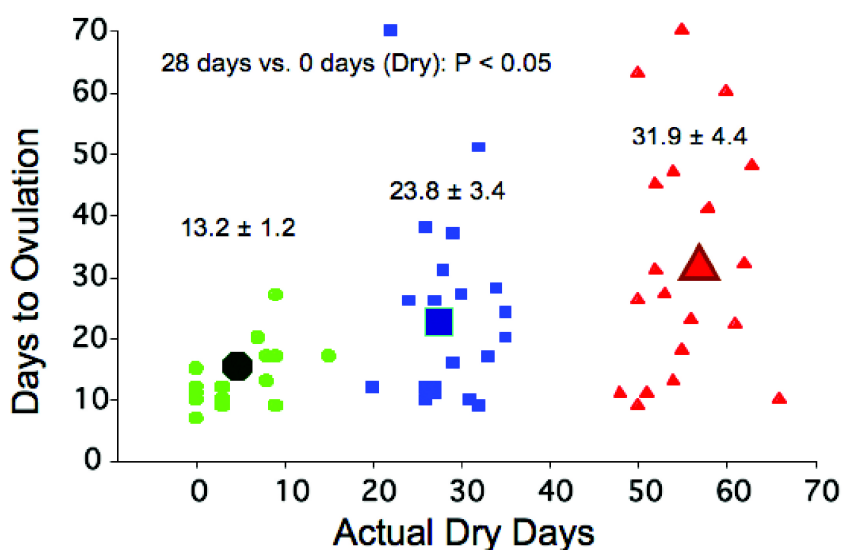
Results from a Commercial Farm Study

In a recent study from the University of Wisconsin-Madison, full lactation milk production, as well as reproductive effects and incidence of metabolic disorders were evaluated in a commercial dairy herd with 34- and 55-day dry periods. For cows with a 55-day dry period total milk production was analyzed as a 305 mature equivalent (ME). For cows with the 34-day dry period total milk production was analyzed as sum of the additional 21 days of milk production prepartum plus the 305 ME. Overall, there was no difference for total milk production ($13,707 \pm 180$ vs. $13,615 \pm 136$ for 34- and 55- day dry periods, respectively).

Time from calving to first postpartum ovulation was reduced for cows with a short dry period (Table 1). There is some research to indicate cows, which begin to cycle sooner may be more fertile when they are bred. Cows receiving a shortened dry period had seven percent (54 versus 61 percent) more pregnancies at 150 DIM when compared with cows receiving a traditional dry period (Table 1). Days open were also reduced by 17 days (127 versus 110) for cows receiving a shortened dry period when compared with those receiving a traditional dry period (Table 1). Surprisingly, there were no differences in incidence of metabolic disorders. However, this was a well managed herd with exceptional monitoring of cows and preventative treatments given as needed.

Potential advantages of reducing length of the dry period include increased income from milk production prepartum, simplification of dry cow management (including fewer diet changes and group changes) and reduced dry cow facilities.

Figure 2. Effects of dry period length on days to first postpartum ovulation.



What About Eliminating the Dry Period?

Most studies have shown a 20 to 25 percent drop in milk production during the following lactation if the dry period is eliminated. The decrease in milk production is greater with cows entering their second lactation compared with cows entering their third lactation. Management changes have alleviated the difference in milk production for cows with no dry period. Research from the University of Arizona showed that mature cows with no dry period that were given bST until calving had similar milk production compared with cows given a 30- or 60-day dry period with no supplemental bST. Additionally, researchers from the University of Wisconsin-Madison found milking mature cows with no dry period more frequently in the last 28 days of gestation (4x/day) resulted in similar milk production compared with cows with a shortened dry period. Interestingly, cows with no dry period were barely in a negative energy balance postpartum. This may result in decreased metabolic disorders, earlier resumption of ovarian activity and decreased immune suppression in early lactation dairy cows.

While the management practice of no dry period is promising, more research is needed to determine whether lifetime production and longevity are affected.

Table 1. Effects of dry period length on subsequent reproduction

	34 d (n=360)	55 d (n=341)	P-value
Days to First Ovulation ¹	35	43	P<0.05
Days to First A.I. ¹	67	73	P<0.1
First Service Conception Rate	31.10%	31.10%	NS
Second Service Conception Rate	41.70%	33.90%	0.15
Overall Conception Rate	30.80%	29.60%	NS
Pregnant @ 150 DIM	61%	54%	P<0.1
Days Open ¹	110	127	P<0.1

¹*Based on survival analysis with median values Watters, et al, 2006*

Recommendations

All cows or herds may not be ideal candidates for a shortened dry period. Excellent management and record keeping is important for appropriate evaluation. There is some data to indicate herds with short calving intervals are more likely to experience reduced milk production in the subsequent lactation when shortening the dry period. In addition, there is research to suggest that the dry period should not be shortened for cows between the first and second lactation. Herds with a high twinning rate must be cautious if implementing a shortened dry period because cows with twins calve eight to 10 days sooner.

Overall, we recommend herds consider a reduction to a 40-day dry period followed by an evaluation prior to implementation of a 30-day dry period. As milk production and lactation persistency increases, through genetic selection and other management practices such as administration of bST, three times a day milking, and long-day lighting, the feasibility of shortening or eliminating the dry period may increase.

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