BRIGHT IDEAS IN DRY COW MANAGEMENT
Geoffrey E. Dahl, Karen E. Karvetski, Jessica M. Velasco, and Eric D. Reid

TAKE HOME MESSAGES

- Dry period duration may be optimized between 42 and 60 days, but fewer than 30 days results in significant production loss in the next lactation

- Greater milking frequency of cows that receive a short dry period may lessen the reductions in yield in the next lactation

- Short day photoperiod is recommended for dry cows for the entire dry period, and 21 d of short days is not sufficient to consistently improve yields

- Emerging data on dry cow time budgets suggests that stall comfort and availability is as important to dry cows as to those in lactation

Over the past few years dry cow management has been reexamined with respect to nutrition housing, and health. This paper focuses on new ideas in lighting for dry cows and altering the length of the dry period as methods to improve overall productivity and health during the transition and subsequent lactation.

DRY PERIOD LENGTH REDUCTION

A dry period length of 60 d has been an industry standard for more than 60 years. The original recommendation was based on retrospective studies of large DHIA datasets that indicated that cows dry for less than 40 d, or more than 70 d, had lower yield in the subsequent lactation relative to contemporaries. In addition, results from a small number of designed studies that compared different dry period lengths directly supported the concept that less than 60 d dry was detrimental to subsequent yield. Yet the need for a 60 d dry period has been revisited in recent years because of changes in production, management and nutrition that resulted in many cows drying off at relatively high milk yields.

With regard to designed comparisons, work from Wisconsin and Arizona directly tested the necessity of a 60 d dry period versus 30 d dry. Annen et al. (2004) found that while primiparous cows required a 60 d dry period for optimal production in the next lactation, multiparous cows were not adversely affected by a 30 d dry period. Rastani et al. (2005) drew similar conclusions regarding multiparous cows’ dry period length, and observed that feed management of dry cows could be simplified by reducing dry period length. Thus, direct comparisons indicate that no significant loss of yield occurs when the dry period is reduced from 60 to 30 d in mature cows.

Retrospective analytical approaches to determine optimal dry period length have also been revisited recently. Workers at the USDA-Beltsville examined more recent records from large
numbers of cows on DHIA, and concluded that a 60 d dry period remains optimal (Kuhn et al., 2005). However, models developed from that same dataset indicate that minimal loss of milk occurs between 40 and 60 d dry (Kuhn and Hutchison, 2005), and so other management advantages, such as fewer diet changes, may mean that a shorter dry period is optimal overall.

**PHOTOPERIOD RECOMMENDATIONS FOR DRY COWS**

Previous evidence indicates that the best management approach to light exposure for dry cows is a reduction in the length of light exposure to 8 hrs/d, i.e. a short day photoperiod (SDPP). Indeed we have shown that limiting light exposure to 8 hr/d increases milk yield in the next lactation (Miller et al., 1999; Auchtung et al., 2005), improves dry matter intake during the dry period (Auchtung et al., 2005), and limits the immuno-suppression cows experience around parturition (Auchtung et al., 2004, Auchtung and Dahl, 2004). Two recent experiments extend our understanding of the response and how to best manage implementation of short days with dry cows.

The purpose of the first study (Reid et al., 2004) was to determine if the effects of SDPP during the dry period could be observed with a 21 d treatment, that could be implemented at the beginning of the transition period and reduce the amount of time animals are housed in an enclosed facility. At dry-off cows were assigned randomly to one of four dry period treatments: long day photoperiod (LDPP), SDPP, AMB (followed natural lighting schedule during dry period), and SD21 (AMB until 21 d prepartum followed by SDPP). After parturition, animals were exposed to natural lighting during lactation. There were three cohorts of cows for each treatment, with cohorts being dried off in October, January, and April.

![Figure 1](image_url)

**Figure 1.** Milk yield of cows exposed to SDPP, LDPP, or ambient photoperiod (AMB) for 60 d when dry or to SDPP for only the final 21 d (SD 21) of the dry period.
The milk production responses for the initial 110 d of lactation are presented in Figure 1. In confirmation of previous studies, Exposure to SDPP for a 60 d dry period caused higher yield in the subsequent lactation relative to LDPP. Cows on SDPP also had greater yield than those on ambient photoperiod or SDPP for only the final 21 d of the dry period. These results suggest that if SDPP treatment is limited to only the final 21 d of the dry period, the production response is not observed.

![Figure 2. Summary of behavioral activities of cows during the dry period.](image)

A second study was designed to examine the impact of combining a reduced length of the dry period with exposure to SDPP. Forty cows were dried off approximately 42 d before expected calving and housed under SDPP or LDPP from dry off to calving. We also made extensive behavioral observations of the cows during the dry period to assess the impact of photoperiod manipulation on animal well-being. Although the milk yield data is incomplete as of this date, a number of observations made about the behavior of dry cows lead to recommendations about housing of those cows during this critical phase of the production cycle.

A summary of behavioral activities is presented in Figure 2. Similar to lactating cows, dry cows spend the majority of their time lying down, although dry cows average over 15 hrs/d lying, which far exceeds the 11 to 12 hrs that lactating cows typically lay down. Part of the difference in lying activity during lactation relative to the dry period likely results from the other demands on the time of lactating cows, i.e. milking, holding pen time. However, it is important to consider that dry cows will lay down for longer periods if stall space is available, and so the recommendation of clean, comfortable stalls that they don’t have to compete for (i.e. stocking density of 100% or less) is as critical to dry cows as it is during lactation.
REFERENCES


