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Four Management Practices to Manage Milk Yield in Dairy Herds

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Because of the COVID19 pandemic, milk demand has shifted due to closures of restaurants and other events (e.g., hotels, airports, conferences); consequently, dairy farms were asked to reduce milk yield to match market demand with supply. This article describes four management practices to quickly reduce milk yield without neglecting animal welfare (https://www.dcwcouncil.org/node/4006), and avoiding negative long-term effects on milk yield. To address these potential negative effects, the lactation curve was divided in two periods (Figure 1):

1) Pre-peak: There are potential benefits associated with cow health, but there is also a negative carry-over effect on milk yield by reducing peak milk; thus, the entire lactation persistency may be impacted.

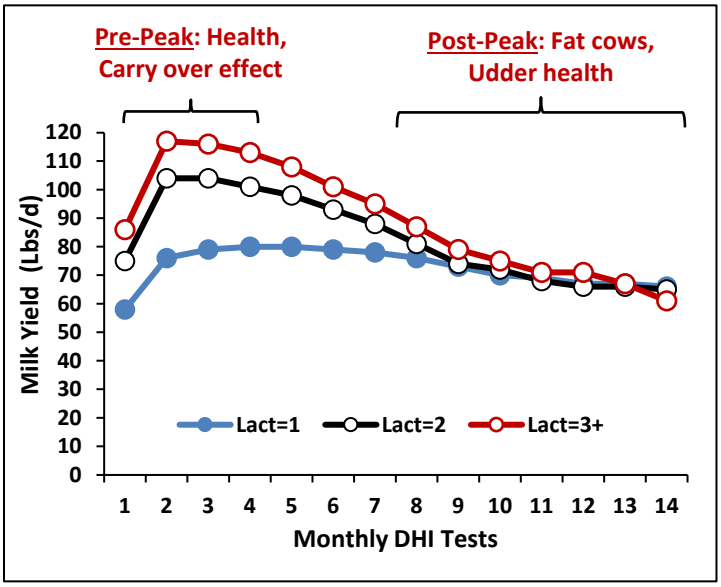

Figure 1. Schematic representation of mean lactation curves from lactating Holstein cows. First lactation cows (Lact=1), second (Lact=2) and third or greater lactations (Lact=3+).

2) Post-peak: There are some potential benefits on udder health by reducing milk yield at the end of lactation, but there is also a risk for excess condition on cows (fat cows).

1) Reducing Daily Milking Frequency

Reducing the milking frequency from 3x to 2x, reduces milk yield by 8 to 10%. A study showed that there are health benefits {increased blood glucose and reduced blood β-hydroxybutyrate (BHB)} and increased cyclicity by milking 2x per day as opposed to 3x per day for the first 30 days in milk (DIM) followed by 3X until the end of lactation.

When reducing milking frequency from 3x to 1x, the overall milk yield would be reduced about 40 to 50%. Based on previous personal field experience when switching from 3x to 1x per day for two consecutive weeks to update/renovate an existing milking parlor, it takes over 45 days or longer to recover prior milk yield.

Considerations: Restricting access to feed and/or water is not an acceptable management practice because it violates one of the animal welfare freedoms (freedom from thirst and hunger). Each farm should review and adjust the feeding program when changing milking frequency to avoid increased feed waste at the bunk and/or over-conditioned cows in late lactation. Reducing milking frequency almost always frees up labor that could be used in other areas of the farm (e.g., cleaning, catch-up with maintenance, maternity, etc.).

2. Extending Days Dry

In the US, average days dry is 55 days, ranging from 42 to 65 days. Increasing the dry period by 14 days (drying cows earlier), total herd milk yield would drop about 3%.

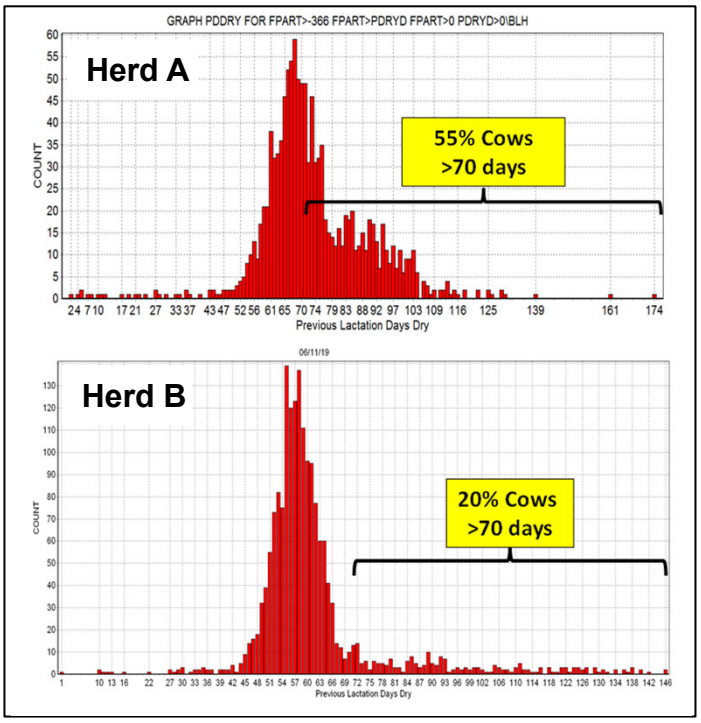

Figure 2. Schematic representation of the pattern of previous dry period lengths in two different dairy herds. The overall proportion of cows with >70 days dry is 55% in herd A while in herd B is 20%.

This management approach could be applied in Herd B (20% of cows >70 days) but not in herd A (55% of cows with >70 days dry; Figure 2). Another alternative is to change the feeding management and/or milking frequency 1 week prior to drying cows off: 1) Changing to a dry cow ration 1 week prior to dry-off, milk yield per cow would drop about 60% and 2) Changing to 1x milking frequency (instead of 2x or 3x) 1 week prior to dry-off, milk yield per cow would drop about 38%. These two management alternatives to reduce milk yield 1 week prior to drying cows off have potential milk quality benefits by reducing the risk of intramammary infection.

Considerations: Dairy cows with >70 days dry have greater risk for metabolic problems during the transition period {increased non-esterified fatty acids (NEFA) prepartum and BHB postpartum}. To avoid increasing the proportion of over-conditioned cows prepartum (BCS > 4.0) due to extended days dry and metabolic problems early in lactation, you would need to assess the pattern of days dry in your herd (it should look like Herd B with only 20% of cows >70 days dry (Figure 2). Jersey and jersey-crossed cows and older cows are more likely to experience more metabolic issues with extended days dry; thus, increasing the risk for culling .

3) Increasing Whole Milk Feeding to Pre-Weaned Calves

Feeding 2.5 gal/day of milk reduced health risk, increased body weight gain of pre-weaned replacement heifers, and lifetime performance compared to heifers fed 1.3 gal/day. For a typical herd, feeding 2.5 gal/day to calves for 60 days would reduce annual milk sold by 2.3%. Feeding 2.5 gal/day for 90 days, total milk in the bulk tank would be reduced 3.6%. For a 600-cow herd (~1.6 births/day; 50% female), you would be feeding 50 calves for 60 days x 2.5 gal/day = 125 gal/day. For 90 days, you would be feeding 72 calves for 90 days x 2.5 gal/day = 180 gal/day. Assuming 13.5% total solids (3.5% Fat and 3.1% Protein), 2.5 gal of whole milk would provide enough nutrient to grow at a rate of ~1.9 lb/day. Considerations: Feeding large volumes of milk would require an extra feeding time (from 2x to 3x per day), thus additional labor.

4) Culling cows

Removal of cows from the herd may not be an option for some dairy herds with current COVID-19 issues because of closure of slaughter plants. Each dairy farm is unique, and you would need to develop your own priority list for culling, but below is a possible priority list:

1. Chronic mastitis: Cows with ≥3 clinical cases (Grade 2 to 3) within a lactation.
2. Lameness: Cows with score of >3 (using 5-point scale).
3. Reproduction: Open cows with 8 or more services (repeat breeders).
4. Health events: Cows experiencing ≥3 events within the first 30 DIM (e.g., ketosis + metritis + displaced abomasum; dystocia + ketosis + metritis). Lactating cows experiencing ≥3 health disorders have increased risk of culling within 60 DIM compared to cows without health events.
5. Milk yield: Removal of lactating cows with reduced milk yield by stage of lactation (bottom 10 to 15% of milking herd). These are likely cows with poor udder conformation or milk yield relative to dry matter intake.

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