

COW GROUPING STRATEGIES ON CALIFORNIA DAIRIES

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Introduction

The dairy industry in California has been the growth center of the US dairy industry for the last 20 years and projections suggest further growth in the foreseeable future. This growth can be defined in many ways, including total milk production, milk production per cow, total number of cows, numbers of cows per dairy and even the numbers of dairies. As the average size of dairy farms in California has doubled, and then doubled again, with dairies in the 3000 lactating cow range now being common, dairy producers have been faced with challenging opportunities as to how best to group and manage their cows to maximize their performance and profitability.

While commercial management of dry dairy cows has received a lot of ink over the past decade, and has arguably resulted in one of the fastest and most widespread fundamental changes in management of one class of dairy cows in recent history, large dairy producers have also been changing the way that they group and manage lactating cows. Unfortunately the ability to critically evaluate the benefits of these grouping strategies through controlled research studies is very limited due to the long-term nature of the benefits and need for several large groups of cows, both being characteristics that are very rarely available at university or government research facilities.

Thus large dairy producers have had to make grouping and management decisions, that can potentially save or lose them tens, if not hundreds, of thousands of dollars per year, based upon their perceptions of the impacts of their decisions on productivity and/or profitability. Such an approach is obviously fraught with the risk of making an incorrect decision based upon an incorrect perception of the outcome. Nevertheless, in the absence of an alternative, there are no options. This author has learned, often the hard way, over the years that when groups of dairy producers make a similar decision over time, and stay with it, that it is very often correct. For example,

there was a widespread decision by dairy producers to use yeast and yeast culture products in their rations well before experimental data was available that documented their benefits, and while most dairy cattle nutritionists were not recommending their use and/or referring to them in one of several unflattering terms.

The purpose of this article is to describe grouping management decisions that seem (i.e., in the author's experience) to be increasing in prevalence on large dairies in California. This article will not, in general, address the scientific reasons why those decisions are being made, but will address the author's perceptions of why dairy producers are making those decisions. While herd sizes in the Northeast are substantially lower than those in California, the principles that have driven grouping decisions in California also hold for smaller herds in a different climate. However, whether those grouping decisions are practically possible in smaller herds is an issue for each individual dairy producer.

Dry Cows

Dry cows are no longer the forgotten animals on commercial dairies. Indeed the dry period of dairy cows, particularly the transition dry period (i.e., from about 20 days prepartum to calving) is now widely recognized as a critical period in which the quality of all inputs should be increased, as they will directly impact the cow's productive performance in the next lactation as well as the incidence of disease associated with calving. Many commercial management practices that have been introduced in the last decade address these issues.

Dry Period Groupings Based Upon Time Prepartum

Most commercial dairy producers now divide dry cows based upon time before calving. When asked, the most commonly quoted time by dairy producers to move cows to a transition dry group is 21 days prepartum. Producers often quote this time, it would seem, as they perceive that it is the 'correct' answer (i.e., in articles that they have read, it is the most

recommended by experts). However examination of most dairies' actual records, or merely counting the number of cows in the transition dry group relative to the number in the far-off dry group, suggests that a more common time is actually closer to 14 days, with values as low as 10 days not being uncommon, since pen sizes often limit the size of the transition dry group. Is this shorter period a problem? A recent study on a large commercial facility (Robinson et al., 2000; Figure 1) showed no benefit to extending the transition period beyond about 12 days, and this is consistent with mathematical modeling, which suggests that dry cows go into negative protein and energy balance between 8 and 12 days prepartum.

The division of the dry period into far-off and transition dry groups facilitates use of higher energy and protein levels in the ration of the transition dry group to compensate for the reduction in feed intake that occurs in the final 10 days prior to calving. These higher protein and energy levels often are achieved, at least partially, by selection of higher nutrient forages, such as legumes, that also have higher intake potential. The division also allows many producers to add a number of high-value feed additives to the transition dry group including yeasts or yeast cultures, B vitamins, and anionic salts.

However one of the difficulties of using legumes for transition dry cows is that they often have levels of calcium and/or potassium that make it very difficult to achieve a desirable DCAD balance without use of anionic salts. Many producers try to avoid use of anionic salts, as they believe that it suppresses feed intake when the overall feeding objective is to prevent

its depression. Thus many large dairies have active programs to identify lots of hay with low levels of potassium for use in the close-up rations, thereby giving a whole new meaning to the term 'dry cow hay.' This practice is growing in popularity, as it allows legumes to be used while maintaining a desirable DCAD balance.

Dry Period Groupings Based Upon Parity

Many commercial dairy producers now divide transition dry cows by parity. They have been convinced, to at least some degree, by controlled research that has shown heifers to be more productive in their first lactation if fed a higher nutrient density ration in the transition dry period (e.g., Robinson et al. 2000; Figure 2) and recent recommendations by the Dairy Subcommittee of the National Research Council (2001) that suggest higher nutrient levels in transition dry rations of heifers versus mature cows. In addition, they are well aware that transition dry heifers tend to be more reluctant than mature cows to compete for space in free stalls, and that bullying by mature cows can negatively affect feed intake and subsequent performance. The parity separation also allows heifers to develop a social structure that carries into the lactation strings (discussed below). Thus many large California dairies group the transition dry cows based upon parity, with heifers grouped separately from mature cows, and the incidence of its use is increasing.

Dry Period: The Bottom Line

There are four dry cow groups that are most commonly found on large commercial dairies in California. These divide dry cows (i.e., any mature

Figure 1. Impact of days in the transition dry group on milk yield in the next lactation.

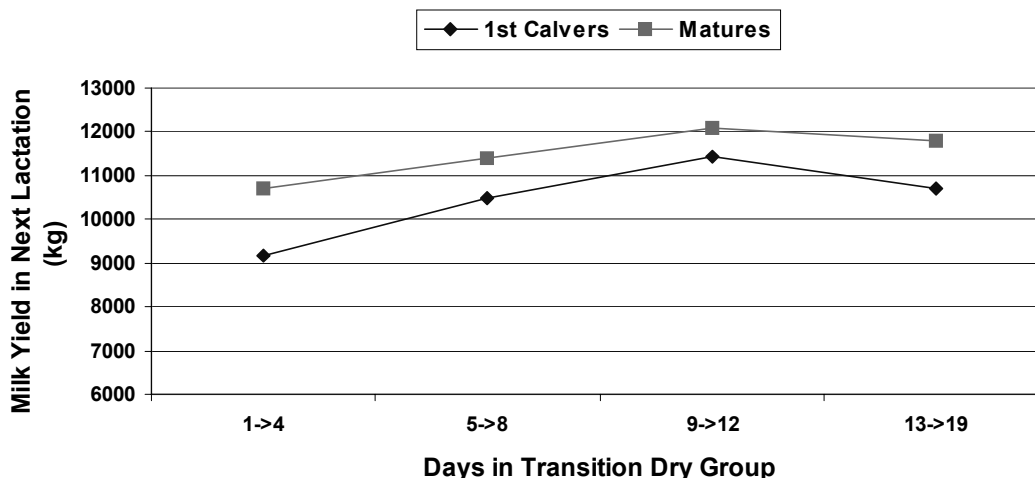
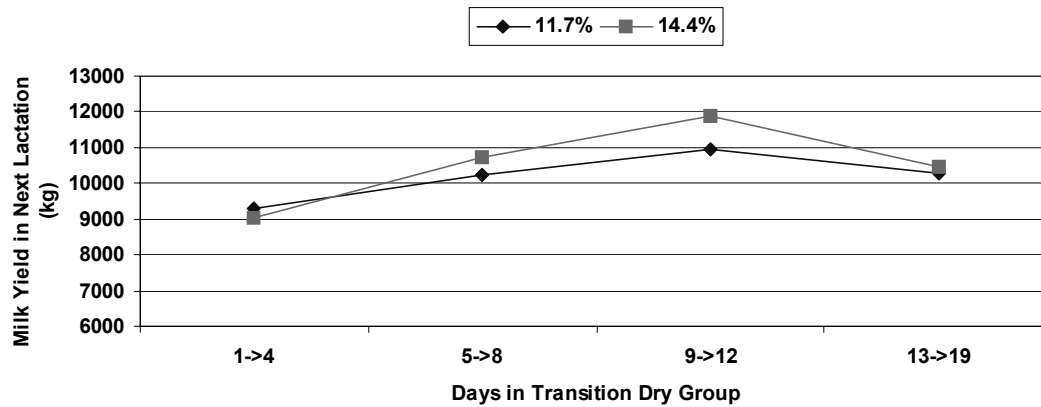


Figure 2. Impact of CP level (% DM) of the transition dry group on next lactation milk.



cow after dry-off or any heifer within 60 days of calving) into either far-off or transition groups (dividing at 10 to 20 days prepartum) and within each of these groups into heifer or mature cow groups. However the far-off heifer group is seldom considered to actually be a dry cow group by dairy producers, who tend to classify it as simply the older group of bred heifers. Feeding management decisions are consistent with these grouping decisions by providing higher nutrient density rations to the transition dry cows, with a slightly higher protein and energy density for heifers within either time group.

Lactating Cows

Grouping strategies for lactating cows have received much less research attention than those for dry cows over the past decade. Nevertheless, dairy producers have instituted a number of changes in grouping strategies in response to their perceptions of those that improve overall lactation performance.

The Just Fresh Group

Once cows calve, and if they are moved to large high groups of up to 200 cows, they can become lost in the crowd. This means that unresolved health issues from calving may reoccur and not be treated promptly. Thus many dairies have instituted a just-fresh group into which most cows are moved directly after calving, and where they stay until it has been determined that they are fully recovered from calving, by at least daily assessment, and ready to move to the high group, or until a fixed time, ranging up to 40 days but often as little as 5, has passed. This pen is frequently close to the milking parlor to minimize imposed walking for milking and keep them in close proximity to the calving pens so that employees are often nearby. Thus there is a continuing surveillance

of the cows from these employees from the time they are moved into the transition dry group until they are moved to a high group.

Producers try to underpopulate pens of just-fresh cows so that those cows with walking problems or illnesses, or a general reluctance to approach the bunks, have plenty of room to maneuver. Generally, although not always, these cows are fed the high group ration, often the high group, first-calver ration, in preparation for the impending move to the high group. Since calving problems tend to be much less prevalent in heifers than in mature cows, and mature cows tend to require more time to recover, the just fresh groups tend to have a preponderance of mature cows.

Parity splitting in the just fresh group appears to be increasing in use due, at least partially, to the ability to feed these parity-split fresh groups the parity-split high group rations which they will be fed when they are moved to the parity-split high groups.

Lactation Groupings Based Upon Parity

Separate grouping of first calvers from mature cows is becoming much more prevalent on large California dairies. Producers have been convinced by their perceptions that heifers are more productive in their first lactation if fed a higher nutrient density ration. They are well aware that first calvers can be more reluctant than mature cows to compete for bunk space and space in free stalls, as in the dry period, and that bullying by mature cows can negatively affect intake and performance. Thus many large dairies divide the early lactation group based upon parity with first calvers grouped separately from mature cows. Separate penning of first calvers allows them to develop a social structure and self-confidence that

carries into the groups where parities are combined in later lactation. In addition, the nutrient density of the ration for the heifers is sometimes increased to compensate for their lower feed intake and higher nutrient requirements for maternal growth compared to mature cows.

Lactation Groupings Based Upon Breeding Status

The prevalence of grouping lactating dairy cows by breeding status is increasing. After clearing just fresh pen(s), cows are moved into parity-split high group pens, discussed above, of open cows and bred cows that have not been confirmed in calf. The ration, or rations (as the nutrient density of the ration for the first calvers is sometimes higher than that of the mature cows) often contains relatively high-cost feed additives such as yeasts or yeast cultures, B vitamins, buffers, and rumen inert fats.

Once confirmed in calf, generally between 90 and 120 days in milk, cows are moved from these early lactation parity-split high groups to parity-combined high groups that are generally fed a ration very similar to that of the parity-split high groups, except that many of the higher cost feed additives are removed. Cows stay in this group until 2 to 4 weeks prior to dry-off, at which time they may be moved to a near dry group (discussed below). However the prevalence of parity-split groups within these bred groups is increasing.

This practice represents a fundamental shift from the formerly popular, and widely recommended, system of a progressive shift of cows from high to medium to low density rations as cows progressed through lactation and their milk production declined. The change of strategy reflects the recognition that moving cows to lower nutrient density rations as they progress through lactation *causes* reductions in milk production due to lower nutrient delivery, rather than meets them with lower nutrient delivery.

Lactation Length and the Near Dry Group

On most larger dairies, the lactation length is set by the upcoming calving date rather than the past calving date. Thus dry off dates have very little to do with the cow's days in milk and everything to do with the days carried calf. Thus cows stay in the combined-parity, bred high string until they reach about 225 days in calf, at which time they are dried off and moved to the far-off dry group. However, this strategy means that cows can be dried off as early as 260 days in milk or

as late as, well, years, and that milk production at dry off can range from 5 to 50 kg/cow/day. To facilitate dry off of the higher producing cows, all cows may be moved to a near dry group 2 to 4 weeks prior to dry-off. Cows would have bST injections terminated at this time and be fed a lower nutrient density ration to cause, rather than adjust for, lower milk production that will ease the transition from lactation to the dry state.

The incidence, and characteristics, of near dry groups varies widely in California. On many dairies, cows are moved to a near dry group but continue to be fed the high group ration right up to dry-off in order to maximize milk yield. However in such cases, the cows would be moved to a just dry group at dry-off that would be water restricted and fed a very low nutrient density ration to stop milk secretion.

Lactating Period: The Bottom Line

There are five lactation groups that are most commonly found on large commercial dairies. These group lactating cows into those of all parities that just calved, group first calvers and mature cows in early lactation that are open or not yet confirmed in calf separately, and group later lactation cows of all parities into those that are within about 210 days in milk from those that are within about 14 days of dry-off. Feeding management decisions are consistent with these grouping decisions by providing a lower nutrient density ration only to those cows that are close to dry-off (i.e., near dry), to cause a reduction in milk yield, but restrict the use of higher value feed additives to the high group open and yet-to-be-confirmed-in-calf cows, and sometimes result in higher nutrient density rations being fed to the high group of first calving cows.

Practices that are now widespread include the use of a just fresh group, grouping lactating cows by breeding status, and grouping open and not-yet-confirmed-in-calf cows by parity. The use of either a near dry or just dry group is also common, but declining in prevalence. Parity grouping of open and not-yet-confirmed-in-calf cows is increasing in prevalence.

Finally, many producers are questioning the traditional 60-day dry period as being too long and expensive in terms of investment in a nonproductive cow. As there is very little data to support benefits of dry periods in excess of 40 days, mammary involution is complete in 30 days, and because many dry treatments require 42 days to clear the cow, producers are considering

reducing target dry periods to 40 days. This practice will almost certainly increase in the drive to further increase productivity and profitability.

The Real Bottom Line

In business, everybody needs an edge to succeed. In most businesses this involves putting a literal or metaphysical brand stamp on your product. For example, Coca Cola may differ very little from Bob's Pop, but the Coca Cola logo causes brand recognition and so buyers are willing to seek it out, as well as pay more for it, than Bob's Pop. But in the dairy business, all dairies produce milk that, within the context of the pricing system, all sells and all sells at the same price. Thus the only area that dairy farms can get a real edge that increases their profitability is to reduce costs of production. Many large dairies in California have made similar decisions on grouping dairy cows based upon their perceptions of what increases productivity and profitability.

The purpose of this article was not to judge grouping decisions, but rather to present the decisions that producers have chosen, by their actions, to be successful.

Summary

Dairies in California are highly profitable, at least partly due to their grouping management decisions. Mature cows after dry-off, and heifers within 60 days of calving, are commonly grouped separately and, within parity groups, are divided into far-off dry and transition dry groups, with the real break commonly found at about 14 days prepartum. Lactating cows are commonly grouped into those of all parities that have just calved, first calvers and mature cows separately in early lactation that are open or not yet confirmed in calf, and later lactation cows of all parities into those that are within about 210 days in milk from those that are within about 14 days of dry-off. Grouping decisions on large California dairies represent owner/manager decisions on strategies that improve overall performance and profitability, in their opinions.

Acknowledgments

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