DCRC

DAIRY CATTLE REPRODUCTION COUNCIL

Great Opportunities, Grave Consequences: Managing the Transition Cow

The transition dairy cow continues to be somewhat of an unsolved mystery. We continue to learn that how cows are fed, handled and managed during the three weeks before through three weeks after calving can have a definite influence on production, health and reproductive performance.

We know that reproductive performance can be directly influenced by metabolic disorders, early lactation performance and nutrition. The dairy is responsible for helping transition cows navigate a myriad of challenges leading up to calving through the initial weeks in the milking herd. And when properly handled, the returns in production, health and breeding pen performance can be great.

Three weeks leading up to calving

In the past, dry cows have been managed with an "out-of-sight, out-of-mind" mentality. Because this group of animals is costing more than they are generating for the dairy and don't have the daily interaction the milking string does, dry cows are often an afterthought.

Research[1] continues to show that the dry period—especially the three weeks before calving—can directly impact milk production, incidence of metabolic disorders, and subsequent reproductive performance. About one-tenth of the herd is removed within the first 60 days of milk—most often from culling or death—so managing fresh cows starts long before the calf is even born.

The three weeks prepartum are especially important because a multitude of changes are occurring all at once. These changes include:

- **Dry matter intake.** Dry matter intake (DMI) can decline by 30 percent or more in the weeks leading up to calving[2]. Cows that go off feed prior to calving are at higher risk for metabolic disorders early in lactation. Metabolic disorders stunt early lactation performance, which can negatively influence production levels and reproductive abilities later in lactation.
- **Environment.** Cows are often moved to new pens prior to calving so employees can watch for cows that will be calving or going off feed. Multiple pen changes can be especially difficult for cows when they are introduced to a pen of new animals. The reordering of animal hierarchy can take some time and animals often eat less during this transition.
- **Ration changes.** The rumen is undergoing major changes as cows move from a high-forage, low-energy diet to a high-energy, low-forage diet. These changes can directly influence the rumen microbial population, so it's essential to prepare the rumen for upcoming ration changes.

While it may seem difficult, the three weeks before calving boil down to one word: consistency. Monitoring cows and changes in behavior or health can identify potential problems early and allow you to make the appropriate changes.

- **Monitor behavior.** Watch closely for cows going off feed or showing sudden shifts in behavior. If you can work to maintain DMI during this stressful period, cows can more easily transition into the milking string postpartum.

- **Minimize change.** As creatures of habit, keeping the environment and animals as consistent as possible can help smooth the transition period. Minimize pen moves and reduce overcrowding to maintain DMI. As Figure 1 further illustrates, milk production, time spent lying down and rumination time all decrease as the number of cows in a pen increases.
- **High-quality ration.** Prepare cows for the upcoming lactation with a high-quality ration they can't resist. Work with your nutritionist to formulate an appetizing ration that will reduce the incidence of metabolic disorders and prepare the rumen for the upcoming lactation.

Figure 1. Effect of stocking density[3]

Stocking density	100%	115%	130%	145%
Milk, lbs./day	95.9	96.3	95.0	91.5
Lying, hours/day	12.3	12.0	11.5	11.2
Standing alley, hours/day	1.3	1.6	1.7	2.0
Feeding, hours/day	4.9	4.9	5.0	5.0
Ruminating, hours/day	8.5	8.5	8.4	8.1
Ruminating standing, hours/day	0.5	0.6	1.0	1.1

Three weeks postpartum

Just as cows experienced changes during the close-up period, changes surround cows at the time of and directly following calving. These changes in circumstances—including having a calf, beginning to lactate, a new ration, a new group of cows to adjust to—initiate the most frequent changes in cow health and performance.

The first 60 days is milk is often when we see the largest percentage of animals leave the herd. One of the main reasons cows leave the herd is because of metabolic disorders—like ketosis, metritis, milk fever and displaced abomasums. Metabolic disorders can have a grave impact on future reproductive performance and cows that experience them will struggle to regain performance losses throughout the lactation. This often means that additional energy from the ration is needed for daily maintenance rather than production and reproductive performance.

Managing fresh cows for reproductive success should focus on providing a clean environment with a fresh, properly formulated diet in an environment with plenty of space and clean water.

- **Start with nutrition.** By supplying an energy-dense ration that also provides rumen microbes with the nutrients they need to thrive, cows can successfully join the milking string. Because fresh cows spend at least some time in an energy-deficient state, helping to make up the difference with dietary energy is critical. Work with your nutritionist to formulate a ration to keep cows healthy and producing high levels of quality milk. Also ensure that this ration provides the nutrition cows needs need to get bred back.

- **Focus on environment.** Much of cows' performance will depend on the environment they are placed in, which means minimizing pen moves, calculating stocking density and providing a clean, dry environment is critical for keeping cows healthy throughout the transition.
- **Monitor performance and set goals.** Below are some basic goals for incidence of metabolic disorders in your herd[4]. Use them to monitor your herd and investigate potential problems to minimize incidence of metabolic disorders.

Figure 2. Goals for incidence of metabolic disorders

Disorder	Goal
Displaced abomasum	2%
RP/metritis	5%
Milk Fever (≥2nd lactation)	2.5%
Dystocia	10%
Ketosis	2.5%

The transition period is one of the most important areas to focus upon because the six-week time frame will directly impact the rest of the lactation and future pregnancies. By ensuring cows have proper nutrition, environment and attention, you can help them successfully navigate this challenging time in their lifecycle and be ready to be bred at the opportune time.

1 Van Saun RJ. Transition Cow Nutrition and Management: The Key to Herd Reproductive Performance. Pennsylvania State University. Available at: http://vbs.psu.edu/ext/resources/pdf/transition-cow-health-and-nutrition/trans%20cow%20nutr.pdf. Accessed December 10, 2009.
2 Overton M, Boomer G. Transition Cow Management Checklist. Paper presented at: 2009 Western Dairy Management Conference; March 11 – 13, 2009, Reno, Nevada.
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4 Ahmadzadeh A, McGuire M. Metabolic Disorders. Presentation at University of Idaho 2009 for Dairy Management course AVS/AS 472. Available at: http://www.avs.uidaho.edu/avs472/Word/Nutrition/2009/metabolic%20disorders%202009.pdf. Accessed December 10, 2009.