

DAIRY PIPELINE

Managing the transition cow is one of the most important aspects of management on a dairy farm today. It is a critical factor in both the profitability and productivity in your dairy herd. A proper transition cow management program can improve health of the cow and calf, improve reproductive efficiency, milk production, increase dry matter intake, improve energy balance, decrease metabolic disorders, and increase your bottom line. Research shows that a sound transition cow program can increase milk production by as much as 2000 pounds in the upcoming lactation. Some points to consider when developing a program are dry period length, feeding behaviors, hormonal and metabolic shifts, rumen changes and immune system depression. Remember to devote adequate resources; labor, facilities, feed/forage, and management. A little extra attention paid to the cow, the ration, and the details coupled with better forage and more bunk space greatly increase the profitability of your operation. The quality and quantity of feed a transition cow eats is extremely important. Provide high quality feeds and forages and allow plenty of bunk space to maximize intake. Feed your better forages and high quality, highly palatable grains to transition and early lactation cows. Keep track of forage dry matter and forage quality through testing to insure that rations stay balanced. Provide additional bunk space for these cows, especially if you are mixing mature cows and first lactation heifers. Offer plenty of clean water that is easily accessible and easy to find. Avoid overcrowding in transition groups and optimize cow comfort. Transition cows should be kept in a clean, dry, well ventilated environment. Cows should be easy to see and be near working facilities if needed. Facilities should also be free of smooth, slippery floors.

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Breeding protocols for heifers ---- Artificial insemination is a powerful tool for genetic

improvement that enhances the value of bred heifers. A longer duration of estrus and more mounting activity makes the detection of estrus in heifers easier than in lactating cows, thus heifers are generally more sexually active than cows and easier to catch in estrus. For optimum fertility, heifers should have three or more estrous cycles before the breeding season begins. If the goal is to average 24 months of age at first calving, then on average heifers must be inseminated between 13 and 14 months of age. Therefore, for optimum fertility, heifers should reach puberty by 10 months of age. Puberty in heifers is a function of breed, age, and weight. Most heifers will begin cycling when they reach approximately 60% of the expected mature body weight (550 to 600 lbs for Jersey and 750 to 800 lbs for Holstein heifers). An adequate nutrition and development program is critical for success in a heifer AI program. In general, insemination after a detected estrus is usually associated with higher conception rates compared with fixed-time AI following synchronization of estrus or ovulation. There is no "best" time to observe heifers for standing activity but movement of heifers prior to visual observation appears too enhanced or stimulates standing activity. Insemination should occur within the first 16 hours after the onset of standing activity and usually heifers will still be in "standing" estrus during the actual deposition of semen. While conception rate (number pregnant divided by the number inseminated) is often the focal point of discussion, pregnancy rate (number pregnant divided by number in the group or the number available for insemination) is a more accurate assessment of success. Pregnancy rate accounts for heat detection rate (efficiency) in a non-synchronized group and for synchronization response rate in a synchronized group combined with the conception rate, thus pregnancy rate is the conception rate times the service rate. In a timed or appointment AI program the conception rate and pregnancy rate are equal because all heifers are presented for insemination at the appointed time regardless of estrus. Dairy heifers can be successfully synchronized using CIDR based protocols. In a recent study we published in the *Journal of Dairy Science*

(Peeler, I.D., R.L. Nebel, R.E. Pearson, W.S. Swecker, and A. Garcia. 2004. Pregnancy rates after timed AI of heifers following removal of intravaginal progesterone inserts. J. Dairy Sci. 87:2868-2873). A pregnancy rate of 60.1% was obtained after the first synchronization cycle with timed AI following two different CIDR based protocols. An overall pregnancy rate of 93.3% was obtained after two synchronization cycles. These protocols offer the opportunity of fixed-time AI without estrus detection. Although conception rates are slightly reduced after synchronization, the overall reproductive performance is usually improved because of the insemination of all heifers not just the heifers detected in estrus.

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There are no free rides! How do you evaluate milk replacers for your feeding program? The first question asked is: What's the cost of a bag? It's amazing to see the difference in prices of milk replacers from one manufacturer to another. In the case of the calf less than one month of old, economizing by purchasing the cheaper milk replacer may not be the best decision. Did you feed your children the cheapest food during their early childhood? The same logic should apply to the young calf. These animals require highly digestible diets. How do you evaluate the milk replacers being considered? There are several key things to consider in evaluating a milk replacer. The primary nutrients in milk replacers are protein, fat and carbohydrate. Most milk replacers are based upon **whey proteins** (a byproduct from cheese making). They will appear as dried whey, whey product and whey protein concentrate. The principal difference in the three forms is the amount of lactose and mineral removed from the dried whey. Dried whey contains only 12% protein, while whey protein concentrate can be as high as 80% protein. Unfortunately there can be significant variation in the digestibility of whey proteins due to type of cheese being made, drying temperatures and handling procedures. The best quality milk replacer manufacturers know the source of their whey proteins and test frequently for quality. Although skim milk may appear on the tag, it is usually present in amounts less than 1% of the total mixture and is included as "tag dressing" to create the impression of higher quality. **Soy proteins** are of lower digestibility and amino acid content and cause

allergic reactions by the gut tissue. Soy flour is indicative of poorer quality even if protein levels in the milk replacer are above 20%. At the present time, there is not enough research to suggest that egg proteins are advisable due to their lower digestibility, particularly when the egg product contains the albumin. Fat is usually supplied by animal fats such as tallow or lard. High digestibility is assured when the fats are homogenized to produce small fat droplets and an emulsified such as lecithin is included. There is only limited research supporting use of vegetable fats. Carbohydrate is supplied by lactose, the only carbohydrate that is digestible by the young calf. The "intensive" milk replacers commonly contain higher levels of protein (24 to 28% vs. 20%) and require that they be fed in higher amounts. It's hard to believe that the extra cost of these "intensive" milk replacers can be worth it, but successful adopters of this feeding strategy report higher gains and better body condition of calves which results in lower mortality and quicker recovery if calves get sick. With your baby calves, cheaper is not always the most advisable strategy. Closely check the ingredients and ask for research which supports the use of their products.

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**** Upcoming Activities****

PCDART Workshops	March 17-18
<i>Virginia Tech</i>	
Ninth National Dairy Calf and Heifer Conference, <i>Sioux Falls, SD</i>	March 30-Apr 1
Little All-American Show & Banquet	April 16
VT Showcase Sale, <i>Virginia Tech</i>	April 15
Hokie Cow Classic, <i>Virginia Tech</i>	May 31

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