

Dry and Transition Cow Management

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The period from calving through the first few weeks of lactation is associated with a high incidence of metabolic and infectious diseases that include milk fever, abomasal displacement, ketosis, fatty liver syndrome, dystocia, retained fetal membranes, metritis and mastitis. These diseases are interrelated and one is frequently a risk factor for another. For example, cows with hypocalcemia are at greater risk for abomasal displacement. One 1988 study showed that about 37% of dairy cows in 17 herds had one or more health problems in the periparturient period leading to lost income. Proper nutrition of the cow during the period around calving strongly influences the risk of developing metabolic disease. Yet producers frequently neglect nutritional management at this time because they fail to see a direct relationship between nutrition of the dry cow, disease problems, milk production and reproductive performance in the subsequent lactation.

The goals of managing the cow during the dry and transition period

are to produce a healthy calf, have minimal health problems and come into high milk production. To achieve these goals, there are four physiological functions that must be achieved or maintained during the periparturient period:

Prevention of hypocalcemia

Adaptation of the rumen to the energy dense diets that are fed to lactating cows

Minimize prepartum fat mobilization

Maintain a strong immune system

Prevention of Hypocalcemia

Hypocalcemia develops when the cow cannot maintain normal blood calcium levels due to the great demand for calcium in the colostrum. A cow with low blood calcium levels is at greater risk for milk fever, dystocia, retained fetal membranes, metritis, mastitis and abomasal displacement.

Prevention of hypocalcemia is not so simple as the feeding of more or less calcium. Rather the ability for the cow to absorb calcium from the gastrointestinal tract is related to the dietary cation-anion difference (DCAD) of the dry cow diet.

Adaptation of the Rumen to Lactating Cow Rations

Following calving, an increasing amount of concentrate is typically offered to the cow over the first few weeks of lactation. If the cow hasn't been acclimated to higher concentrate feeding in the late dry-period, the cow is at high risk for developing either acute or subacute ruminal acidosis. A transient ruminal acidosis can result in varied

clinical symptoms including laminitis that may not be manifest until later in lactation. Ruminal acidosis can also result in a depression in dry matter intake and increase the risk for ketosis and abomasal displacement.

Guidelines for Adaptation of the Rumen

The two critical issues that must be addressed for adaptation of the rumen to feeding of concentrate that will occur postpartum are

1. the amount of time concentrate must be fed to affect adaptation and
2. the amount of concentrate that needs to be fed to effect the changes.

Time - Prepartum transition rations should be fed for at least 3 weeks prior to each cow's due date. Since it takes 4-6 weeks to stimulate rumen anatomical changes necessary to absorb concentrate, she will be half way through this process when she calves. If she calves early, the process will at least be initiated.

Amount - Cows fed TMR should receive an energy density of 0.70 to 0.74 Mcal/pound. For cows in a component-fed herd, lead feed concentrate dry matter at 0.5 to 0.75 % of body weight.

Minimizing Prepartum Fat Mobilization

Fat mobilization occurs as part of the normal physiologic preparation for parturition and lactation. Excess fat mobilization is a risk factor for the fat cow syndrome, fatty liver syndrome, ketosis, abomasal displacement and retained fetal membranes. The 1989 NRC recommendations for feeding dairy cattle do not adequately provide for the cow in late gestation. The energy density of these rations must be increased in the last half of the dry period if the cow is to avoid excessive fat mobilization to fuel the growing fetus.

Dry Matter Intake Maximizing dry matter intake (DMI) prior to calving appears critical for the prevention of metabolic disorders. Cows in moderate body condition will not be subject to the effect of changed in DMI as profoundly as overconditioned cows. Management for optimal body condition is beneficial.

Energy Density of Ration Since DMI decreases as much as 30% in the final week of the dry period, the energy density of the ration can be increased to compensate for the decline in DMI. Non-fiber carbohydrates in particular have a beneficial effect in the late dry period on the rumen and general metabolism of the cow.

Maintain Strong Immune System Plasma levels of vitamin A, vitamin E, zinc and selenium have been observed to decrease between dry off and calving. These nutrients are involved with immune system function and their decrease may adversely affect the cows ability to ward off infections such as mastitis and metritis to which she is highly susceptible at this time.