

How to achieve high conception rates

Could reproductive performance be holding your dairy back? The primary reason for poor reproduction is the inability to determine which dairy cows are in heat and which cows are ready to be bred. With each missed heat, the number of days open increases, total annual milk production decreases and operating profits are reduced. Maximizing reproductive performance requires attention to nutrition, management and health care programs.

Management

Management and disease can be the primary culprits in poor reproductive performance. Even with effective management and health programs, a dairy may not be achieving optimum reproductive performance. This is when an examination of the dairy's nutritional programs may be called for, as the examination may reveal nutritional shortcomings. Making the necessary nutritional changes could help improve reproductive performance.

Suboptimal reproductive performance often results from a lack of energy in the diet during early lactation. Upon freshening, cows typically go into a negative energy balance. They cannot consume enough feed to meet their energy needs.

To compensate, more and more of their body fat stores are mobilized. In transition rations, it is critical to maximize energy content so each cow reaches a positive energy balance as soon as possible.

If a cow remains in a negative energy balance for a longer period of time or loses excess body condition, it takes longer to achieve first estrus. This results in greater days open and longer calving intervals, during which the cow remains at a lower level of milk production for an extended period of time.

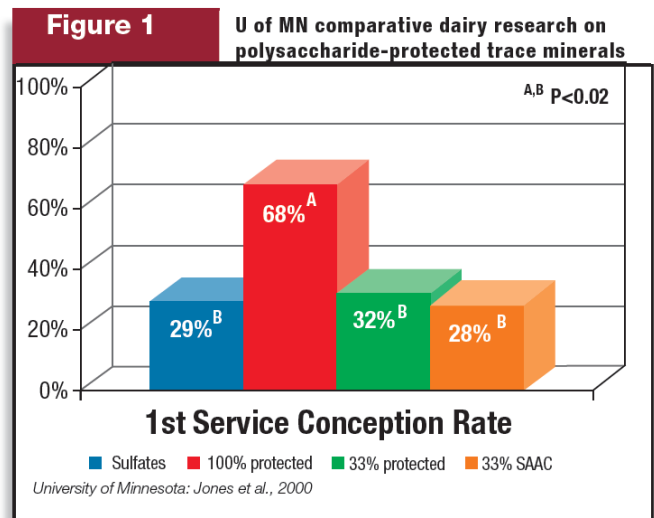
Getting cows bred sooner increases the overall rolling herd milk average as much as any other factor. Toward this goal, monitor body condition scores (BCS) and

keep BCS at or above 2.5-3.0 for timely breeding. To maximize energy intake in early lactation, diets should be formulated to maximize supplemental fat utilization. Maintain a minimum total NDF of 28 percent along with minimum NDF from forage of 21 percent.

Protein

After energy, protein is most likely to be the next nutritional factor that requires close monitoring. When the crude protein level is too low, non-detectable heats can occur, resulting in poor conception rates. This should only be a problem as producers begin to try to balance nitrogen to meet environmental regulations.

Most of the time, surplus protein is found in diets of early lactation cows. Excess degradable protein often leads to an increase in the number of services per conception and days open. This results from high levels of blood urea nitrogen (BUN), which has been



Research shows the response in reproductive performance to polysaccharide-protected trace minerals.

associated with a decrease in overall fertility. Monitoring milk urea nitrogen (MUN) levels, which should be in the range of 10 to 14 mg/dl, gives a good indicator of BUN levels and helps track protein nutrition in the diet. Be sure to set baselines throughout the year to help track changes or abnormalities.

Vitamins and minerals

Vitamins and minerals play a vital role in reproductive performance. Vitamin A is the vitamin most likely to be deficient in dairy cows. Vitamin A is involved in the health of epithelial tissue which lines the entire reproductive tract. A deficiency of vitamin A can lead to compromised tissue integrity. Compromised tissues can be susceptible to infections and diseases, thus decreasing the chance of sustaining a pregnancy. Vitamin A supplementation should be approximately 150,000 IU per day.

Macro-minerals

Calcium and phosphorus are the macro-minerals most directly related to reproductive performance. Dystocia and prolapsed uterus have a greater chance of occurring during a calcium deficiency. Also, a deficiency in calcium can lead to uterine problems such as a lack of involution after calving. Thus, calcium levels should be maintained from 0.75-0.90 percent of dry matter (DM) for early lactation and high producing cows.

Phosphorus affects reproductive performance by influencing fertility and feed intake. Decreased feed intake due to a phosphorus deficiency can lead to an energy deficiency. Phosphorus supplementation should be 0.45-0.50 percent of DM.

Trace minerals

Embryonic health and reproductive performance are highly influenced by zinc, copper, manganese and selenium. Deficiencies in any one of these trace minerals can lead to fetal abnormalities, delayed

estrus, embryonic death, reduced estrus activity and infertility. Levels of zinc should be 40 to 60 ppm, copper 10 to 12 ppm and manganese 40 to 50 ppm. Although these are the recommended supplementation levels, interactions with antagonists in the diet can result in suboptimum levels being actually delivered to the cow for absorption.

The use of organic sources of these trace minerals, such as polysaccharide-protected trace minerals, assures that the trace minerals formulated in the diet will actually be delivered to the cow. Research conducted at the University of Minnesota has shown what dairy producers can expect to see when they feed polysaccharide-protected trace minerals when the antagonists present could limit performance see **Figure 1**).

In addition, selenium needs to be monitored and maintained at 0.30 ppm to prevent retained placentas. In situations where antagonists are present, it may be necessary to include one of the many organic selenium yeast-type products to ensure the cow fully benefits from supplementation.

Proper nutrition is critical to optimizing the dairy herd's reproductive performance. While it isn't a solution for poor management or failed protocol compliance, nutrition can contribute to reproductive performance that is suboptimal to normal. In addition to feeding a balanced diet that includes value-added products such as polysaccharide-protected trace minerals, monitoring cows closely during early lactation is critical. Cows should maintain much of their body condition to avoid susceptibility to poor reproductive performance. Achieving maximum reproductive performance takes vigilance in nutrition, management and health care programs.

For more information on this study or any other QualiTech research, please visit our website at: <http://www.qualitechco.com> or call us at 800-328-5870.