MIX 30™

THE HIGH ENERGY LIQUID FEED

Tech Bulletin

The Transition Cow Ration

The dairy industry has designated the three weeks immediately preceding calving and the three weeks immediately following calving as the transition period. The purpose of identifying and defining this specific time period is due to its extreme importance in determining the subsequent, if not entire lactation performance of the dairy cow (Wang, 1990).

The diet the dairy cow receives during this time period is critical in preventing a number of nutritional diseases. Primary among these diseases is milk fever. In addition, cows associated with milk fever have an increased risk of dystocia, ketosis, left displaced abomasum, mastitis, retained placenta and milk fever in the subsequent lactation (Curtis et al., 1984; Wang, 1990; Oetzel, 1988). The dairy cow's milk production and even the productive life of the cow are believed reduced by milk fever (Block, 1984; Curtis et al., 1984). Subclinical milk fever is also believed responsible for reducing lactation performance in the dairy cow.

The principal motive of all these ailments can be traced to low blood calcium levels (hypocalcemia) that are inevitable during or immediately following calving. As previously indicated the primary clinical manifestation is milk fever with numerous other significant associations. It is believed the common denominator of these associations is hypocalcemia's affect on organs that have smooth muscle function such as the uterus, rumen and abomasums. The potential for problems is further exacerbated by the negative energy status that is inexorably present at calving due to negative net energy intake and these calving-related disorders. In addition, the length and severity of this negative energy balance greatly influences reproduction, specifically hormonal function associated with ovarian activity and cycling.

To alleviate hypocalcemia and its associated ailments the practice has been implemented of feeding diets to the prepartum cow that are slightly acidic. Acidic diets (diets with more anions relative to cations) cause an increase in blood calcium level that prevents milk fever. In addition, associated ailments are also reduced by the restoration of calcium to levels necessary for proper muscle contraction. The common practice has been to reduce the dietary level of cations like potassium and increase the level of anions like chloride giving diets a negative cation-anion difference to help increase blood calcium.

Mathematical equations have been devised that can be used to determine the dietary cation-anion difference (DCAD). There are numerous anionic sources available for use in adjusting the DCAD of the dairy cow ration. Most of these are available commercially in one form or another. These include hydrochloric acid, ammonium chloride, calcium chloride, calcium sulfate, magnesium sulfate, and elemental sulfur. Because of differences in bioavailability of each mineral element in the DCAD equations and because of the different sources of anionic salts the correct equation to use may vary depending on the particular situation. Although a consensus on optimal DCAD for the prepartum cow has not been reached, research seems to indicate a DCAD between 0 and-10 meq using the four element DCAD equation [(Na + K) – (Cl + S)]/100g DM is optimal. It is important that dietary Ca is adjusted to recommended levels and that consideration be given to other factors that affect the DCAD of the diet.

One major drawback to the inclusion of anionic salts into the diets of dairy cows is that most are very unpalatable and therefore have a tendency to reduce dry matter intake. As negative energy balance is already a major problem for the cow following calving, reduced dry matter intake only worsens the situation.

MIX 30, The High Energy Liquid Feed, has a negative DCAD value of -216.52 meq/100 grams. In addition, MIX 30 provides a dense source of energy to counteract the negative energy staus that occurs immediately following calving. MIX 30 should be an integral part of any transition cow ration.

References

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