

Texas Dairy Matters

Higher Education Supporting the Industry

IMMUNE SYSTEM CHALLENGES

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Whenever we have extremely wet conditions many dairy producers deal with muddy corrals. Add to the mud cold weather and much of the cow's energy is channeled toward maintenance rather than production.

Even dairies with freestalls have some cattle in dry lots; such as close up dry cows, hospital cows, and late lactation cows. These cows are already immune challenged. Now we've added another factor with poor environment.

The immune system has the highest nutrient requirement of all systems and is the first to be suppressed if nutrients are restricted. Nutrients of special importance to the immune system include energy, protein, vitamin A, vitamin E, copper, zinc, and selenium.

Why are transition cows immune-challenged? The exact cause isn't known, however estrogen and glucocorticoids are both elevated during this time. These two steroid hormones are known for suppressing the immune response. Another factor which may be contributing is the reduction in dry matter intake that occurs at calving. This reduces the intake of the nutrients required by the cow and her immune system just when she needs them most. As lactation starts an additional, significant drain on her nutrient intake is the energy and calcium required for milk production.

What are the results of the cow being immune-challenged? Some of the diseases associated with the cow being immunocompromised include:

- mastitis,
- metritis, and
- retained placenta.

Twenty five percent of clinical coliform mastitis cases occur during the first two weeks of lactation; sixty percent in the first eight weeks. In Texas herds, retained placentas range from five percent to as high as twenty percent. Frequently, metritis is associated with a retained placenta or a difficult calving. These conditions result in significant losses due to secondary illness and subsequent depressed reproductive performance.

Research has demonstrated plasma levels of vitamins A, vitamin E, and zinc decrease as much as sixty percent the first day after calving. It is critical in poor weather conditions to make sure animals consume adequate amounts of these nutrients. The 2001 NRC publication *Nutrient Requirements of Dairy Cattle* has increased the recommended level of vitamins for close-up cow rations to 100,000 IU of Vitamin A, 25,000 IU of Vitamin D and 1200 IU of Vitamin E to ensure that adequate vitamin intake occurs even on the day of calving when dry matter intake is low.

Other management efforts that can be made toward compensating for poor weather include: cow comfort and hygiene. Provide a dry, draft-free, clean maternity pen to assist the cow in staying healthy. Immune suppression added to a dirty environment increases the risk of fresh cow health problems.

The additional cost incurred to provide cows with adequate nutrition and clean calving areas is more than offset when the incidence of disorders such as retained placentas, metritis and mastitis are reduced. Work with your nutritionist and farm team to provide the best possible nutrition and care during stressful times.