

Texas Dairy Matters

Higher Education Supporting the Industry

NUTRITIONAL IMPACT ON REPRODUCTION

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Reproductive performance in dairy cattle has been on the decline for the last 4 to 5 decades and has played a large role in involuntary culling. Substantial time and effort has been committed to research to better understand this issue, but effective solutions may be a culmination of multiple factors. One of these factors, as outlined by researchers from Florida, includes nutritional strategies to improve cow reproductive performance.

Approximately 75 % of all health issues experienced during lactation occur within the transition period, three weeks prior to calving to three weeks after calving. Issues experienced during this phase negatively impact the remainder of the lactation, including subsequent reproduction. The introduction of dietary cation-anion difference (DCAD) balancing of dairy rations during the



Figure 1. Using urine pH to monitor effect of DCAD ration.

transition period improves animal health, including reducing incidences of milk fever and retained placenta. Increasing the number of days the cow consumes the DCAD ration before calving increases the number of pregnant cows, as well as improves dry matter intake in the weeks following calving. This is an important point as the cow experiences a drastic increase in energy requirements following calving. Increasing feed intake assists in meeting that energy demand.

While macrominerals utilized for DCAD balancing are important, microminerals may also play key roles in animal health and reproduction. Selenium, copper,

chromium, and zinc are key micronutrients important for animal health; with selenium receiving slightly more attention. Emphasis on ensuring adequate selenium in the ration can reduce the occurrence of retained placenta, improve uterine health, and increase pregnancies per artificial insemination; although the addition of selenium and related trace minerals above requirements may have no or even a negative impact on reproductive parameters. Instances of feeding organic trace minerals have shown benefits in reducing days open and services per conception.

Negative energy balance following calving due to increased milk production requires the cow to divert energy for reproductive processes to the mammary gland for milk synthesis. The addition of supplemental energy sources to the ration, such as fat, has been a common practice to reduce the need for body fat mobilization. However, you must add the correct type of fat that provides beneficial energy and boosts reproductive performance, while avoiding milk fat depression and decreased dry matter intake. Polyunsaturated fats stimulate follicular growth; however over feeding supplements high in the polyunsaturated fatty acid, linoleic, causes milk fat depression.

Dietary protein levels are also important in reproductive performance. Protein is broken down into ammonia nitrogen, a product that is then absorbed and transported to the liver where it is detoxified, yielding urea. Overfeeding degradable protein or underfeeding fermentable carbohydrates can result in increased urea levels in the body, leading to decreased pregnancies per artificial insemination, as high levels of urea can be toxic to embryo development. Decreased ovarian follicular development may also be attributed to excessive levels of ruminally degradable protein.

While not an all-inclusive list, combine these areas in nutrition with sound management and a stable reproductive program to improve reproductive performance. Work closely with your nutritionist and veterinarian to find the program that best fits your management scheme and enhance your herd's productivity.