



How nutrition affects reproductive success



Balancing energy and protein in cow diets is important, as lower conception rates are often observed in cows with very high dietary protein intakes. Excess protein can increase the urea concentration in uterine secretions, which results in elevated prostaglandin levels. As prostaglandin is a signal for the body to return to cyclicity, this mechanism may be partly responsible for early embryonic losses in some herds.

As with body condition maintenance, research indicates that fat supplementation may additionally have a direct impact on reproduction.



Dietary fat has been reported to increase follicle formation in super-ovulated cows, possibly by increasing the serum insulin levels as a mediating step.



Luteinizing hormone (LH) secretion, which triggers ovulation and CL development, is controlled in part by an animal's energy status; thus, fat supplementation that enhances the energy balance will also aid in LH regulation.



Dietary fat supplementation has also been reported to increase serum progesterone. A poor-quality CL or insufficient progesterone can both be responsible for pregnancy losses before implantation, particularly in cows that are bred on their first cycle after calving. This once again highlights the importance of early calving to provide cows sufficient time to complete their anestrus and return to normal cyclicity before the start of the breeding season.

Beyond energy and protein, trace minerals - such as copper, zinc, manganese and selenium - play key roles in health, metabolism and the general nutritional requirements of beef cattle. Optimizing trace minerals can aid in maintaining optimal uterine health by reducing the risk of:

- Metritis
- Retained placentas.
- Other adverse events that lengthen the time needed for uterine involution and a return to normal cyclicity

Nutrigenomics research has also shown that minerals affect several metabolic pathways related to the preparation of the endometrium for implantation.

Other factors affecting success

The period before the start of the calving season is a good time to go over your herd health plan. Connect with your veterinarian and other experts to ensure that your management and vaccination programs are in line with the best practices for your region.

This is also a good time to make sure that your recordkeeping is up to date. Diagnosing breeding and reproductive issues is often an

exercise in looking back. Working from accurate records can make the difference in identifying the underlying causes and developing a plan to prevent them next year.

Setting up for rebreeding success happens before calving

Beyond the importance of individual nutrients, timing the supplemental feeding of cows correctly is important. The last 50 to 60 days of the cow's gestation period are well-known to be critical for colostrum quality, as well as calf health and growth — but preparation for calving and rebreeding go hand in hand. As it takes time for nutrients to be absorbed, metabolized and take effect in the animal, a feeding program to support reproductive soundness and breeding-related stresses should begin before calving and continue through the confirmation of pregnancy.

A few key indicators to monitor are the percentages of mature cows calving during the first 21 days of the calving season and of late-season-calving cows. If either of these metrics run above average, it is time to take a close look at your calving and breeding season program.

Cows need to be set up for successful rebreeding before calving. Waiting to think about the breeding season until after the calf hits the ground is too late to affect major change in your cow herd's performance.