



# BEEF SOLUTIONS

## How cattle vaccination and nutrition connect

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Proactive cattlemen are good cattlemen. They have the foresight to combat the inevitable stresses and other challenges their cattle will face. They know that weaning, transportation and other prolonged periods of stress can have a negative impact on immune function and, ultimately, the performance of their animals. So they act to mitigate that stress and, in turn, any health problems their beef cattle are facing. They know that prevention is cheaper than treatment, and they want to see their cattle thrive. Preventative health management practices are key for healthy cattle.

Vaccinations and nutrition have a symbiotic relationship in terms of maintaining healthy immune functions in cattle. While quality nutritional programs are the bedrock of healthy immune function, both nutritional and vaccination programs are important for successful preventative health management on a cattle operation. Preventative health management focuses on promoting an animal's natural immunity and minimizing the negative growth responses associated with stress and other health challenges.

### The role of vaccination

Vaccinating your cattle stimulates their immune systems to produce antibodies that specifically work to combat disease-causing viruses or bacteria. After vaccination, a healthy immune response should translate to a memory of those specific pathogens for the immune system. This memory ensures a rapid response if the animal is exposed to pathogens it has been vaccinated against and allows the animal to avoid infection. Disease challenges vary between different geographies, so it is important to work with your local veterinarian to develop vaccine protocols, as they can identify and walk through the specific needs of your operation.

Although your needs may vary based on your herd and geography, there are a few vaccines that we typically consider crucial for beef cattle, such as a scours vaccine and vaccinating for the bovine respiratory syncytial virus.

### Implementing a beef vaccination schedule

While vaccination is generally important, establishing a well-constructed beef cattle vaccination schedule is crucial for vaccine success. One part of that plan — that is, the timing — can make the difference between failure and success. Vaccinations should be timed so that peak levels of antibodies are present when the animal is at the highest risk of infection. Keep in mind that peak levels of antibodies take several weeks to manifest following vaccination, so you'll want to plan ahead.

### The stage of the production cycle will determine the type and timing of the vaccine.

**Pre-calving:** A scours vaccination should happen during late gestation so that the highest levels of antibodies are present in the colostrum. A new calf's immune system is weak, leaving it susceptible to disease and reliant on colostrum to provide it with much-needed antibodies and protection.

**Pre-breeding:** For added protection for replacement heifers and cows, it might make sense to implement a pre-breeding vaccination protocol. This should be done around 45 days before you are hoping to breed.

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**Bulls:** Keeping your bulls protected may mean implementing an annual vaccination program. Similar to your cows and replacement heifers, these vaccinations may be most effective for bulls around 45 days before breeding.

**Weaned calves:** Vaccinations should be given a couple of weeks before weaning so that peak antibody protection is achieved during feedlot arrival. With weaning, transportation, a new environment and mingling with a new group, this time in a calf's life is the perfect storm for sickness. Vaccination provides calves with some protection as they start this new stage of their lives.

These programs and protocols are only as effective as they are managed. Poor animal health status at vaccination, improper vaccine handling and inadequate nutritional status can all lead to vaccine failure. A failed vaccine costs more than just the amount of product you had in the syringe; it can lead to loss of gain or even death throughout an entire group of calves. Likewise, it is important to understand that vaccines do not guarantee 100% protection and may only provide protection for a period. Even so, can we increase the effectiveness of the vaccine through proper nutrition?

## The role of nutrition

Meeting an animal's nutritional requirements is essential for the proper development, maintenance and function of its immune system. Among the other health benefits good nutrition provides, it can also bolster the effectiveness of vaccines and provide longer-lasting protection for cattle. To achieve a nutritional status that supports immune responses, a cattle nutrition program must include energy, protein, trace minerals and vitamins.

**Energy:** Immune responses require an abundance of energy. When cattle are exposed to a disease, their immune systems work hard. In terms of the energy hierarchy, an immune response comes before maintenance and production energy. However, shifting energy to the immune response will decrease the nutrients available for growth or maintenance and can cause a reduction in body condition in dams and reduce growth in feedlot animals.

**Protein:** Proteins are used to produce antibodies. Since the goal of vaccination is to increase the production of antibodies, a protein deficiency can result in substandard antibody production. As with energy, shifting protein from growth to immune function can negatively impact animal performance.

**Trace minerals and vitamins:** The amount of trace minerals and vitamins needed in the diet varies based on the age, role and geography of the cattle, but both vitamins and minerals play an essential role in immune function. Deficiencies in one or more of these nutrients can lead to reduced antibody production.

## Nutritional needs at different life stages

Just like with vaccines, the nutritional needs of your cattle will vary based on your specific herd and geography. Factors that can contribute to the nutrition discussion on your operation include the type of facilities your cattle have access to, the feedstuffs used and whether your cattle have experienced health issues in the past. The most important factor, though, is the current life stage of your cattle, as this will dictate the most basic nutritional needs that should be met.

**Newborn calves:** As mentioned above, calves are born with a high susceptibility to disease, requiring them to rely on colostrum to acquire those all-important antibodies. Calves should have a [healthy gut](#) from the very start so that they can better absorb the nutrients in colostrum and, as they transition to creep feed, maximize their potential for big gains.

**Weaned calves:** Maintaining a healthy gut in your calves through weaning is crucial to supporting their gastrointestinal integrity, aiding in vaccine success during the receiving period and keeping them healthy in high-stress situations.

**Cows:** The needs of the cows in your herd can vary based on their age and their current stage in the production cycle. Depending on the forage quality, cows may need mineral supplementation for optimum health, immune function and reproductive success.

Herd vaccination programs require an investment of both time and money, and quality nutrition is essential to safeguarding your investment. Talk with your veterinarian about putting together a solid vaccination and nutrition program for your operation. Remember: Proactive cattlemen are good cattlemen, and prevention is cheaper than treatment.