



ONA REPORT

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Probiotic Supplementation Boosts Calf Growth and Carcass Quality in Florida Beef Cattle

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Published in *The Florida Cattleman and Livestock Journal*, August 2025.

Probiotics, also known as direct-fed microbials (**DFM**), are beneficial bacteria added to livestock feed to support gut health and improve digestion. These supplements can help break down tough plant fibers, support the growth of helpful microbes in the stomach, and reduce inflammation. One type of probiotic, called *Bacillus*-based DFM, has shown the ability to fight harmful bacteria, strengthen the gut lining, and help animals absorb more nutrients from their food. Because a calf's digestive and immune systems begin developing right after birth—and are shaped by both the cow's and calf's diets—supplementing with probiotics early in life could have lasting benefits. However, few studies have explored how giving these supplements to both cows and calves affects long-term health and productivity.

What We Did

In this study conducted at the Range Cattle Research and Education Center (Ona, FL), we gave a *Bacillus*-based DFM (3 grams per cow-calf pair) to mature Brangus crossbred beef cows starting in the last three months of pregnancy and continuing through the nursing period until weaning. The supplement was mixed into a free-choice mineral that both cows and calves could eat whenever they wanted (the target intake of mineral supplement was 56 grams or 2 oz per animal daily).

All calves were weaned at 8 months of age. After weaning, the steers were raised on bahiagrass pastures for 60 days and fed a moderate amount of concentrate (about 1.5% of their body weight) to support continued growth. They were then transported to a feedlot in North Carolina, where they were fed high-concentrate diets during the growing and finishing phases before harvest.

Key Findings

- **Intake of mineral supplement:** As expected, the amount of mineral supplement eaten varied over the course of the year (Figure 1). On a few occasions, adding the probiotic slightly increased the mineral consumption. However, when averaged across the year, **mineral intake was similar between groups.**
- **Cow performance:** Cows that received the probiotic slightly gained body condition during the breeding season (5.13 vs. 4.83; scale of 1 to 9), when they were fed low-

quality hay. Despite this improvement in body condition score, there was no difference in pregnancy rates between treated and untreated cows.

- **Heavier Calves at Weaning:** Calves from the supplemented group were 11 lb **heavier at weaning** than those that did not receive the probiotic supplement. This result shows that probiotic use can support stronger early preweaning growth of calves.
- **Stronger Immune Start:** Calves also had **higher immunoglobulin G (antibody) levels** in their blood within the first 24 hours after birth, indicating better immune protection passed from their mothers. After weaning, steers that consumed the *Bacillus*-based probiotic also had **stronger responses to vaccines**, suggesting long-term immune benefits from early-life probiotic exposure.
- **Improved Carcass Quality:** While carcass weights were similar, calves that had access to the *Bacillus*-based probiotic produced **more high-quality beef**. Specifically, fewer carcasses graded as Select (lower quality) and more graded as Low Choice or Prime, which are more desirable in the beef market.

Why This Matters

Providing a *Bacillus*-based probiotic to both cows and calves using a simple, low-effort mineral supplement improved calf preweaning growth and beef quality. These results show that early-life nutrition—starting before birth—can have lasting positive effects on performance, immunity, and the value of the final product.

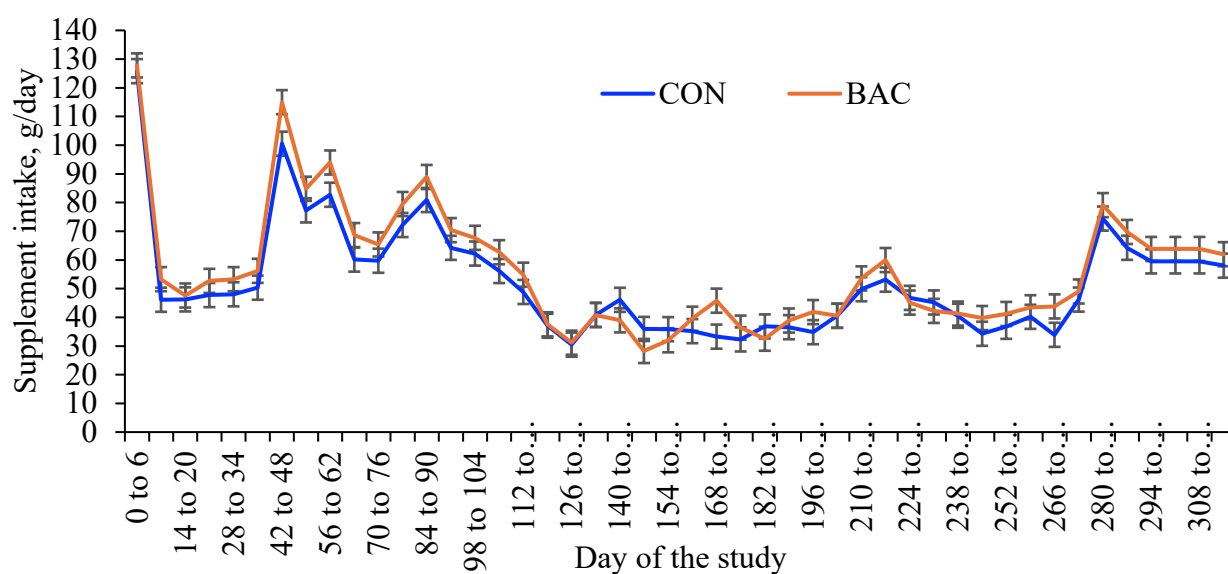


Figure 1. Supplement dry matter intake of cow-calf pairs offered free-choice access to trace mineral supplement, either alone (**CON**) or combined (**BAC**) with a *Bacillus*-based DFM supplement (3 g/day per cow-calf pair) from day 0 (94 days before calving; August) until day 330 (weaning; July; calves at 240 days of age).