

Research Notes

ARM & HAMMER



CERTILLUS reduced total clostridia and deaths related to digestive issues in dairy cattle.

STUDY OVERVIEW

An on-farm assessment¹ evaluated the effect of CERTILLUS™ on clostridia levels and diversity on dairy cattle in Wisconsin. Several *Clostridium* species, including *C. perfringens* (Types A-E), are associated with disease in ruminants. *C. perfringens* has been implicated in diseases such as hemorrhagic bowel syndrome and necrotic enteritis in dairy cows and calves.

CERTILLUS was incorporated in the total mixed ration of approximately 1,000 milk cows at a dose of two billion CFU/head/day. Herd health, milk production and fecal clostridia levels and diversity were monitored for 144 days of treatment and 97 days post treatment when CERTILLUS was removed from the ration. CERTILLUS was reintroduced after this post treatment period and herd health was monitored for another 144 days. During the study feed samples were also collected and analyzed for coliforms, clostridia, yeast and mold.

RESULTS

During the first 30 days of CERTILLUS use, there was a significant reduction in total clostridia with the majority of cows having fecal clostridia levels below 100 CFU/g during this time.

C. perfringens counts were lower than the pre-treatment samples, after 16 days of CERTILLUS treatment.

FIGURE 1: Enumeration results of total clostridia by individual fecal sample for all time points, including a comparison with the Wisconsin Survey results. Time points that are different from the pre-treatment samples are indicated by asterisks over the mean error bars. (***) $P \leq 0.0001$, ** $P \leq 0.001$, * $P \leq 0.05$).

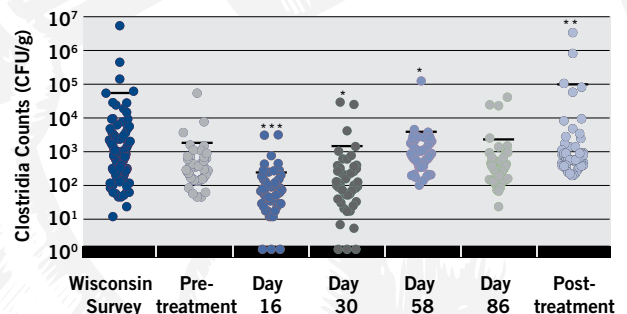
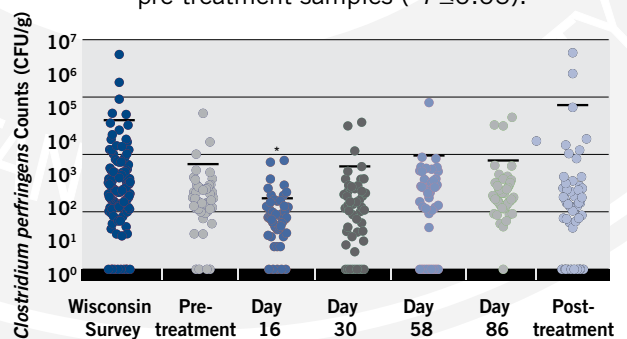


FIGURE 2: Calculated counts of *Clostridium perfringens* by individual fecal sample for all time points, including those for the Wisconsin Survey. *C. perfringens* counts at Day 16 were lower than the pre-treatment samples (* $P \leq 0.05$).



In the pre-treatment diet, yeast and mold levels of the fermented feedstuffs were low. Feed samples collected on days 16, 30 and 58 had increased levels of mold and yeast. In spite of this microbial challenge, animals maintained performance.

CERTILLUS™ improved herd health by reducing the number of deaths due to digestive issues.

CONCLUSION

Supplementation of CERTILLUS in dairy cattle diets can maintain herd health by controlling clostridia, improve resiliency in the face of challenges, and reduce deaths due to digestive issues.

FIGURE 3: Levels of coliforms, clostridia, yeast and mold in the fermented feedstuffs present on farm at the sampling time points during the field trial. Fermented feedstuffs with levels of yeast or mold above 10^8 and 10^6 CFU/g respectively (shown by dotted lines) are considered unfit to be fed. For simplicity, the detection limit of <10 CFU/g for bacteria counts and $<1,000$ CFU/g for yeast and mold counts are depicted as one in this image.

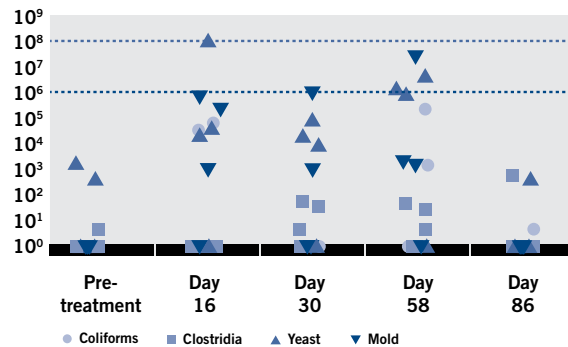
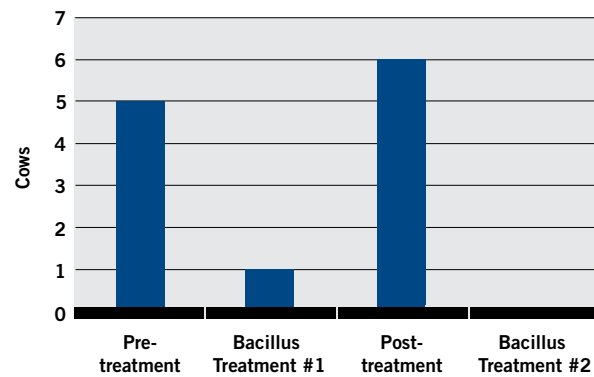


FIGURE 4: Number of cow deaths due to digestive issues.



1 Smith AH, Thompson JS, Griffin MN, Schissel J, O'Neill JP, Rehberger T. The Effect of a *Bacillus* Probiotic on Herd Health, Milk Production and *Clostridium* Populations on a Dairy Farm in Wisconsin. In: 7th Conference on Beneficial Microbes, (Madison, WI), 2018. p. #104.

