

Research Notes

Arm & Hammer Animal and Food Production



CERTILLUS supports improved production response in dairy cattle.

STUDY OVERVIEW

A study¹ was conducted to determine the effect of CERTILLUS™ on multiple performance metrics when fed to lactating dairy cows. Twenty-eight Holstein cows were assigned to one of two treatment groups for a 25-week study.

- One half of the cows received the TMR control diet of alfalfa hay, whole cottonseed and concentrate
- One half of the cows received the control diet plus 2×10^9 cfu/head of CERTILLUS CP Dairy daily

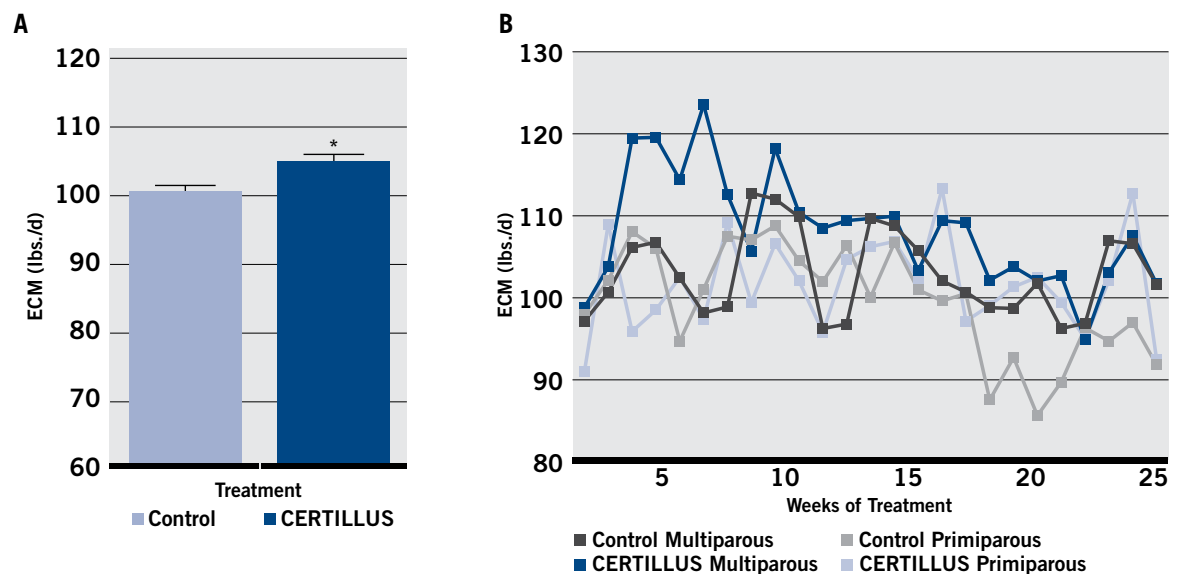
Milk samples, fecal samples, blood samples and rumen fluid were collected and analyzed throughout the study. Resulting treatment effects on milk production and components, body weight, feed intake and efficiency, feeding events, and plasma insulin and glucose concentrations were recorded.

RESULTS

Milk Production Changes

- Cows fed CERTILLUS produced 4.1 lbs. more ($P < 0.05$) ECM than control cows (Fig. 1A). This was primarily from multiparous cows as primiparus did not respond to treatment.
 - The driver for the ECM response was the increase ($P < 0.05$) of milk fat percentage by 0.39 points (4.02% for control and 4.41% for CERTILLUS-fed cows). No differences were detected for milk protein percentage.
 - Although heifers did not respond as multiparous cows (Fig. 1B), they appeared to have started to separate out with CERTILLUS-fed animals producing more ECM beginning week 17 of the trial.

FIGURE 1: Energy corrected milk yield.



* $P < 0.05$ Overall: Control = 100.6 vs. Treatment = 104.7 ± 1.2 lbs./d

- The total milk solid percentage for the CERTILLUS™-fed cows improved by 3.5%, providing an average solid percentage of 13.4%; the control cows averaged 12.9%.
- Milk urea nitrogen (MUN) showed a small but significant ($P<0.05$) increase from 12.4 to 13.4 mg/dL by CERTILLUS-fed cows.

Feed Intake, Efficiency & Feeding Event Changes

- Cows fed CERTILLUS had 14.5% fewer feeding events (off-feed issues) than the control cows.
- Feed intake in CERTILLUS-fed cows was initially 13% lower than the control group. But in the last 5 weeks of the study the multiparous control and CERTILLUS-fed groups performed the same, where the primiparous CERTILLUS-fed cows consumed 9% less feed than the control group.
- Cows fed CERTILLUS had 16.9% greater feed efficiency than the control group at the beginning of the study, and 14% greater than the control group at the end of the study.

Body Weights and Condition Score

- There were no significant effects on body weights or condition scores attributable to treatment.

Fecal and Feed Clostridia

- Both groups had very low total *Clostridia* and *Clostridia perfringens*. The majority of animals in both groups were classified as low risk for health events related to *Clostridia*.
 - In terms of risk assessment for health and production issues from total *Clostridia* and *C. perfringens*, overall risk for total *Clostridia* was low for 26.5% of cattle, medium risk for 56.4% of cattle and high risk for 17.2% of cattle.
 - For *C. perfringens*, the risk assessment was 73.4% of cattle at low risk, 16% at medium risk and 10.5% at high risk.
- As all feeds were dry (hay, grains and supplements), there were low *Clostridia* loads in the rations and little chance for outgrowth in the TMR in the feeders.

CONCLUSION

- In this study, feeding CERTILLUS contributed to an increase in milk fat with 4% FCM and ECM, both being significantly increased.
- Considering the increases in production and feed efficiency, reductions in feed intake and off-feed events, and increase in MUN, we are theorizing that in these cows, CERTILLUS exerted effects either via rumen fermentation efficiency and/or nutrient absorption from the lower gut.
- Despite the low microbial challenge to these animals, CERTILLUS appeared to affect overall performance, likely via nutrient availability.
 - Additionally, based on the fewer feed events with CERTILLUS, there may be effects on other microbial populations leading to improved performance and efficiency.
- The cause of decreased feed intake in cows supplemented with CERTILLUS is unknown, but could be due to greater energy extracted from feeds whether in the rumen or lower gut.

Future research will be directed in these areas to ascertain why we observe these positive changes.



To learn more about CERTILLUS contact your nutritionist, veterinarian or ARM & HAMMER™ representative or visit AHfoodchain.com.

