Feed Supplements in Dairy Cattle Health

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Abstract

Vitamin and mineral supplements are often added to the feed of dairy cattle to enhance health, reproduction and milk production. Zinc and vitamin E are known to play a vital role in immune function and are essential for combating infections, therefore, reducing the risk of mastitis and promoting overall health. Vitamin E is also required for peak reproductive performance and muscle control. Parameters used to monitor the health of dairy cows includes measuring daily milk production, fat and protein content of the milk, and somatic cell count (SCC).
In this study we supplemented the diet of 8 dairy cows with vitamin E and monitored their milk production, milk fat and protein levels, SCC and incidence of mastitis. The vitamin supplement correlated with reduced incidence of mastitis and high SCC. Milk production was not affected by higher SCC.

Introduction

Eight dairy cows were chosen for the study, based on their similar production and days in milk (DIM). Vitamin E was added to the daily feed for 11 weeks. Milk samples were collected once per week and sent to DHIA for analysis of milk fat protein, and SCC. The objective of this research is to provide empirical evidence on the impact of management practices on milk quality and production efficiency in dairy farming. We hypothesize that management practices, including milk testing
protocols, vitamin E supplementation, and feed composition, significantly influence somatic cell counts and production rates in dairy cows.

Methods

Dairy cows were selected for the study, based on their similar production and days in milk (DIM). Feed analysis was done on the daily ration to determine the amount of vitamin E to supplement. Vitamin E (15 mg/838U per day) was sprinkled on top of the daily feed ration for 11 weeks. Milk samples were collected once per week from each cow and sent to DHIA for analysis of milk fat protein, and SCC. Milk production records were kept on the farm for each cow. Data was analyzed for each cow and correlated with her production level and general health status.

Results

All eight cows remained in production during the study. One cow developed mastits and was treated with antibiotics, returning to normal health status later in the study. Two other cows (596 and 598) showed signs of a subclinical infection, but were not treated. All eight cows had normal milk production during the study, as seen in the steady PR/DIM, fat and protein levels for the 11 weeks. The changes seen in the SCC reflect the health status of each cow.
The two cows (422 and 556) that showed signs of infection at week 2. #556 showed improvement by week 3 and 4, then had higher than normal SCC until a spike in week 11. Her production remained normal. #422 had the highest SCC and remained high until week 8. Her production and protein content remained normal, but milk fat was low every week. The two subclinical cows (596 and 598) mainteined normal production and levels of milk fat and protein, despite elevated SCC. Two cows (592 and 593) had normal SSC along with normal production and all tested parameters for the entire study. Two cows (589 and 596) had elevated SCC at week 2. #589 had normal SCC levels and production levels the rest of the study. #596 was back to normal SCC by week 4, with an increase at week 6. Her production and milk quality were not affected.
The date suggest that the addition of vitamin E

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Discussion

Our literature review supports the hypothesis that supplemental vitamin E supports the immune system in dairy cows. The process of lactation is physically stressful to cows, requiring proper nutrition for milk production and maintenance of the immune system. Dairy cows are prone to mastitis, an infection of the udder that causes monetary loss to the producer. Treatment of mastitis with antibiotics is expensive and requires the cow to be excluded from commerical collection while antibiotics are in their system. It is beneficial for the cows and the producers to avoid infections and antibiotic use, therefore, use of dietary supplements that promote strong immune systems and general health are a good investment. Our study concurs with this finding in the literature, which often sites use of zinc with vitamin E and A in combination. Our data confirm the contribution of vitamin E alone, is substantial to normal milk production, even during clinical and subclinical infections.

Conclusion

Maintaining a strong immune system is important for the health of dairy cows. Proper nutrition is vital for the immune system. The addition of supplemental vitamin E and zinc is known to promote a healthy immune system, however, vitamin E alone appears to support immunity and normal milk production in dairy cows. This appeared to decrease the incidence of mastitis and therefore, the use of antibiotics. Vitamin E supplementation is cost effective and easy to administer, making it an ideal component to promote herd health and normal milk production in dairy cows.