Goat Milk Quality Study comparing milk qualities from goats supplemented with Dried and Milled Sauvignon Blanc Grape Marc (GM) and unsupplemented goats run at pasture. Phase Three Trial.

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Introduction

Casual evidence of three trials conducted from 2020-2022, focusing on feeding dried and milled Sauvignon Blanc grape marc to lactating dairy goats to assess internal parasite control had indicated a positive effect on milk protein levels. As protein levels in goat milk are critical to maximise product prices and financial returns for producers, this trial was initiated to more accurately measure the effect.

Materials and Methods

The commercial dairy goat farm with over 70 milkers was selected for the trial. Due to the limitations in available animals and on-farm management facilities during the trial period, the control and treatment groups were limited to 12 goats each. The farmer carefully selected and matched goats in each group by age and milk production history to ensure the two groups were as balanced as possible.

These goats had previously been fed on this grape marc, so they adapted well to the daily ration provided in a trough feeder during the trial. The goats were grazed on adequate pasture of mixed species, and received daily supplementary concentrate feed as part of the standard farm management feeding regime.

The trial ran from November 13, 2022 to January 29, 2023, with the treatment group receiving 250g of GM per goat from December 16 to January 15th.

Milk samples were collected at regular intervals from both the control and treated animals before the introduction of GM, during**,** and after its removal from the treatment animals' diet. These samples were analysed at MilkTestNZ (Hamilton) and Cawthron Institute (Nelson). Additionally, the farmer supplied individual trial goat information from three LIC Herd tests conducted before and after the trial period.

Faecal samples were collected from identified individuals in both groups, and Faecal Egg Counts (FEC) were recorded at the Gribbles Animal Health Lab (Auckland)

Results

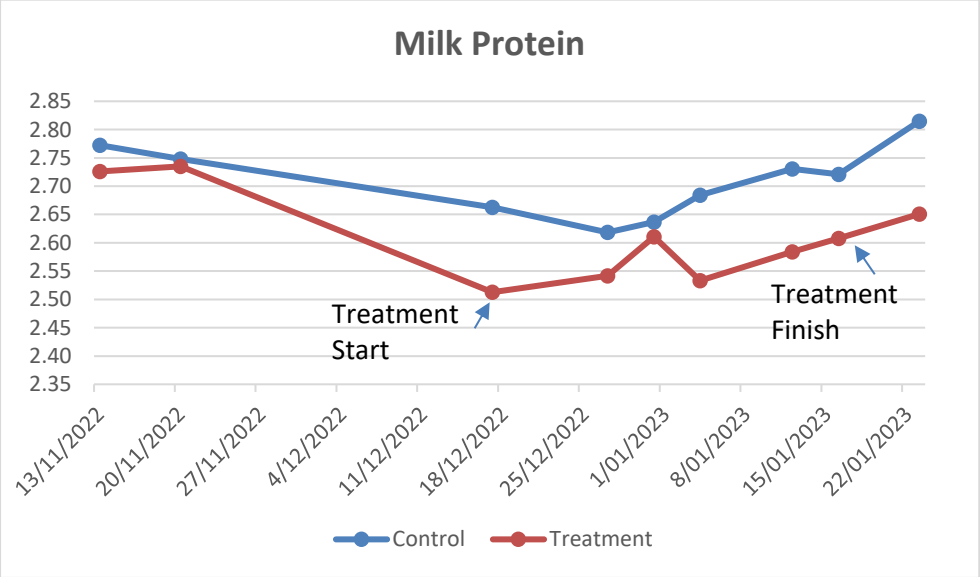
Milk Tests

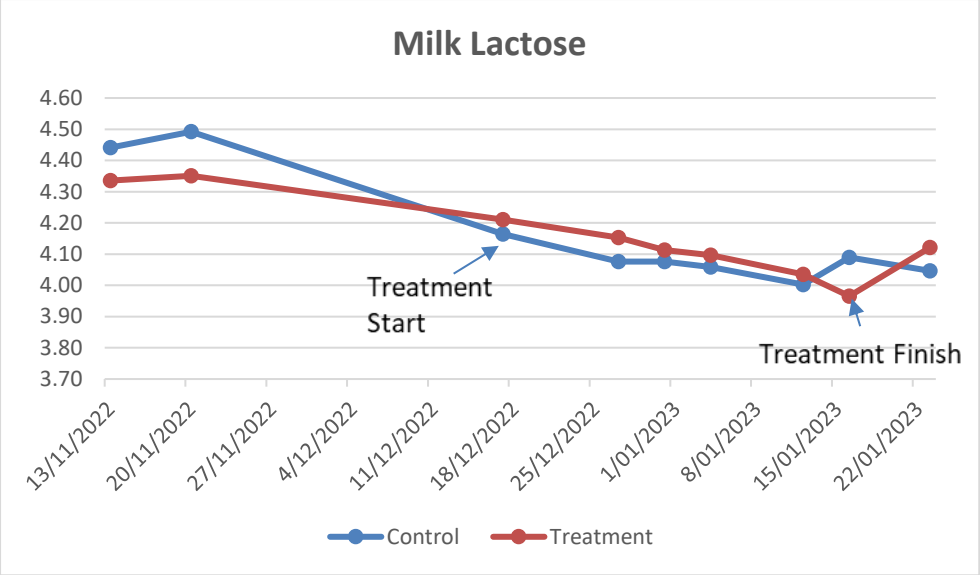
A bulk milk sample from each group taken in mid-lactation was analysed at Cawthron for fatty acid content. Milk samples from the identified 12 animals in each group were collected nine times over the nine-week trial period and analysed at MilkTestNZ. Whole herd individual milk samples were collected and analysed every two months at LIC.

Cawthron Analysis - Fatty acids results

It's important to note that a single snapshot analysis of fatty acids (FAs) may not provide definite results, Nevertheless, in comparisions to the control group, the GM-fed group had decreased levels of C4.0, C14, C15, and increased levels of C18.1t elaidic, C18.2n6c linoleic, and C20.4n6 arachidonic fatty acids by more than 15%. Of greater interest was that these findings confirmed a previous trial with dairy goats, although with samples obtained later in the lactation period.

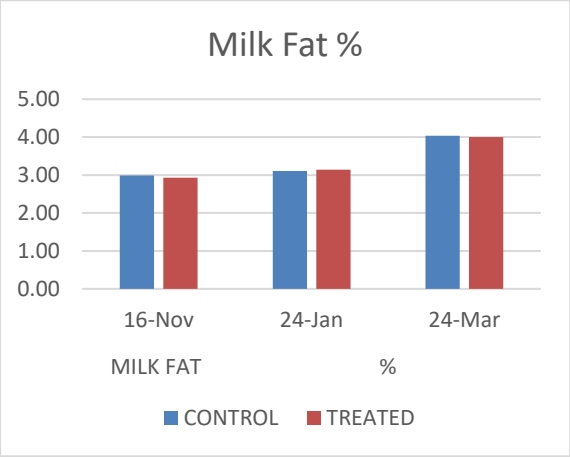
MilkTestNZ Results

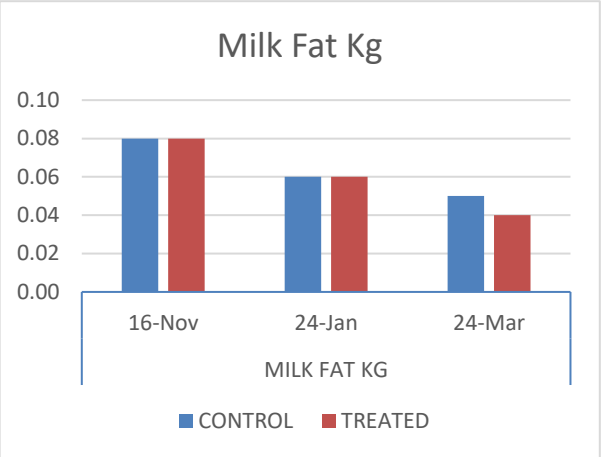


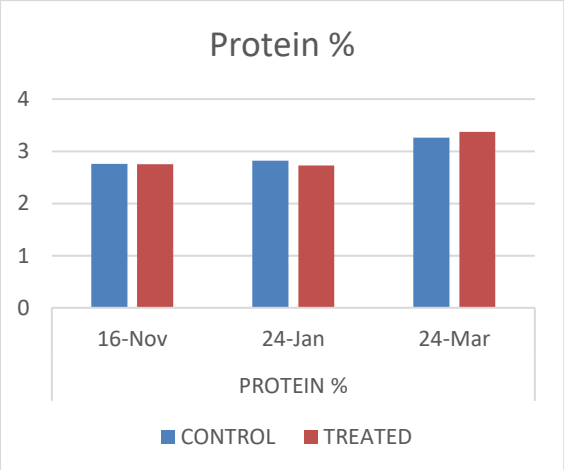


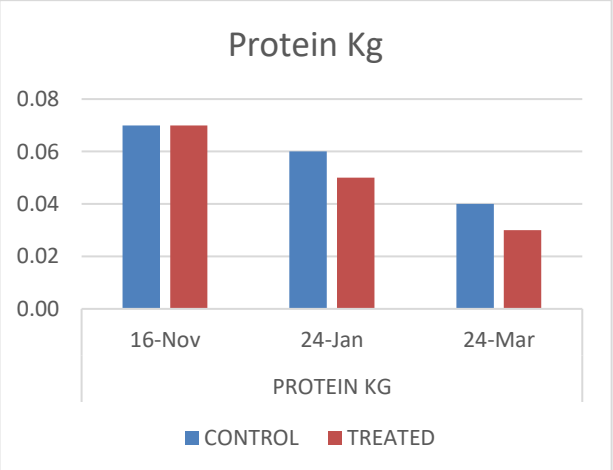
LIC Results

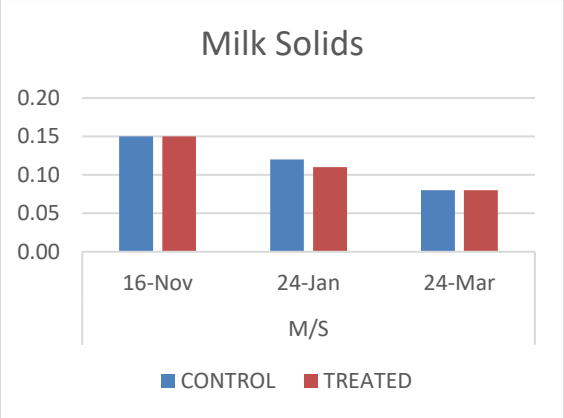
These tests were carried out before and after the completion of GM feeding (December 16 – January 15).

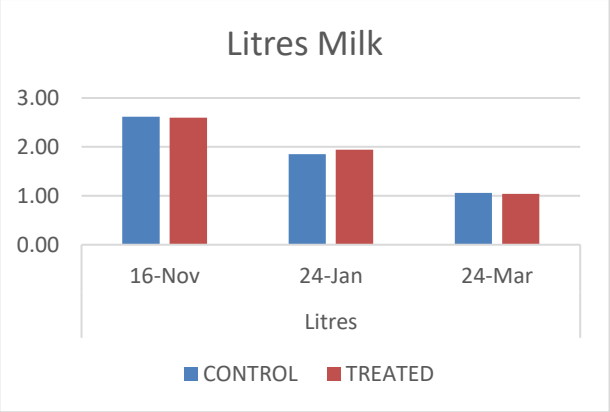








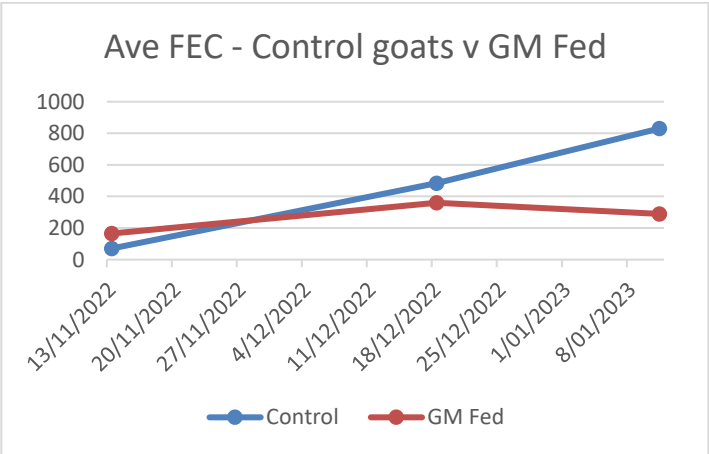


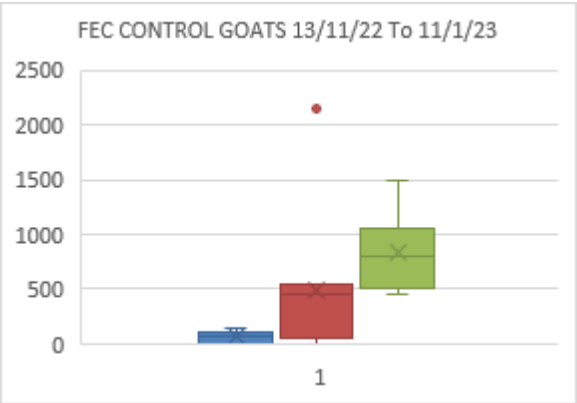


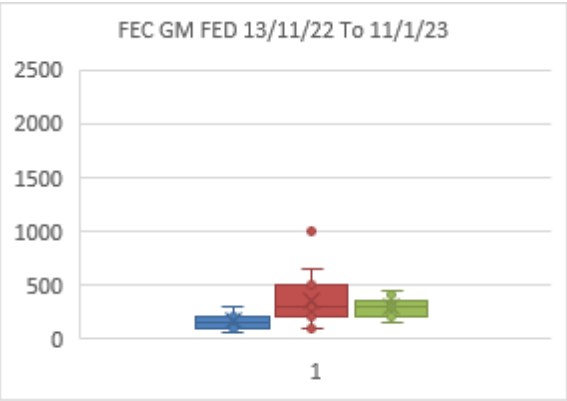
In both lots of tests there was no significant difference observed in milk quality between trial and control animals following the start of GM feeding. However, there did appear to be a trend toward lower protein levels in the milk of treated animals after the conclusion of the trial as indicated in the LIC Results. The farmer did feel that the GM treated goats slipped in condition after the GM feeding was finished**,** suggesting they may have been affected by parasites once the anthelmintic properties experienced with feeding of GM were removed.

Parasite Faecal Egg count (FEC) results

Three lots of FECs were collected, with the second FEC taken the day the GM was started, while the third collected towards the end of the period when the GM was still being fed.







Consistent with findings from all previous studies, goats fed GM exhibited significantly lower FECs than the Control animals, in as little as two weeks after the commencement of GM feeding. This confirms GM will have a useful role in the future for parasite management.

Conclusion

Protein content is important to milk values, so while our previous studies all suggested that feeding GM to goats would increase milk protein levels this could not be confirmed in this trial. However, the trial did confirm the findings from previous trials that the feeding of GM influenced the percentage of important fatty acids in milk.

It is possible that the GM-fed group, which was managed as a separate small mob in a confined paddock may have had less access to a diverse range of pasture species and differences in feed quantity and quality compared to the Control animals. This could have affected the results and might explain the lower average milk protein levels seen with this group even before the GM feeding had started.

It has become apparent that for GM to work well, stock need constant access to it, which means there are always likely to be environmental variables, including pasture and shelter, as groups will need to be run separately.

Ideally, this milk quality trial would have been conducted with housed animals allowing for careful control over feed intake, stock density, and shelter, but financial and practical constraints precluded that.

Acknowledgements

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