Letter to the Editor: Silage manuscripts in the *Journal of Dairy Science*

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As silage researchers who have collectively published hundreds of articles in the *Journal of Dairy Science*, we are writing to share two concerns with you, and we appreciate this opportunity for discussion.

The first concern is that we understand that the *Journal of Dairy Science* is planning to impose stricter conditions on acceptance of silage-focused studies or to stop accepting them. We agree that all silage studies published by the journal must meet the rigorous and high standards of the journal but ask that you reconsider plans to stop publishing studies that meet these standards.

Dairying in the United States relies on the production of silage, which constitutes up to 60% of the diet of US dairy cows. Likewise, in Canada, Europe, and most parts of the developed world, dairy cow production is heavily reliant on silage. Therefore, silage is the main source of dietary nutrients for most dairy cows in these regions. Approximately 133 million tons of corn silage alone were produced in the United States in 2019

because of the great desirability of the forage for dairy production. In fact, corn silage, which is the focus of most silage studies in the journal, is the main source of dietary energy and digestible fiber in dairy cow diets. Moreover, silage NDF digestibility is one of the most important predictors of milk yield by cows.

Many researchers, silage producers, and dairy farmers in the United States and abroad look to the *Journal of Dairy Science* for timely and accurate information on various silage-related factors that affect the nutritional status and health of cows as well as their performance and the profitability of dairy farms. For instance, the journal is often consulted for information on factors affecting silage production and utilization, including differences in the yield and nutritive value of different forage species and varieties, optimal silage inclusion rates in diets, forage preservation additives and methods, silage pathogens, contaminants, and other antinutritional factors that influence cow and human health. The silage publications in the journal are a vital aspect of what makes it the premier comprehensive publication for all things pertaining to dairy production and consumption.

The second concern is that some silage manuscripts have been rejected recently because *field*, not *silo*, was

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considered the experimental unit. This is a discussion we have all had at our universities and research institutes with our statisticians and agronomists, many of them coauthors on our silage papers. Our statisticians have repeatedly told us that considering the forage sample destined for a silo or the silo itself as the experimental unit is not statistically wrong because it is the smallest unit to which the treatment is applied. Clearly, it is necessary to ensure that representative forage samples are used for an experiment. This can be achieved in several ways, such as by blocking a field according to pertinent criteria and taking replicate samples from each block (as is the norm in agronomy trials) or by taking replicate samples from different fields. Accounting for variation in this way already exceeds what is done for feeding trials with cows, where an ingredient from only one batch from a supplier is typically tested. For more details, please see the recommendations from *Animal Feed Science and Technology* on acceptable design of silage experiments (Udén et al., 2012).

Two related factors that often come up are whether silage trials should be repeated across years or whether more than one silo per treatment is needed in silage feeding trials. There is no compelling evidence that year

affects the ensiling or feeding process. Therefore, just as for feeding trials, there is no sound rationale to require silage studies to be replicated across years. Likewise, requiring replicate silos per treatment for dairy cow feeding studies is at odds with typical practice in feeding studies, where an ingredient that is being tested is from a single bay or bin from a single batch from the supplier. Although it would be ideal to ensure that ingredients tested in a feeding trial or forages examined in a silage trial truly represent all existing variability, it would be logistically challenging and cost prohibitive to do so. For example, having duplicate silos per treatment would require a doubling of the number of animals being fed a treatment, whether on trial or not, so that silo feed-out rates could be kept sufficiently high to prevent aerobic deterioration issues in one or more silages from unintentionally influencing the results of a study.

REFERENCES

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