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Supplementation with hay increases calf starter intake

Effects of calf starter form on feed intake and growth rate are examined in a new review in *Applied Animal Science*

Champaign, IL, June 7, 2021—Starter feed manufacturing processes have changed considerably since the 1930s, but much of the research on processing of calf starters occurred in the 1940s through 1960s. A recent review and meta-analysis in *Applied Animal Science* by authors at the University of Bonn, Bonn, Germany, and at Andhil LLC, St. Louis, Missouri, examined more than 80 years of research on the effect of different forms of calf starters on starter feed intake and weight gain of pre- and post-weaned dairy calves.

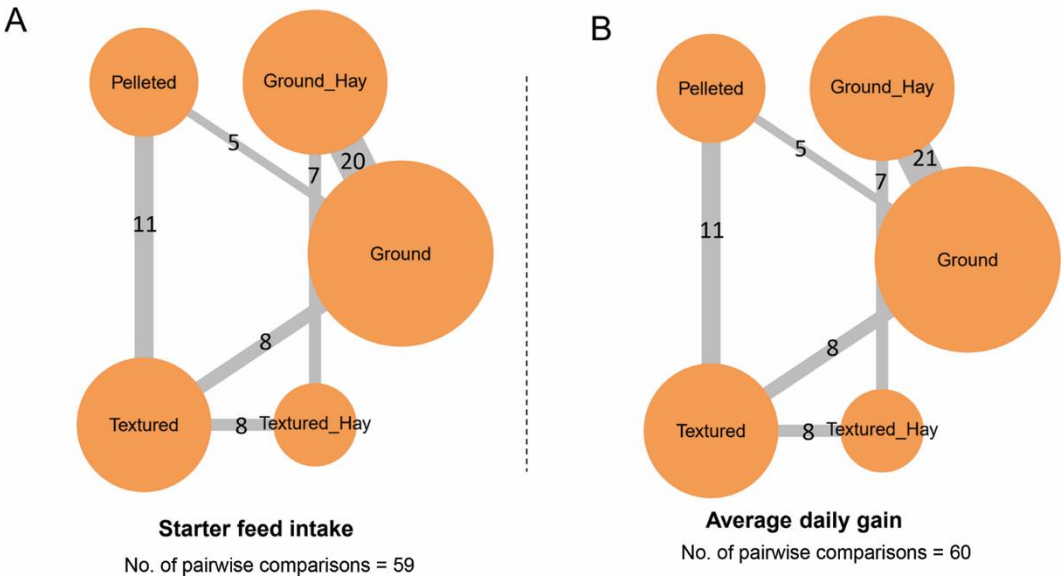
Newborn calves are not functional ruminants. This function largely develops due to the chemical composition of their diet and its fermentation in the rumen. Processing of grains in calf starter diets improves the digestibility of nutrients and alters the rate and site of starch digestion. In calf starters, hay supplementation, the level of feed intake, amount of rumination and salivation, and grain physical characteristics affect whether grain should be processed and the extent of processing prescribed; however, there is a paucity of information about how combinations of different grain processing techniques might affect calf intake and performance.

The authors conducted a meta-analysis to quantitatively summarize the effects of different forms of calf starters (ground, pelleted, textured, ground diets blended with hay, and textured diets blended with hay) on starter feed intake and growth rate of dairy calves during preweaning and postweaning periods. They found extreme effects of different forms of calf starters on starter feed intake and of increased starter feed intake for calves fed ground starter diets blended with hay compared with those fed ground starter diets without hay.

However, no definitive conclusions could be made about the specific effects of forms of starter such as ground, pelleted, or textured. Additionally, it was noted that more research is needed to incorporate additional factors such as particle size distribution of forages and starters, better definition of dietary concentration, type of and method of processing of the grain in starters, and the nutrient composition (e.g., type and concentration of protein, sugar, starch, and fiber) into the evaluation, as well as physical form of the starter, to better understand how to optimize calf starter nutrition.

“This review and meta-analysis address questions about the most effective physical forms for dairy calf starters with hay to optimize dietary intake and growth during the pre- and post-weaning phases,” said David K. Beede, PhD, editor in chief of *Applied Animal Science*. “Relatively few studies reported on this in the literature, but quantitative particle size distribution of forages and starter diets and proportion of grains

in calf starter diets along with how grains may have been processed are important considerations that should be addressed in future studies," said lead author Morteza H. Ghaffari. "Also, there is a lack of data in the literature on whether and to what extent cereal grains in a textured starter need to be processed," added Ghaffari.



Caption: Full network plot of all trials illustrating the network of different treatment comparisons (ground, ground hay, pelleted, textured, and textured hay) for (A) the starter feed intake and (B) average daily gain. (Credit: M. H. Ghaffari and A. F. Kertz)

Although there is a lack of processing data of starter diets for dairy calves in existing studies, it appears that greater starter intake by calves occurred when hay was supplemented to the finely ground starter or when calves received textured starters compared with pelleted diets.

The article appears in the June issue of *Applied Animal Science*.

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Notes for Editors

"REVIEW: Effects of different forms of calf starters on feed intake and growth rate: A systematic review and Bayesian meta-analysis of studies from 1938 to 2021" by Morteza H. Ghaffari and Alois F. Kertz (DOI: https://doi.org/10.15232/aas.2021-02150), *Applied Animal Science*, Volume 37, Issue 3 (June 2021), published by Fass Inc. and Elsevier Inc.

This article is openly available at https://doi.org/10.15232/aas.2021-02150.

Full text of the article is available to credentialed journalists upon request; contact Brittany Morstatter at +1-217-356-3182 ext. 143 or arpas@assochq.org to obtain copies. To schedule an interview with the authors, please contact Morteza H. Ghaffari at morteza1@uni-bonn.de.

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