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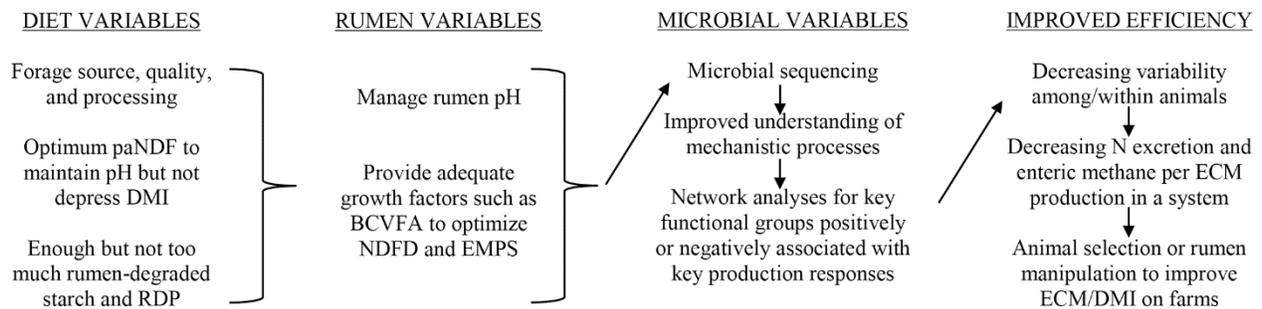
Opportunities for advances in rumen efficiency

Possibilities for using current knowledge about the rumen microbial community are discussed in a new invited review in *Applied Animal Science*

Champaign, IL, August 16, 2021—Knowledge of the complexities of the rumen has advanced in the last 10 years through dairy research and technology. It is now time to analyze that knowledge and put it to use in improving ruminal efficiency. A new [invited review](#) in [Applied Animal Science](#) does just that. The article was written following a presentation at the 2020 Symposium of the American Registry of Professional Animal Scientists.

“Just as a good dairy ration starts with the forage available, a good rumen efficiency starts with optimizing the functionality of the fibrolytic microbes,” said author J. L. Firkins, PhD, Department of Animal Sciences, The Ohio State University, Columbus, OH, USA. The microbial community in the rumen varies among animals and dietary conditions, and multiple factors can disturb it. The author emphasizes that maintaining a balanced community should be a consideration when evaluating responses in other dairy experiments.

“This invited review examines how advances in our knowledge of rumen microbial ecology provide opportunities to improve ruminal fiber degradation, reduce enteric methane production, and limit wastage of dietary protein without disrupting ruminal efficiency,” said David K. Beede, PhD, editor in chief of *Applied Animal Science*. The author dives deep into each of these three areas, reviewing literature that has been published on the detailed aspects of each topic. The article touches on numerous subjects including diet quality, forage class, and processing methods; finding balance when increasing DMI or neutral detergent fiber degradability; and what is known about the rumen microbial consortium.



Caption: Outline of interconnecting variables that are projected to improve efficiency of rumen processes. BCVFA = branched-chain volatile fatty acids, NDFD = neutral detergent fiber (NDF) degradability, EMPS = efficiency of microbial protein synthesis (microbial N produced per unit of carbohydrate degraded), and paNDF = physically adjusted NDF (Credit: J. L. Firkins).

When more complex analyses of diet formulation and data from microbial sequencing techniques are available, scientists will be able to more optimally manipulate dietary conditions. “In addition, animal selection for efficient types of populations or selective microbial screening among less efficient animals has some potential,” said Firkins. He added, “A promising approach is to supplement branched-chain volatile fatty acids to substitute for rumen-degradable protein to support fibrolytic bacteria and their primary role to maintain a properly balanced microbial consortium.”

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

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Notes for Editors

“Invited Review: Advances in rumen efficiency” by J. L. Firkins (DOI: <https://doi.org/10.15232/aas.2021-02163>), *Applied Animal Science*, Volume 37, Issue 4 (August 2021), published by FASS Inc. and Elsevier Inc.

This article is openly available at <https://doi.org/10.15232/aas.2021-02163>.

Full text of the article is available to credentialed journalists upon request; contact Brittany Morstatter at +1-217-356-3182 ext. 143 or arpas@assoqhq.org to obtain copies. To schedule an interview with the author, please contact J. L. Firkins at firkins.1@osu.edu.

About *Applied Animal Science*

Applied Animal Science (AAS) is a peer-reviewed scientific journal and the official publication of the American Registry of Professional Animal Scientists (ARPAS). In continuous publication since 1985, AAS is a leading outlet for animal science research. The journal welcomes novel manuscripts on applied technology, reviews on the use or application of research-based information on animal agriculture, commentaries on contemporary issues, short communications, and technical notes. Topics that will be considered for publication include (but are not limited to) feed science, farm animal management and production, dairy science, meat science, animal nutrition, reproduction, animal physiology and behavior, disease control and prevention, microbiology, agricultural economics, and environmental issues related to agriculture. Themed special issues also will be considered for publication. www.appliedanimalscience.org

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