

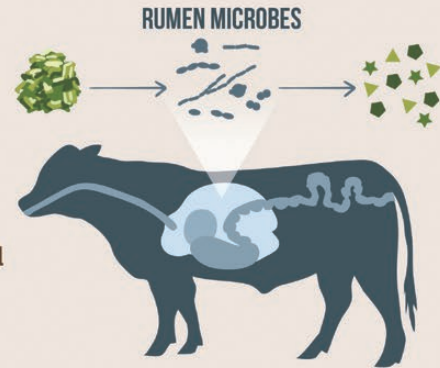
Performance of direct-fed microbials in beef steers.

ASAS EDITORIAL



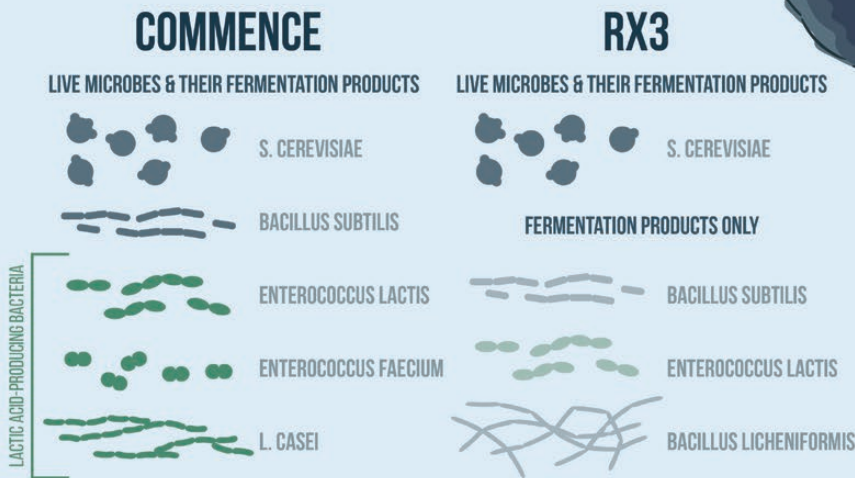
The rumen is the fermentation powerhouse of a ruminant's stomach, where friendly microbes break down tough plant fibers into digestible nutrients. The functioning of these microbes is therefore key to the metabolism, productivity, and health of cattle.

Like the probiotics in your medicine cabinet, **direct-fed microbials (DFM)** — a supplement of live microbes — are sometimes used by cattle farmers to alter the rumen microbial ecosystem in hopes of improving productivity. DFMs vary in species composition, however few studies have compared the performance of multi-species DFMs in controlled conditions.



INFOGRAPHIC BY FUSE CONSULTING LTD.

This study compared the performance of two DFMs fed to beef steers:



BOTH DFMS SIGNIFICANTLY IMPROVED PLASMA GLUCOSE LEVELS, THOUGH THERE WERE NO EFFECTS ON APPARENT DIGESTIBILITY OF NUTRIENTS.

DESPITE CONTAINING A BLEND OF LACTIC ACID-PRODUCING BACTERIA, THE COMMENCE-SUPPLEMENTED DIET DID NOT AFFECT LACTATE LEVELS IN THE RUMEN. THIS MAY BE BECAUSE THE DIET THE STEERS WERE FED DID NOT SUPPORT LACTATE ACCUMULATION.

Supplementation of either of these two multi-species DFMs can improve the energy status and therefore productivity of beef steers. This appears to occur via a change in the fermentation pattern of the rumen, rather than a change in feed digestibility.

INFOGRAPHIC

Performance of direct-fed microbials in beef steers

Direct-fed microbials (DFM) are probiotic supplements fed to cattle to alter the rumen microbiome and improve health and performance (Uyeno et al., 2015). Inclusion of DFMs in feedlot diets has variable effects ranging from no improvements in average daily gain to reduced performance in some feeding systems (Wilson et al., 2016; Swanson et al., 2018). In this issue, two DFMs were assessed for their ability to alter nutrient digestibility and blood parameters (Ugunade et al., 2020). Although no effects were evident on total tract digestibility, the DFMs increased blood glucose suggesting improved energy status.

References

- Swanson, K. C., J. J. Gaspers, F. A. Keomanivong, T. C. Gilbery, G. P. Lardy, M. L. Bauer, and G. L. Stokka. 2018. Influence of feeding direct-fed microbial supplementation on growth performance and feeding behavior in naturally fed and conventionally fed finishing cattle with different dietary adaptation periods. *J. Anim. Sci.* **96**:3370–3380. doi:10.1093/jas/sky194.
- Ugunade, I. M., M. McCoun, M. D. Idowu, S. O. Peters, and D. M. Paulus Compart. 2020. Comparative effects of two multi-species direct-fed microbial products on energy status, nutrient digestibility, and ruminal fermentation, bacterial community and metabolome of beef steers. *J. Anim. Sci.* **98**:1–11. doi:10.1093/jas/skaa201.
- Uyeno, Y., S. Shigemori, and T. Shimosato. 2015. Effect of probiotics/prebiotics on cattle health and productivity. *Microbes Environ.* **30**:126–132. doi:10.1264/jsme2.ME14176.
- Wilson, B. K., B. P. Holland, D. L. Step, M. E. Jacob, D. L. VanOverbeke, C. J. Richards, T. G. Nagaraja, and C. R. Krehbiel. 2016. Feeding wet distillers grains plus solubles with and without a direct-fed microbial to determine performance, carcass characteristics, and fecal shedding of O157:H7 in feedlot heifers. *J. Anim. Sci.* **94**:297–305. doi:10.2527/jas.2015-9601.