



Cow

PURINA® EFFICIENZ™ FERMENTATION PRODUCT

Optimizing feed efficiency to support milk and component yield potential

Inclusion of EfficienZ™ Fermentation Product in a cow's diet supports rumen function which, in turn, optimizes volatile fatty acid production. Volatile fatty acids (VFA), including propionate and acetate, support both milk volume and milk fat yield. The liver converts propionate to glucose, the primary precursor for milk lactose synthesis. Milk lactose is the primary driver for milk volume.

Rumen function and propionate influence on milk volume:

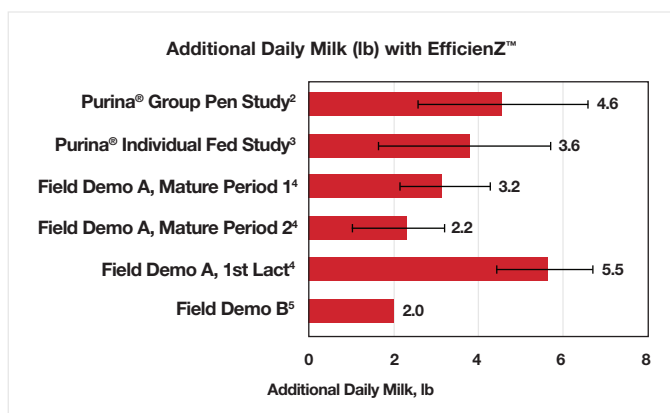


Ruminal *in vitro* fermentation studies at the Purina Animal Nutrition Center evaluated effects of EfficienZ™ in several different diet types. The research shows that the inclusion of EfficienZ™ Fermentation Product in the diet supports:

- ✓ Digestion (measured by increased gas production)¹
- ✓ Total volatile fatty acid (VFA) production (both acetate and propionate)¹

Results from lactating cow feeding studies at the Purina Animal Nutrition Center and a field demonstration show that EfficienZ™ Fermentation Product supports:

- ✓ Milk yield^{2,3,4,5}
- ✓ Energy-corrected milk^{2,3}
- ✓ Feed efficiency^{2,3}



¹ *In vitro* fermentations: PIV2019_3, PIV2019_7, PIV2019_11, CBF2020_2, CBF2021_2 Purina Animal Nutrition Center, 2019-2021

² Lactating cow group pen study: DC591, Purina Animal Nutrition Center, 2019

³ Lactating cow individually fed study: DC592, Purina Animal Nutrition Center, 2020

⁴ Northern Ohio Field Demonstration, 2020

⁵ Northwest Pennsylvania Field Demonstration, 2020



FEED GREATNESS®



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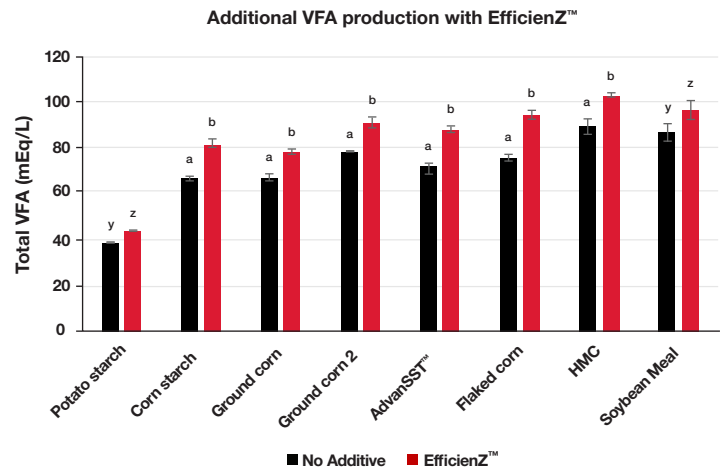
PURINA® EFFICIENZ™ FERMENTATION PRODUCT

Optimizing rumen fermentation

Inclusion of EfficienZ™ Fermentation Product in a cow's diet supports rumen function which, in turn, optimizes volatile fatty acid production.

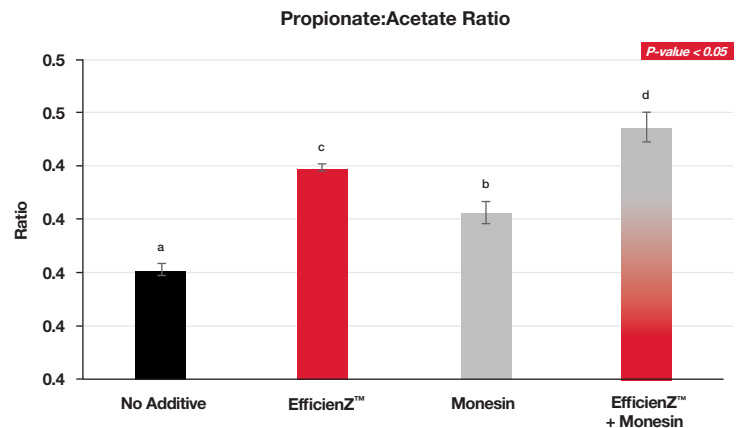
Ruminal *in vitro* fermentation studies at the Purina Animal Nutrition Center evaluated effects of EfficienZ™ Fermentation Product with several different diet ingredients. Results show that inclusion of EfficienZ™ Fermentation Product in the diet supports digestion, total VFA production, and a beneficial profile of VFAs with a wide range of ingredients.

^{ab} Means with different subscripts within a feed are significantly different ($P < 0.05$)
^{yz} Means with different subscripts within a feed tend to be different ($0.05 < P < 0.2$)



Results from *in vitro* fermentation studies at the Purina Animal Nutrition Center show an increased propionate-to-acetate ratio that demonstrates a beneficial shift in ruminal fermentation. This indicates that EfficienZ™ Fermentation Product can be utilized with other additives, such as monensin, to support optimized ruminal fermentation efficiency and the production and availability of energy.

^{ab} Means with different subscripts are significantly different ($P < 0.05$)



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