

## **Zinc Supplementation Alters Microbiome and Improves Feed Efficiency**

-Lorianne Stevens

Researchers from the University of Wyoming report zinc supplementation using a zinc amino acid complex decreased on rumen microbiome diversity. While populations of species important for feed conversion and efficiency were enhanced.

Whit Stewart, University of Wyoming's Sheep specialist, and Ph. D candidate Chad Page recently wrapped up a study at Montana State University. Where Stewart determined the impact of zinc supplementation using either zinc sulfate or zinc complexed with an amino acid on the ram's rumen microbiome, and overall growth performance.

Dietary zinc benefits have long been known to animal researchers regarding animal health, immunity and enzyme production. Despite this, in a field study Stewart and Page conducted they found, 9.5% of sheep ranches had deficient animals and 57.1% had animals marginally deficient in zinc. Production losses from marginal deficiency can be hard to quantify but may include reduced feed intake, wool production, growth, and fertility.

Ruminants like sheep are unique in that not only do the sheep themselves have dietary requirements, but the micro-organisms in the rumen also have a dietary requirement for zinc. Page and Stewart predicted that supplementation of zinc would change the biodiversity of the rumen bacterial community differently, based on the type of supplement.

Stewart observed rams supplemented with zinc amino acid complex had a greater average daily weight gain and increased feed efficiency when compared to the group supplemented with zinc sulfate. This indicates bioavailability and absorption differs between the two zinc sources.

For Stewart, the most interesting part of this experiment is, although there were some differences in rumen activity between the zinc amino acid group and the zinc sulfate group, neither supplement negatively influenced the rumen or the overall health of the animal. Because of this Stewart believes either supplement could be easily used by producers.

Seeing as most western sheep production systems rely heavily on rangeland grazing, the possible implications of this study could be vast. Mineral contents vary greatly in rangeland plants and many tend to be zinc deficient easily resulting in animal deficiency and causing production slumps.

Mineral supplementation has the potential to improve production when range animals are fed low quality forages or mineral deficient feedstuffs. While marginal deficiency doesn't cause obvious symptoms, those deficiencies may negatively influence immunity, fertility, growth and wool production.

Research on this topic continues for Stewart and Page on the effects of zinc supplementation in preventing or reducing occurrence the occurrence of mastitis in ewes, and newborn lamb survival.