UA Study Shows Trace Minerals Improve Semen Quality

DR. JEREMY POWELL

FAYETTEVILLE, ARK.

A recent UA study evaluated the effect of trace mineral supplementation on bull semen quality during the summer months when high environmental temperatures can negatively affect fertility.The study found that semen quality was improved in bulls fed an organic trace mineral supplement compared to bulls fed a more traditional inorganic mineral supplement. Minerals are commonly supplemented to livestock as inorganic molecules of sulfates or carbonates. Complexes of a mineral bound to an amino acid or a carbohydrate are known as organic minerals. Recently, organic sources of some minerals have been used for supplementation to livestock and possibly provide improved bioavailability.

Mature Angus and Balancer bulls were utilized in the study and assigned to one of two treatments. Bulls received either an inorganic or organic trace mineral supplement from mid-May to September. The inorganic mineral supplement contained trace minerals from inorganic sources, while the organic diet contained a portion of the trace minerals (Zn, Cu, Co and Mn) from organic mineral sources. The organic mineral supplementation was delivered by Availa4® from Zinpro Corporation. The total level of trace minerals and all other ingredients in the bulls' diets were identical for the two treatment groups.

Because sperm production in bulls requires 60 days, weekly semen collection began in mid-July and continued for nine weeks utilizing electroejaculation. Samples were evaluated immediately after collection by computer-assisted sperm analysis. Then semen was processed and frozen for follow-up post-thaw evaluation.

Bulls supplemented with organic trace minerals exhibited improved fresh semen sperm motility compared to bulls supplemented with inorganic trace minerals (65.5 percent versus 56.1 percent, respectively). Likewise, frozen semen sperm motility also increased at zero and two hours post-thawing. Overall, these results suggest replacing a portion of the supplemental Zn, Cu, Co and Mn with organic trace mineral amino acid complexes may improve measures of bull semen quality both before and after freezing. A more detailed description of the study can be found at this web site: http://arkansasagnews.uark.edu/5971.pdf. Δ

DR. JEREMY POWELL: D.V.M./Associate Professor, Department of Animal Science, University of Arkansas