Trouw Nutrition INTERNATIONAL

Technical Report

BULL FERTILITY ENHANCED BY ZINC OPTiMIN®

The supplementation of dietary OPTiMIN® Proteinated Zinc to bulls improved semen quality.

Three hundred twenty five yearling Angus bulls were allotted by weight into six pens to provide three pens of heavy and three pens of light bulls. One of three dietary treatments (40 ppm Zn Sulfate, 40 ppm Zn with 2/3 from Zn Sulfate + 1/3 from Zn OPTiMIN®, 60 ppm Zn Sulfate) was then assigned to provide one heavy and one light pen per dietary treatment. The bulls were fed the diets for 126 days. Average daily gain, change in scrotal circumference, change in liver Zn concentration were evaluated in all bulls. Sperm motility and morphology were evaluated in 167 bulls intended for sale.

It is well recognized that nutrition plays a critical role in the performance and well being of livestock.

KEY POINTS:

1. Average daily gain and change in scrotal circumference were numerically but not statistically different among treatments groups, with the bulls fed the Zn OPTiMIN® having the greatest numerical increase in scrotal circumference.
2. The percent normal sperm cells was statistically higher in bulls fed Zn OPTiMIN® and the higher level of Zn Sulfate when compared to the bulls fed Zn Sulfate at 40 ppm; with the average normal sperm cell count being 6.4% higher in bulls fed the Zn OPTiMIN® compared to bulls fed the 60 ppm level of Zn Sulfate.
3. In all fertility measurements observed, bulls receiving the Zn OPTiMIN®/Zn Sulfate combination have statistically greater improvement compared to bulls fed Zn Sulfate at 40 ppm; and numerically greater improvement compared to bulls fed the 60 ppm Zn Sulfate treatment.
4. Bulls fed Zn OPTiMIN®/Zn Sulfate at 40 ppm of Zn increased normal sperm cells by 23.5% over those receiving Zn Sulfate at 40 ppm.

Initial and final liver biopsies were collected (10 per pen) and analyzed for zinc concentration. Individual bull weights and scrotal measurements were recorded at the beginning and end of the feeding period. Semen from bulls intended for sale (n=167) was collected and evaluated for motility and morphological abnormalities prior to the end of the study. Bulls with less than 70% normal sperm cells or with motility scores of poor were considered classification deferred.

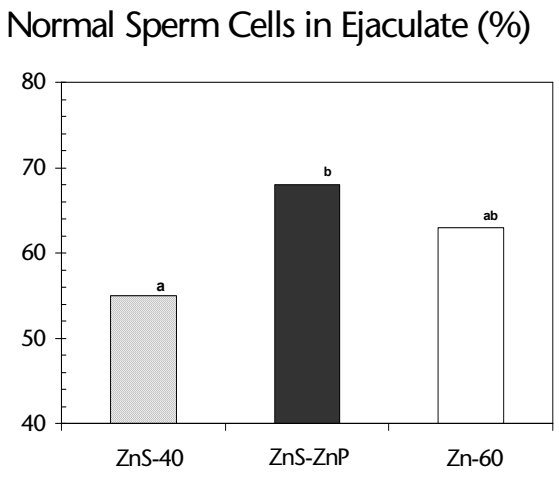
Table 1. EFFECT OF ZINC LEVEL AND SOURCE ON BULL GROWTH AND FERTILITY

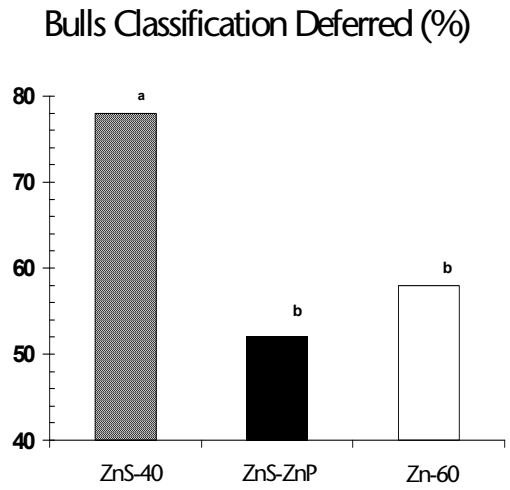
Criteria measured	ZnS 40ppm	ZnP- ZnS 40ppm	ZnS 60ppm
ADG, lbs	2.9	3.3	3.3
Change in scrotal circumference, cm	8.6	9.3	9.1
Change in liver concentration, ppm	-9.8	1.2	20.6
Normal sperm cells in ejaculate, %	55.8[a]	68.9[b]	62.5[a,b]
Bulls classification deferred, %	77.6[a]	51.5[b]	58.8[b]

Change in liver concentration: ZnS-40 vs. ZnS-60 (P=0.058).

[a,b] Means with unlike superscripts within a row differ (P<0.05)

Treatments ZnS-40 = 40 ppm Zinc from Zinc Sulfate; ZnS-ZnP = 40 ppm Zinc, 2/3 from Zinc Sulfate, 1/3 from Zinc OPTiMIN®; ZnS-60 = 60 ppm zinc from Zinc Sulfate.





These data are adapted from 1995 Cattlemen's Day Report #727, Kansas State University.