

Research Now

Availa-4 Improves Bull Semen Quality

Introduction:

Research studies designed to evaluate the impact of trace minerals from Availa®4 on reproduction have shown positive effects that improve the economic bottom line for beef producers. These studies have primarily been focused on the cows and replacement heifers. Responses have included increased conception rates to AI programs, shorter calving intervals, and improved pregnancy rates to natural service. The objective of this study was to evaluate the effect of trace minerals from Availa-4 compared to a standard inorganic mineral supplementation program on bull semen quality.

Materials and Methods:

- Nineteen Angus and Balancer bulls
- 123 d feeding period (mid-May to mid-Sept)
- Starting d 60, weekly semen collections for 9 weeks

Treatments:

- Per head daily: 450 mg Zn, 150 mg Cu, 300 mg Mn and 12 mg Co
- 1) Standard Inorganic sources
 - 2) Availa-4: Replaced a portion of the inorganics sources: 360 mg Zn, 125 mg Cu, 200 mg Mn and 12 mg Co per head daily

Results:

Bulls fed Availa-4 (7 g/head daily):

- More motile sperm ($P < 0.02$)
- Likewise, progressive sperm percentage increased ($P < 0.01$)
- Greater percentage of motile sperm with rapid motility ($P < 0.01$)

Conclusion:

Feeding bulls trace minerals from Availa-4 at least 60 d prior to semen evaluation can improve bull semen quality parameters.

Figure 1

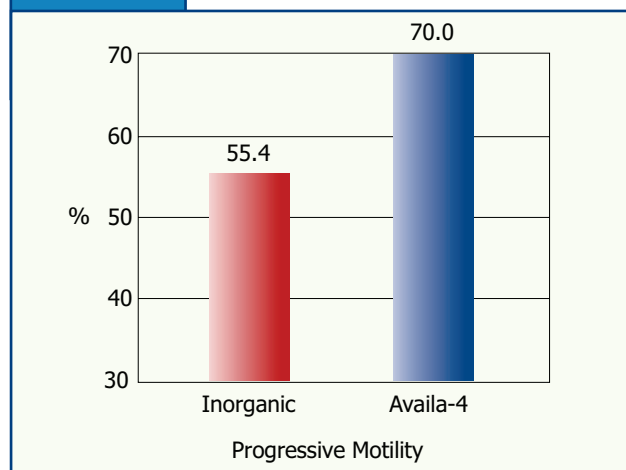
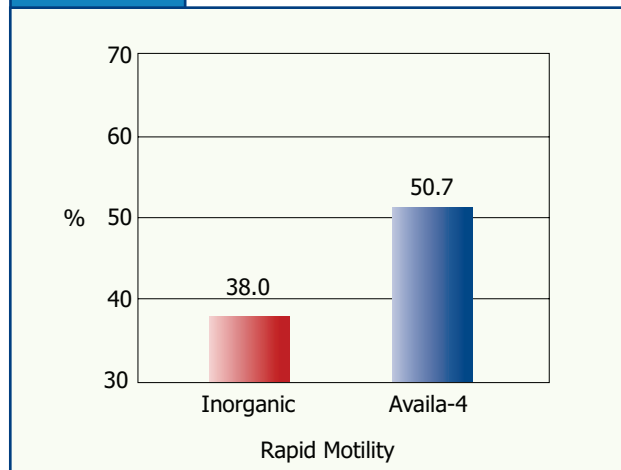


Figure 2



Abstract

Evaluation of organic versus inorganic trace mineral supplementation on bull semen quality.

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Studies indicate that organic forms of trace minerals can improve cow reproductive performance, particularly during periods of stress. However, limited information is available on the effects of organic trace mineral supplementation on bull fertility. The objective of this study was to evaluate the effect of trace mineral supplementation on bull semen quality, as measured by computer-assisted sperm analysis (CASA). Angus and Balancer bulls were assigned to inorganic (n=9) and organic (n=10) trace mineral treatments, based on semen quality, breed, body weight, and age. The bulls were maintained in a dry lot pen and fed mixed grass hay. Three times each week bulls were individually fed a ration containing either inorganic or organic Zn, Cu, Co and Mn trace mineral for 123 days (mid May to mid September). Starting on day, 60, semen was collected by electroejaculation weekly for 9 weeks. Semen was evaluated by CASA for percent motile, progressive and rapid sperm within 5 minutes of each collection. Data was analyzed by treatment, week and their interaction, using SAS PROC Mixed for repeated measures. No interaction occurred between week and treatment, nor was week significant ($P > 0.05$). Bulls supplemented with organic trace mineral had more ($P = 0.019$) motile sperm than those supplemented with inorganic trace mineral (67.3 versus 56.3%, respectively). Likewise, progressive sperm was improved ($P = 0.004$) for bulls receiving organic (70.0%) versus inorganic (55.4%) trace mineral. The percentage of motile sperm with rapid motility (path velocity $> 50\mu\text{m}/\text{sec}$) was also greater ($P = 0.002$) for bulls supplemented with organic as compared with inorganic trace mineral (50.7 versus 38.0%, respectively). Sperm motility is the single most important semen quality parameter influencing bull fertility. These results suggest organic trace mineral supplementation may improve bull semen quality. Additional studies are needed to determine if this improvement in semen quality translates into higher pregnancy rates.

Key Words: trace mineral, fertility, beef bulls

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