

Yuma County Boligrow Trials, 1985

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Introduction

Boligrow is an aluminum sulfate material used to reduce the soil pH and improve soil structure. Research has been conducted on Boligrow in Saudi Arabia and Egypt, but additional work in Arizona was desired to determine the effectiveness of this material under our soil and water conditions. A cooperative study was established in which this material was applied to squash, lettuce and carrots on the sandy mesa soil using ground water and solid set sprinklers. An additional sweet corn trial was conducted on the heavy soil at the Yuma Valley Agricultural Center with Colorado River water.

Methods

Three rates of Boligrow (control, 500 lbs/A, 1000 lbs/A) were banded on 3 replicated plots of squash, lettuce and carrots when the plants were approximately 3 weeks old. After the growing beds were listed for the sweet corn trial at the Yuma Valley Agricultural Center, Boligrow was broadcast at 4 rates (control, 500 lbs/A, 1000 lbs/A, 2000 lbs/A) on March 18, 1985. The beds were then formed and double rows were planted on each bed. The plots were 4 beds by 55 feet and replicated 4 times in a Latin Square design.

The lettuce and carrots were harvested near maturity. The squash was harvested 5 times from May 20 to June 11, 1985. To determine biomass on the sweet corn trial a 35 foot section of the center 2 rows of each plot was cut and weighed on May 11, 1985, when the corn was approximately 5 feet high.

Results

Yields are illustrated in Figures 1 to 3. A significant difference between treatments was observed only in squash where the 1000 #/A rate showed a significant reduction in yield. This could have been a result of concentrating the material in bands near the young plants, rather than broadcasting the Boligrow over the entire plot. On the other hand, a slight, although non-significant, increase in yield was consistently seen at the 500#/A rate in squash. The only observable trends with the lettuce and carrots were at the 1000#/A rate where the yield was slightly higher than the control in carrots but lower in lettuce.

Soil variation and salt accumulation severely affected the growth of corn in some plots. For this reason the yields from only the two highest plots for each treatment were used, and no statistical analysis was made. As can be observed in Figure 4, a slight increase in yield resulted when the rate of Boligrow was increased.

The effectiveness of Boligrow to increase yield or biomass was not statistically significant either on the sandy mesa soil where ground water was used, or on the heavy soil irrigated by Colorado River water at the Yuma Valley Agricultural Center. In some cases, however, Boligrow appeared to give a slight increase in production. With an estimated cost of \$75.00 per ton the economic advantage of using Boligrow is questionable in the Yuma area.

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Figure 1. Squash Yield for the Three Treatments for 20 Feet of Row

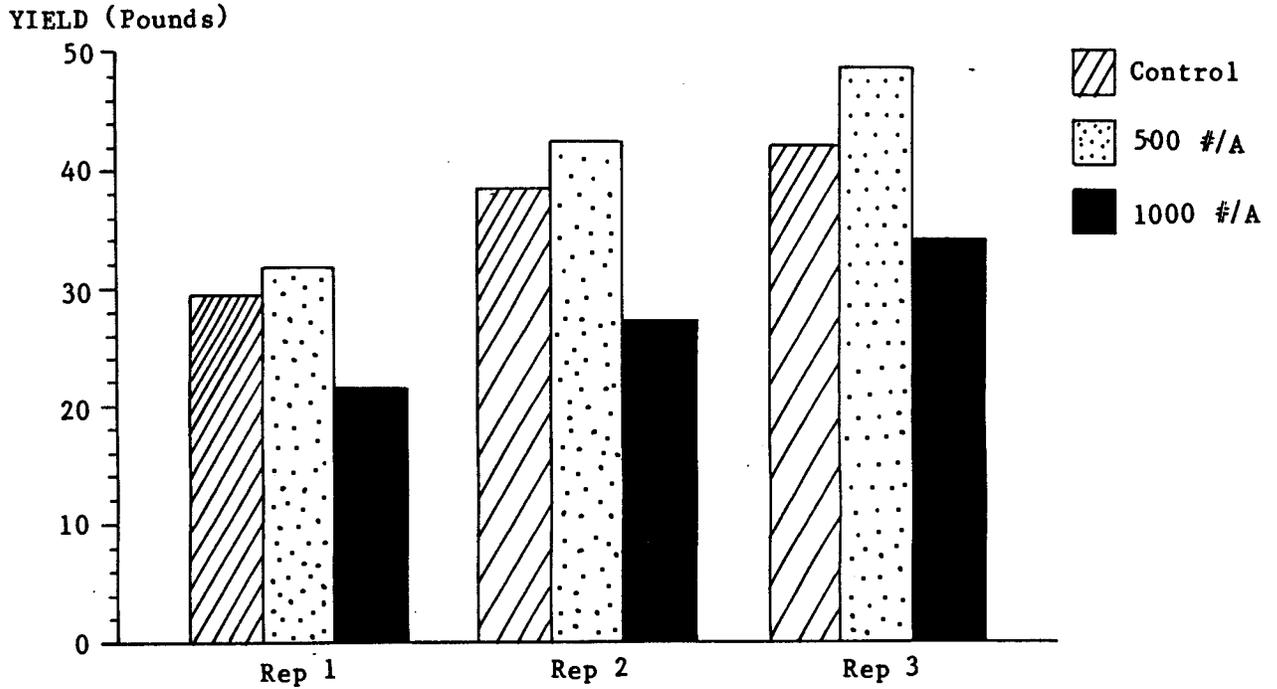


Figure 2. Lettuce Yield for the Three Treatments for 10 Feet of Row

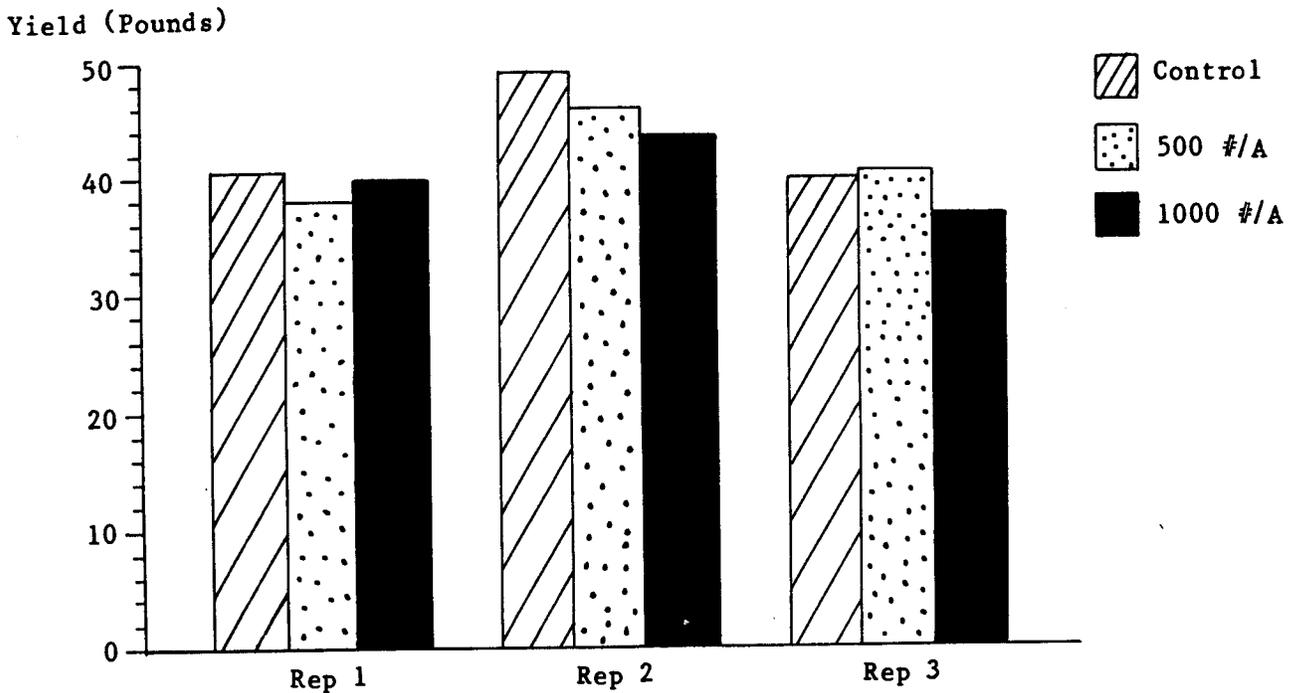


Figure 3. Carrot Yield for the Three Treatments for Eight Feet of Row.

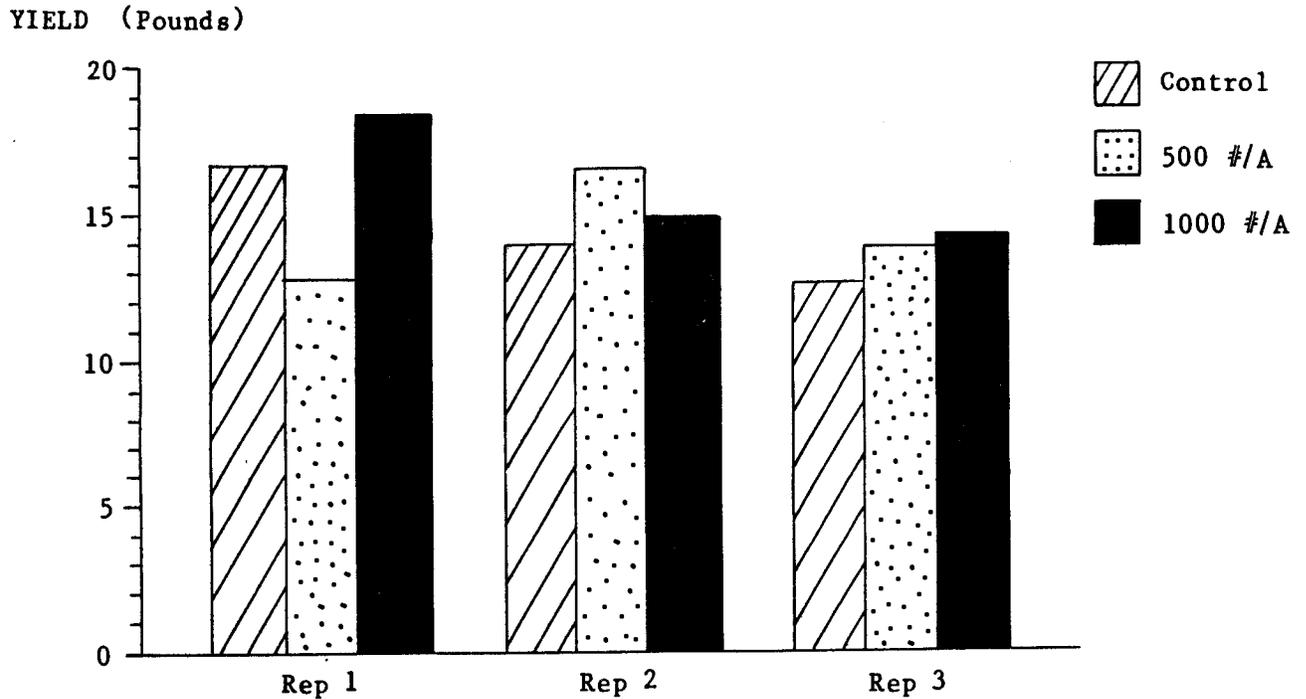


Figure 4. Corn Biomass Yield for the Four Treatments for 35 Feet of Row

