

“Effects of Bioactivated Base *actosol*® on Root Development, Plant Height and Seed Count/Head on Wheat”

Woodlief Farms in Rolesville, North Carolina, 2009

A field test was conducted to evaluate the use of *Base actosol* on established wheat plants (Southern States 8308 variety) during the spring of 2009. The objective was to compare applications of *Base actosol* to non-treated grower standard program and determine its effect on root development, plant height, and seed count/wheat head.

Wheat seed of SS 8308 were planted on Nov. 14-18 2008. No fertilizer was applied until March of 2009. The rate of spring fertilizer was 100 units of a 24% nitrogen. Plants were grown under non-irrigated growing conditions. On February 16 and March 24th 1.5gallons of *Base actosol* /40 gallons of water per acre were applied overhead. Plot size consisted of 1 acre for each treatment. Both treatments received the identical amount of fertilizer and all other growing conditions were the same. Evaluation of root development, plant height, and seed count per head were measured on June 9, 2009. Harvesting of the crop occurred on June 17-20, 2009. Data collected from the study consisted of 10 replication within the field for each treatment.

TREATMENTS:

1. Base actosol two times at 1.5gallons/40 gallons of water per acre
2. Grower standard (Control)

Both treatments received the identical amount of fertilizer and all other growing conditions were the same.

OBSERVATIONS/DATA

Root Development. Observation from this study showed that *Base actosol* significantly improved root development compared to the grower standard treatment. The actosol treatment showed improvement in both root mass and in root length compared to the grower standard as shown in Figure 1 and Figure 2



control

actosol®

Figure 1



actosol®

control

Figure 2

Plant Height. Evaluation of shoot height of wheat plants that were treated with *actosol* averaged 27-28 inches vs. grower standard of 22-23 inches as shown in Fig. 3. It was also noted that the length of the shoots correlate closely to the length of the seed head.



Figure 3.

actosol® control

Seed Count/Head. Evaluations of seed count /head were determined by removing the individual seeds from each head and counting the total seeds and weight of the seeds per head. Ten replications were made from each treatment. Results showed that the use of *actosol* averaged 44 seeds per head vs. 21 for the grower standard. We also observed that the weight of seeds per head averaged three times as great 2.2 grams vs. 0.8 grams for the grower standard as shown in Fig. 4. Visual observations also noted that seeds which had received actosol were fuller and larger in girth.



Figure 4.

actosol® control

RESULTS/CONCLUSION

Results showed that *Base actosol* does increase root development, shoot length, and seed count/head. In relationship to calculating an estimate of yield difference between actosol vs. the grower standard we calculated the estimated yield by multiplying the average heads per foot(30) by the average number of kernels per head(44 actosol vs. 21 grower standard) The results was 1320 vs. 630. We then divided this number by 12(rows spacing in inches) which was 110 vs. 53 and then multiplied it by .48 to arrive at an estimated yield of 53 bushels for actosol vs. 25 bushels for the grower standard. This is a 112% increase in yield per acre. It should be noted that this grower did not fertilize at planting and

weather conditions were not typical of a average growing season. Based on this geographic area yields for the 2008-2009 growing season ranged from 25 -60 bushels and based on this farmers soil type and growing conditions they would consider 40 bushels per acre to be extremely good. Based on the increase in yield and the wheat currently selling at average \$4.00/bushel the farmer realized a gross profit \$112.00 per acre minus \$36.00 per acre cost for actosol thus net profit per acre to the farmer was \$76.00. This is a significant gain for the farmers thus improving their overall income of farm operations which otherwise have been very marginal due to decreasing crop yields and lower crop prices.