

“Effect of Base *actosol*® on Root Development, Plant Quality and Nutrient Retention on Tobacco Plants” Hope Farm, Clinton, North Carolina 2009

The use of humates to increase root development, plant quality, and potential yields has been tested by various university researchers on commercial agronomic and horticultural crops. The purpose of our study was to determine the effect of Base actosol on root development, plant quality, and nutrient retention on commercially grown tobacco.

On March 20, 2009 a test was initiated applying *Base actosol* to float bed (12.5 gallons of actosol/500 gallons of water) growing tobacco seedlings (288 cells/tray) in a greenhouse at Hope Farm, in Clinton, NC. An identical bed of tobacco seedlings was not treated (grower standard). Seedlings of both treatments received the same liquid fertilizer in the float beds while in the greenhouse until April 17th, 2009. Plants/Seedlings treated with base actosol in the greenhouse were then transferred to the field where they received an application of *Base actosol* in the transplant water (2gallons of actosol/acre in 80 gallons of water). A second group of seedlings which did not receive any actosol in the greenhouse (grower standard) were transplanted to the field and only received water at planting. Both groups received the following fertilizer during the testing period. Fertilizer treatments included 200 lbs/acre of 15.5% calcium nitrate on April 24 followed by 700lbs /acre of 8-4-24-13.2S-4.9Mg with Avail approximately May 13th. Observations were made and data were collected on July 7th and Aug 12th. Soil samples were taken on both dates. Ten replications were made of each treatment.

OBSERVATIONS/DATA:

Root Development. Observation from this study showed that *Base actosol* treatments significantly improved root development compared to the grower standard. Based on our observations Base actosol also increased fibrous feeding roots (Fig.1) and (Fig.2) compared to the grower standard and thus we noted improved top growth and quality of the tobacco.



Figure 1

actosol®



Figure 2

control

Plant Quality. It showed an increase in plant height and improved in color and quality of tobacco plants (Fig. 3) treated with base actosol vs. grower standard. Average height of tobacco plants treated with actosol showed a 10% increase in plant height compared to the grower standard. Measurement of height growth for this study was calculated from the base of the plant to where it was topped. Based on these two criteria, there is a strong correlation between improvement in root development and its impact on vegetative top growth and plant quality.



Figure 3

Nutrient Retention. The study showed that *Base actosol* improved nutrient retention in sandy soils in which this study was conducted compared to the grower standard. (*Table 1*) The results show that base actosol doubled the organic matter content and retained more phosphorous, potassium, magnesium, calcium, and zinc content in the soil compared to the grower standard.

Effects of *Base actosol* on Nutrient Retention and Organic Matter Content in Sandy Soils, Clinton, North Carolina

Treatment	Date	O.Matter	P ppm	K ppm	Mg ppm	Ca ppm	pH ppm
actosol	July 7	1	175	34	48	315	6.2
Grower Standard	July 7	0.5	179	37	55	370	6.3
Actosol	Aug. 12	0.9	165	47	48	327	6.1
Grower Standard	Aug. 12	0.5	147	38	33	249	5.9

Table 1

RESULTS/CONCLUSION:

Results showed that *Base actosol* when used in both float beds in the greenhouse and transplant water at planting provided improved root development, plant quality, and greater nutrient retention in sandy soils in growing tobacco at Hope Farms in Clinton, NC. It should be noted that during the months of June and July weather conditions were not typical and excessive rainfall occurred thus further indicating that *Base actosol* provides a significant opportunity for growers in these types of soils to increase their quality of tobacco crop and also increase the yields.