

## **FOLIAR FERTILIZERS IN COTTON PRODUCTION**

**Daniel F. Fowler, K.L. Edmisten, and R. Wells**

**Department of Crop Science  
North Carolina State University  
Raleigh, NC**

### **Abstract**

Studies were conducted in 2001 and 2002 to compare the effects of applying foliar potassium and foliar nitrogen to cotton. These tests were conducted in 2001 at the Upper Coastal Plain Research Station near Rocky Mount, North Carolina and the Peanut Belt Research Station near Lewiston, North Carolina. Plot sizes were 40 or 50 feet long depending on location, four rows wide, and row spaced thirty-six inches apart. In 2002, this research was repeated at the Peanut Belt Research Station. A potassium study was conducted using Phytogen 355, early maturity variety, and FiberMax 966, medium maturity variety, to determine if any difference would occur in earliness. Five rates of potash were applied in this study, 0%, 33%, 66%, 100% and 133% of the recommend rates from soil test at each location. Plots were then split by either receiving a foliar application of potassium nitrate ( $KNO_3$ ) (13-0-46) or not receiving any foliar treatment. Potassium nitrate was applied at ten pounds of material to the acre applied at early bloom and at full bloom. The nitrogen study was designed in similar fashion using the same varieties for maturity and growth characteristics. At planting, fifteen pounds of nitrogen was applied to every plot by knifing in thirty percent nitrogen. Later, at lay-by, five rates of nitrogen were applied to the test. These rates were 0, 20, 40, 60 and 80 of nitrogen to the acre. Plots were later split, either receiving a foliar application of urea (46-0-0) or not receiving any foliar treatment. The urea was also applied twice during the growing season at ten pounds of material to the acre at early and full bloom. The center two rows of each plot were spindle picked and sub-sample ginned to determine lint yield, percent lint and fiber quality via HVI. Foliar application of potassium nitrate significantly increased yields only at the Rocky Mount location in 2001. On the other hand, the use of foliar fertilizers increased cotton yields at all locations. These data suggest that under certain environmental conditions foliar fertilizers may be profitable for producers. Under the harsh growing conditions of 2002, fertility was not the limiting factor. Thus, very few differences were seen with the application of foliar nutrients. Quality differences were seen only in 2001 with the use of foliar urea. Staple and Uniformity Index readings were statistically increased in 2001 with the foliar application of urea. Similar trends were seen in 2002, but these findings were not statistical possibly because of such poor growing conditions. No statistical differences were seen with the application of foliar potassium nitrate.