



Increased yield levels with foliar-applied potassium nitrate in cotton

The study was initiated to evaluate cotton (

Gossypium hirsutum

L.) responses to soil- and foliar-applied K for conventional-tillage (CT) and no tillage (NT) production systems in Tennessee, USA. The soil was described as a Memphis silt loam soil, low in Mehlich I extractable K. Potassium rates of 0, 34, 67 and 134 kg K₂O/ha were soil applied to the plots each year. Foliar treatments included: no-foliar K, KNO₃, and Ca(NO₃)₂. Potassium nitrate was applied at 4,9 kg K₂O/ha/application and Ca(NO₃)₂ was applied at 1,6 kg N/ha per application, equivalent to N from KNO₃. Foliar treatments were applied at bloom or 2 weeks after bloom and on either a 9 or 14 days interval for a total of four applications. All foliar treatments were applied in 93,5 L water/ha. A split plot arrangement of treatments in a randomized complete block design was used with five replications per treatment.

Regression equations expressing yield as a function of K₂O rate were developed for KNO₃ and no-foliar K treatments each year for both tillage systems. Yields in both tillage systems were increased by soil and foliar applied K. In 1991 and 1992, the foliar KNO₃ treatment increased yields at all soil K₂O rates. In 1993, foliar KNO₃ increased yields at soil K₂O rates up to 105 kg K₂O/ha in CT and up to 115 kg K₂O/ha in NT. In addition, foliar KNO₃ increased yields at soil K₂O rates up to 121 kg K₂O/ha for the 1994 NT cotton. Based on the results foliar K may be expected to increase yields on medium and low testing soils, even if fertilized with 134 kg K₂O/ha.