



Foliar-applied potassium nitrate on cotton is a profitable supplement to soil-applied K on low K testing soils

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 chloride was soil applied at potassium rates of 0, 34, 67 and 134 kg K₂O/ha to the plots each year. Foliar fertilization provided 44,8 kg/ha KNO₃ in four applications of 11,2 kg/ha each. Foliar treatments were applied shortly after bloom on either a 9 or 14 days interval. Similarly, the foliar calcium nitrate treatment provided 40,3 kg/ha Ca(NO₃)₂ in four applications of 10 kg/ha, each applied at a rate equal to nitrogen in the foliar KNO₃ treatment. All foliar treatments were applied in 93,5 L water/ha.

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. Both for conventional and no-tillage cotton lint yield response models the KNO₃ foliar treatment had increased yield levels compared to the Ca(NO₃)₂ and the control treatments at all five K levels applied to the soil. Economic analysis suggested that foliar KNO₃ on this low K soil in Tennessee provided higher net revenues per hectare than the control, even when relatively high rates of K were applied to the soil for up to two years.