SULFUR MANAGEMENT IN THE UPPER SOUTHEAST COASTAL PLAIN

W. H. Frame
Virginia Tech, Tidewater Ag. Research and Extension Center
Suffolk, VA

Abstract

A series of experiments were implemented in 2014 and 2015 to determine the effect of sidedress sulfur (S) applications on upland cotton (*Gossypium hirsutum)* yields. The objectives of the studies were 1) determine the effect of sidedress S application on concentrations of petiole and leaf S concentrations during bloom and 2) determine the effect of S application on cotton lint yield and quality. The first experiment was conducted during 2014-2915 at six locations on evaluated the application of potassium sulfate coated urea (KSCU) at sidedress on upland cotton. The maximum S application rate applied from KSCU was 12 lbs. S per acre during the trials and was compared to urea alone and a bulk blend of urea and granular potassium sulfate. The second experiment was conducted during 2015 at two locations and evaluated S application rates ranging from 0-40 lbs. S per acre on three cotton varieties. The KSCU trial results showed increased petiole S concentrations during the first week of bloom when 12 lbs. S per acre were applied regardless of formulation. Leaf S concentrations were less responsive to applied S at sidedress than petioles. When S application rates were highly correlated to petiole S concentrations with R^2 values of 0.948 and 0.955 for both locations during 2015 whereas leaf S concentrations had R^2 values of 0.78 and 0.86. A useful method to evaluate S status of cotton may be to use a petiole nitrate-N to petiole S ratio to determine if cotton may be deficient in S. During 2015, the petiole nitrate-N:petiole S ratio dropped from the 0 lbs S per acre to the 10 lbs. S per acre rate at both locations. There was also a variety by petiole nitrate-N:petiole S interaction at location 2 during 2015. Lint yields were increased on average 98 lbs of lint per acre during 2014 when 12 lbs. S per acre was applied with urea during the KSCU trials. However, no significant yield responses were observed in either study during the 2015 growing season. Climatic conditions varied during the 2015 growing season and may have introduced variability which limited S response during 2015. More data are needed to ascertain the effect of S fertilization on upland cotton production in the upper southeastern coastal plain.