4 University of Missouri Cotton Nitrogen Recommendations

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Current University of Missouri cotton nitrogen (N) recommendations (NR) are based upon soil texture as indicated by cation exchange capacity (CEC). The equation used for determining the NR for cotton is:

$$NR = CEC \times 3 \quad [1]$$

with the limits of the lowest recommended rate being 40 lb N/A, and a maximum of 75 lb N/A. No adjustments are made on the basis of soil organic matter, residual soil N in the form of nitrate or ammonium, or previous crops grown. A message is included with cotton NR's stating "if cotton height exceeds four feet, reduce future N applications by 20%". Fertilizer application timings and materials to be used are not addressed in the University of Missouri NR. Leaf and/or Petiole N testing is not done routinely, and NR's are not based upon these tests.

Cotton soils in Missouri are predominately loamy sand to sandy loam in texture, and have low CEC's. Therefore, basing NR's on CEC rarely results in NR's greater than the 40 lb N/A. Research in Missouri and other midsouth states has shown that cotton growth and lint yields often respond to N quantities greater than 40 lb N/A. Therefore, the University of Missouri is in the process of changing current cotton NR's. New recommendations will still be based primarily on soil texture. Proposed recommendations will be 60 to 100 lb N/A on loam or lighter textured soils, and 60 to 120 lb N/A on silty clay loam or heavier soils, with individual rates being dependent on yield goals. Split N application timings will be recommended on soils with CEC's of five or less. Nitrogen applied all pre-plant will be recommended on soils containing CEC's of greater than five, unless the total N requirement exceeds 80 lb N/A. New NR's will