EFFECTS OF NITROGEN AND POTASSIUM RATES AND TIMING ON COTTON YIELD AND FIBER QUALITY: FIRST YEAR RESULTS Blake L. Szilvay Keith L. Edmisten North Carolina State University Raleigh, NC Guy D. Collins North Carolina State University Rocky Mount, NC

Abstract

The purpose of this research is to help better predict the effect on yield and quality that variable timings and rates of nitrogen and potassium have on cotton. Too much of either nutrient can result in luxury consumption or delayed maturity, while too little could result in plant stress or inadequate yields. Poor application timing may render nutrients unavailable when needed, while spoon-feeding applications may be logistically inconvenient or economically draining. Timing and rate decisions are made on a case-by-case basis and are better made when there is relevant research available.

Potassium treatments include one, one and a half, and two times the recommended rate applied at pre-plant, layby, and 3 weeks after layby while nitrogen treatments include a total combination of 20, 80, or 110 pounds/acre at the same timing. Measurements included nodes above white flower at first bloom, second layby, and two weeks after second layby, a petiole sample two weeks after second layby, end of season plant mapping, defoliation rating, yield quality, and fiber quality. There were 10 potassium treatments, three rates and three timings with a control, and 8 nitrogen treatments, two rates at three timings, a control, and a single 20 pounds at pre-plant. Potassium trials took place at the Sandhills Research Station and the Peanut Belt Research Station. Nitrogen trials took place at the Upper Coastal Plain Research Station and the Peanut Belt Research Station.

There was no significant yield difference, with either nutrient, in splitting applications as compared to preplant fertilizer applications. Both potassium trials showed no yield increase throughout all rates and timings. Potassium didn't affect maturity. Although, the plant tissue percent potassium and nitrogen varied in both tests, it did not correlate with yield in either. Early potassium or nitrogen stress didn't affect yield significantly.

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