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COTTON FIBER QUALITY AND GROSS RETURNS FOR SELECTED FOLIAR CORON APPLICATIONS

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Abstract

A 2-year (2001-2002) study was conducted to evaluate the effect foliar nutrient applications on a Leeper silty clay loam soil testing high in P and K had on cotton lint gross returns and fiber quality. Slow release N (CoRoN®, 25-0-0), slow release N + K (CoRoN, 10-0-10, 0.5% B) liquid formulated solutions, and conventional foliar applications of Solubor [boron (20% B)], potassium nitrate (KNO_3) and feed grade urea (46% N) were applied either at pinhead square or sequential applications starting at pinhead square or first bloom. Sequential applications were applied at first bloom 9 and 13 days after first bloom applications in 2001 and 2002, respectively. The delay in the 2002 applications was due to wet soil conditions. Foliar applications were made with TXVS-4 nozzles on 20 inch spacing with water as the carrier at 5 gpa. Boom height was 20 inches above the cotton plants with a boom pressure of 32 psi.

Soil test indicated high P and high K levels and annual fall applications of 250 lb/A of potash (K_2O) were made prior to land preparation. NuCotn 33B cotton cultivar was planted about May 20 in 38-inch rows with a seeding rate of 4 seed/ft of row. N as liquid UAN (32% N) at 80 lb N/A was applied sidedress to all treatments, 6 inches from the row and 2 inches deep, about 10 days before the pinhead square foliar applications.

The National Commodity Credit Corporation (NCCC) loan base price of 51.92¢/lb with premiums or discounts adjustments for treatment fiber quality was used to calculate the gross lint returns. The NCCC net loan value for each treatment multiplied times the lint yield equaled the gross lint return/A. The local vendor 2001 price was used to determine the foliar nutrient material cost per acre. Returns/A above the foliar nutrient material cost/A and the check lint gross return/A for each treatment were calculated by subtracting the cost of the material and the check gross returns from the treatment lint gross returns.

During the growing season, no visual differences between treatments were noted. Both years, foliar nutrient applications had no effect on gin turnout, staple length, strength, micronaire and net loan price and there was no year by treatment interaction. Year had no effect on lint gross returns and there was no year by treatment interaction. Therefore, the two year treatment means were compared. The two year average study lint gross return mean was $486/A. Lint gross returns ranged from $459/A for the check (water) to $511/A for the KNO_3 treatment. The check and Solubor at 0.15 lb B/A applied at first bloom and repeated 9 or 13 days later, and CoRoN 25-0-0 at 1 gpa applied at pinhead square showed no difference in gross returns. These treatment returns were lower than KNO_3 (1 lb N + 3.3 lb K_20/A) and CoRoN 10-0-10 0.5%B at 1 gpa, all applied at first bloom and repeated 9 or 13 days later. The returns for KNO_3, urea at 1 lb N/A, and CoRoN 10-0-10 0.5% B at 1 gpa all applied at first bloom and repeated 9 or 13 days later; CoRoN 10-0-10 0.5% B at 1 gpa applied only at first bloom; and CoRoN 25-0-0 at 5 gpa applied at pinhead square followed by CoRoN 10-0-10 0.5% B at 1 gpa applied at first bloom and repeated 9 or 13 days after bloom ranged from $490 to $511/A with no differences. However, CoRoN 25-0-0 at 0.5 gpa applied at pinhead square showed returns equaled to urea at 1 lb N/A and Solubor at 0.15 lb B/A both applied at first bloom and repeated 9 or 13 days later; CoRoN 10-0-10 0.5% B at 1 gpa applied at first bloom; and CoRoN 25-0-0 at 0.5 gpa applied at pinhead square followed by CoRoN 10-0-10 0.5% B at 1 gpa applied at first bloom and repeated 9 to 13 days later.

The per application cost for foliar nutrient material ranged from $0.60/A for Solubor to $4/A for CoRoN 10-0-10 0.5% B. The returns above the check and the total cost/A for the material ranged from $1/A for Solubor to $46/A for KNO_3 (1 lb N + 3.3 lb K_2O/A), applied at first bloom and repeated 9 to 13 days later. All treatments except Solubor and CoRoN 25-0-0 at 0.5 gpa applied at pinhead square showed more than $27/A returns above the check and the foliar nutrient material cost.

The fiber quality as reflected by net lint loan value ranged from 51.32¢/lb for Solubor to 53.68¢/lb for CoRoN 10-0-10 0.5% B applied at 1 gpa at first bloom and repeated 9 to 13 days later with no differences between treatments. However, all treatments except CoRoN 10-0-10 0.5% B applied twice at 1 gpa had a lower net loan value than the check. Although not significant, net loan value data suggests the product chosen for foliar fertilization in cotton may influence net loan value and gross returns.

In conclusion, farmers should be able to improve cotton profitability by using foliar applied nutrients. Foliar nutrients which contain N and/or K provided greater returns than Solubor. However, combinations of the N and K (CoRoN 10-0-10 0.5% B and KNO_3) provided $4 to $17/A more return than N (Urea and CoRoN 25-0-0) alone. One application of CoRoN 10-0-10 0.5% B at 1 gpa at first bloom provided returns equivalent to two applications. Data suggests the product chosen for foliar fertilization in cotton may influence lint quality as reflected in net loan value and gross returns.