THE EFFECT OF POTASH LEVEL ON SEVERAL CHARACTERS IN FOUR STRAINS OF UPLAND COTTON WHICH DIFFER IN FOLIAGE GROWTH

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COTTON rust, attributed to a deficiency of potash, is common in the Coastal Plain of Georgia. Even when 40 to 60 pounds per acre of potash are applied, the deficiency symptoms occur in cotton grown on many soils. Defoliation, shriveled bolls, and reduced yields are the general results. Observations indicate that the severity of potash-deficiency symptoms differ in cotton varieties. Light-foliaged varieties seem to show earlier deficiency symptoms and varieties with largest leaf area remain normal longer and give larger yields when potash is deficient.

Previous studies at the Georgia Coastal Plain Experiment Station have indicated that heavy-foliaged strains shed less than light-foliage types, regardless of weevil population or seasons. Isely (1) in Arkansas has shown that leaf size has little influence upon weevil damage where plants were of the same size.

The results of experiments reported in this paper show the effect of potash on plant foliage and factors associated with cotton yield on four strains of upland cotton. The experiments were made on Tifton sandy loam at the Coastal Plain Experiment Station, Tifton, Ga.

REVIEW OF LITERATURE

Numerous experiments have been conducted studying the value of potash applications to the cotton crop; most of these, however, have not been concerned with different types or strains of cotton.

Moore and Rankin (2), at the North Carolina Experiment Station, found that relationships did exist between potash applications and yield and boll and seed characters of cotton. In a study of exchangeable potassium in Alabama soils, Volk (4) concluded that higher potash applications resulted in later maturity and heavier weevil infestation and, consequently, gave lower yields in many localities.

Potash-varietal-wilt studies conducted in Alabama by Tisdale and Dick (3) showed that varieties differ as to potash requirements. Their work also indicated that only moderate applications of potash were profitable.

MATERIALS AND METHODS

The land selected for this study grew Spanish peanuts the two preceding years. The peanuts received applications of a 2-10-4 fertilizer at a rate of 400 pounds per acre. In the study, reported here, potash was applied at the rates of 20, 40, and 80 pounds of K₂O per acre, secured from applications of 3-8-4, 3-8-8, and 3-8-16 fertilizer mixtures, respectively, applied at the rate of 500 pounds per acre. The nitrogen in these formulas was obtained in the following way: 40% from 16% nitrate of soda, 40% from 42% uramon, and 20% from 7% cottonseed meal. The phosphorus was derived entirely from 16% superphosphate and the potash was obtained from 50% muriate of potash in all instances.

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2 Agronomist (Cotton Breeding). The author is indebted to Dr. G. W. Burton for aid and suggestions in preparation of the manuscript.
3 Figures in parenthesis refer to “Literature Cited”, p. 698.