

For More Economical Production of Cotton

A Summary of Recent Research Studies

By A STAFF WRITER

IMPORTANT studies of cotton production seeking more economical and more profitable practices are made yearly by the South Carolina Experiment Station. Valuable to practical farmers are some of these studies made at the Pee Dee branch at Florence in connection with time and methods of planting, varieties, fertilization, and soil treatment. From reports by E. E. Hall, superintendent of the branch, Dr. H. P. Cooper, agronomist, and their co-workers are summarized these results:

Growing cotton profitably depends largely upon the quality of seed and variety planted. Farmers have taken advantage of the excellent work of plant breeders in developing varieties and strains of cotton with superior qualities. The South Carolina Experiment Station conducts yearly variety tests, obtaining the yield of seed cotton, length of staple, per cent of lint, and size of boll for each variety.

40 Varieties Tested

Forty varieties and strains were tested in 1935 showing a difference in yield of 411 pounds of seed cotton between the highest and lowest yielding varieties. The four highest yielding varieties, follow: Humco Carolina Foster 13-52-6, 1,919 pounds; W. W. Wannamaker Dixie Triumph, 1,912 pounds; Coker Farm Relief 33-10, 1,910 pounds, and Coker Wilds St. 6, 1,906 pounds of seed cotton per acre. Wood's Ingold 670 was the lowest yielding, with 1,508 pounds.

Usually best yields are obtained from early plantings provided perfect stands are maintained. Too early planting often results in having to plant over, or, in broken stands, with lower yields resulting than from later plantings.

From 1923 to 1934 plantings have been made at the station at 10-day intervals, beginning about March 15 and ending May 10, to determine the best average planting date for local conditions. Four years during the 12-year period, March plantings made the highest yield, but in 1926 and 1928, March plantings were failures. Highest average yields were obtained from plantings made the first two weeks in April.

Since 1923 tests have been made to compare results obtained with cotton seed delinted by machine, sulphuric acid treatment and seed in normal undelinted condition. Acid-delinted seed have proven superior in obtaining stand and increasing yields, as will be observed from yields over a period of 11 years, the average of yields from normal seed being 1,596 pounds of seed cotton per acre; from machine-delinted seed, 1,655 pounds; from acid-delinted seed, 1,711 pounds.

Since 1930, delinted and normal seed have been dusted with Ceresan, an organic mercury dust disinfectant, with beneficial results. When seed are treated with dust they do not rot as quickly if weather conditions are not favorable for germination and improved stands have resulted. Plants from dusted seed have been freer from sore-shin disease, angular leaf spot, and anthracnose than plants from untreated seed. These benefits are reflected in increased yields. Results for the five-year period show that normal seed yielded 1,651.6 pounds of seed cotton per acre; normal seed dusted with Ceresan, 1,792.6 pounds; acid-delinted seed, 1,821.2 pounds; acid-delinted dusted with Ceresan, 1,848.4 pounds; machine-delinted seed, 1,713.5 pounds; ma-

chine-delinted seed dusted with Ceresan, 1,765.1 pounds.

What is Best Spacing?

Results obtained in South Carolina cotton contests show that close spacing of cotton is most profitable.

To obtain maximum yields of cotton under boll weevil conditions it is necessary to have as large a number of plants per acre as possible without undue crowding. This can be accomplished by leaving plants closer in the drill or by planting in narrow rows. Cotton spaced one plant every eight inches in the drill will have approximately the following number of plants per acre for different width rows: 3 feet, 21,700; 3 1-2 feet, 18,600; 4 feet, 16,300.

In a width of row test over six years the average yields were: three-foot rows, 1,884.8 pounds of seed cotton per acre; 3 1-2 foot, 1,896.6; four-foot, 1,807.3.

Recent studies show that different methods of application of fertilizer have a marked effect upon the stand and yield of cotton.



This wise farmer knows how to conserve moisture and keep down weeds and grass. Just as the tiny cotton plants break through the crust, he begins to stir the soil in the crop's first cultivation.



Information that sticks is presented in this field demonstration in the use of a dusting machine for boll weevil control, Shelby, N. C.



It's surprising what a short time it will be before cotton cultivating with two-horse outfits will be the order of things. This photo was made in Chester County, S. C.



Dusting cotton with a tractor proved effective for this cotton grower in Georgia.

Poor stands, resulting in low yields, were obtained by placing the fertilizer in narrow bands at depths of one, two, three, and four inches beneath the seed.

No injury to stand has occurred from placing the fertilizer two to three inches to the side and slightly below the level of the seed. Highest yields have been obtained from such placements.

Nitrogen For Cotton

Three brands of nitrate of soda—Arcadian, Chilean, and Champion—were used to determine any advantage of brands in cotton production. These were used along with a fertilizer mixture in which the ammonia was derived from one-third nitrate of soda, one-third cottonseed meal, one-third sulfate of ammonia. Fertilizer mixtures analyzing 2-10-5, with the ammonia, were applied at rate of 500 pounds per acre before planting. After the cotton was thinned it was side-dressed at a rate equivalent

to 100 pounds of nitrate of soda per acre.

Highest average yield was made from the fertilizer mixture in which the ammonia was derived from three sources; lowest from sulfate of ammonia. Different brands of nitrate of soda gave approximately the same average yield.

Results of experiments show that it is profitable to side-dress cotton soon after it has been thinned to a stand with some form of readily available nitrogenous fertilizer. Fourteen materials were used in side-dressing experiments at a rate equivalent to 150 pounds of nitrate of soda per acre. No significant differences were shown in the five-year average yields with most of the 14 materials.

Nitrate of Soda Side-Dressing

Nitrate of soda as side-dressing has been applied at rates of 100, 150, 200, 250, and 300 pounds per acre to cotton over a period of years to determine the most profitable amount to use. Average results for a seven-year period show the no-nitrate check plot yielded 1,537.1 pounds of seed cotton per acre; 100 pounds nitrate, 1,795.2 pounds cotton; 150 pounds nitrate, 1,856.4 pounds cotton; 200 pounds nitrate, 1,886.5 pounds cotton; 250 pounds nitrate, 1,890.2 pounds cotton; 300 pounds nitrate, 1,920.4 pounds cotton.

Side-dressing cotton with 50, 100, and 150 pounds of muriate of potash per acre, following a basic fertilizer application of 600 pounds of a 4-9-4 per acre before planting and 100 pounds of nitrate of soda after thinning, has been under test since 1930.

The average yield of cotton for the five-year period for the regular fertilizer was 1,887.4 pounds; 2,075 pounds when side-dressed with 100 pounds of nitrate of soda; 2,134 pounds when 50 pounds per acre of muriate of potash was applied. No further increase in average yield for the five-year period has occurred from heavier applications of potash.

To test the value of legume cover crops on the yield of cotton following these legumes, the growing of crops of Austrian peas, hairy vetch, Monantha vetch, and Hungarian vetch preceding cotton has been continued six years. These crops are seeded in the cotton middles about the first of October and are turned under about March 15, preparatory to planting cotton in early April. The basic fertilizer is 500 pounds of a 4-8-4 per acre, with half of each plot receiving in addition 200 pounds of sodium nitrate as side-dressing. Check areas of similar size are left without cover crops but otherwise receive the same treatment.

At the beginning of the experiment, side-dressing increased yields of seed cotton on all plots, but after a few years the cumulative benefits from the cover crops became more pronounced, resulting in practically no gain from side-dressing on cover crop plots.

For six years, side-dressing has given 120 pounds average yearly gain of seed cotton on the check area as compared with a yearly average gain of 47 pounds on the hairy vetch plots, most of which occurred during the first two years. This shows the value of legumes in supplying most of the nitrogen needed to produce a cotton crop.