

AGRONOMY

COTTON

Cotton Variety Test: Wilt resistant varieties are considered most reliable for Coastal Plain conditions, since a large portion of the land is infested with wilt (*Fusarium vasinfectum*). The leading varieties in this group, possessing other desirable features, have been W. W. Wannamaker's Cleveland, Coker's 4 in 1, and Tifton Station 21. Coker's 100 Wilt Resistant and Wannamaker's Stonewilt are two wilt resistant strains of recent introduction which seem promising but have been tested only two years. On land known to be free of wilt, other varieties have given good results. The outstanding varieties of this group are Stoneville 2B and Deltapine. Table 4 gives the results for most varieties which have been in test since 1938.

Cotton Fertilizer Test: Many factors deserve consideration in regard to fertilizer requirements. Cotton in South Georgia is planted on a wide range of soils, varying from rather heavy red soils (Greenville series) to the light sandy soils such as Norfolk. The natural fertility of these soils differs, as well as the rotation practices of the different farms. Therefore, it is not possible to recommend fertilizers that will give optimum yields under all conditions. However, general recommendations may serve as a guide to proper fertilizer applications.

FORMULAS AND RATES: Cotton responds well to applications of any good fertilizer. In order to secure the proper amounts of nitrogen, phosphorus, and potash, mixed fertilizers should contain 3 to 4 per cent nitrogen, 8 per cent phosphorus, and 8 per cent potash. Cotton on land of average fertility should respond well to a 500-pound application of 3-8-8 fertilizer at time of planting. Additional nitrogen will be needed as a top dressing unless the land tends to produce extra large stalks. Where "cotton rust" is severe, potash may be incorporated with the nitrogen top dressing.

NOTE: The War Production Board has limited the number of formulas to be made. Some Georgia farmers will not be able to obtain formulas they have been using in the past. From the approved list of grades the 3-9-9 and 3-9-6 are suggested for cotton under most South Georgia conditions. These mixtures should be applied at a rate of 400 to 600 pounds per acre. The 3-9-9 should be supplemented with a nitrogen top dressing except where cotton follows a cover crop or when planted on fertile land. The 3-9-6 does not carry enough potash for average conditions and this mixture should be supplemented with a 10-0-10 top dressing.

NITROGEN STUDIES: Small growth of plants and a yellowish green color of foliage can usually be taken as typical symptoms of nitrogen deficiency. The amounts of nitrogen needed will vary in relation to the reserve in the soil. Coastal Plain soils require applications of from 15 to 30 pounds of nitrogen per acre. Since many forms of nitrogen leach from our light soils rather rapidly, it is considered a good practice to split nitrogen applications. This is done in most cases by obtaining approximately half from the original application of a fertilizer containing 3 to 4 per cent nitrogen and the remainder from some quickly available nitrogen as a top dressing which should be applied at time of first squares.

There is a difference in the response of the cotton plant to the various

TABLE 4.
YIELD COTTON VARIETIES IN TEST SINCE 1938

VARIETY	Yield in Pounds Lint per Acre					Wt. 100 Bolls in Lbs.	Per Cent Lint	Length Staple in 32nd Inches
	1938	1939	1940	1941	1942			
	Avg.							
1. W. W. Wannamaker's Cleveland W. R.*	523	468	594	610	524	1.23	36.5	33.0
2. Summerour's Hibred	557	481	538	634	485	1.40	42.3	29.0
3. Stoneville 2B	521	404	549	630	534	1.39	35.7	33.8
4. Coker's 4 in 1*	526	475	574	589	478	1.23	35.0	33.6
5. Stoneville 5A	483	437	537	634	478	1.20	37.2	32.9
6. Maret's Cleveland	510	451	546	593	456	1.26	35.2	33.6
7. Rhyné's Cook	521	451	547	522	492	1.43	35.9	31.1
8. Petty's Toole	483	386	567	599	484	1.19	35.4	29.9
9. Rhyné's Clewewilt	489	368	492	589	456	1.38	35.0	32.7

The following varieties have been in the test only four years								
10. Tifton Station 21*	418	575	680	534	552	1.42	37.6	32.9
11. Deltapine 12	463	607	626	483	545	1.14	40.5	32.7
12. Deltapine 11A	441	603	579	535	540	1.25	38.5	32.9

* Figures given for these varieties were obtained from the highest yielding of two strains.

TABLE 5.
COTTON—SOURCES OF NITROGEN TEST

SOURCE OF NITROGEN*	Yield in Pounds Seed Cotton Per Acre							7-Yr. Avg.
	1936	1937	1938	1939	1940	1941	1942	
1. Sulphate of Ammonia	996	1054	1189	1167	1372	1208	1158	1163
2. Urea	834	1090	1111	1248	1368	1217	1161	1147
3. Am. Nitrate Limestone	903	1118	1153	1145	1367	1269	1054	1144
4. Calcium Nitrate	942	777	1181	984	1176	1220	---	1047**
5. Peanut Meal	1027	973	1112	1174	1308	1215	1109	1131
6. Cottonseed Meal	973	1055	1113	1194	1263	1113	987	1100
7. Cyanamid	956	1250	1075	1070	1265	1044	988	1093
8. Tankage	1006	973	1091	1101	1294	1173	1005	1092
9. Nitrate of Soda (Chilean)	909	924	1175	1009	1201	1227	1175	1089
10. Nitrate of Soda (Arcadian)	900	886	1086	1034	1253	1237	1175	1082
11. Nitrate of Soda (Champion)	903	918	1130	949	1230	1265	1155	1079
12. Ammophos and Soda	884	970	1041	1046	1223	1132	1156	1065
13. Nitrate Solution Base	---	---	1064	1153	1352	1218	1162	---
14. 60% Sulphate, 40% Nitrate	---	---	---	1095	1311	1198	1194	---
15. Calnitro	---	---	---	1084	1213	1253	---	---
16. Check (No Nitrogen)	812	712	839	768	1042	939	818	847

* 800 pounds 2-47-9-5 used 1936, 1937, 1938.

500 pounds 4-8-8 used beginning 1939.

** 6-Yr. Average.

nitrogen materials. Organic and ammonia forms are slower to become available for plant food but do not leach as readily as nitrate nitrogen which is the quickest for plants to utilize. When heavy spring rains occur, the organic forms give best results. The inorganic forms are the cheapest source of nitrogen. For these reasons a mixed fertilizer deriving 70 to 80 per cent of the required nitrogen from inorganics is considered most desirable. The organic materials used in mixed goods will improve the physical condition of the fertilizer and supply some nitrogen which will not leach from the soil in case heavy rains occur soon after applications are made. Nitrate of soda, urea, and cyanamid have been the best inorganic materials. Good sources of organic nitrogen for cotton fertilizers are cottonseed meal, peanut meal, and tankage. Sources of nitrogen tested at this Station since 1936 are presented in Table 5.

PHORPHORUS STUDIES: A deficiency of phosphorus results in late maturing cotton. A slow growth of young plants and lack of normal branching are usually associated with insufficient phosphorus in the soil. Practically the only severe deficiencies of this material to show up in South Georgia have been on virgin soil or land receiving no fertilizer for a number of years. Good cotton yields may be secured where 30 to 50 pounds of phosphorus per acre are used. This requirement can be met by applying 400 to 600 pounds per acre of mixed fertilizer containing 8 per cent phosphoric acid.

From studies made at this Station, superphosphate has given best results in cotton fertilization. Di-calcium phosphate and triple superphosphate have given satisfactory yields.

POTASH STUDIES: Potash is quite often the limiting factor in cotton production under South Georgia conditions. Symptoms of potash deficiency on cotton are: yellow spots occurring between leaf veins with the entire leaf gradually turning reddish brown. This results in an abnormal shedding of leaves causing the late crop of fruit to either shed or produce small immature bolls. Potash deficiency on cotton is commonly known as "rust". Where such a condition exists, harvesting is hampered to a great extent. Cotton yields are lowered when potash is lacking and very likely the quality of the fiber is inferior.

Potash hunger presents itself, as a general rule, on land that has been rather heavily cropped and which has received only light applications of potash. Harvested peanuts remove large quantities of plant food from the soil and the crops that follow frequently suffer from insufficient potash. Approximately 40 pounds of potash per acre are required for cotton production on land of average fertility. Five hundred pounds of 3-8-8 fertilizer will supply this need of potash.

Although potash does not leach from the soil as does nitrogen, there are many instances where top dressing cotton with potash will give profitable returns. Where there is a severe potash deficiency, a top dressing of 50 pounds of muriate or some other source of potash should be applied. This, in addition to the original 500 pounds of 3-8-8 (NPK), would give a total potash (K_2O) application of 65 pounds per acre, which should be sufficient to produce a profitable cotton crop in the Coastal Plain. Table 6 presents the results obtained from a nine-year test of top dressing with muriate.

