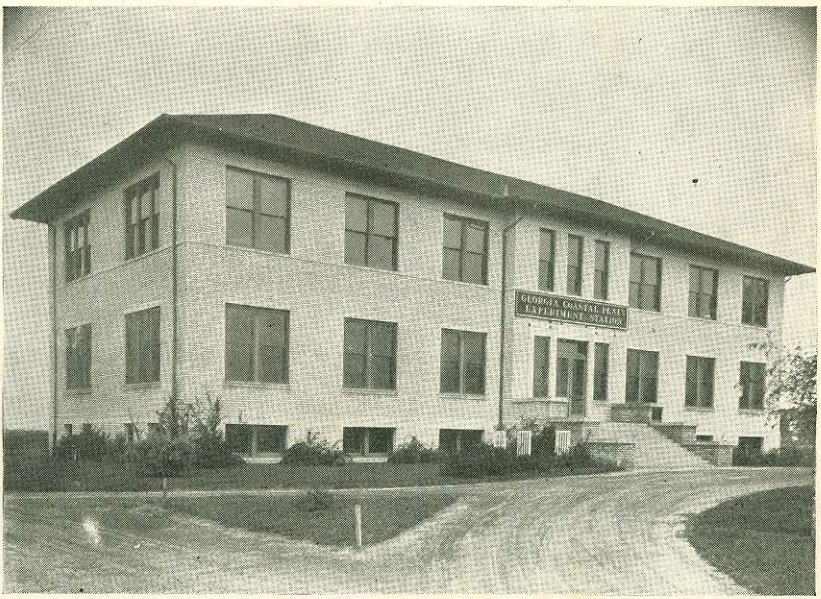
GEORGIA COASTAL PLAIN EXPERIMENT STATION

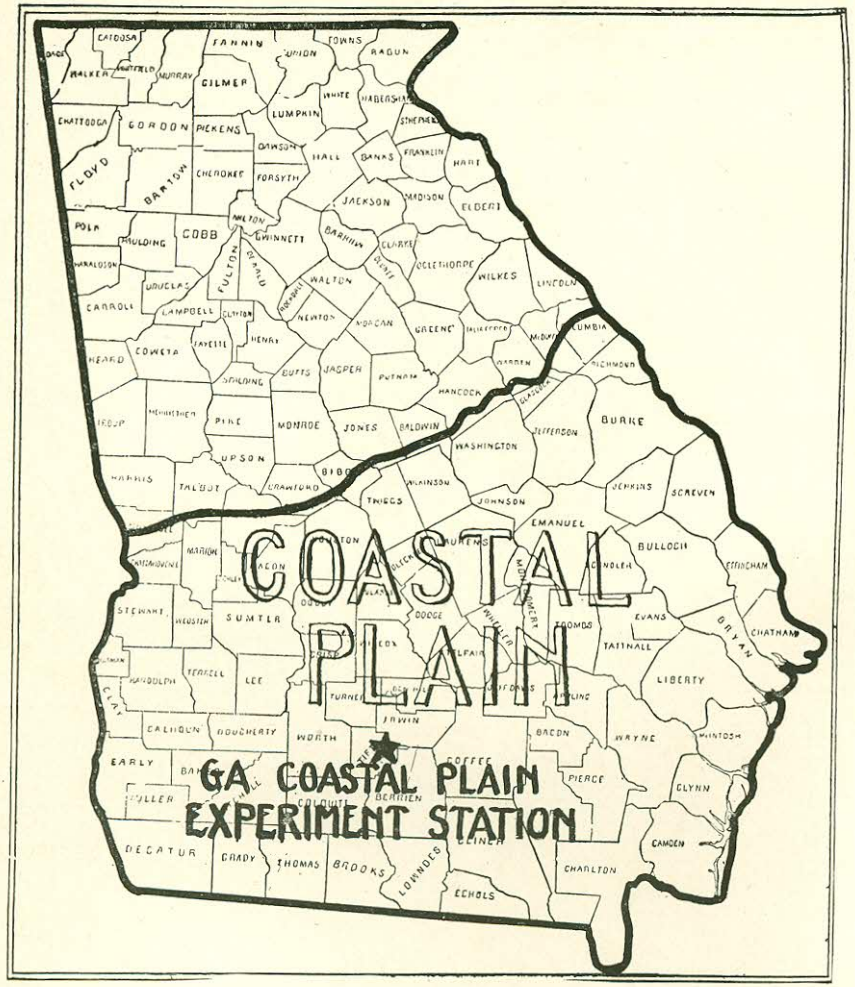
TIFTON, GEORGIA

June 1, 1926. Bulletin 6.



SIXTH ANNUAL REPORT 1925

S. H. STARR, *Director.*



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*Assistant Agronomist, U. S. D. A. Resigned October 1925.

†Agent, U. S. D. A.

Tifton, Georgia, June 1, 1926.

To His Excellency, Clifford Walker,
Governor of Georgia.

Sir:

In accordance with the regulations of the Board of Trustees, I have the honor to transmit to you herewith the Sixth Annual Report of the Georgia Coastal Plain Experiment Station for the year 1925.

Very respectfully,
R. W. GOODMAN, Chairman.

Tifton, Georgia, June 1, 1926.

To the Honorable Board of Trustees of the
Georgia Coastal Plain Experiment Station.

Gentlemen:

I have the honor to submit to you herewith the Sixth Annual Report of the Georgia Coastal Plain Experiment Station covering operations for the year 1925.

Respectfully submitted,
S. H. STARR, Director.

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INTRODUCTION

The sandy nature of the soils and the mild climate of the coastal plain area of the State, or what is commonly called South Georgia, enable the farmer to choose from a large number of crops. For cash crops he may grow cotton, tobacco, peanuts, sugar cane, watermelons, cantaloupes, peaches, pecans, sweet potatoes and various other field and orchard crops and he may raise cattle, hogs and poultry. When any of these crops, or combination of crops, are selected and made a part of the farm program, the success of the farmer will depend largely on the acre yield. Low yields and profits do not go together. Each enterprise must properly fit into the farm business.

Practically every farmer in this area grows cotton as one of his cash crops. To do so at a profit, he must eliminate guess work as to the proper fertilizer to use, the best varieties to be planted, the best cultural methods, boll weevil and other insect control, and other factors connected with growing this crop. If he chooses tobacco as one of his cash crops, he must prepare the seed bed, get out strong healthy plants at the right time, use the right kind and quantity of fertilizer, give the tobacco the proper cultivation, keep the plants free from insects and disease and cure and properly handle the crop if he is to produce economically the quality of leaf which will command a good price. And so it is, that no matter which crop or group of crops he selects, he must use the proper fertilizer, a good variety of seed and proper management if high yields are to be made economically.

It is the function of the Coastal Plain Experiment Station to assist in these matters by conducting experiments designed to overcome the problems which confront the farmer of the coastal plain area. In this way facts of vital importance to agriculture are established. There are many enterprises to be considered and given careful study which should be done by trained research workers. The Experiment Station is working on a number of these problems, but the work is necessarily limited on account of the small appropriation received. The service this institution is performing is becoming generally

recognized and it is hoped that adequate funds will be provided to meet the demands made upon it.

The activities of the station are summarized in the following report. The work in the Agronomy Department has been continued largley as heretofore except that it has been enlarged somewhat which was made possible by the purchase of 62 acres of land adjoining the main station tract. The Horticultural work has been continued as outlined in the previous report, and plans are being made for its enlargement to include melon disease studies in co-operation with the Georgia Experiment Station. The tobacco experiment work which includes a very comprehensive study of fertilizer requirements, varieties, various rotation and cropping effects and disease studies is being continued under a co-operative arrangement with the U. S. Department of Agriculture and the Georgia State College of Agriculture. Mr. J. C. Hart, who has had charge of the agronomic work with tobacco, resigned at the close of the growing season, and his successor, Mr. J. M. Carr, is to handle this work the coming year. The livestock work, which consists of hog grazing tests, forage and pasture studies is being continued as heretofore. There is an urgent need of livestock development as a prominent part of the farm operations in South Georgia and there is a strong demand from the farmers that this work be enlarged.

The U. S. Department of Agriculture has assisted in equiping a laboratory for the study of tobacco diseases. Other laboratories necessary for the proper conduct of the station work are badly needed. Construction has been started on four cottages for laborers. The work is being done largely with experiment station labor and paid for out of the small fund derived from farm sales. These cottages will very materially help in solving the labor situation at the station and it is hoped that funds will be provided for other needed buildings such as a green house, barns and machinery shed etc.

Very gratifying results are being obtained along a number of lines and the results will be published from time to time. All of the members of the staff have assisted in preparing the following data.

AGRONOMY

Small Grains

The small grains experiments are being continued as during previous years. The work with these crops consists of variety trials with wheats, oats, ryes and barleys, rates and dates of seeding tests with wheats and oats, dates of application tests of quickly available ammonia fertilizers to oats, general fertilizer tests of oats, and tests to determine the effects of varying amounts of acid phosphate in combination with a cover-crop and limestone on the yields of oats.

When the variety tests were begun at the Station no work had been done on the fertilizer requirements of the crop. All of the variety trials have been fertilized during the past six years with 400 pounds of 16% acid phosphate applied at planting time and 100 pounds of nitrate of soda, or it's equivalent of other quickly available ammoniate, applied as a top dressing in the spring. Such treatment of the grain crop has given fairly good results, although there has been visible evidence of the need of potash in the treatment.

WHEATS: In 1925 Georgia Red led the variety trials with a yield of 19.8 bushels per acre. Though this yield is rather low as compared with yields obtained in more favored wheat growing regions, wheat can be grown profitably on a small scale for home consumption in the coastal plain. Georgia Red has proven a very consistent yielder and is fairly resistant to rust which is such an important factor influencing wheat yields in this region.

The results thus far on the rates and dates of seeding tests indicate that six pecks per acre sown on November 1st should give best results.

The following Tables No. I and II give the results of the 1925 wheat variety tests and the yields for the five and six year period over which these trials have extended.

TABLE 1.—WHEAT VARIETY TEST FOR 1925.

VARIETY	Yield in Bushels per Acre
1. Georgia Red	19.8
2. Redhart	16.2
3. Purple Straw	15.9
4. C. I. 4159-4	15.1
5. Velvet Chaff	14.8
6. Alabama Bluestem	14.7
7. Dietz Mediterranean	14.4
8. Fulcaster	13.5
9. Bluestem	11.8
10. Fultz	9.3
11. Leap's Prolific	8.3

TABLE II.—WHEAT VARIETY TESTS FOR SIX YEARS.

Variety	Yield in Bushel Per Acre						
	1920	1921	1922	1923	1924	1925	Average 6 Years
1. Georgia Red	14.6	31.8	13.6	13.7	17.6	19.8	**18.5**
2. C. I. No. 4159	------	26.3	7.6	7.5	14.5	15.1	**14.2***
3. Dietz Mediterranean	6.7	10.9	11.0	15.9	18.0	14.4	**12.8**
4. Bluestem	10.3	17.3	12.6	9.4	14.7	11.8	**12.7**
5. Velvet Chaff	------	------	7.9	10.7	16.9	14.8	**12.6†**
6. Fulcaster	5.9	12.0	8.8	11.2	18.1	13.5	**11.6**
7. Leap's Prolific	5.4	9.5	6.8	7.3	16.0	8.4	**8.9**
8. Fultz	------	------	4.9	4.6	13.7	9.3	**8.1†**

*Five-year average.
†Four-year average.

A field of "Hundred Bushel" oats on the Station farm.

OATS: The same group of tests were continued with oats as outlined in the previous report. Variety tests, dates of seeding tests, rates of seeding tests, dates of top dressing tests, general fertilizer tests, and tests to determine the effects of varying amounts of acid phosphate, a cover-crop, and limestone on the yield of oats comprise the work with this crop.

Coker's Appler led in the variety tests in 1925 with a yield of 38.4 bushels per acre. Bancroft, Hundred Bushel, Appler, Texas Rust Proof, Patterson, and Fulghum ranked in yield in the order named. Kanota, Burt, Early Ripe, and Ferguson Navarro were among the varieties yielding poorest and showing the least adaptation to conditions of the coastal plain.

These variety trials have been conducted over a period of sufficient length to justify some general conclusions and recommendations as to varieties. The results show conclusively that the rustproof group are consistently heavier yielders than the non-rustproof group. Among the rustproof oats the Hun-

dred Bushel variety, a strain of Appler, has led in yield for the six year period while among the non-rustproof group Fulghum has proven to be the best variety.

TABLE III.—OAT VARIETY TEST FOR 1925.

VARIETY	Yield in Bushels Per Acre
1. Coker's Appler	38.4
2. Bancroft	38.1
3. Hundred Bushel	36.2
4. Appler	32.4
5. Texas Rust Proof	31.7
6. Patterson	29.9
7. Fulghum	29.9
8. Kanota	25.5
9. Burt	19.1
10. Early Ripe	15.6
11. Ferguson Navarro	14.2

TABLE IV.—OAT VARIETY TESTS FOR SIX YEARS.

Variety	Yield in Bushels Per Acre						
	1920	1921	1922	1923	1924	1925	Average 6 Years
1. Hundred Bushel	44.3	62.5	31.1	27.3	50.0	36.2	**41.9**
2. Coker's Appler	47.6	54.3	26.4	12.4	47.9	38.4	**37.8**
3. Appler	47.6	55.3	24.1	22.4	43.7	32.4	**37.6**
4. Bancroft	45.1	50.1	27.6	12.3	49.2	38.1	**37.1**
5. Patterson	------	59.7	32.8	16.0	42.9	29.9	**36.3***
6. Fulghum	34.7	55.1	42.1	16.1	30.7	29.9	**34.8**
7. Texas Rustproof	22.1	36.8	26.5	23.1	48.0	31.7	**31.4**
8. Burt	------	43.4	24.1	7.5	38.6	19.1	**26.5***
9. Early Ripe	27.0	36.3	25.1	8.3	37.6	15.6	**25.0**
10. Culberson	22.8	15.4	11.9	1.4	------	------	----------
11. Culberson Selection	18.7	17.2	12.7	0.3	------	------	----------

*Five-year average.

OATS—LIME, COVER CROP, AND VARYING AMOUNTS OF PHOSPHORIC ACID TESTS: These tests are being continued as during past seasons to determine the effects of limestone applied at the rate of 3000 pounds once in three years, a summer cover crop turned under once in three years and varying amounts of acid phosphate applied directly to the oat crop each season. The results indicate very little gains from the use of limestone, or from the use of the summer cover crop which follows the oat crop. However, it must be borne in

mind that in the three year rotation of oats, cotton and corn the oats are two years removed from the cover crop.

OATS, DATES OF SEEDING: The data recorded from the dates of seeding tests further indicate the advisability of earlier seedings, particularly with the rustproof oats. The 1925 yield for October 15th and November 1st seedings of Fulghum oats was 27.1 bushels per acre, while the yield of Appler, a rustproof variety, was 41.3 bushels per acre for October 15th seedings and 36.9 bushels per acre for November 1st seedings. The rustproof oat requires a longer growing season than the non-rustproof group which accounts in a large measure for the uniform increases in yield from the early seedings. The late seedings of all varieties have yielded poorly. It appears now that October 15th to November 1st is the optimum date for small grains seeding, since any variations from that date have resulted in lower yields.

TABLE V.—OATS, DATES OF SEEDING TESTS.

Variety	Date of Seeding	Yield in Bushels Per Acre				
		1922	1923	1924	1925	Average 4 Years
Fulghum	Oct. 15th	27.0	9.1	27.4	27.1	**22.6**
Fulghum	Nov. 1st	22.3	15.8	24.0	27.1	**22.3**
Fulghum	Nov. 15th	22.9	11.9	18.7	22.0	**18.9**
Fulghum	Dec. 1st	13.9	5.9	14.8	18.9	**13.4**
Appler	Oct. 15th	36.9	20.4	36.3	41.3	**33.7**
Appler	Nov. 1st	29.3	26.3	21.4	36.9	**28.5**
Appler	Nov. 15th	25.9	19.5	7.5	23.4	**19.1**
Appler	Dec. 1st	14.7	18.7	4.7	16.7	**13.7**

OATS, FERTILIZER TESTS: The triangle fertilizer tests are being continued to determine the proportions of phosphoric acid, ammonia and potash which will give the highest and most economical yields of oats. The data obtained to date indicate that for average soil conditions of the coastal plain a complete fertilizer should be applied.

Phosphoric acid is the most essential of the three fertilizing elements to the oat crop. More decided increases in yields have been obtained from it than from either the ammonia or potash,

however, each is essential to economical production. Under ordinary conditions 400 pounds of 16% acid phosphate furnishes the amount of phosphoric acid which should supply the needs of the crop.

The results of the top dressing tests indicate that ammonia applied as a top dressing will give better results than ammonia applied in a complete fertilizer at planting. 100 pounds of nitrate of soda or it's equivalent in other quickly available nitrogen fertilizer has given excellent results.

Potash in liberal amounts prevents lodging and increases yields. Fifty pounds per acre of muriate of potash or it's equivalent should furnish the amount of potash required for the oat crop on the average Tifton Sandy Loam or heavier phases of Norfolk soils.

TABLE VI.—OATS, DATES OF APPLYING TOP DRESSING FERTILIZER.

(Nitrate of Soda or Sulphate of Ammonia.)

Date of Application	Yield in Bushels Per Acre						
	1920	1921	1922	1923	1924	1925	**Average 6 Years**
Jan. 15th	------	60.2	39.9	12.6	27.3	21.9	**32.4***
Feb. 1st	54.2	69.7	42.1	12.1	28.9	24.2	**38.5**
Feb. 15th	37.7	59.7	37.9	13.2	28.1	32.8	**34.9**
March 1st	37.8	48.8	42.7	11.9	26.9	30.4	**33.1**
March 15th	43.9	31.6	39.0	11.4	16.6	22.9	**27.6**
No top dressing	32.3	53.0	37.8	12.4	17.2	21.9	**29.1**

*Five-year average.

RYE: The variety tests with rye indicate that Abruzzes and South Georgia are the best adapted to soil and climate of the coastal plain. As will be noted from the following Table No. VII Abruzzes is slightly leading in grain yields.

Rye is being used extensively throughout the coastal plain as a cover, green-manure and grazing crop. For these purposes Abruzzes has been found to be very satisfactory. Since it produces more abundant leaf and stem growth than the South Georgia, Abruzzes is somewhat more popular.

TABLE VII.—RYE VARIETY TESTS.

Variety	Yield in Bushels Per Acre					
	1921	1922	1923	1924	1925	Average 5 Years
Abruzzes	37.6	22.2	20.4	33.1	12.9	25.2
South Georgia	35.0	26.5	14.4	31.7	13.7	24.3
Rosen	6.0	1.9	4.6	6.7	------	4.8*

*Four-year average.

BARLEY: The variety and adaptation tests with barleys have disclosed no varieties which seem especially well adapted. Several hundred head rows are being grown in an effort to isolate types which are suited to conditions of the coastal plain.

Cotton.

The experimental work with cotton consists of variety tests, triangle fertilizer tests, general fertilizer tests, ammonia tests, potash tests, rates of application tests, spacing tests, top dressing tests, tests to determine effects of lime, cover crop, and varying amounts of complete fertilizer on cotton yields, and boll weevil control tests.

COTTON, VARIETY TESTS: Fifty varieties were again included in the variety tests. The tests are being conducted on a typical Tifton sandy loam soil. The boll weevil was controlled on these plots by the use of a calcium arsenate, molasses and water mixture, applied just preceeding squaring and during the time of the appearance of the first squares, and later poisonings with calcium arsenate dust.

The results of the cotton variety tests indicate conclusively the importance of wilt resistance in the coastal plain. Varieties which are resistant to wilt have led in yield during the five years the tests have been conducted. Neither the extremely early small boll varieties nor the late maturing big boll varieties have yielded well. Among the wilt resistant varieties which are growing in use in the coastal plain are Petty's Toole, Covington Toole, Lewis 63, Council Toole and other varieties of much the same type. On wilt free lands Cook's Improved, the Cleveland Big Boll varieties, Poulnot and others are giving satisfactory results. Table No. VIII shows the yields for 1925. The average yield for the varieties which have been in the tests for 1923, 1924 and 1925 are shown in Table No. IX. Yields of varieties which have been grown for five years are shown in Table X.

TABLE VIII.—COTTON VARIETY TEST FOR 1925.

Variety	Yield in pounds seed cotton per acre			
	First Picking	Second Picking	Third Picking	Total Yield
1. Cook's Improved	434	387	65	**887**
2. Petty's Tool	253	503	122	**878**
3. Hartsville (20)	187	528	159	**875**
4. Lightning Express	559	287	22	**869**
5. Couch Toole	294	450	112	**856**
6. Wannamakers Cleveland	375	437	44	**856**
7. Fitzpatrick's Cleveland	234	490	97	**822**
8. Lewis 63	294	412	103	**809**
9. Coker's Cleveland (3)	250	472	84	**806**
10. Perry's Toole	268	422	112	**803**
11. Rhyne's Cook	272	381	106	**759**
12. Express 782	500	215	37	**753**
13. Shiver's Prolific	218	412	112	**743**
14. Dixie Triumph	250	403	78	**731**
15. Meade	259	378	84	**722**
16. Salsbury	372	300	44	**716**
17. Coker's Webber (49-101-3-3)	365	272	75	**712**
18. Mathis Toole	228	409	75	**712**
19. Kelly's Big Boll	231	400	78	**709**
20. Lone Star	290	344	72	**706**
21. College No. 1 (23-25)	475	200	28	**703**
22. Acala	472	200	28	**700**
23. Piedmont Cleveland	268	394	37	**700**
24. Money Maker	309	322	59	**691**
25. Steinheimer's Cleveland	259	350	75	**684**
26. Coker's 1 1-8" Cleveland	275	347	56	**678**
27. Addison's Prolific	281	325	72	**678**
28. Durango (489)	400	234	34	**669**
29. Delfos (631)	472	168	18	**659**
30. Culpepper	331	250	69	**650**
31. Sike's Cleveland Big Boll	162	387	97	**647**
32. Poulnot	112	415	112	**640**
33. Delfos (6102)	387	218	34	**640**
34. Bullard	356	212	53	**622**
35. Hawkin's Prolific	203	340	75	**618**
36. Bank Account	150	400	62	**612**
37. Rexall	275	250	56	**581**
38. Covington Toole	219	290	62	**572**
39. Trice	384	165	15	**565**
40. King	150	318	87	**556**
41. Simpkin's Prolific	337	162	31	**531**
42. Columbia (487)	250	240	37	**528**
43. Hooper's Big Boll	272	212	31	**515**
44. Okra	244	206	62	**512**
45. Coker's 1 1-16" Cleveland	287	187	25	**500**
46. College No. 1 (3-5-1-3-2-2)	206	209	47	**462**
47. Half and Half	225	194	40	**459**
48. Caldwell	222	200	22	**444**
49. Delatype Webber	200	209	28	**437**
50. Over-The-Top	325	87	15	**428**

TABLE IX.—COTTON VARIETY TESTS FOR THREE YEARS.

	Variety	Yield in pounds seed cotton per acre			
		1923	1924	1925	Average 3 Years
1.	Petty's Toole	812	1262	878	**984**
2.	Council Toole	606	1487	856	**983**
3.	Lightning Express	768	1128	869	**922**
4.	Fitzpatrick's Cleveland	693	1244	822	**920**
5.	Dixie Triumph	800	1212	731	**914**
6.	Coker's Cleveland	630	1281	806	**906**
7.	Cook's Improved	569	1182	887	**879**
8.	Delfos (6102)	800	1134	640	**858**
9.	Piedmont Cleveland	638	1218	700	**852**
10.	Covington Toole	688	1275	572	**845**
11.	Express (782)	612	1150	753	**838**
12.	Salsbury	755	1034	716	**835**
13.	Lone Star	605	1193	706	**835**
14.	Wannamaker's Cleveland	593	1040	856	**830**
15.	Hartsville	592	1009	875	**825**
16.	Steinheimer's Cleveland	721	1046	684	**817**
17.	Poulnot	593	1154	640	**796**
18.	Half and Half	750	1175	459	**795**
19.	Rexall	724	1078	581	**794**
20.	Mathis Toole	568	1081	712	**787**
21.	Meade	525	1109	722	**785**
22.	Hawkins Prolific	637	1069	618	**775**
23.	Acala	618	980	700	**766**
24.	Money Maker	556	1012	691	**753**
25.	Delfos (631)	518	1065	659	**747**
26.	Bullard	588	975	622	**728**
27.	Okra	612	1021	512	**715**
28.	Trice	543	940	565	**683**
29.	Simpkins Prolific	462	931	531	**641**
30.	College No. 1 (5-5-1-3-2-2-1)	487	959	462	**636**
31.	King	555	763	556	**625**
32.	Hoopers Big Roll	343	872	515	**577**
33.	Caldwell	575	693	444	**571**
34.	Over-The-Top	499	775	428	**567**
35.	Deltatype Webber	425	737	437	**533**
36.	Addison's Prolific	493	747	325	**522**

TABLE X.—COTTON VARIETY TESTS FOR FIVE YEARS.

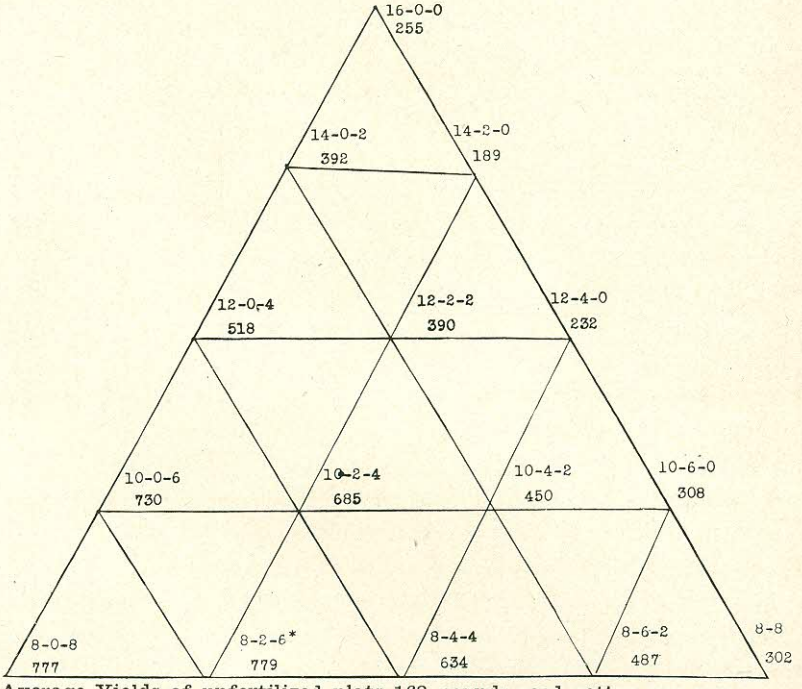
Variety	Yield in pounds seed cotton per acre					
	1921	1922	1923	1924	1925	Average 5 Years
1. Petty's Toole	885	682	812	1262	878	**904**
2. Cook's Improved	625	661	569	1182	887	**785**
3. Steinheimer's Cleveland	680	657	721	1046	684	**758**
4. Covington Toole	585	664	688	1275	572	**757**
5. Poulnot	835	524	593	1154	640	**749**
6. Utopia	775	607	562	1028	------	**743***
7. Wannamaker's Cleveland	620	593	593	1040	856	**740**
8. Coker's Hartsville	605	591	592	1010	875	**735**
9. Half and Half	405	576	750	1175	459	**673**
10. Okra	540	500	612	1022	512	**637**
11. Coker's Webber	655	385	612	766	------	**604***
12. Hooper's Big Roll	645	385	343	872	515	**552**
13. Deltatype Webber	470	426	425	738	437	**499**

*Four-year average.

COTTON FERTILIZER TESTS including the triangle method and a general group of twenty-five combinations are being continued to determine the most profitable combination for cotton. These tests are being conducted on a typical Tifton sandy loam soil. The results, thus far, indicate that a fertilizer analyzing 9% phosphoric acid, 3% ammonia and 5% potash is very satisfactory on the soil type on which this work is being done. A general recommendation of the above formula is being made with slight modifications on the lighter soils. An increase of one per cent. of ammonia and one to two per cent. of potash on the lighter or poorer soils should give good results. Table No. XI gives in graphic form a summary of the results obtained from the triangle used in the cotton fertilizer tests:

TABLE XI. COTTON FERTILIZER TESTS FOR FIVE YEARS (TRIANGLE METHOD)

TABLE XI.



Average Yields of unfertilized plats 168 pounds seed cotton per acre.
***Top row figures represent fertilizer formula and lower figures the yield of seed cotton per acre. For example: the yield from the fertilizer analyzing 8% phosphoric acid, 2% ammonia and 6% potash was 779 pounds of seed cotton.**

COTTON,—AMOUNTS OF FERTILIZER TESTS: Amounts of fertilizer varying from 200 pounds through 1200 pounds per acre are being applied to cotton to determine the economical rates a 9-3-5 combination may be applied to the crop. The results of two years tests indicate that on good soils 800 to 1000 pounds per acre may be profitably applied. Further data will be necessary before other than tentative recommendations may be made.

COTTON,—AMMONIA TESTS: Ammonia from different organic and mineral sources are being applied to the crop in a complete fertilizer at planting. Nitrate of soda, sulphate of

ammonia, dried blood, tankage and cotton seed meal are included. The results of four years tests indicate that there is a preference for the quickly available sources. Slow acting sources such as tankage and cotton seed meal have yielded poorly. Under conditions of comparable prices of ammonia from the mineral and organic sources, to derive fifty per cent from each would seem advisable.

COTTON,—TOP DRESSING TESTS: The top dressings of quickly available nitrogenous fertilizers, in varying amounts, applied at various stages of the cotton plant's growth are being continued. Applications are made in amounts varying from 50 pounds per acre through 200 pounds per acre of nitrate of soda or an equivalent amount of other ammoniates. The applications are made at chopping, squaring, blooming and at the appearance of the first bolls.

Two season's yields further the tentative conclusion that 100 to 125 pounds of nitrate of soda or its equivalent in sulphate of ammonia or other quickly available nitrogenous fertilizer applied at chopping will produce economical increases in yield.

The area on which the above tests are being conducted is fertilized with 500 pounds of complete fertiizer analyzing 9% phosphoric acid, 3% ammonia, and 5% potash applied at planting. No data are available on the effects of top dressings on cotton fertilized with more than 500 pounds of a 9-3-5.

COTTON,—LIME, COVER CROP, AND VARYING AMOUNTS OF FERTILIZER TESTS: This group of experiments is planned to determine the effects of lime and green-manure in combination with varying amounts of a complete fertilizer on the yields of cotton. Ground limestone is applied at the rate of one and one half tons per acre once in three years. The green-manure consists of a crop of soy beans following small grains which preceded the cotton crop in a three year rotation of cotton, corn and oats. No economical increases have resuted from the use of lime. The treatment showing the most

benefit to the cotton crop is a complete fertilizer with a green-manure crop.

COTTON, SPACING TESTS: The spacing work to determine the distance in the drill and the number of plants per hill giving the highest yields is being continued. Unthinned cotton yields poorly. The results thus far indicate that two stalks to the hill, spaced twelve to fifteen inches in three and one-half foot rows will give good results.

BOLL WEEVIL CONTROL TESTS: Tests to determine the most effective method of using calcium arsenate to control the boll weevil were continued as follows:

1. Pre-square poisoning with a home-made mixture made of 1 gallon of molasses, 3 pounds of calcium arsenate and 3 gallons of water. This treatment was followed by calcium arsenate dust applied with a dusting machine.
2. Pre-square poisoning with calcium arsenate dust. This treatment was followed by calcium arsenate dust applied with a dusting machine.
3. No pre-square poisoning. Four applications of calcium arsenate were applied with a dusting machine at five day intervals after the weevil infestation reached ten per cent.
4. Pre-square poisoning with the home-made molasses, calcium arsenate, and water mixture. This treatment was followed by mopping throughout the growing season with the same mixture.
5. Beginning just after the appearance of first squares three applications of dust were applied at six to seven day intervals.
6. Florida Method.
7. Check areas receiving no poison.

The hot dry season of 1925 served to keep the weevil under control. Due to this natural control, the results obtained from the different methods of poisoning show small increases in yields over unpoisoned cotton. During seasons affording no natural control the effectiveness of calcium arsenate properly

applied is more evident than during such growing seasons as occurred in the years 1924 and 1925.

The results of the weevil control tests show conclusively the benefits of early poisoning. These applications may be made with calcium arsenate dust or with the home-made mixture of molasses, calcium arsenate and water. The latter method is probably most practicable since only a small per cent. of cotton growers in the coastal plain are equipped with dusting machinery. These early applications should be begun a week to ten days before squaring and two to three applications made at weekly intervals. Later applications should be made with a dusting machine.

Corn.

CORN VARIETY TESTS: The corn variety trials include twenty-eight varieties. The results for six years show Whatley's Prolific leading with an average yield of 44.9 bushels per acre. Hastings Prolific has yielded 41.5 bushels per acre for the same period. The results indicate that the heaviest yields may be expected from the prolific types, however, there are a few varieties of the big ear group which have made excellent yields. Among these are Hollis, Ellis, Piedmont Two Ear and Puckett's Improved.

In addition to determining the best varieties, from the standpoint of yield, efforts are being made to isolate varieties which are resistant to corn weevil damage. From the observations made it has been concluded that the type of shuck is the most important factor determining the amount of weevil damage in a variety. The character of the grain seems to have little effect in weevil resistance. A shuck of fine texture which fits closely to the ear and extends well over the tip of the ear repels weevils to a marked extent.

The following Table No. XII shows 1925 yields. Table No. XIII gives the yields of corn varieties which have been grown for six years.

TABLE XII.—CORN VARIETY TEST FOR 1925.

	Variety	Yield Shelled Corn in Bushels Per Acre
1.	Whatley's Prolific	53.3
2.	Davis' Prolific	50.9
3.	Pee Dee No. 5	50.4
4.	Piedmont Two Ear	49.6
5.	Paulk	47.9
6.	Mosby's Prolific	47.8
7.	Biggs Seven Ear	47.8
8.	Garrick	47.6
9.	Hastings' Prolific	46.6
10.	White Dent	46.1
11.	Rockdale	46.0
12.	Ellis	45.9
13.	Giant Red Cob	45.5
14.	Calhoun Red Cob	45.2
15.	Puckett's Improved	44.7
16.	Clegg	44.0
17.	Williamson	43.9
18.	McClelland	41.3
19.	Cockes' Prolific	40.0
20.	Reuter's Surecropper	39.6
21.	Blount's Prolific	38.6
22.	Hickory King	37.7
23.	Paymaster	37.2
24.	Boone County	36.2
25.	Golden Dent	34.6
26.	Reid's Early Yellow Dent	30.9
27.	Huff's Improved	30.9
28.	Mexican June	24.2

TABLE XIII.—CORN VARIETY TEST FOR SIX YEARS.

	Variety	Yield in Bushels Per Acre						
		1920	1921	1922	1923	1924	1925	Average 6 Years
1.	Whatley's Prolific	33.7	56.4	33.1	50.9	41.9	53.3	44.9
2.	Hasting's Prolific	28.1	53.4	36.1	44.1	40.8	46.6	41.5
3.	Puckett's Improved	22.5	55.4	40.5	36.4	37.3	44.7	41.1
4.	Piedmont Two Ear	25.2	43.1	41.0	46.1	37.5	49.6	40.4
5.	Ellis	27.8	46.3	39.9	39.8	40.9	45.9	40.1
6.	Garrick	31.2	46.0	34.7	43.5	36.3	47.6	39.9
7.	Hollis	33.1	41.5	36.7	48.7	35.7	------	39.1*
8.	Williamson	27.3	40.1	36.7	42.6	34.6	43.9	37.5
9.	White Dent	25.9	35.9	30.7	33.7	27.3	46.1	33.3
10.	Cocke's Prolific	23.6	27.7	32.3	33.0	35.2	40.0	32.0
11.	Golden Dent	------	32.7	19.1	31.8	24.9	34.6	28.6*
12.	Hickory King	18.6	25.5	28.5	24.9	24.8	37.7	26.7
13.	Reid's Yellow Dent	16.0	18.0	21.0	18.7	19.0	30.9	20.3

*Five-year average.

CORN, FERTILIZER TESTS: The work with fertilizers has been in progress for five years. The triangle method is being used to determine the most suitable combination for corn. The data shows a 10-2-4 (10% phosphoric acid, 2% ammonia and 4% potash) to be the best of the eighteen combinations used. The above tests are being conducted on a Tifton sandy loam soil. On lighter soils an increase of one to two per cent. of both ammonia and potash would probably result in increased profits.

A second group of fertilizer tests have been in progress during the past three seasons to determine the stage of growth of the corn plant at which fertilizer may be most profitably applied as a side dressing. Also, comparisons of sources of ammonia are being made. These treatments include complete fertilizer applied at planting and top dressing of complete fertilizer, and ammonia fertilizers, at various stages of the crops' growth. The data to date indicate that fertilizer should be applied at planting on soils of average fertility. On the more productive soils better results can probably be obtained from a top dressing made when the corn reaches a height of twelve to fifteen inches.

CORN,—LIME, COVER CROP AND AMOUNTS OF FERTILIZER TESTS: These tests are continued to determine the benefits of lime, a cover-crop, and complete fertilizer in varying amounts, on the corn crop. Thus far neglible increases have resulted from the use of lime. Appreciable increases have resulted from the use of a green manure crop in combination with a complete fertilizer.

Peanuts.

PEANUT, VARIETY TESTS: Peanut variety tests including several varieties are being continued as during the last four years. One half of the area devoted to each variety received an application of 16% acid phosphate at the rate of 250 pounds per acre. The average yields for five years are shown in the following table.

TABLE XIV.—PEANUT VARIETY TESTS.

Average for 1921, 1922, 1923, 1924 and 1925.

Variety	Average Yield of Unhulled Nuts in Pounds Per Acre	
	No Fertilizer	250 Lbs. 16% Acid Phosphate Per Acre
North Carolina	1353	1582
Spanish	1098	1445
Improved Spanish	1199	1434
McGovern	1187	1295
Virginia Bunch	1093	1206
Valencia	913	1010
Tennessee Red	534	546*

*Four-year average.

PEANUT, FERTILIZER TESTS: The peanut fertilizer tests include various combinations of phosphoric acid, potash, ammonia, lime and sulphur. As the work progresses the results indicate that a complete fertilizer may be required for the crop, however, acid phosphate and limestone have shown the most economical results during the past three seasons. Small quantities of ammonia and potash should certainly be used on the lighter and poorer soils. Further experiments should give more accurate information on the fertilizer requirements of the crop. A fertilizer analyzing 10 to 12 per cent. phosphoric acid, 2 to 3 per cent. ammonia and 2 to 4 per cent. potash used in addition to limestone should give good results.

PEANUT, SPACING TESTS:Various spacings are being conducted with White Spanish peanuts. Hulled and unhulled nuts are being used in each spacing test. During 1924 and 1925 no benefits resulted from the use of hulled nuts, however, it must be borne in mind that seasons will influence the results obtained. The closer spacings have consistently given the highest yields. The close spacings may be easily and practically obtained through the use of a double hopper planter. Spacing of six to seven inches are recommended and may be obtained in the manner indicated.

Hay.

HAY TESTS: Laredo, O-Too-Tan and Mammoth Yellow soy beans, and Iron, Brabham, Clay and Unknown cowpeas are being compared in a series of hay tests planted in three-foot rows after oats and cultivated. Table No. XV shows the average yields for 1923, 1924 and 1925.

In 1925 all hay yields were rather low, due to the dry season. Among the soy bean varieties O-Too-Tan has proven to be the most desirable bean from the standpoint of yield as well as quality of hay produced.

Comparisons are also being made of various combination seedings for hay. These plantings are made broadcast and in rows, the seedings in rows being cultivated. Throughout these tests the coarser forage plants such as sorghum and Sudan grass have made the largest yields. However, a much better quality of hay is obtained from mixtures including legumes. Table No. XVI shows the average yields of these hay seedings for four years.

TABLE XV.—SOY BEAN AND COWPEA HAY TESTS.

For 1923, 1924 and 1925.
Seeded in Three-Foot Rows and Cultivated
(After Fulghum Oats—No Fertilizer)

Variety	Yield Cured Hay in Pounds Per Acre			
	1923	1924	1925	Average 3 Years
Soy Bean Varieties:				
1. O-Too-Tan	2171	1981	2516	**2566**
2. Laredo	3200	794	1683	**1942**
3. Mamoth Yellow	3350	733	1427	**1756**
Cowpea Varieties:				
1. Iron	3107	608	924	**1296**
2. Brabham	2357	522	1023	**1277**
3. Unknown	2285	333		**1202***
4. Clay	2071	488	750	**1136**

*Two-year average.

TABLE XVI.—HAY TESTS.

Average Yield for 1922, 1923, 1924 and 1925

Seeded After Oats. No Fertilizer.

Crop	Yield Cured Hay in Pounds Per Acre	
	Cultivated in 3 Ft. Rows	Broadcast
1. Red Top Sorghum and Laredo Soy Beans	5171	2597
2. Red Top Sorghum and Beggarweed	4886	2607
3. Red Top Sorghum	3963	1692
4. Red Top Sorghum and Brabham Cowpeas	3358	2568
5. Red Top Sorghum and Sudan Grass	2616	1878
6. Laredo Soy Beans	2492	1560
7. Sudan Grass and Beggarweed	1975	1335
8. Sudan Grass	1956	1440
9. Brabham Cowpeas	1906	1219
10. Sudan Grass and Laredo Soy Beans	1831	1381
11. Laredo Soy Beans and Beggarweed	1820	1399
12. Sudan Grass and Brabham Cowpeas	1717	1573
13. Brabham Cowpeas and Laredo Soy Beans	1644	1326
14. Brabham Cowpeas and Beggarweed	1591	1459

Soy Beans.

SOY BEAN, VARIETY TESTS: The soy bean variety trials are being continued. Each season new varieties are included which have not been grown in the coastal plain. Special attention is being given to the selection of varieties best suited to forage or hay production. O-Too-Tan and Laredo have been found to be very desirable hay plants. The O-Too-Tan is fast becoming a very popular variety for hay production, since its late maturity permits the successful use of it following a grain crop. The Laredo is better adapted to earlier seedings. When sown after grain Laredo has produced only fair yields, while the earlier seedings compare favorably with the better varieties.

The average yield of grain and hay for seedings made during May are shown in Table No. XVII.

TABLE XVII.—SOY BEAN VARIETY TESTS.
Average for 1921, 1922, 1923, 1924 and 1925
(Cultivated in three-foot rows—Early plantings.)

Variety	Yield of Bean in Bushels Per Acre	Yield Cured Hay in Pounds Per Acre
O-Too-Tan	1.9	3326
Laredo	11.7	3293
Mammoth Yellow	7.7	2678
Black	10.1	2650
Brown	6.7	2636
Biloxi	1.7	2468
Virginia	10.2	1154
Southern Prolific	9.8	----*

*No hay produced.

Millets.

The millet variety trials are being continued. Barnyard Millet has produced the highest average yield of grain. Considerable use is being made of the crop as grazing, principally for poultry. The Pearl or Cat-tail Millet is the most desirable variety for forage or green-grazing for cattle and hogs. The dry season resulted in rather low grain yields in 1925.

Velvet Beans.

The velvet bean trials show Tracy's Early Black, a variety obtained through the U. S. Department of Agriculture, leading in yield. Early Arlington, 120 Day, Osceola, 90 Day and Bunch have yielded in the order named during the three years 1923, 1924 and 1925.

TABLE XVIII.—VELVET BEAN VARIETY TESTS.

Variety	1923		1924		1925		Average Yield	
	Beans Planted Solid	Beans in Corn	Beans Planted Solid	Beans in Corn	Beans Planted Solid	Beans in Corn	Beans Planted Solid	Beans in Corn
Tracy's Early Black	765	784	650	706	540	690	**651**	**726**
Early Arlington	500	540	461	604	464	677	**475**	**607**
120 Day	106	659	212	290	288	372	**202**	**440**
90 Day	240	359	250	396	272	322	**254**	**359**
Osceola	120	373	88	156	149	235	**125**	**254**
Bunch	337	200	62	94	92	78	**167**	**124**

HAIRY VETCH is winter hardy and is a good cover crop. It usually produces little or no seed.

AUSTRIAN WINTER PEA (A variety of Canad Field Pea), like hairy vetch, is winter hardy and is a good cover crop for south Georgia. Plantings on the Station farm begin to make growth in the early spring before hairy vetch. It may be turned under early for a cover crop. If allowed to mature, it produces a light yield of seed.

A close-up view of MONANTHOS VETCH. This variety is early, seeds well and withstands ordinary south Georgia winters, but is not as winter hardy and doesn't produce as much tonnage as hairy vetch or Austrian winter pea when these crops are allowed to make maximum growth. Like Austrian winter pea it begins growth in the early spring before hairy vetch and is desirable when the cover crop must be turned under early.

Winter Field Peas.

WINTER FIELD PEAS, VARIETY TESTS: The Field Pea variety and adaptation trials are being continued. Several new varieties were included in 1925, none of which showed characteristics worthwhile.

The results with this crop show that the Grey Winter or Austrian Winter Pea is a most promising winter cover and green-manure crop. During the five years it has been included

in the tests excellent vegetative growths have been obtained. Low average seed yields rather indicate little possibility as a grain crop. Further data on yields and range of adaptation may be had from U. S. Department of Agriculture Circular No. 374.

Vetches.

VETCH, VARIETY TESTS: Several vetches are being grown in the variety and adaptation trials. Among those showing most promise are Monanthos, Hairy and Purple. Hairy and Monanthos are being included in a series of green-manure tests with corn and cotton which should give more definite data on these outstanding vetch varieties.

Bur Clovers.

BUR CLOVER, VARIETY TESTS: The bur clover trials are being continued with such new kinds as are obtainable added each season. All plats reseeded from 1924 continued to grow. However, some of the poorly adapted kinds have almost disappeared. Of the many varieties being grown Tifton Bur Clover continues to be the most outstanding from the standpoints of quantity of growth made and seed produced. Efforts are being made to increase the seed supply of Tifton Bur Clover.

Other Legumes.

Fertilizer tests have been conducted with Serredella, Subterranean Clover, Black Medic, Annual Yellow Blooming Melilotus, and Hubam Clover. During the three years these tests have been in progress it has been observed that very liberal fertilization is required by the above named crops, except possibly Serredella with which further tests are planned to determine its use under South Georgia conditions.

There is one other legume (Lotus uliginosus), with which only a small amount of work has been done, which offers considerable promise as a lowland pasture plant. These seedings

of L. uliginosus were made in the fall of 1923 on very low moist bottom land. It has continued to spread to about twice the original area sown, showing a vigorous tendency which will very probably enable it to become established under conditions existing in lowland pastures.

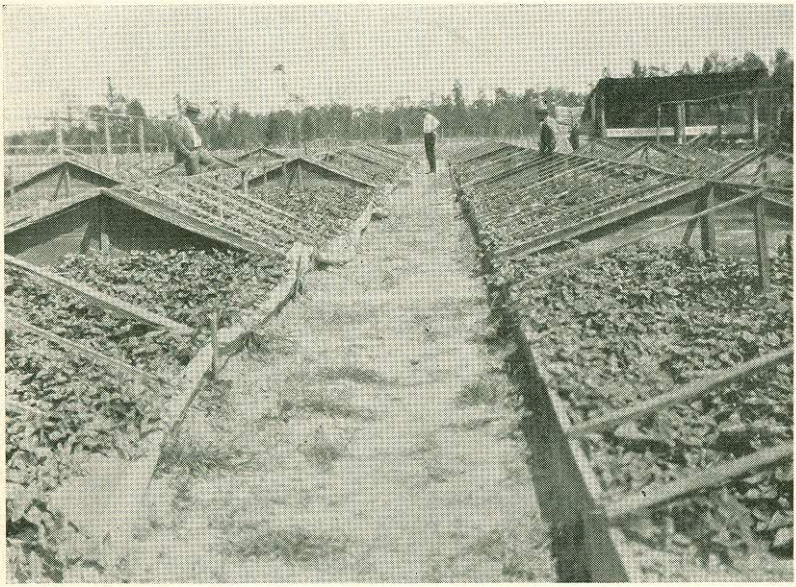
Grasses.

The adaptation studies with grasses have disclosed no new plants which offer anything promising for grazing and forage. A group of newly introduced grasses were added to the garden in the spring of 1925 and are being studied.

Carpet grass, Dallas grass and lespedeza is considered the standard mixture for lowland pasture. Bahia grass, centipede grass, vasey grass and Napier grass continue to be the most promising kinds included in the grass garden.

Lowland Pasture Tests.

A permanent lowland pasture is maintained to determine the grazing value of carpet grass, Dallas grass and lespedeza planted singly and the three seeded in combination. The grazing period covers a period of approximately nine months. Grazing to capacity has not been possible, but the condition and weight of animals on the plats indicate that the combination seeding s superior to either carpet grass, Dallas grass, or lespedeza sown alone.



Sweet potato beds on which canvas covers are used.

HORTICULTURE

Sweet Potatoes.

The work with sweet potatoes as outlined in the previous report consists of variety trials for early and late maturity, dates of planting, dates of harvesting, spacing tests in the drill, hill selections, fertilizer tests, storage tests, and tests to determine the influence of northern and southern grown seed-stocks on yield.

Other phases of sweet potato culture that are in progress are methods of cultivation, spacing tests in row widths, methods of breeding and selection to improve sweet potato strains, tests to determine the residual effects of fertilizer and the effect of heavy applications of fertilizer on early maturity.

SWEET POTATO, VARIETY TESTS: As a result of the dry growing season in 1925, the yields of all varieties were

considerably lower than in previous years. A striking result observed in varietal response to rainfall is that yields of commercial varieties fluctuate less with extremes in seasonal conditions than do the high yielding varieties that are not grown commercially; hence as a result of the drought in 1925, the commercial varieties have shifted to higher places in the order of yield than in 1924.

TABLE XIX.—SWEET POTATO VARIETY TESTS.
Average Yields for 1922, 1923, 1924 and 1925

Variety	Total Yield in Bushels Per Acre	Yield of No. 1's in Bu. Per Acre
1. McMillan Cluster	224	146
2. Hardshell	219	141
3. Southern Queen	210	137
4. Golden Beauty	201	134
5. Jerusalem	197	135
6. Triumph	181	128
7. York Yam	171	109
8. Porto Rico	167	107
9. Nancy Hall	164	103
10. Pumpkin Yam	162	94
11. Dooly Yam	153	92
12. Purple Yam	137	70
13. Big Stem Jersey	137	51
14. Shoer's Early	136	87
15. Yellow Yam	121	65
16. Norton Yam	112	64

SWEET POTATO, EARLINESS OF MATURITY OF VARIETIES: A test was begun in 1924 to determine the varieties best adapted to the requirements of the early market. During the two years this test has been in progress the yields from the different varieties have fluctuated considerably. The data at hand are showing Porto Rico and Nancy Hall to about equal advantage from the standpoint of early yields. The early yield of No. 1 potatoes from Big Stem Jersey is about half of that of these two varieties. Southern Queen is leading in yeld, but due to its inferior quality when green, is not considered a potato for the early market.

SWEET POTATO, PLANTING DATES: The practice of delaying the planting of sweet potatoes until late in the season is responsible, more than any other factor, for the low yields realized from this crop in South Georgia. In the following table it will be noted that the high yields realized from the early plantings rapidly decrease as the planting season advances. Over a four-year period plantings made in April have averaged 61 bushels of No. 1 potatoes per acre more than plantings made in June.

TABLE XX.—INFLUENCE OF DATES OF PLANTING ON YIELDS OF SWEET POTATOES.

Average Yields of Porto Ricos for 1922, 1923, 1924 and 1925

Average Date Planted	Total Yield in Bushel Per Acre	Yield of No. 1's in Bushel Per Acre	Average Growing Days
April 1st	304	136	220
April 15th	273	135	205
May 1st	207	114	190
May 15th	199	116	175
June 1st	154	84	159
June 15th	122	64	144
July 1st	82	42	129
July 15th	61	24	114
August 1st	34	8	98

SWEET POTATO, HARVESTING DATES: A series of harvesting dates extending from July 1st to November 1st show that the sweet potato makes a gradual growth throughout its entire growing period and that with favorable seasonal conditions the root development continues as long as the vines remain green and healthy. Data obtained from harvesting dates over a four year period are shown in the following table.

TABLE XXI.—INFLUENCE OF DATES OF HARVESTING ON YIELDS OF SWEET POTATOES.

Average Yields of Porto Ricos for 1922, 1923, 1924 and 1925

Average Date Harvested	Total Yield in Bushels Per Acre	Yield of No. 1's in Bushels Per Acre	Average Growing Days
July 1st	14	3	74
July 15th	39	17	90
August 1st	81	40	107
August 15th	100	48	121
September 1st	137	77	138
September 15th	159	101	152
October 1st	168	98	168
October 15th	189	119	182
November 1st	237	131	199

SWEET POTATO, SPACING TESTS: In spacing trials in which the rows are three and a half feet wide, plants were set at distances varying from four to twenty-eight inches in the drill. Over a four year period the closer spacings have given a higher total yield, while in No. 1 potatoes there is very little difference resulting from plantings made eight, twelve, sixteen and twenty inches in the drill, as will be noted in the following table. It will be observed, however, that close spacing produces a high per cent. of strings and that extremely wide spacing produces a high per cent. of jumbo potatoes.

TABLE XXII.—SWEET POTATO SPACING TESTS.

Average Yields of Porto Ricos for 1922, 1923, 1924 and 1925

Distance in Drill	Yield in Bushels Per Acre				
	Total	No. 1's	No. 2's	Strings	Jumbos
4 inches	259	114	73	63	9
8 inches	236	128	53	46	9
12 inches	228	128	48	40	12
16 inches	207	130	37	30	10
20 inches	195	124	39	21	11
24 inches	193	120	37	23	13
28 inches	193	107	43	23	20

SWEET POTATO, SELECTION WORK: The hill selection work begun in 1921 is being continued. Other methods of selection are also in progress which have as their object the

development of a potato that will be more desirable for home consumption and as a commercial product.

SWEET POTATO, FERTILIZER TESTS: 1. A fertilizer test embracing 15 formulae of the triangular fertilizer method has been in progress four years. During the dry season of 1925, potash seemed to be more essential in the production of a high yield of sweet potatoes than ammonia; although the average yield over a four year period, shows a high per cent. of ammonia to best advantage. The three formulae producing the highest yields over a four year period are given below. The yields are expressed in bushels per acre.

Fertilizer Formula	Total Yield Per Acre	No. 1 Potatoes	No. 2 Potatoes	Strings	Jumbos
8-6-2*	250	135	51	30	34
8-4-4	231	137	46	29	19
8-2-6	229	128	47	31	23

*8% phosphoric acid, 6% ammonia and 2% potash.

This work is being continued to determine more conclusively the fertilizer requirements of the sweet potato crop.

2. Another set of tests are being conducted in which fertilizer is applied in amounts varying from 200 to 1200 pounds per acre. Results obtained over a four year period indicate that 600 to 800 pounds of fertilizer per acre is the most profitable rate of application.

3. In order to determine the source from which the ammonia in sweet potato fertilizer should be derived, tests are in progress which include six different carriers. Combinations of slowly and quickly available sources are also used. These tests are incomplete and will be continued.

4. Another set of tests are being conducted to determine the influence of varying amounts of fertilizer on early maturity.

THE INFLUENCE OF NORTHERN AND SOUTHERN GROWN SWEET POTATO SEED STOCKS ON YIELD: These tests are in cooperation with the U. S. Department of Agriculture, the latter furnishing the northern grown seed stock and this station furnishing the southern grown. In these trials eight varieties were used and of this number four grown from each of the sources are leading. At the time the tests were begun, in 1922, it was thought that higher yields could be obtained from plantings in the south if the plants were derived from northern grown seed-stock. Data at hand, however, indicate that the two sources from which the seed stocks used in this project were procured, have little if any influence on sweet potato yields in the south. Six of the varieties (Porto Rico, Nancy Hall, Big Stem Jersey, Dooly Yam, Triumph and Yellow Yam) show practically the same yields resulting from the two sources, while Southern Queen shows an increase of 24 bushels per acre in favor of southern grown stock and Pumpkin Yam an increase of 54 bushels per acre in favor of stock from the same source.

TABLE XXIII.—COMPARISON OF YIELDS FROM NORTHERN AND SOUTHERN GROWN SEED STOCKS.

Average Yields for 1923, 1924 and 1925

Variety	Northern Grown Stock Total Yield in Bushels Per Acre	Southern Grown Stock Total Yield in Bushels Per Acre
Southern Queen	151	175
Porto Rico	131	135
Nancy Hall	129	129
Big Stem Jersey	124	120
Dooly Yam	121	116
Triumph	118	114
Yellow Yam	105	107
Pumpkin Yam	70	124

STORAGE TESTS WITH SWEET POTATOES: All of the varieties included in the variety trials are placed in storage and in the spring, when the potatoes are taken from the curing house, the per cent. rot in each variety is determined

In the following table is given the average per cent. of rot from each variety, over a four year period.

TABLE XXIV.—SWEET POTATO STORAGE TESTS.
Average Yields for 1922, 1923, 1924 and 1925

Variety	Per Cent Rot in Storage
Southern Queen	5%
Triumph	9%
Nancy Hall	13%
Dooly Yam	16%
Shoer's Early	17%
Norton Yam	19%
Pumpkin Yam	23%
Yellow Yam	24%
Porto Rico	26%
Golden Beauty	27%
York Yam	28%
Jerusalem	34%
McMillan Cluster	38%
Hardshell	39%
Purple Yam	43%
Big Stem Jersey	43%

A similar storage test is being conducted with sweet potatoes from the triangular fertilizer plots. Results at hand are outstanding in only one respect; the well balanced formulae are showing the least rot.

Tomatoes.

TOMATO, VARIETY TESTS: The variation in varietal yields of tomatoes from year to year has caused considerable shifting in the order of yield in the four year average, as compared with that of the three year average given in the previous Report. Of the sixteen varieties of tomatoes included in the variety trials as shown in Table XXV, New Stone is leading in the production of marketable fruit and comes second in total yield. Not only is the New Stone productive but its yield fluctuates less from year to year than the other varieties. For home use and local market the Stone probably has no superior

in South Georgia, while Livingston Globe is showing considerable merit as a shipping tomato. Spark's Earliana and Chalks Early Jewel are the earliest maturing varieties. Cooper's Special holds promise as a commercial variety.

TABLE XXV.—TOMATO VARIETY TESTS.
Average Yields for 1922, 1923, 1924 and 1925

Variety	Total Yield in Pounds Per Acre	Lbs. Marketable Tomatoes Per Acre
1. Duke of York*	16103	9607
2. New Stone	16100	10269
3. Selection No. 5*†	13263	8319
4. Cooper Special*	13077	9765
5. Chalks Early Jewel	12975	7066
6. Livingston Globe	12900	8556
7. Norton†	12737	8481
8. Sparks Earliana	12734	5735
9. Redfield Beauty	12410	7969
10. Dwarf Champion*	11420	7235
11. Greater Baltimore*	11033	6663
12. Matchless	10967	7503
13. Norduke†	10834	7508
14. Marvel†	10335	7005
15. Ponderosa	10130	4709
16. Brimmer*	7232	3181

*Three-year average.
†Wilt resistant variety.

TOMATO, PLANTING DATES: Tomatoes are planted at fifteen-day intervals throughout the growing season to determine the date at which this crop should be planted to obtain the highest yields. As will be noted in Table No. XXVI, the highest yield is realized from the earliest planting. The yield of each successive planting gradually decreases.

TABLE XXVI.—TOMATO, DATES OF PLANTING TESTS.
Average Yields of New Stone for 1922, 1923, 1924 and 1925.

Date Planted	Total Yield in Pounds Per Acre	Lbs. Marketable Tomatoes Per Acre
April 1st	15551	9810
April 15th	11757	7818
May 1st	9393	6527
May 15th	5935	4177
June 1st*	5069	3458
June 15th*	5418	3325
July 1st*	3186	1851

*Three-year average.

TOMATO, FERTILIZER TESTS: A tomato fertilizer test is being continued to determine the combination of phosphoric acid, ammonia and potash required. Over a four year period a 9-5-7 formula (9% phosphoric acid, 5% ammonia and 7% potash) is leading in total yield and in marketable fruit.

Another set of tests are being continued to determine the most profitable rate at which fertilizer may be applied to tomatoes. These tests indicate that under ordinary conditions in South Georgia, the greatest net returns may be expected from around 800 to 1000 pounds of fertilizer per acre.

Tests of different sources of ammonia are being continued.

TOMATO, IRRIGATION TESTS: To determine the advisability of irrigating tomatoes and the type of irrigation best suited to conditions in the coastal plain, small areas of upland (Tifton Sandy Loam) were equipped with over-head and sub-irrigation systems, and these systems compared with an un-irrigated area. In a four year average the over-head has produced a higher yield with less water requirement than the sub-irrigation system, although the increase in yield in the irrigated over the un-irrigated area is so slight that it is doubtful if the practice of irrigating would be profitable under conditions represented by these tests.

Watermelons.

WATERMELON, VARIETY TRIALS: Variety trials with watermelons were continued as in previous years. The order of yield of the eight varieties, as obtained from a four year average, varies very little from the yield shown in the 1924 Report. As will be noted in Table No. XXVII, Thurmond Grey is producing the largest melon of the eight varieties included in these tests. Only two years results are included in the table, however, due to the fact that the Thurmond Grey seed purchased in 1924 and 1925 were not true to type. Stone Mountain was added to the following list of varieties in 1925 and is

showing to good advantage in South Georgia. It produced 800 melons per acre, averaging 30 pounds each.

TABLE XXVII.—WATERMELON VARIETY TESTS.
Average Yields for 1922, 1923, 1924 and 1925

Variety	No. Marketable Melons Per Acre	Average Wt. of Marketable Melons	Days Required to Mature
Thurmond Grey**	640	33	102
Rattlesnake	510	24	106
Watson	500	24	110
Florida Favorite*	480	22	111
Kleckley Sweet	400	22	104
Irish Grey	360	22	112
Halbert Honey*	347	22	109
Alabama Sweet*	200	21	114

*Three-year average.
**Two-year average.

WATERMELON, PLANTING DATES: As shown in Table No. XXVIII, the average size of the melon and the number of melons set per acre may be increased by early planting.

TABLE XXVIII.—WATERMELON PLANTING DATES.
Average Yields of Watsons for 1922, 1923, 1924 and 1925

Date Planted	No. Marketable Melons Per Acre	Average Wt. of Marketable Melons	Days Required to Mature
March 1st*	580	28	133
March 15th	540	26	115
April 1st	500	24	104
April 15th	420	23	95
May 1st**	120	23	90

*Average for years 1923 and 1925.
**Average for years 1922, 1923 and 1924.

WATERMELON, FERTILIZER TESTS: The triangular test with watermelons, including fifteen formulae, has been in progress four years. In these tests an 8-4-4 formula (8% acid phosphate, 4% ammonia and 4% potash) is leading in yield.

Tests of rates of applying fertilizer show a profitable increase up to 800 pounds per acre.

WATERMELON, PRUNING TESTS: In these tests different areas were pruned to one, two, three and four melons to the vine, and another area was left unpruned. Data procured over a four year period show the area pruned to one melon to the vine producing the largest melons, while of the pruned areas the area pruned to two melons to the vine is producing the highest yield of marketable melons per acre. Although the results are incomplete and further studies are being made, the data to date show that the unpruned area is producing considerably more melons per acre as compared to the pruned areas, and with the exception of those pruned to one to the vine, the melons are practically as large. It is evident, however, that all ill-shaped melons should be pruned.

Irish Potatoes.

IRISH POTATO, VARIETY TESTS: Red Bliss, grown from second crop potatoes is maintaining its lead in the Irish potato variety trials. Green Mountain is maintaining its place as second in order of yield although, due to its tendency to fluctuate in production with the varying seasons and its lack of uniformity in shape, it is not recommended as a variety for South Georgia. Other varieties such as "Norther" and "Early Rose" are showing to good advantage, but due to the fact that they have been grown only two years are not included in the variety trials as shown in Table No. XXIX. Red Bliss is probably the most popular variety in South Georgia and is well adapted to conditions here.

TABLE XXIX.—IRISH POTATO VARIETY TESTS.
Average Yields for 1922, 1923, 1924 and 1925

Variety	Total Yield in Bushels Per Acre	Yield of No. 1's and 2's in Bu. Per Acre
1. Red Bliss (Second Crop)*	68	64
2. Green Mountain	64	57
3. Red Bliss (Maine Grown)	55	48
4. Irish Cobbler	54	50
5. Spalding Rose*	49	41
6. McCormick	33	26
7. Lookout Mountain*	31	24
8. Improved Peach Blow	24	17

*Three-year average.

IRISH POTATO, PLANTING DATES: Planting dates ranging from March 1st to April 15th usually shows a slightly higher yield resulting from plantings made March 15th to April 1st. This is probably due to heavier rainfall through the period of maturity of the potato. Note the comparative inches of rainfall as shown in Table No. XXX. Fall plantings of Irish potatoes have not proven successful because of the difficulty experienced in securing satisfactory germination.

TABLE XXX.—INFLUENCE OF DATES OF PLANTING ON YIELDS OF IRISH POTATOES.

Average Yields of Red Bliss for 1922, 1923, 1924 and 1925

Date Planted	†Rainfall in Inches for Growing Period	†Rainfall in In. for Last Half of Growing Period	Total Yield in Bushels Per Acre	Yield of No. 1's and No. 2's in Bu. Per Acre
March 1st*	13.66	6.80	51	43
March 15th	12.42	7.36	55	47
April 1st	13.32	9.54	56	48
April 15th*	10.88	9.38	43	37

*Three-year average.
†Rainfall represents a three-year average.

IRISH POTATO, FERTILIZER TESTS: The work with fertilizers for Irish potatoes is not conclusive although a formula carrying 8% phosphoric acid, 4% ammonia and 4% potash continues to lead in a four year average.

Tests with varying amounts of fertilizer indicate that 1000 to 1200 pounds per acre may be profitably applied.

IRISH POTATO, IRRIGATION TESTS: Comparative tests with irrigated and un-irrigated areas have been conducted with Irish potatoes for three years. In this project both the over-head and sub-irrigation systems were used. It will be noted in Table No. XXXI that a considerable increase in yield has been realized from the irrigated areas and that of the two systems used, over-head has a slight advantage in yield of marketable potatoes and requires less water.

TABLE XXXI.—IRISH POTATO, IRRIGATION TESTS.
Average Yields of Spring Plantings for 1923, 1924 and 1925

System	Total Yield in Bushels Per Acre	Yield of No." 1's and 2's in Bu. Per Acre
Over-head irrigation	67	64
Sub-irrigation	67	62
Field (not irrigated)	47	42

Beans.

BEAN, VARIETY TESTS: The variety trials with both snap and lima beans include spring and fall plantings. In comparing Tables Nos. XXXII and XXXIII, it will be observed that yields from fall plantings are much lower than from those made in the spring. Apparently the fall growing season is too dry to satisfy the moisture requirement of the growing plants. It has been observed also that fall plantings are more susceptible to bean diseases which result in serious damage to the crop. The beans planted in the fall of 1925 were a complete failure, due to the extreme heat and drought of that season, however, Table No. XXXIII is shown as in the previous report in order that yields from fall and spring plantings may be compared.

TABLE XXXII.—BEAN VARIETY TESTS.

Spring Plantings.
Average Yields for 1922, 1923, 1924 and 1925

Variety	Total Yield in Pounds Per Acre	Days Required to Mature	Bearing Period (Days)
Snap Beans:			
McCaslan Pole	3134	63	34
Stringless Green Pod (Bush)	2796	55	40
Cornfield (Pole)	2790	70	27
Old Homestead (Pole)	2639	68	29
Georgian Pole*	2463	68	40
Black Valentine (Bush)	2406	55	36
Davis White Wax (Bush)	2248	55	36
Red Valentine (Bush)	2107	61	33
Imp. Round Pod Refugee (Bush)	2017	62	27
Tepary (Bush)†	1975	81	33
Wardwell's Kidney Wax (Bush)	1885	54	37
Hodson Wax (Bush)	1710	62	28
White Mexican (Bush)	1630	61	30
Excelsior Refugee (Bush)	1587	59	32
Lima Beans:			
Florida Butter (Pole)	4394	88	79
Jackson Wonder (Bush)	3133	80	64
Henderson Bush	2365	80	63
Small White Lima (Pole)*	2161	83	49
Ford Hook (Bush)	1125	85	49
Large White Lima (Pole)*	949	81	21

*Three-year average.
†Two-year average.

TABLE XXXIII.—BEAN VARIETY TESTS.

Fall Plantings.

Average Yields for 1921, 1922, 1923 and 1924

Variety	Total Yield in Pounds Per Acre	Days Required to Mature	Bearing Period (Days)
Snap Beans:			
Corn Field (Pole)*	1524	72	25
Tepary (Bush)*	1104	66	16
Old Homestead (Pole)	1083	68	27
McCaslan Pole	820	63	27
Georgian Pole*	573	69	11
Wardwell's Kidney Wax (Bush)*	511	56	28
Black Valentine (Bush)*	470	49	33
White Mexican (Bush)	421	67	18
Hodson Wax (Bush)	381	59	22
Excelsior Refugee (Bush)*	372	59	26
Imp. Round Pod Refugee (Bush)	348	69	19
Red Valentine (Bush)	321	50	31
Davis White Wax (Bush)	307	53	31
Stringless Green Pod (Bush)	213	62	31
Lima Beans:			
Jackson Wonder (Bush)*	1370	79	21
Small White Lima (Pole)†	1127	92	12
Henderson (Bush)	941	82	16
Florida Butter (Pole)*	545	91	12
Large White Lima (Pole)†	56	95	12
Ford Hook (Bush)*	19	95	5

*Three-year average.
†Two-year average.

English Peas.

ENGLISH PEA, VARIETY TESTS: Variety trials with English peas indicate that of the early maturing varieties Thomas Laxton is outstanding; Notts Excelsior is showing to good advantage as a medium maturing variety and of those that mature late, Improved Telephone and Bliss Everbearing are very dependable and heavy bearers.

Work with other truck and vegetable crops was carried forward in a limited way as in previous years. This work includes variety trials and adaptation studies with asparagus, beets, cabbage, carrots, celery, corn (sweet), cucumbers, egg plants, endive, kohl rabi, lettuce, okra, onions, parsley, parsnips, pepper, radish, spinach, squash and turnips.

Fruits.

Work in adaptation studies and variety trials with fruit crops is in its fourth year and is showing a fair degree of progress.

PEACH, VARIETY TESTS: Of the 46 varieties of peaches included in the present plantings, only 17 varieties matured fruit in 1925. Table No. XXXIV shows the average yields of the first and second crops of as many varieties as have produced fruit over a two year period.

TABLE XXXIV.—PEACH VARIETY TESTS.
Average Yields for 1924 and 1925 (First and Second Crops)

Variety	Free or Cling	(Average) Date Mature	Yield in Crates Per Tree
Imperial	Free	July 8	.79
Florida Gem	Free	July 7	.58
Taber	Cling	July 1	.55
Mamie Ross	Semi-Cling	July 18	.38
Mayflower	Semi-Cling	June 4	.34
Hiley	Free	June 30	.34
Georgia Bell	Free	July 13	.20
Late Elberta	Free	August 14	.14
Waldo	Free	June 19	.13
Elberta	Free	July 21	.11
Carmen	Semi-Cling	July 14	.11
Honey	Free	June 25	.10
Greensboro	Semi-Cling	June 15	.07
Early Elberta	Free	July 22	.05
Salway	Free	July 31	.04
Angel	Free	July 11	.02
J. H. Hale	Free	July 27	.02

GRAPE, VARIETY TESTS: Eighteen varieties of grapes produced fruit in 1925. Tables Nos XXXV and XXXVI show the average yields of the first and second crops of as many varieties as have produced fruit over a two year period. It will be noted in Table No. XXXV that Moor's Diamond stands second in order of yield, however, this variety is showing a high degree of susceptibility to rot and for that reason should not have a place in plantings in South Georgia. Of the varieties listed in

this table, Morrell, Niagara and Delaware are outstanding at the present time and among other varieties not listed in the table, Carmen is showing to good advantage.

TABLE XXXV.—GRAPE VARIETY TESTS.

(Bunch Type)

Average Yields for 1924 and 1925 (First and Second Crops)

Variety	Color	Average Date of Maturity	Yield in Pounds Per Vine
Morrell	Purple	July 5	12.8
Moor's Diamond	Creamy White	July 6	12 0
Niagara	Greenish White	July 4	7.1
Delaware	Red	July 3	6.3
Ives	Black	July 1	5.4
Worden	Black	July 6	5.0
Concord	Blue Black	July 8	4.8
Lutie	Red	June 30	2.9
Brilliant	Red	July 8	2.4
Agawan	Redish Brown	July 3	1.2

Of the 12 varieties of muscadine grapes growing at the station at the present time, five varieties have produced two crops of fruit. Of these varieties, Thomas is leading in yield as will be noted in Table No. XXXVI and it is also of superior quality among the black muscadines, while Scoupernong, the only white muscadine included in the table, tops them all in quality, but is a shy bearer.

TABLE XXXVI.—GRAPE VARIETY TESTS.

(Muscadine Type)

Average Yields for 1924 and 1925 (First and Second Crops)

Variety	Color	Average Date of Maturity	Yield in Pounds Per Vine
Thomas	Redish Purple	August 8	14.2
Eden	Black	July 7	11.6
Flowers	Purplish Black	August 9	7.9
James	Black	August 9	5.7
Scoupernong	Bronze	August 12	4.1

STRAWBERRY, VARIETY TESTS: In a three year variety test with strawberries, Klondike and Missionary, as shown in Table No. XXXVII, are outstanding varieties. Other varieties were added to the collection in the fall of 1924. Among the new varieties "Seedling" is showing to best advantage and apparently is quite superior to Klondike or Missionary in that it better withstands the summer heat.

TABLE XXXVII.—STRAWBERRY VARIETY TESTS.

Average Yields for 1922, 1923 and 1924

Variety	Total Yield in Quart Per Acre	Days Bearing Period
Klondike	2115	98
Missionary	1638	98
Excelsior	971	97
Lady Thompson	654	95
Progressive Everbearing	637	101
Aroma	534	86
Dunlap	346	87

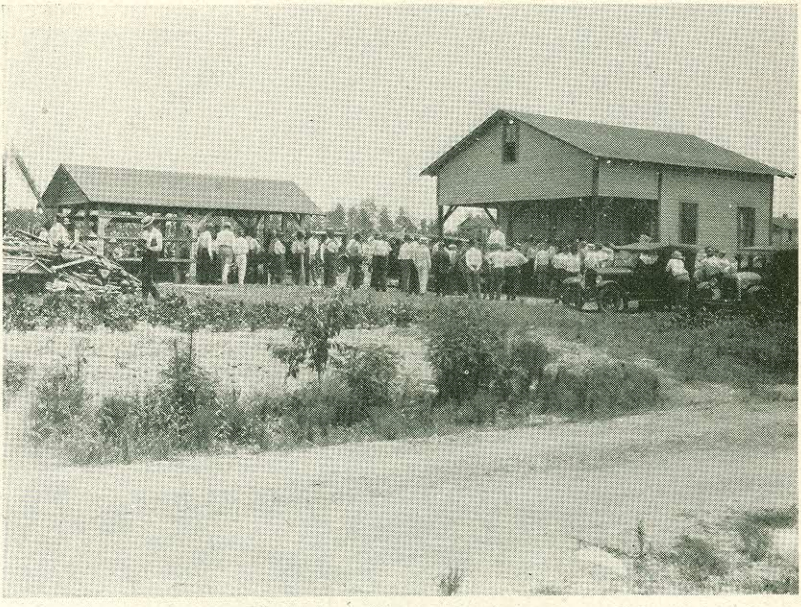
DEWBERRY, VARIETY TESTS: Table No. XXXVIII shows the average yield secured per vine, from a two year test with dewberry varieties. "Young" is decidedly the superior berry in vigor, resistance to disease, productiveness and quality. For home use and local markets this berry probably has no superior and there is a possibility of its shipping if picked when red. Lucretia is a good shipper but is susceptible to disease and seems to lack vigor. Austin is not desirable because of its poor keeping quality and lack of uniformity in shape and size.

TABLE XXXVIII.—DEWBERRY VARIETY TESTS.

Average Yields for 1924 and 1925

Variety	Total Yield in Quarts Per Plant	Average Date of Maturity
Young	3.9	May 18
Austin	3.1	May 16
Lucretia	2.2	May 21

OTHER FRUITS: Among other fruits that have reached bearing age are plums, jubes, apples, walnuts, figs, pecans, pears, blueberries, blackberries, raspberries and quince. Results secured from work with these fruits are incomplete.

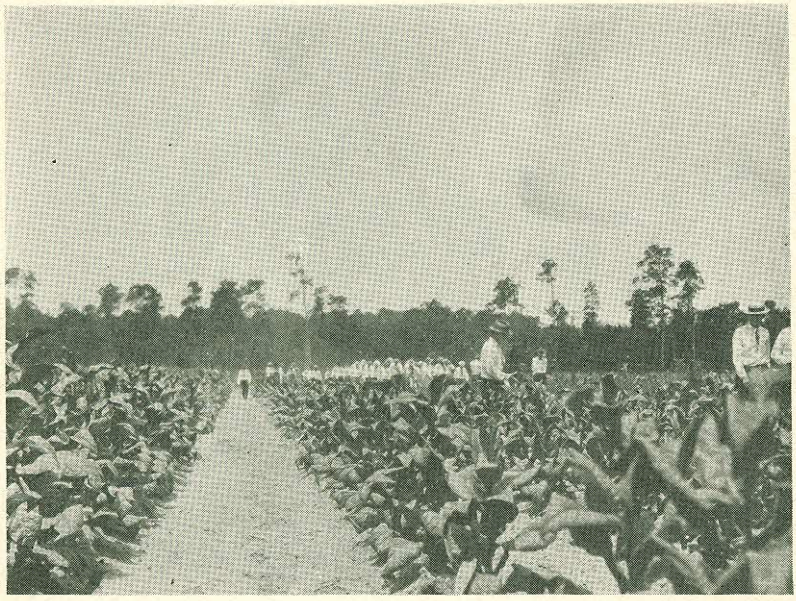


Farmers' tobacco field meeting at the Experiment Station.

Tobacco.

The experimental work with tobacco is being continued along the lines as outlined in previous reports, and in addition, studies are being made with reference to tobacco diseases. This work is conducted in cooperation with the Bureau of Plant Industry of the U. S. Department of Agriculture and the Georgia State College of Agriculture.

TOBACCO, FERTILIZER EXPERIMENTS: The fertilizer experiments are being continued to determine the fertilizers that produce maximum yields of good quality tobacco. The injury from nematodes or root-knot in the fertilizer experiments was so great it was found necessary to change the location of some of the tests and alternate tobacco with corn every other year, using both the new and old locations.



Tobacco experiments.

The results so far have not made it advisable to change the stations recommendations of not less than 1000 pounds per acre of a fertilizer analyzing 8% phosphoric acid, 3% ammonia and 5% potash. The use of a small quantity of stable (horse) manure as a supplement to commercial fertilizer continues to show decidedly beneficial results. From the experimental evidence at hand, there seems to be little probability of a change being made in recommendations as to the quantity of ammonia or nitrogen in the fertilizer formula recommended. There is some indication, however, that a slight increase in phosphoric acid and potash may be desirable. Definite conclusions cannot be reached in this respect until the work is continued for a longer period.

The sources of potash to be used in the fertilizer seem to be an important question from both the farmers' and manufacturers' point of view. For this reason, various sources of potash are

being tested. It is quite evident that potash in liberal quantities is necessary to make a good grade of tobacco. Potash hunger of the tobacco plant becomes evident within a few weeks after planting where no potash or an insufficient quantity of this material is used in the fertilizer.

The tests with different sources of ammonia are being continued. The evidence at hand seems to indicate that half the ammonia requirement should be from an inorganic source and half from an organic source. It appears that nitrate of soda may be advantageously used for the inorganic requirement, but if desired, as much as one half of the nitrate of soda may be replaced by sulphate of ammonia as a source of inorganic nitrogen. Dried blood, fish scrap, cotton seed meal and Urea seem to be desirable sources of organic nitrogen. Stable manure has been outstanding in yield per acre and quality of the leaf produced.

TOBACCO—VARIETY TESTS: The variety work with tobacco is being continued as described in the previous Report The Warne variety is being used in the experimental work, but there is some indication that Yellow Prior may be slightly superior to Warne. However, there are no indications that Yellow Prior is very far superior to other broad leaf varieties, such as Warne, Gold Leaf and some of the Orinocas.

TOBACCO—CROP RELATION WORK: The crop relation work has been underway for four years and marked indications of cropping effects are showing up in the various rotations. The study of the relation of the main southern crops to tobacco should prove very valuable since it seems that crop rotation is going to be a big factor in controlling root-knot or nematode injury to tobacco in South Georgia.

Tobacco Disease Work

The disease that has been found to be causing greater losses than all others combined during recent years in this section

is root-knot. The damage done ranges from a slight loss in some fields to practically a total loss in other fields. For this reason, investigations, to date, have been confined largely to a study of this disease. The work has been divided into two general phases: Crop Rotation and Selection for Resistance.

CROP ROTATION: In the crop rotation experiment a three-year rotation has been started with tobacco following at one-year and two-year intervals the following crops: resistant cowpeas (Brabham), susceptible cowpeas (Clay), corn and velvet beans, tobacco, beggarweed, sweet potatoes, peanuts, fallow and cotton. This test which covers three acres and contains sixty plats has been in progress only one year and sufficient data has not been taken to warrant recommendations.

SELECTION FOR RESISTANCE: The work on resistance includes the growing of as large a number of species and varieties of tobacco as possible on soil that is infested with the root-knot nematode with the view of finding a resistant variety. It also includes examinations of as many diseased tobacco fields as possible for resistant plants of a given variety. This work also has been in progress only one year and no conclusions have been reached.

Carpet Grass Sod.

Live Stock.

Work is being continued with hog grazing crops as heretofore in order to determine the grazing crops, and their carrying capacity, that may be advantageously used in a year round grazing system. A permanent pasture of Carpet grass, Dallis grass and Lespedeza is being maintained to study pasture management. Cattle are being procured from time to time with a view to making grazing tests and feeding tests. Funds are needed to develop this line of experimentation.

REPORT OF THE TREASURER FOR THE YEAR
Ending December 31, 1925.

RECEIPTS:

January 1st, Balance, Treasurer	$1,127.83	
Director, (Petty cash revolving fund)	1,500.00	$ 2,627.83
1925 State Appropriations		26,500.00
Sales of Farm Products		4,665.59
Total Receipts		$33,793.42

DISBURSEMENTS:

Salaries	$10,980.00	
Labor	5,920.34	
Publications	528.01	
Postage and Stationery	612.37	
Freight and Express	5.82	
Heat, Light, Power and Water	19.90	
Seeds, Plants and Trees	616.41	
General Supplies	2,068.41	
Fertilizers	867.12	
Feeding Stuffs	148.23	
Library	109.98	
Tools, Implements and Machinery	1,166,55	
Furniture and Fixtures	544.64	
Live Stock	592.00	
Traveling Expenses	625.31	
Contingent (Insurance & Misc.)	672.77	
New Buildings	3,919.97	
Repairs Buildings	275.25	
Fences	337.81	
Additions and Alterations Buildings	465.81	
Extensions and Improvements	797.37	
House Rent	86.66	
Total Disbursements		$31.360.73
Balance on Hand, December 31, 1925:		
Treasurer	932.69	
Director (Petty cash revolving fund)	1,500.00	2,432.69