

12-1-1925

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Report
South Mississippi Branch
Experiment Station
1925

By

E. B. FERRIS and W. S. ANDERSON

Mississippi Agricultural Experiment Station
A. & M. College, Mississippi
J. R. RICKS, Director

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A Report of Work at South Mississippi Branch Experiment Station for 1925.

Introduction—1925 will possibly go down in history as the most favorable year South Mississippi has known for the past quarter of a century and we can only hope that it will be followed by many similar years. 1924 was an exceptionally good year for cotton due to the small amount of rain throughout the entire year, but this deficiency in rainfall was really too great for cotton and practically ruined all late corn, sweet potatoes, sugar cane and lespedeza. On the other hand 1925 was quite dry enough for the maximum production of cotton, sufficient rains coming in midsummer to enable the setting of sweet potatoes, the development of corn and the growth of sugar cane, becoming dry and hot again just in time to save the cotton from the boll weevil.

The weather then remained dry through September enabling practically all cotton to be picked, ginned and sold while the grade was good and the price at its best. Late rains and a few light showers in September enabled sweet potatoes, sugar cane and late planted crops of all kinds to take on new life and to develop rapidly for several weeks. The result is that much of the land made a bale or more of cotton to the acre, average amounts of corn, good potatoes and cane, while fruits and vegetables earlier in the year go down as among the best the section ever produced.

Cotton and Corn—A circular each on corn and cotton have been issued giving in detail the work done here with these crops and it will be sufficient to say here that possibly the best work ever done with the two crops has been reported in these circulars. This has been due to two causes, in the main to the ideal seasons and again to the fact that we had leased additional land for carrying on work with fertilizers, this land being almost perfectly uniform, practically level, well drained, and sufficiently large to give room for a number of replications with the fertilizers used. Another factor that has had much to do with the amount of good this work has accomplished is the fact that large numbers of visitors have come to the station throughout the year and have been able to see the work and to carry the information home to others.

Nearly all the County Agents from South Mississippi counties have headed delegations of farmers and business men on visits to the station, but these have constituted only a small part of the ones who have come alone and in smaller parties to inspect the work. A large part of the time of two men has been taken up here this year, between the time of laying by crops and the harvesting of the same, in showing visitors over the station. Much of the time of the assistant director

and horticulturist has also been spent in making talks at farmers' meetings, judging exhibits at many community, county and sectional fairs and in helping to award prizes given by other organizations to encourage better agriculture.

Dairy Cattle—On account of the presence of ticks and the quarantine incident thereto this station found it advisable earlier in the year to dispose of its herd of registered Jersey cattle. All these animals had been freed of ticks when dipping was compulsory in the county and had since been kept on tick free pasture. The county stopped dipping two years before and ticks were again as plentiful as they had ever been, leaving us surrounded by infested ranges and constantly in danger of losing valuable animals. Such animals were lost from time to time as a result of ticks, no surplus cattle could be sold on account of the quarantine, and the country was in no shape to profit by any experiments that might be carried on here with dairy cattle, since in the main they were selling their herds rather than buying others. So, arrangements were made with the Holly Springs Branch Station to take these cattle until such time as conditions will warrant our station doing further work with such animals.

Six-weeks Cowpeas.—In doing work here with varieties of cowpeas we have found much trouble in getting peas that will resist nematodes and produce fruit. A good many of the standard varieties survived the nematodes but practically none of these bore enough fruit to warrant their being grown. In making these tests we found some locally grown peas that always fruited remarkably well and were at least sufficiently immune to nematodes to bear excellent crops of peas every time they were planted. A news letter telling about the fruiting qualities of these peas, brought scores of inquiries about them from farmers over four or five southern states saying they wanted a pea that would fruit, as they were having the same trouble that we described in getting peas to fruit. The result of this demand was that we distributed about a dozen bushels of these peas in small lots of one peck or less to a number of people scattered widely over this and adjoining states. The demand for these peas continues to come and this year, after disposing of the dairy cattle in June, twenty-two acres of the pasture land was prepared and planted to such peas between August 1 and September 1. The extremely dry weather was responsible for a rather poor growth of vine with these peas, still they fruited remarkably well and were cut, vine and all, when ripe, have been stored and will be threshed at the first opportunity. A large number of requests for these peas have been listed and they will again be sold in such quantities as to distribute them to all who have asked for them, charging the market price.

About one and one-quarter acres of ground were planted to these peas this year on May 15, following a crop of rape. They made a remarkably good growth of vine and fruited so abundantly that it appeared they had all turned to peas. On July 25 one grown hog and

kept there without additional feed until August 15 when they had largely consumed them. These hogs were again weighed and had gained 390 pounds, weighing a total of 2015 pounds.

Four plats of land of one-twentieth acre each were planted alone to these peas on May 15 and four other plats of same size were planted to corn and peas at the same time. This was on land being used in our soil fertility work where we are testing the soil building qualities of the three standard legumes of the section, cowpeas, soy beans and velvet beans grown alone and with corn, as measured by a crop of cotton following. These six-weeks peas planted alone averaged at the rate of 32.2 bushels per acre which was reduced to 19.7 bushels when corn was planted with them. On the other hand corn made 35.6 bushels per acre when grown alone and this was reduced to 29.5 bushels when the peas grew with it. This seems a remarkable showing for these peas, which, if sustained in the future, would make them by far the best legumes for the section.

Soy Bean Varieties.—On April 1, six varieties of soy beans were planted here, one row to the variety and repeated six times. These beans were planted on land prepared and fertilized for cotton and cultivated just as we did the cotton growing nearby. These beans ripened from July 18 to Oct. 25, and as they ripened were cut, housed, and the percentage of beans to hay determined by threshing small lots by hand. The variety planted as Mammoth Yellow evidently was misnamed by the seedsman selling it as it had no characteristic of this variety as grown here before. The Biloxi bean ripened so late that it had shed practically every leaf when harvested so that the yields as shown appear abnormally small. They also fruited very poorly and gave decidedly the lowest yield of beans among the six kinds. These varieties were cut on the dates mentioned and gave yields of forage with beans, and beans alone calculated in pounds per acre as follows: Wilson, July 18, 1366 pounds hay, 407 pounds beans; Virginia, July 18, 1533 pounds hay, 613 pounds beans; Mammoth Yellow, September 9, 2866 pounds hay, 713 pounds beans; Laredo, September 9, 3000 pounds hay, 720 pounds beans; Biloxi, October 25, 2400 pounds hay, 240 pounds beans; Oootan, October 25, 4533 pounds hay, 1007 pounds beans.

Cooperative Work.—The only real cooperative work done this year with field crops under station supervision was with T. E. McCardle near Hattiesburg, Mr. W. M. Sellers, County Agent, being entitled to much of the credit for this. Here the work was done with fertilizers under cotton and is reported in detail in our circular on this crop. Seed from a number of varieties of cotton, corn and soy beans were furnished Mr. T. H. Montgomery, County Agent of Lawrence County, and were used by him in conducting some experimental plats near Monticello. Plans were also furnished Mr. Montgomery for conducting simple experiments with fertilizers on this land. Mr. Montgomery resigned before the end of the year and we have no report as to the good accomplished by the experiments. We also furnished very small

amounts of cotton seed, six-weeks pea seed and seed corn to a number of agriculturists in Smith-Hughes schools in South Mississippi for use in teaching their classes the leading characteristics of these varieties. No reports have been received, nor were they expected from these.

Cooperative Work with State Plant Board.—The same work mentioned in our report for 1924 has been carried on in 1925 with the State Plant Board which has kept a representative here all the year. Up to December 1 their representative was Mr. R. C. Price, who then resigned and was succeeded by Mr. J. E. Lee. This station furnished land for growing an acre of wilt-resistant tomatoes for seed production and another acre for bedding some 700 bushels of sweet potatoes for use in the weevil sections of Pearl River County. Mr. Price carried on poison work here on cotton against the boll weevil and supervised the use of poison on all station cotton. To a certain extent the Plant Board was furnished the use of teams and implements in growing a considerable acreage of sweet potatoes with the idea of producing their own seed for 1926. A report is made in the circular on cotton of the results of poison work against the boll weevil, showing that early poisoning did not pay, but that poisoning by the Coad method gave an increase of 261 pounds of seed cotton per acre.

Java Sugar Cane.—For several years Mosaic disease has done great damage to sugar cane in this section. Early in 1925, Mr. D. C. Neal, Plant Pathologist of the main station at A. & M. College, sent us sufficient canes of Cayana No. 10 Sugar Cane to plant about one-sixth of an acre. It was planted on land already prepared for cotton, but was given additional fertilizer in mid-summer. While the seasons were rather dry, this cane made a remarkably good growth and possibly yielded at the rate of 25 tons per acre. It was all cut just before frost and banked with dirt. A "News Letter" sent out by us several weeks ago telling of this cane and agreeing to send it to those who would pay the cost of packing and shipping, has met with ready response and numbers of letters are being received requesting a start of this cane. Four additional varieties of this cane were sent here at the request of Mr. Neal and grown near that above mentioned. There was not enough of this to distribute and all has been used in increasing our planting for another year.

Winter Cover Crops.—In the fall of 1924 as crops were harvested, oats were sown and worked in with tractor disc. After cotton, this was done early in September and completely destroyed the cotton stalks, and stopped the boll weevil. These oats lay in the ground until December without sufficient moisture to germinate them. Following rains they came up to good stands, grew well through winter, furnished considerable grazing to dairy cattle and were largely turned under in March as the lands were prepared for various crops. We cannot recommend too highly the oat as a winter cover and grazing crop for South Mississippi for while it lacks some of the good qualities of winter legumes, it is a sure crop here and absolutely the least expensive one to grow. Many oats have again been planted this fall

following both corn and cotton and in addition to these we have planted several acres to rye, more than an acre to rape, besides considerable vetch, burr clover, crimson clover and white clover.

Lespedeza.—A considerable acreage was planted to lespedeza last year, intended both for hay and pasture. The extremely dry season killed a lot of this lespedeza and none of it reached a height at which it could be cut. All this was gone over in February of 1925 and re-seeded where it appeared the stand had been lost. The very dry spring and early summer prevented the germination of these seed, so that very poor stands were obtained and our lespedeza this year, except for grazing, has amounted to nothing, none of it having been cut.

Rotation Experiments.—The same work done heretofore with these rotations was again carried on in 1925 and exceptionally good yields of cotton and corn obtained. We find that a mistake has been made in the past where testing corn and legumes together in not planting both at the same time, for experience has shown that the legumes will not thrive planted with corn if not done at the same time, or in separate rows if planted later. By not so doing, we have lost much of the effects of these legumes grown with corn in these rotations. Hereafter this planting of corn and legumes at the same time will be done and we believe will result in a material improvement in the land as a result, causing the plats where legumes are grown to show better yields than others where left out, a thing that has not been apparent heretofore.

Horticultural Work.—Excellent work has been done this year with a number of fruit and vegetable crops, including sweet potatoes and will be reported on by Mr. W. S. Anderson in charge of the horticultural work of the station. This work has attracted a great deal of attention from our numerous visitors and has aided greatly in popularizing the work of the station.

Distribution of Pure Cotton Seed.—In 1923, Mississippi Station Trice cotton did so well here and elsewhere in the state that a great demand arose for the seed. We had previously been much pleased with this cotton here in the way it had produced as compared with other varieties. These seed were saved pure in 1923 and distributed among growers who agreed to keep them pure. This was done again at the end of 1924 when a much larger quantity of Trice seed was available. Again this year these seed have been kept pure and we have available for another year pure Mississippi Trice seed from eighteen bales of cotton, besides that from several hundred bushels of planting seed let out in the spring. 1924 and 1925 have been such dry years and the weevil so completely controlled as a result thereof that early cottons like Trice have shown no superiority over other later maturing kinds. The result will likely be that the people will substitute other kinds for it and possibly make mistakes. We still believe Trice to be the safest cotton for South Mississippi.

Soil Fertility Tests.—Mention has been made many times of 32 plats of land set aside here in 1922 for testing the soil building prop-

erties of three standard legumes, cowpeas, soy beans and velvet beans grown alone and with corn, also corn alone. This work is done on eight plats of land, repeated four times, all of which grew cotton in 1924 and all planted again to the several crops in 1925. It is interesting to note here the effects of these several crops on the yields of each other. Corn alone made 35.6 bushels per acre which was reduced to 29.9 bushels when soy beans were grown with it; to 29.5 bushels with cowpeas; and to 13.6 bushels with velvet beans. Cowpeas alone made 32.2 bushels per acre which was reduced to 19.7 bushels when grown with corn; soy beans alone made 12.1 bushels per acre and this was reduced to 6.9 when grown with corn; velvet beans did not fruit at all when grown alone and made approximately 21 bushels with corn.

REPORT OF HORTICULTURAL WORK AT THE SOUTH MISSISSIPPI EXPERIMENT STATION FOR 1925.

By W. S. Anderson, Horticulturist.

The investigations in horticulture as reported in bulletin 225 from this station, have been continued in the main, during 1925. These projects may be grouped as follows:

- I. Plant Breeding and Selections for Varietal Improvement.
- II. Fertilizer Tests.
- III. Variety Tests.
- IV. Cultural Tests.
- V. Cooperative Tests.

Plant Breeding and Selections for Varietal Improvement. The work with selection of Nancy Hall sweet potatoes for improvement of the variety has been continued again this year as in the past four years, but the results this year have not been so indicative of benefit as in the past. As reported in Circular No. 57 from this Station last year, the "H. Y." or high yielding strain made an increase in production the first year of 19% over the "L. Y." or low yielding strain; 15% the second year of the selection; and 23% last year or the third year of the selection. This year we have to report the following yields: "H. Y." strain, 103.6 bushels of No. 1 grade potatoes; "L. Y." strain 128.8 bushels of No. 1 potatoes. This shows a 14.6% increase in yield in favor of the "L. Y." strain. This selection will be continued with renewed interest another year.

The work begun two years ago with the selection of favorable individual plants in a planting of some five hundred specimens of wild blueberry from Florida has been continued. During 1925 vigorous growths were made by the many kinds and fruit was borne by most of them. We made selection of twelve apparently distinct types. Studies are being made of the various characteristics of these types and their relation to the production of fruit of marketable and culi-

nary value in sufficient abundance to warrant their propagation for general distribution.

VARIETY TESTS

Vegetables—The only work done with varieties of vegetables this year was the testing of three of the most commonly planted varieties of sweet potatoes. Draws of Nancy Hall, Porto Rico, and Triumph varieties were set out on April 8th in well prepared land that had been previously fertilized at the rate of 500 pounds per acre of an 8-4-8 mixture. The plats were composed of one row each and repeated six times in the field for accuracy in computing results. A representative series of these plats was harvested on August 15th and the remainder dug October 7th. The following tables show the production per acre of these varieties:

SWEET POTATO VARIETY TEST—DUG AUGUST 15TH.

Name	lbs. No. 1	lbs. No. 2	lbs. No. 3	lbs. Jumbo	Bu. No. 1	Bu. No. 2	Bu. No. 3	Bu. Jumbo
Nancy Hall	2057	514	1776	374	36	9	31	6
Porto Rico	7293	1075	1730	2384	130	19	30	42
Triumph	7573	1075	1730	2244	135	19	30	40

PLATS DUG OCTOBER 7TH YIELDED THE FOLLOWING FIGURES.								
Name	lbs. No. 1	lbs. No. 2	lbs. No. 3	lbs. Jumbo	Bu. No. 1	Bu. No. 2	Bu. No. 3	Bu. Jumbo
Nancy Hall	3113	1402	2554	841	55	25	45	15
Porto Rico	8910	1963	2431	3553	159	35	43	63
Triumph	7386	2337	3085	3113	131	41	55	55

A study of the above tables will reveal the facts that on basis of No. 1 sweet potatoes from early digging Triumph led, with Porto Rico a close second, and Nancy Hall far behind as third; that on basis of total marketable roots, No. 1 and No. 2 dug early the rank was the same as above; that on basis of No. 1 when dug late Porto Rico was in the lead with Triumph not far behind as a second and Nancy Hall third again; and that on basis of total marketable roots dug late the ranking order was the same. These facts are interesting because the sweet potato growers are either interested in the production of the greatest amount of No. 1 roots for some high priced early market, or in the production of the greatest amount of total marketable roots for the canning industry in the fall when the sweet potatoes can be left until entirely mature, or further, in the production of the largest amount of marketable roots to be stored in a modern curing house for selling on the spring markets. From our experience here, we believe that where the market desires a yellow potato, the grower will do well to plant the Porto Rico.

Fruits—In the main the many varieties of fruits as reported in previous issues from this office have made good growths this year, and also many have borne fruits in creditable amounts. One of the most interesting groups of fruits that we are testing is the peach, of which we have something like thirty-five varieties, a careful record being kept of each. Below we give in brief outline the record of the production of peach varieties this year:

PEACH SUMMARY FOR 1925

No. of trees bearing	Name of Variety	Lbs. average per tree	Bu. average per tree	Highest yield per tree lbs.	Highest yield per tree bu.	Date began ripening
2	Early Mamie	36	.7	46	.9	July 3
11	Rose Hiley (Clean Culture)	71	1.4	131	2.6	June 15
6	Hiley (Sod)	17.6	.3	51	1	June 15
8	Hiley (Alt. Sod)	54.5	1	71	1.4	June 15
7	Hiley (Alt. clean)	35.7	.7	46	.9	June 15
29	Ga. Belle	112	2.2	316	6.3	July 7
15	Hiley	90	1.8	148	2.9	June 15
38	Slappy	60.8	1.2	111	2.2	June 25
1	Carmen	18	.3	18	.3	June 25
2	Walde	85	1.7	88	1.7	June 16
2	Jewel	62	1.2	66	1.3	June 8
1	Glen	53	1	53	1	June 16
2	Honey	44	.88	57	1.1	June 18
2	Fla. Gem	55	1.1	72	1.4	—
2	Imperial	84	1.6	121	2.4	—
2	Colon	15	.3	18	.3	June 23
9	Elberta	7	.14	17	.34	June 23
31	Early Elberta	5	.1	24	.48	July 17

A study of the above table shows that with probably one exception the same varieties that made creditable yields of fruit in 1924 did so again in 1925. Early Rose, which was a high producer of fine fruit that ripened early in 1924, failed to set any peaches this year. As has been reported in a news letter heretofore, this variety is a very late blooming one, and this year tried to bloom and set fruit during one of the driest times which the section has ever seen. Other and more early blooming kinds had set their crops before the moisture had become so completely exhausted. Although not ready to commit ourselves finally on the matter, we feel that the failure of Early Rose to set fruit this year was due very largely to weather conditions at the time of blooming. These conditions will be watched in the future and reports rendered according to our findings.

It is interesting, although not very pleasantly so, to note from the tables that the South's most famous variety, Elberta, has practically failed with us. Less fruit was produced this year than last. Since other varieties commonly planted in the section are bearing well under the same treatment as given to Elberta, we are at a loss to know why the latter does not bear fruit. We have observed that the tree growth of this variety is rather abnormal in that there are a large number of small suckers put out rather low on branches each year instead of the tree making normal terminal growth. The few fruits produced are

large and showy and have fine quality.

We have planned for next year a series of tests which are designed to find out why Elberta does not bear with us here. These include changes in methods of pruning, cultivation, and fertilization. It is hoped that these tests will result in our being able to report favorably on Elberta for South Mississippi.

As a group the Florida varieties, including Walde, Honey, Fla. Gem, Colon, and Glen, which we have been testing in an effort to find a good early peach, have as yet been unfavorable. However, this year the fruit produced by Jewel and ripened on June 8th was of sufficient size and had enough quality and color to make it a good seller at that time. The fruit of this ripened from two to three weeks earlier than last year and the peaches were about twice as large as last year. All peaches were fertilized this year with eight pounds per tree of an 8-4-6 mixture, made from 600 pounds acid phosphate, 300 pounds nitrate of soda, and 150 pounds sulphate of potash. This was applied just before growth began in the spring and immediately worked in with a disk harrow. The cultivation was kept up regularly until August 1st. A winter cover crop of oats has been planted in the orchard this fall about October 15th, to be turned under in the spring of next year. Spraying of bearing varieties was done in keeping with recommended schedules, using arsenate of lead as an insecticide and Atomic Sulphur as a fungicide. As a dormant spray we used Oil Emulsion in the fall, and Concentrated Lime-Sulphur in the late winter application, the former being diluted to 1 to 30 and the latter diluted 1 to 7. This schedule of spraying has given us fair control of all pests on peaches here.

Plums in the variety test have not progressed far from their position of last year. Munson, the large yellow one that has been very attractive in its performances here for the past three years, was again in the lead with a yield of 157 pounds of fruit this year. It is not a strong grower, but sufficiently so that it never fails to have enough wood for a fine crop. It sets such heavy crops that we have to thin the fruit every year. Santa Rosa looked better this year than it has heretofore, producing an average on two trees of 39 pounds of fruit of large size, and good quality. It ripened about the tenth of June, whereas Munson was ripe the last week in May. Both varieties ripen over a long period making them favorable for home orchard plantings. Mammoth Gold was better this year also, making 24 pounds average production on two trees. It is much less to be favored, however, than either of the two above mentioned on account of its weakness of tree. Burbank, Improved Wild Goose, and Wickson were still less favorable producing respectively 11, 14 and 3 pounds of fruit average per tree. America and Gold are still unfavorable. Two Compass Cherry-Plum trees were planted in the variety test this year and they came through with creditable growths.

None of the Apricot varieties under test have set fruit yet, and this being the end of the fifth season, we hold very little in store for

them in the future, although the trees are vigorous.

Both Sultana and Princess varieties of Almond set fruit this year but neither held them until matured. Trees of both are still maintaining fair vigor.

The greater part of the varieties of apples in the test have continued their vigorous growths this year, but some have died of attacks of blight, apparently. One tree each of Wilson Red June, Sorsby, and Golden Delicious has succumbed to attacks of this blight. All of the above named varieties together with Day, Red Astrachan, Staymen Winesap, and Florence Crab, bloomed and set a few fruits this year. Rambo and Mother are two others that are making very vigorous growths but have not yet fruited.

All pecan varieties in the test made fine growths this year and a few nuts were produced by Stuart, Success, Schley and Teche.

Japanese varieties of persimmons in the test made good growths this year and fine crops of fruit were produced by Tane-Nashi, Triumph, and Zengi, while a few fruits were ripened by Ormond and Tamopan. Triumph and Tane-Nashi seem to be much preferred.

All pears, including Pineapple, Favorita and some others unnamed, that have been sent here from Washington for trial, have made good growths and the Pineapple bore its first fruit.

All of the twelve varieties of figs made the usual good growths this year and also made in the main the usual poor crop. We harvested only fair crops from Brunswick and Green Ischia, with a few from Black Ischia and Black Mission. We are quite uncertain yet whether we will be able to find any variety of fig that will do well under our system of clean orchard cultivation. Our observation is that the same varieties that we have under test here are doing excellently well in this vicinity when planted and handled under backyard conditions, where there is an ample supply of moisture and fertility with no root disturbance by cultivation.

As it has been reported in a news letter from this office earlier in the year, the grapes in our variety test here have made a wonderful showing, considering the fact that such a heavy crop was made last year with such a shortage of moisture, and the fact that there was very little rainfall this year up to the time the vines ripened their crops. A few varieties, we are sorry to say, fell by the wayside this season as they died from unknown causes. These were Niagara, Captain, and Mericadel. The last two were so unfavorable that we do not plan to replant them, but we expect to replace the Niagara because it has been one of the most favorable varieties in the test. The varieties of Muscadines continued to be very outstanding as a vine crop for this section. Below we give tables of yields for this year of both bunch grapes and muscadine grapes:

SUMMARY OF YIELDS OF BUNCH GRAPES FOR 1925

No. vines bearing	Name of Variety	Yield in lbs. average per vine	Yield in lbs. Highest per vine	Average yield per acre (484 vines)	Date Ripe	Rank as to yield
10	Ellen Scott	10.4	19	5,033	7-10	8
2	Concord	29	39	14,036	7-15	6
2	Wilder	34	38	16,456	7-17	5
1	Carmen	15	15	7,260	7-22	7
2	Lukfata	7	7	3,388	7-22	9
1	R. W. Munson	6.5	6.5	3,146	7-22	10
1	Ronalda	48	48	23,232	7-25	1
1	Edna	44	44	21,296	7-30	2
1	Herbement	38	38	18,392	8-7	3
1	Muench	35	35	16,940	8-6	4

SUMMARY OF YIELDS OF MUSCADINE GRAPES FOR 1925

				(286 vines)		
1	James	79	79	21,172	8-17	1
5	Thomas	64	85	17,152	8-18	2
1	Scuppernong	30	30	8,040	8-18	3
2	Flowers	25	25	6,700	9-1	4

The test of European varieties of bunch grapes grafted on Lenoir stock has been very unsatisfactory and is practically eliminated from consideration. All vines that have not yet died are very lacking in vigor and it is expected that they will die within another year.

The various varieties of citrus fruits have made wonderfully fine growths this year. At the end of the second season after the freeze of 1924 our trees of all varieties are practically as large as three year old trees were before the freeze. Although there is yet some thinning necessary to properly shape the trees, they are substantially as good as before the freeze. The satumas have, of course, not reestablished themselves as fast as the grape fruit and round oranges, but they are now from four to six feet in height. Fruit was produced by almost all varieties. The satumas made from a few fruits up to as many as 107 per tree. Pineapple and Lue Gim Ging round oranges seem to come back stronger than others of their kind. The Pineapple tree stands about eight feet high now and ripened early, about November 1st, 14 fine fruits. Lue Gim Ging stands only about five feet in height but has on it now turning 44 oranges. The Duncan variety of grapefruit has borne a very large crop of fruit this year, one tree having 44 fruits now and the other 24. Foster grapefruit has been more vigorous in growth but bore only a few fruits. These, however, are of very large size. Tangerine trees bore only a few fruits. The two varieties of Kumquat have made fine growths and are loaded with fruit. Maruma seems slightly more hardy than Nagami, but the fruit of the latter is much larger and better in quality. The Thomasville Citrangequats secured from the Department of Agriculture at Washington last winter have made very vigorous growths this year and appear to be very hardy. As is our usual custom, all citrus trees have been banked with dirt to a height of about 18 inches as a precaution against loss from severe freeze. Our single tree of Meyer lemon has made excellent

growth since the 1924 freeze, and this year bore four fruits of large size.

The several species of *Rubus*, briar berries introduced in recent years from foreign countries and planted here two years ago, have in the main made good growths this year. Two of them ripened a few fruits but these were of poor quality and exhibited very little prospects of being of any commercial value. The Thornless Dewberry planted the first of last year has made little showing this year and appears unfavorable. The Van Fleet Raspberry planted two years ago seems rather favorable, making excellent growth and ripening a few berries this year.

In January 1925 we received from Whitesbog, N. J., seven varieties of northern type blueberries and planted them in our test plats here. There were included Cabot, Adams, Pioneer, Sam, Grover, Harding and Rubel varieties. These plants all started off with rather favorable appearances, but as time went on they weakened more and more, and by September 1st all had died but two plants of the Harding. We are sorry to report that before December 1st these, too, had died. Thus it appears that we will fail to get satisfactory results from northern type of blueberries in this section. However, we expect to try others next year.

Cultural Tests—The work with sod culture, clean culture permanently, and alternate clean and sod culture with peaches and figs has been continued as in the past. We have kept tab of all observations as to the nematode infestation on the several plats, but up to date have not made notice of anything of value in the control of this pest. There is a slight infestation of nematodes in some of the plats but not enough to cause any injury as yet. Of course, we have quite a fine demonstration of tree growth and fruit production on this series of plats. The trees on clean culture permanently being more than four times as large as those on permanent sod, and the former are producing an average per tree of 71 pounds of peaches, and the latter only 17.6 pounds, as shown by the tables accompanying this report. Both plats have been handled the same except for culture.

Cooperative Tests—The test in cooperation with the Bureau of Plant Industry of the U. S. Department of Agriculture with European grapes grafted on American varieties as stocks has been continued this year. Although this is the end of the third year of the test, we are not yet in position to recommend the planting of these grapes only experimentally. Our observation today December 10th, shows the following:

Muscat-Hamburg on Catawba made fair growth this year but all died since growth stopped; same on Missouri Reising, made small growth and two vines are yet alive; same on Brilliant, made fair growth but none lived to the end of the season; same on Ives, made good growth, from five to fifteen feet, and three vines are living and appear in healthy condition; Chasselas-Fontainbleau on Ives, made excellent growth, some vines being over 20 feet long, and four are living,

exhibiting vigor and hardiness; same on Brilliant, made rather poor growth and two are alive; same on Missouri Reisling, made fair to good growth and three are alive, showing up fairly hardy; same on Catawba, made excellent growth, some vines being 20 feet long, and five are alive, being the most hardy and vigorous appearing combination in the test; Malaga on Catawba, Missouri Reisling, Brilliant, and Ives, all made fair growths this year but none are alive today, dying back after growth stopped; Sultanina on Ives, three are alive and made good growths this year, appearing reasonably hardy; same on Brilliant and Missouri Reisling all dead; same on Catawba, one alive and made poor growth this year. A few clusters of nice fruit were borne by all vines of both Muscat-Hamburg and Chasselas-Fontainbleau, the quality being good, although not equal entirely to that of the California grown grapes.

The cooperative pear stock propagation test started in 1923, in which Mr. F. C. Reimer, of the Experiment Station of Talent, Oregon, furnished several trees of two species of pear used for stocks in that section to our station for growth and rooting of cuttings from them has been continued this year. In early December 1924 we made 100 cuttings from each of these species, *Pyrus calleryana* No. 1 and *Pyrus calleryana* No. 2, and lined them out. The spring of this year was very dry, and as was our experience in 1924, we lost the greater part of these cuttings. Only two grew, and these were of *Pyrus calleryana* No. 1.

Being constantly approached with questions about the fertilization of pecan trees in this section and not being able to conduct any fertilizer work with pecans on the station due to the small size of our trees, we secured the cooperation of Ex-Governor Theo. G. Bilbo in starting a test this year in his grove, one mile south of Poplarville. The trees in the Bilbo grove are about eighteen years old, and have been bearing for several years. They are planted 54 by 54 feet, are nearly all of the same variety, and are reasonably uniform in every respect. The land also is as well suited to fertilizer tests as could be expected. With the assistance of Mr. J. F. O'Kelley and Prof. J. C. C. Price of the Main Station Staff at the A. & M. College, we selected a block of about 125 trees in this grove for the test. Plats are composed of four trees each and alternate rows used for accuracy. The test was repeated four times in the block. We used the formula 8-5-3, and plan to test the amount and time of application. No fertilizer was used on one plat, 25 pounds on the next, and 50 pounds on the third; then on other plats we applied 25 pounds in March and 25 pounds in June. All above applications were made per tree. Due to practically no crop on these trees this year, we secured no results from the test.

FERTILIZER TESTS

Tomatoes—A new test of fertilizers under tomatoes was started in 1925, comparing formulas which are most commonly used on South Mississippi soils. Amounts per acre are much larger than have been

heretofore used in our tests here with tomatoes. The work is being done on plats 1-35 acre in size, containing five rows each. The plats are duplicated, with series II joining the end of series I, the order of plats being reversed in the former. Three rows of each plat were harvested, fruit being picked in the pink stage of ripening. The variety used for the test was Norton Wilt-Resistant. Plants were set 3 1-2 feet apart in rows 3 1-2 feet wide. Vines were trained on stakes and pruned. The table below gives the results of the first year's work with these tests. Although these figures may be indicative, to some extent, of the best way to fertilize for tomatoes, we do not feel that recommendations should be made.

TOMATO FERTILIZER RECORD FOR 1925

Acid Phos.	Nit. Sod.	Sul. Pot.	-- Formula	Increase		Gross Value	Cost of Fertilizer	Net Gain
				Total	No. 1			
600	300	200	8-4-8	5535.4	3889.6	\$237.49	\$18.53	\$218.96
600	300	150	8-4-6	4386.2	2892.7	177.29	17.28	160.01
600	300	100	8-4-4	3643.1	2403.4	147.30	16.03	131.27
600	450	100	8-6-4	6456.1	3936.7	242.50	20.16	222.34
600	600	100	8-8-4	3364.0	1946.6	120.34	24.28	96.06
450	450	150	6-6-6	2446.9	1558.7	95.74	20.09	75.65
675	450	150	9-6-6	4284.7	2581.0	159.12	22.07	137.05
900	450	150	12-6-6	3320.5	2614.8	158.65	24.05	134.60
1200	600	200	8-4-4	4089.0	2750.2	168.36	32.06	136.30

(The increases in the above table are in pounds per acre)

Sweet Potatoes—New work was started in 1925 with fertilizers under sweet potatoes, the same being conducted on land leased for experimental work with various crops. Plants (draws) of the Nancy Hall variety were set out for this work, after the land had previously been thoroughly prepared and fertilizers applied, on June 11th and 12th. These were spaced 18 inches apart and the rows are three and one-half feet wide. Plats are 1-20 acre in size, containing six rows each, four of which were harvested and two discarded for accuracy. The plats are in triplicate. Below are figures showing results of this year's test, which, like the work with tomatoes, are too immature to warrant recommendations, while they may be taken as indicative of proper fertilizers for sweet potatoes.

SWEET POTATO FERTILIZER RECORD FOR 1925

Acid Phos.	Nit. Soda	Sul. Pot.	-- Formula	Yield	Increase
				in Pounds	in Pounds
300	150	100	8-4-8	8770	195
300	150	75	8-4-6	9080	740
300	150	50	8-4-4	8540	435
300	150	25	8-4-2	7270	-30
300	150	0	8-4-0	6690	-40
300	300	50	8-8-4	6400	240
300	225	50	8-6-4	7310	1672
225	150	50	6-4-4	6740	1055
150	150	50	4-4-4	6650	917
600	300	100	8-4-4	6070	162
900	450	150	8-4-4	6710	675
1200	600	200	8-4-4	6670	507

Note:—The increase in the above table was obtained by subtracting the theoretical yield of the treated plats without fertilizer from the actual yield. This theoretical yield was obtained by dividing the difference between two adjacent checks by four. This proportional part was then used to compute a gradual increase or decrease from one check to the next.