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## Report of the South Mississippi Branch Experiment Station for 1928

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REPORT  
OF THE  
SOUTH MISSISSIPPI BRANCH  
EXPERIMENT STATION  
FOR 1928

*By*

W. R. PERKINS, W. S. ANDERSON  
*and*  
W. W. WELBORNE

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MISSISSIPPI AGRICULTURAL EXPERIMENT STATION  
A. AND M. COLLEGE, MISSISSIPPI,  
J. R. RICKS, DIRECTOR



# REPORT *of* THE WORK *at* THE SOUTH MISSISSIPPI BRANCH EXPERIMENT STATION

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By W. R. PERKINS, W. S. ANDERSON AND  
W. W. WELBORNE

The work of this station for 1928 was planned and carried out to the time of harvest by Mr. E. B. Ferris, who resigned the first of September. He was assisted by Mr. W. S. Anderson in Horticultural work and by Mr. W. W. Welborne in the field crop work.

The scope of the work was rather extensive, requiring more than 900 plats which were fertilized, worked and harvested separately, and covered pretty fully questions of fertilizers, soil improvement, varieties of plants and the testing of new crops.

The year 1928 was on the whole very unfavorable for crop production. The total rainfall for the year was 83 inches, while average for the past ten years was 56.95. 19.43 inches of rain fell in June. During July the rainfall was 10.46, not an excessive amount, but there were 16 days during the month on which rain fell; August with 7.28 inches and 20 days on which there was rain, made conditions exceedingly unfavorable for the cotton crop. The rainy weather in April coupled with the abnormally low temperatures made the securing of stands very difficult, and practically all of the cotton crop had to be planted the third time before stands were secured. The land on the station farm is all more or less rolling and quite irregular in fertility for plat work. The heavy rains of the year made these irregularities worse by the washing of the land.

## ROTATION EXPERIMENT

Since 1919 there have been 84 plats, 1/20 acres each, used in testing different cropping systems on 21 plats, replicated four times. We are using 12 cropping systems in which cotton is used in seven rotations. On one plat of each series, cotton has been planted continuously, and the results show that less than 100 pounds of seed cotton per acre has been the average yield on the four series. For the past three years, the plots that

have been planted to cotton continuously have gone largely to pieces as a result of wilt. Due to adverse weather conditions, and high percentage boll weevil infestation, the yield obtained does not show any great difference and we do not give the summary table showing the results of this work.

### FERTILIZER TEST ON ALFALFA

Twenty-five one-twentieth acre plats were devoted to alfalfa tests in 1927. These plats were limed February 22, at the rate of three tons per acre. On October 8, 1927, the plats were disked well, and alfalfa seed sown. This was followed by a very hard rain, seed came up fairly well but the young plants died badly, leaving a poor stand. On February 10, all plats were given a uniform application of an 8-4-4 fertilizer at the rate of 400 pounds per acre. The plats receiving fertilizer in 1927 were given same amount on February 13, 1928. On February 20, the entire field was planted again to alfalfa seed sent here from the Main Station. This field of alfalfa was cut three times and the records kept. The table following gives the results and explains it in detail.

**TABLE NO. 1**  
Fertilizer Test on Alfalfa—1928

Treatment per A.		Plot Yield			Av. Yield per acre	Check Yield	Increase
Pounds	Analysis	1st cut May 10	2nd cut June 26	3rd cut. Aug. 1			
Check		427	295	175	5980		
1200	8-0-0	470	300	205	6500	5802	698
1200	8-4-0	640	435	275	9000	5623	3377
1200	8-4-4	605	430	375	9400	5445	3955
Check		330	295	165	5266		
1200	0-0-4	350	290	235	5832	5052	780
1200	0-4-4	455	370	225	7000	4839	2161
1200	8-0-4	440	320	230	6600	4625	1975
Check		292	225	145	4412		

NOTE: A basic mixture of an 8-4-4 home mixed fertilizer at the rate of 400 pounds per acre was applied uniformly over all the plats, February 10, 1928. This made a total application of 1600 pounds to all plats except the checks.

### CORN, SOYBEANS, AND SIX WEEKS PEAS

Approximately 40 acres of our land not suitable for experimental work, was planted to corn, soybeans, and six weeks peas this year. Nearly 20 acres of land in one field had been in

pasture for the past two years, the other field having been in cultivation about three years.

The rows were all approximately three feet wide, two having been planted to corn and the third row to peas. The field that had been in pasture for the past two years was planted to corn about the 20th of February and was fertilized very lightly with Nitrophoska on April 15. The pea rows were fertilized with a small application of a general mixture of fertilizer remnants of varying analyses and planted to six weeks peas about April 26. Early in May, Laredo soybeans were planted between hills of corn and covered as corn was cultivated. The beans never did get up to any size, due to a two-weeks drouth. The peas made excellent growth, and fruited heavily. About half of these peas were picked at maturity, and used for planting purposes. The others were left for a bunch of hogs to eat. These hogs were put in the field about the first of July. The corn and peas were plentiful until the first of September.

In the second field, where corn, soybeans, and cowpeas were grown in 1927, the land was prepared and fertilized in February with an 8-4-4 fertilizer at the rate of 300 pounds per acre. Corn was planted in water furrows about March 10 and six weeks peas planted in every third row about April 10. Soybeans were planted between hills of corn about May 10, but did not make very good. The peas and corn made excellent yield.

## **FACTORY VS. HOME MIXED FERTILIZERS UNDER CORN**

Twenty-five one-twentieth acre plats were used in this test where cotton had been grown for the past two years under this same fertilizer test. We are comparing three factory mixed fertilizers with home mixed fertilizer furnishing the same amount of plant food. In mixing the home mixed fertilizer, superphosphate (acid phosphate) nitrate of soda, and muriate of potash, were used in the proper proportions to furnish the same plant food as would be supplied by the factory mixed fertilizers. The fertilizer was applied on March 28, at the rate of 600 pounds per acre, and planted to Cocker's Prolific corn, April 2. Table No. 2 gives the average results of this work, the averages being of triplicate tests in each instance.

TABLE NO. 2

Factory vs. Home Mixed Fertilizers Under Corn—1928

Lbs. Material Applied per Acre		Analysis	Yield Bushels Ear Corn per acre		
Factory Mixed	Home Mixed		Plot Yield	Check Yield	Increase
No fertilizer			14.92		
600		8-4-4	23.43	15.39	8.04
	600	8-4-4	21	15.86	5.14
600		8-5-4	20.62	16.33	4.29
No fertilizer			16.80		
	600	8-5-4	24	16.91	7.09
600		10-5-3	26.14	17.02	9.12
	600	10-5-3	21.35	17.13	4.22
No fertilizer			17.25		

## NITROGEN SOURCES TEST

Twenty-five one-twentieth acre plats which had been used for three successive years in similar tests under cotton, were used this year for corn. Six sources of nitrogen were used in this test with all the plats receiving the equivalent of 600 pounds per acre of an 8-0-4 fertilizer and the nitrogen plats receiving 48 pounds of actual nitrogen per acre. This fertilizer was applied March 23, and Coker's Prolific seed corn planted March 31. Table No. 3 gives the result of this work in detail.

TABLE NO. 3

Nitrogen Sources Test—Corn—1928

Lbs. Material Applied per Acre	Analysis	Yield per Acre	Check Yield	Increase	Value Increase \$ 1 Bu.
600	8-0-4	15.73			
320 Nitrate soda	8-8-4	32.84	16.47	16.37	16.37
240 Ammonium sul.	8-8-4	34.96	17.21	17.75	17.75
220 Cal. cyanamide	8-8-4	38.88	17.94	20.94	20.94
600	8-0-4	18.68			
300 Cal. nitrate	8-8-4	38.75	18.01	20.74	20.74
105 Urea	8-8-4	36.52	17.34	19.18	19.18
185.6 Leunasalpeter	8-8-4	31.77	16.67	15.10	15.10
600	8-0-4	16.00			

## VARIETIES OF CORN

There were 18 varieties of corn under test this year, all with the exception of two varieties were sent from the Main Station, these two varieties being Anderson Choice and Howard, which was obtained locally. These varieties were planted in a single row, sixteen of these being repeated ten times each and two varieties only eight times each. These varieties were planted on land where cotton varieties had grown in 1927. Fertilizer applied March 29, at the rate of 100 pounds per acre of an 30-15-15, factory mixed fertilizer, which is almost the equivalent of 400 lbs. of an 8-4-4 fertilizer. These varieties were planted on May 8, this being the second planting due to the bud worms being so bad.

In harvesting these varieties the corn was husked and weighed, and about equal quantities of each were put aside for later determination of percentage of grain and separation into first, second, and third grades, as a measure of the soundness of this corn. In getting the yield per acre in bushels, seventy pounds was taken for a bushel. Table No. 4 gives the figures obtained with these varieties and it will be seen that the percentage of grain in the ears varied from 80% with Ferguson Yellow Dent to 91% with Mosby Suttle.

**TABLE NO. 4**  
Corn Variety Test—1928

Variety	Bu. per A.	% Grain to Cob	% First Grade	% Second Grade	% Third Grade
Mosby Station	36.64	85	89	7	7
Mosby De'ta	23.65	85	89	4	1
Mosby D&PL	34.37	83	83	12	2
Mosby Suttle	27.72	91	81	15	0
Cocke's Prolific Sta.	39.90	85	90	7	0
Cocke's Prolific Delta	39.94	86	79	17	6
Hastings	34.71	85	91	6	0
Delta Prolific Delta	29.18	86	75	20	1
College 47	41.01	85	78	16	0
Laguma	38.24	84	79	13	3
Mexican June	37.84	84	80	15	0
Paymaster Neal	31.71	83	50	42	0
Yellow Dent Ferguson	28.63	80	5	73	14
Yellow Dent Station	30.51	81	56	38	2
Golden Dent R. H.	31.41	86	14	75	3
Golden Dent Station	31.88	81	63	30	4
Anderson Choice	27.70	85	89	7	1
Howard	28.71	87	70	24	0



## ANALYSIS TEST—CORN

This regular fertilizer work under corn was conducted on the same land for three successive years, but a change was made this year, planting the corn where sweet potatoes had been under the same fertilizer test for three successive years. This did not change any of the plats to different fertilizer heretofore used. Fertilizer was applied on March 24, and Cocke's Prolific seed corn was planted March 31, 1928.

The work was done in three replications, the fertilizer having been applied on the list, harrowed in and planted. Each plot was prepared, planted and cultivated in the same way. Table No. 4B gives this work in detail, the figures reported giving the average of two replications with each test. The highest net profit was obtained when a high nitrogenous fertilizer was used in rather low amounts.

**TABLE NO. 4B**  
Analysis Test—Corn

Lbs. material applied per A.			Pounds ear corn per acre				Dollars per Acre		
Acid phos.	Nit. soda	Mur. pot.	Analysis			Value at \$1 per bu.	Cost Fert.	Net Profit	
			Plot Yield	Check Yield	Increase				
No fertilizer			33.23						
300	160	100	8-4-8	41.5	32.43	9.07	9.07	8.51	.56
300	160	75	8-4-6	41.35	31.63	9.72	9.72	7.98	1.74
300	160	50	8-4-4	39.94	30.84	9.10	9.10	7.46	1.64
No fertilizer			30.05						
300	160	25	8-4-2	36.25	28.	8.25	8.25	6.93	1.32
300	160	0	8-4-0	36.66	25.95	10.71	10.71	6.41	4.30
300	320	50	8-8-4	45.41	23.91	21.50	21.50	11.62	9.88
No fertilizer			21.87						
300	240	50	8-6-4	40.00	24.26	15.74	15.74	9.54	6.20
225	160	50	6-4-4	35.10	26.65	8.45	8.45	6.90	1.55
150	160	50	4-4-4	35.73	29.05	6.68	6.68	6.33	.35
No fertilizer			31.45						
600	320	100	8-4-4	53.54	33.17	20.37	20.37	14.92	5.45
900	480	150	8-4-4	56.98	34.89	22.09	22.09	22.38	-29
1200	640	200	8-4-4	61.04	36.61	24.43	24.43	29.84	-5.41
No fertilizer			38.33						

## LESPEDEZA—1928

Lespedeza as a pasture and hay crop has given excellent results here on the station. In wet years it makes a wonderful yield of hay, but in hot dry summers, especially when grown on

hill land, it frequently is badly damaged, making very little hay. It is one of the most satisfactory that we have for pastures.

In 1927 four varieties of lespedeza and seed was sent here from A. & M. College, and from the experiment station at McNeil. These varieties were planted including one other variety which was our home-grown lespedeza. A poor stand was obtained and this was not cut for hay in order that the seed would mature and a better stand be obtained for this year. Each of the five varieties came up to a perfect stand, and an exceptionally good yield was obtained. The varieties and yield are as follows: Kobe, McNeil, 5100 pounds per acre; Kobe 4500 pounds per acre; Kobe 04479, 3840 pounds per acre; Korean 49027, 2760 pounds per acre; Home-grown, 5100 pounds per acre. This lespedeza was fertilized May 21, 1928, at the rate of 400 pounds per acre of 8-4-4 plus 50 pounds calcium cyanamid.

### SOYBEAN VARIETY TESTS

On May 19, seed of twelve varieties of soybeans were sent here by the Delta Branch Experiment Station. These varieties were planted on a single row test, each variety having been repeated four times. The land was fertilized May 4 with a home mixed 8-4-4 fertilizer at the rate of 500 pounds per acre.

These varieties were planted mainly for demonstration and not for seed or either hay production, as we did not have available land for this. Therefore we do not have any data on the yield. The varieties used in this test are as follows: Ebony, Delta No. 491, Tanloxi 483, Delta 488, Laredo, George Washington, Biloxi, Mammoth Yellow, Loxitan 483, Ootootan, Tokio, and Midwest. The Ebony and Midwest showed up to be very poor varieties for this section. Loxitan 483 and George Washington makes a good growth but the quality of hay would not be very good as the size of stem is very large. The Laredo, Delta 491 and Delta 488 make excellent grades of hay due to the fact that the size of stem is small and the yield is good.

### WORK WITH OATS

In the fall of 1927, just after harvesting the crops, oats were planted as a winter cover crop. Most of these oats are grazed through the winter, and plowed under in the spring, but some are allowed to mature in order to obtain some experimental data from them.

On 128 plats, one-twentieth acre each, tests were conducted

to show the results of analysis test, time applications, nitrogen sources test, and rate of application. The variety of oats planted was the Bayliss Rust Proof oats. The results are given in tables No. 5, 6, 7 and 8, and is self-explanatory, the weights given being pounds of oats in bundle per acre.

**TABLE NO. 5**  
Analysis Test—Oats—1928

Lbs. per Acre	Analysis	Plot Yield	Check Yield	Increase
600	0-6-0	3225		
600	4-6-4	3550	3237	313
600	8-6-4	3675	3250	425
600	6-6-6	3425	3262	163
600	0-6-0	3275		
600	6-6-4	3550	3287	263
600	6-6-2	3400	3300	100
600	6-6-0	3300	3312	-12
600	0-6-0	3325		

**TABLE NO. 6**  
Time Application of Fertilizer—Oats—1928

Amt. Fert. per Acre	Analysis	Time Application	Plot Yield	Check Yield	Increase
No fertilizer			1525		
600	6-6-0	March 7	3400	1719	1681
600	6-6-0	Feb. 20	3400	1913	1487
600	6-6-0	Feb. 7	3475	2107	1368
No fertilizer			2300		
600	0-6-0	March 7	3550	2107	1443
600	0-6-0	Feb. 20	3200	1913	1287
600	0-6-0	Feb. 7	3500	1719	1781
No fertilizer			1525		

**TABLE NO. 7**  
Nitrogen Sources Test—Oats—1928

Lbs. per Acre	Sources	Analysis	Plot Yield	Check Yield	Increase
600		6-0-4	3475		
600	Am. Sulphate	6-6-4	4250	3429	821
600	Urea	6-6-4	4675	3383	1292
600	Cal. urea	6-6-4	4750	3338	1412
600	Cal. Nitrate	6-6-4	4650	3292	1357
600	Nitrate soda	6-6-4	4675	3246	1429
600		6-0-4	3200		

TABLE NO. 8

Rate of Application—Oats—1928

Lbs. per Acre	Analysis	Yields in Pounds per Acre		
		Plot Yield	Check Yield	Increase
No fertilizer		3150		
600	6-6-0	5350	3150	2200
400	6-6-0	4575	3150	1425
200	6-6-0	4025	3150	875
No fertilizer		3150		
600	0-6-0	4550	3037	1513
400	0-6-0	4225	2925	1300
200	0-6-0	3775	2812	963
No fertilizer		2700		

### SORGHUM VARIETY TESTS

Fourteen varieties of grain sorghum were sent here from the Delta Branch Experiment station and planted in single rows, each variety being repeated four times. This land was fertilized at the rate of 600 pounds per acre of an 8-4-4 fertilizer and the seed planted June 22.

In harvesting these varieties the heads were cut after ripening and weighed and the yields are as follows calculated in pounds per acre: Milo Maize, 1,427; Shrock Kafir, 2,117; Shallu, 552; Chilltex, 1,146; Premo No. 2109, 2,005; Hegari, 1,289; Red Top Cane, 1,729; Golden Rod Cane, 869; Shrock Kafir, 1,157; Maize, 1,394; Sagrain 303, 2,195; Kafir Texas Blackhull, 894; Kafir Pink, 526; Milo Maize, 1,025.

The highest average yield and the best producer of grains was the Sagrain, with Shrock Kafir coming next. The Sagrain seemed to be much sounder and less affected by Fungus that attacked the heads.

### SUGAR CANE

Co-operative work with the Department of Agriculture with sugar cane was continued. Forty-four varieties were included in the test. The seed cane for this work was originally supplied by the Department with the understanding that the results would not be published nor any cane be distributed to farmers until the Department had released the information and had satisfied themselves that the cane was worthy of being propagated for syrup or sugar production. Up to this time only four varieties

have been released, viz: Cayana, P.O.J. 234, P.O.J. 213, P.O.J. 36. After planting our 1929 crop, all of the above four varieties were given to farmers in small quantities. The general crop of the 40 varieties was made into syrup of very good quality.

### REGULAR FERTILIZER WORK

For three successive years, beginning in 1925, this fertilizer test was conducted on the same plats, but due to wilt showing up so badly on some of the plats, it was decided to change, planting cotton where corn had been grown for three successive years. The corn having received the same fertilizer test as the cotton and the same number of times repeated, did not change any of the plats to different fertilizers heretofore used. Lone Star 65 cotton seed was planted on April 30, and a poor stand was obtained, due to damping off. The results show a very small net gain due to seasonal conditions as mentioned elsewhere in this circular, as well as poor stands and high infestation of weevils the latter part of the season. Table No. 9 gives the results of this work in detail, each results reported being the average of triplicate tests.

**TABLE NO. 9**  
Analysis Test—Moody Field—Poplarville—1928

Lbs. Material Applied per A.			Analysis	Lbs. Seed Cotton per Acre			Dollars per Acre		
Acid Phos.	Nit. Soda	Mur. Pot.		Plot Yield	Check Yield	Increase	Value of Increase	Cost of Fert.	Net Gain
No fertilizer				697.5					
300	160	100	8-4-8	834.75	630.18	204.57	12.27	8.51	3.76
300	160	75	8-4-6	998.25	562.87	435.38	26.12	7.98	18.14
300	160	50	8-4-4	944.25	495.56	448.69	26.92	7.46	19.46
No fertilizer				428.25					
300	160	25	8-4-2	872.25	413.07	459.18	27.55	6.93	20.62
300	160	0	8-4-0	771.75	397.88	373.87	22.43	6.41	16.02
300	320	50	8-8-4	837	382.69	454.31	27.25	11.62	15.63
No fertilizer				367.5					
300	240	50	8-6-4	496.5	387.94	108.56	6.51	8.71	2.20
225	160	50	6-4-4	550.5	408.38	142.12	8.52	7.35	1.17
150	160	50	4-4-4	553.5	428.82	124.68	7.48	6.33	1.15
No fertilizer				449.25					
600	320	100	8-4-4	1155	540.94	614.06	36.84	14.92	21.92
900	480	150	8-4-4	1326	632.63	693.37	41.60	22.38	19.22
1200	640	200	8-4-4	1525.5	724.32	801.18	48.07	29.84	18.23
No fertilizer				816					

## WINTER COVER CROPS

Of the five winter legumes planted on cotton land all were failures except monantha vetch and Austrian winter peas, the others having been almost totally destroyed by cold weather. The results with cotton after these two crops is given in Table No. 10.

**TABLE NO. 10**

Winter Legumes as a Nitrogen Source Under Cotton and the Effect on the Control of Wilt—1928

Legumes	Lbs. Fert. Used per A.	Analysis	Plot Yield per Acre	Check Yield	Increase	% Wilt Infest.
None	800	8-6-4	899			8.1
Monantha V.	800	8-0-4	945	902	43	15.7
No nitrogen	800	8-0-4	716	905	189	16.9
Aus. W. Peas	800	8-0-4	980	908	72	14
None	800	8-6-4	911			11.6

## POTASH SOURCES TEST—MOODY FIELD

Twenty-four one-twentieth acre plats were used in this test, fertilized with a mixture of 800 pounds per acre of an 8-0-4, to which was added potash from various sources. Thirty-two pounds per acre of actual potash was added, using five common sources. Fertilizer was applied March 24, and Lone Star 65 cotton seed was planted April 30. Due to the seedlings "damping off" so badly after chopping it out, there was hardly a half stand by the middle of June. The percentage of wilt infestation was much higher than it has ever run in this particular field. The highest wilt infestation was on the check plats, it being 25%. The lowest percentage of wilt was where muriate of potash was used, the percent being only 13.3. Since there was not a uniform increase in yield, we do not give the table showing the results of this work.

## COTTON VARIETIES

Eighteen varieties of cotton were tested out here in 1928. The preparation of the seed bed, fertilizer, planting, cultivation and poisoning was done the same way. The fertilizer was applied on March 22, using 600 pounds per acre of an 8-6-4 fertilizer. The varieties were planted on April 9, in single rows, each variety being repeated four times. Samples of each were taken

and sent to the Main Station, A. & M. College, for ginning and determination of lint percentage, length of staple and value per pound of the resulting samples. Table No. 11 gives the results of this work.

**TABLE NO. 11**  
Cotton Varieties—Poplarville—1928

Variety	Lbs. per Acre		Lint Data		Cents per Pound	\$ per A. Total	Rank in Value
	Seed Cotton	Lint	Per-centage	Length			
Cleveland 54	907	331.9	36.5	15/16	17.95	69.92	4
Cleveland Wilson	965	321.3	33.3	13/16F	17.20	66.85	5
Cleveland Piedmont	734	264.9	36.1	13/16F	17.20	54.00	15
Half & Half	664	278.2	41.9	¾F	17.20	54.79	14
Cook 1010	565	234.4	41.5	13/16	17.20	46.26	18
Acala 37	667	234.1	35.1	1	18.45	50.98	17
Rowden 40	663	239.3	36.1	15/16F	18.20	51.18	16
Miller	735	265.3	36.1	1	18.45	57.39	13
D. & P. L. 4	808	297.3	36.8	15/16	17.95	62.55	9
Delta Type Webber	810	268.9	33.2	1½	19.80	62.98	8
Delfos 910	846	285.9	33.8	1 3/32	19.65	66.25	6
Delfos 911	1026	346.7	33.8	1 3/32	19.65	80.35	1
Delfos 6102	981	332.5	33.9	1 1/16	19.40	76.17	2
D. & P. L. 6	809	292.0	36.1	1 1/32	19.05	64.93	7
Express 121	903	324.1	35.9	1 1/32	19.05	72.16	3
Lone Star 168	744	263.3	35.4	1 1/32	19.05	58.80	11
Lone Star 284	777	278.1	35.8	1 1/32	19.05	61.95	10
Lone Star 65	726	255.5	35.2	1 1/16	19.40	58.03	12

### NITROGEN ANALYSIS TEST

Thirty-four one-twentieth acre plats were used in this test dividing it into two series using three replications in each series, one series being inoculated with wilt culture and the other uninoculated. Both series were prepared, fertilized, planted and cultivated in the same way. Cleveland 54 cotton seed was planted May 4, which was the third planting.

The basis of the fertilizer used uniformly over the 34 plats was 800 pounds per acre of an 8-0-4 to which was added the correct amount of nitrogen wherever nitrogen was due. The percentage of nitrogen varied from 4% to 10%. The results show that the highest average increase in yield per acre was

obtained from the use of an 8-6-4 fertilizer which gave an increase of 109.8 pounds per acre. Table No. 12 gives the results of this work in detail.

**TABLE NO. 12**  
Nitrogen Analysis Test—Cotton—1928

Treatment per Acre		Pounds Seed Cotton per Acre			Wilt Infection Percent
Pounds	Analysis	Plot Yield	Check Yield	Increase	
800	8-0-4	530.5			2.2
800	8-4-4	568.5	542.1	26.4	2.6
800	8-6-4	663.5	553.7	109.8	1.6
800	8-8-4	639.5	656.3	74.2	1.3
800	8-10-4	671	576.9	94.1	2.8
800	8-0-4	588.5			3.8

### EFFECTS OF POTASH FERTILIZER ON COTTON WILT

The very apparent effects of potash fertilizers in cotton production in the series of plats listed as "Old fertilizer tests," led to the extension of this line of work in 1927. In 1928 a co-operative agreement was entered into between the N. V. Potash Export, N. Y. and the Mississippi Experiment Stations by which agreement the above company agreed to furnish funds to employ an additional assistant at the South Mississippi Experiment Station to carry on additional experiments in determining

**TABLE NO. 13**  
Effects of Potash Fertilizers on Cotton Wilt—1928—Neal Field

Treatment per Acre			Increase Lbs. Seed Cotton per Acre 600 8-6-0 as Zero				
Lbs. fert. Used	Analysis	Source of Potash	Yield per Acre	Increase		% Wilt Infection	
				1928	1927	1928	1927
No fertilizer			405	-95	-323	24	24.3
600	8-6-0		500			25.1	23.6
600	8-6-8	KCL	677	177	448	14	16.0
600	8-6-8	K <sub>2</sub> SO <sub>4</sub>	649	149	290	8.9	6.0
600	8-6-8	D. Ma- nure Salt	718.5	218.5	367	17	20.0
600	8-6-8	Kainit	757.5	257.5	424	4.6	5
600	8-6-4	KCL	632	132	347	13	5.4
600	8-6-10	KCL	583.5	83.5	403	16.7	7.7
600	8-6-12	KCL	543	43	288	221	16.3



the value of potash fertilizers in controlling wilt and rust in cotton.

There seems to have been a decided influence in the potash applications on the presence of wilt as determined by an examination of 300 stalks in each plat.

## CO-OPERATIVE FERTILIZER TESTS WITH COTTON

This station continued the co-operative fertilizer tests in three south Mississippi counties, namely: Pike, Forrest and Lamar. In each instance, we have had the co-operation of both the county agents and the owners of the farm on which these fertilizer tests have been carried on. For the third year in succession this work was done in Pike county, co-operatively with County Agent A. J. Flowers, and on the farm of Mr. G. H. Alford. The fertilizer was distributed March 31, with the assistance of E. B. Ferris, formerly assistant director of this Station, and W. W. Welborne, the variety of cotton planted being Half & Half, with the report of a fairly good stand. There were only three replications used in this test. Table 14 gives the results of this work in detail.

**TABLE NO. 14**  
Analysis Test—G. H. Alford—Pike County—1928

Lbs. Material Applied per A.			Analysis	Lbs. Seed Cotton per Acre			Dollars per Acre		
Acid Phos.	Nit. Soda	Mur. Pot.		Plot Yield	Check Yield	Increase	Value of Increase	Cost of Fert.	Net Gain
No fertilizer				480					
300	160	100	8-4-8	1290	438	852	51.12	8.51	42.61
300	160	75	8-4-6	1270	395	875	52.50	7.98	44.52
300	160	50	8-4-4	1210	352	858	51.48	7.46	44.02
No fertilizer				310					
300	160	25	8-4-2	1000	325	675	40.50	6.93	33.57
300	160	0	8-4-0	1070	340	730	43.80	6.41	37.39
300	320	50	8-8-4	1270	355	915	54.90	11.62	43.28
No fertilizer				370					
300	240	50	8-6-4	1460	397	1063	63.78	9.54	54.24
225	160	50	6-6-4	1160	425	735	44.10	6.90	37.20
120	160	50	4-4-4	1160	453	707	42.42	6.33	36.09
No fertilizer				380					
600	320	100	8-4-4	1830	525	1305	78.30	14.92	63.38
900	480	150	8-4-4	2090	570	1520	81.20	22.38	68.82
1200	640	200	8-4-4	2190	615	1575	94.50	29.84	64.66
No fertilizer				660					

This was the fourth successive year that this fertilizer test has been conducted in Forrest county, in co-operation with County Agent W. M. Seller, and on the farm of Mr. T. E. McCardle. The fertilizer was applied on March 19, and planted to Half & Half cotton seed on April 17. This work was done in four replications, and Table No. 15 gives it in detail. The net gains show up very badly, but this can be attributed to adverse weather conditions and boll weevils. Mr. McCardle reports that he had the sorriest crop of cotton this year that he has ever had in the past 37 years.

**TABLE NO. 15**

Analysis Test—T. E. McCardle—Forrest County—1928

Lbs. Material Applied per A.			Analysis	Pounds Seed Cotton per Acre			Dollars per Acre		
Acid Phos.	Nit. Soda	Mur. Pot.		Plot Yield	Check Yield	Increase	Value of Increase	Cost of Fert.	Net Gain
No fertilizer				294					
300	160	100	8-4-8	346	289	57	3.42	8.15	-4.73
300	610	75	8-4-6	335	284	51	3.06	7.98	-4.92
300	160	50	8-4-4	319	280	39	2.34	7.46	-5.12
No fertilizer				275					
300	160	25	8-4-2	366	261	105	6.30	6.93	-.63
300	160	0	8-4-0	346	247	99	5.94	6.41	-.47
300	320	50	8-8-4	331	233	98	5.88	11.62	-5.74
No fertilizer				219					
300	240	50	8-6-4	319	230	89	5.34	9.54	-4.20
225	160	50	6-4-4	289	241	48	2.88	6.90	-4.02
150	160	50	4-4-4	289	253	35	2.16	6.33	-4.17
No fertilizer				264					
No fertilizer				292					
600	320	100	8-4-4	502	291	211	12.66	14.92	-2.26
900	480	150	8-4-4	598	290	308	18.48	22.38	-3.90
1200	640	200	8-4-4	679	299	391	23.46	29.84	-6.38
No fertilizer				287					

In Lamar county in co-operation with County Agent C. W. Carroway, and on the farm of Mr. O. J. Pearce, we conducted this same fertilizer test, using only three replications. Due to excessive rainfall throughout the summer, and large infestations of boll weevil, there was not a uniform increase in yield obtained from any of these plats and we do not give the summary table showing the results of this work.

## POTASH SOURCES TEST

There were seventeen one-twentieth acre plats used in this test which included only four sources of potash. These sources were muriate of potash, Kainit, potassium sulphate and sulphate of potash and magnesia. In this work all plats were fertilized uniformly with an 8-6-0 fertilizer at the rate of 800 pounds per acre and 32 pounds per acre of actual potash applied from the several sources of each. The fertilizer was applied March 22 and Lone Star 65 seed cotton was planted April 3. But due to a late spring and big rains, this cotton was planted over the third time which was on May 4. The variety of cotton being Cleveland 54. This was the first year that fertilizer experiments had been conducted on this land. Table No. 16 gives this work in detail, each result reported being the average of triplicate test.

**TABLE NO. 16**  
Potash Test—Cotton—1928

Lbs. Material per A.	Analysis	Sources	Lbs. seed cotton per A.			% Wilt Infest.
			Plot Yield	Check Yield	Increase	
800	8-6-0		650		-	2.1
800	8-6-4	Muriate	570	645	-75	2.1
800	8-6-4	Potash Sul.	585	640	-55	2
800	8-6-4	Kainit	562	636	-74	1.1
		D. M. Salt.	590	631	-41	1.5
800	8-6-0		626		-	3.3

## MURIATE OF POTASH TESTS

Twenty-one one-twentieth acre plats were used in this test, and the various analyses were used. The percentage of potash running from 8-6-0 which was used as a check, up as high as an 8-6-14, using at the rate of 800 pounds of fertilizer per acre. This being the first time that the land has been in cultivation for the past two years, the plats were thoroughly inoculated with wilt culture prior to the planting of the cotton in order to be sure the wilt germ was present in the soil.

The planting of this cotton was one month late, due to the fact that this cotton was planted the third time before getting a uniform stand, late spring and big rains being the causes. The results are given in Table No. 17 which shows that the average percent wilt infestation was the lowest when fertilized

with an 8-6-8 fertilizer and the second lowest wilt infestation when fertilized with an 8-6-10 fertilizer. Although the highest increase in yield per acre was with an 8-6-4 fertilizer, with only 2.8% wilt infestation, which is only .4% higher in wilt infestation than the lowest.

**TABLE NO. 17**

**Muriate of Potash Analysis Test for Control of Cotton Wilt—1928**

Lbs. per A.	analysis	Lbs. seed cotton per A.			% Wilt Infest.
		plot yield	check yield	increase	
800	8-6-0	462			5.1
800	8-6-4	555	470	85	2.8
800	8-6-8	525	478	47	2.4
800	8-6-10	502	486	16	2.5
800	8-6-0	495			8.5
800	8-6-12	515	488	27	3.2
800	8-6-14	610	482	128	4.0
800	8-6-0	476			4.0

### SOIL FERTILITY TEST—COTTON

This work was started here several years ago to determine the effects of three common summer legumes grown alone and with corn, as compared with corn alone. In 1927 the three common legumes and corn were planted and for this year a crop of cotton was planted. There are 32 plats in the experiment, each plat receiving the same amount of fertilizer, which was at the rate of 600 pounds per acre of an 8-4-4 home mixed fertilizer, Lone Star 65 cotton seed was planted on May 1, which was the third time. This year results show that cotton following corn and velvet beans made the highest yield, corn and soybeans making the second highest yield. The results are not what they should have been due to adverse weather conditions and a high infestation of boll weevil the latter part of the season, and for that reason we do not give the summary table showing the results.

### WILT RESISTANT VARIETIES

The wilt resistant varieties test conducted included only six varieties. All seeds used in this test had to be ordered from some pedigreed seed company and we were unable to get more than six varieties. In this test the varieties were planted in single rows, each variety being repeated five times. The basis

of the fertilizer used uniformly on this test, was 600 pounds per acre of an 8-6-4 fertilizer, using ammonium sulphate as the source of nitrogen. Table No. 18 gives the results of the percentage of wilt infestation in each.

**TABLE NO. 18**  
Wilt Resistant Varieties—Cotton—1928

Varieties	Lbs. per A.	analysis	yield per A.	% Wilt Infest.
Cleveland 54	600	8-6-4	451	1
Miller	600	8-6-4	499	1.2
Rhyme's Cook	600	8-6-4	300	1.4
Trice	600	8-6-4	559	3.2
Super Seven (Strain 5)	600	8-6-4	466	2.8
Lightning Express (Strain 7)	600	8-6-4	583	3.4

### FACTORY MIXED VS. HOME MIXED FERTILIZERS UNDER COTTON

This work was done on 25 one-twentieth acre plats, where corn had been grown for the past two years, with this same fertilizer test. In this work we are comparing three factory mixed fertilizers with home mixed fertilizers furnishing the same amount of plant food. The home mixtures used were made by mixing superphosphate, nitrate of soda, and muriate of potash in the proper proportions to furnish the same plant food as would be supplied by the factory mixed fertilizers. Fertilizer was applied at the rate of 600 pounds per acre on March 28. This was planted on May 4, Cleveland 54 being the variety planted.

The results show very small gains, due to seasonal conditions. Table No. 19 shows the average results of this work, the averages being of triplicate tests in each instance.

**TABLE NO. 19**

**Factory Mixed vs. Home Mixed Fertilizer—Cotton—1928**

Lbs. Material Applied per Acre		analysis	Lbs. of seed cotton per acre		
Factory Mixed	Home Mixed		plot yield	check yield	increase
No fertilizer			677		
600		8-4-4	885	702	183
	600	8-4-4	843	727	116
600		8-5-4	838	752	86
No fertilizer			777		
	600	8-5-4	778	757	21
600		10-5-3	875	736	139
	600	10-5-3	815	716	99
No fertilizer			695		.

**ADDITIONAL TOP DRESSING WITH MURIATE OF POTASH**

The purpose of this additional muriate of potash test is to determine the effect that a side dressing of muriate has on the control of cotton wilt and rust.

Twenty-one one-twentieth acre plats were used in this test. The basis of the fertilizer used uniformly over these plats was at the rate of 800 pounds per acre of an 8-6-4 home mixed fertilizer, using as the mixture, superphosphate, nitrate of soda and muriate of potash, which was applied March 2, 1928, and was inoculated with wilt culture March 27. The variety of cotton planted on May 4 was Cleveland 54. Additional amounts of muriate of potash were applied July 3, running from 50 pounds per acre up to 250 pounds per acre, as shown in Table No. 20.

**TABLE NO. 20**

**Additional Top Dressing with Muriate of Potash—1928**

Lbs. per A.	analysis	Additional Amount of Potash Added	Lbs. seed cotton per A.			% Wilt Infest.
			Plot Yield	Check Yield	increase	
Check			630		-	2.8
800	8-6-4	50 lbs.	615	635	-20	3.9
800	8-6-4	100 lbs.	605	640	-35	2.3
800	8-6-4	150 lbs.	617	645	-28	3.4
Check			649		-	4.8
800	8-6-4	200 lbs.	690	691	-1	3.4
800	8-6-4	250 lbs.	717	733	-16	3
Check			776		-	2.5

## HIGH ANALYSIS VS. LOW ANALYSIS FERTILIZER

On 21 one-twentieth acre plats, high and low analysis fertilizers are being tested. This was the second successive year that this test has been conducted on this land, varying the fertilizer analysis slightly. In making the low analysis fertilizer to be compared with the high analysis, superphosphate, nitrate of soda, and muriate of potash were used. Six hundred pounds per acre of the home mixed 8-4-4 fertilizer were used as a check, and this furnished the same amount of phosphorus, nitrogen, and potash as was contained in 160 pounds of nitrophoska, analyzing 30-15-15. Three hundred twenty pounds of a 15-5-5 factory mixed fertilizer was compared with 600 pounds of an 11-2-3 fertilizer and 300 pounds of a 20-16½-0, or Ammophos, was compared with 400 pounds of a factory mixture analyzing 12-6-6. The fertilizer was applied March 28, and planted to Cleveland 54 cotton seed on May 4. Table No. 21 gives the results of this work in detail, the figures given being the averages of triplicate tests in each instance.

TABLE NO. 21

High Analysis vs. Low Analysis Fertilizers—Cotton—1928  
Rate 600 Lbs. per Acre.

Amount Fertilizer per A.	Analysis	Yield per Acre
600	8-4-4	664
160	30-15-15	740
600	11-2-3	647
320	15-5-5	600
400	12-6-6	595
320	20-16½-0	595

## SUPERPHOSPHATE (ACID PHOSPHATE) VS. RHUM'S PHOSPHATE

Rhum's phosphate is probably somewhat different from the phosphate rock formerly used by the Station. It is a high grade of rock testing 32%. This making twice more available phosphorus per hundred pounds of the Rhum's phosphate than in the same amount of superphosphate. It is finely ground, 80% passing through a 300 mesh screen.

Fifteen one-twentieth acre plats were used in this test. A basal mixture of an 0-4-4 fertilizer at the rate of 600 pounds per acre was used, with the additional amount of superphosphate to bring the analysis up to an 8%, which was used as a check.

The Rhum's phosphate was added to the 0-4-4 fertilizer at the rate of 300 pounds, 400 and 600 pounds per acre. Three hundred pounds of Rhum's phosphate gave a yield of 47 pounds greater than 300 pounds of superphosphate, while 400 and 600 pounds of Rhum's both gave smaller yields than were produced by 300 pounds of superphosphate. We consider the results as inconclusive. Table No. 22 gives the results in detail, the figures being the average of triplicate tests in each instance.

**TABLE NO. 22**

Superphosphate (Acid Phosphate) vs. Rhum's Phosphate—Cotton—1928

Pounds Material Applied per Acre				Pounds Seed Cotton per Acre		
Super. Phos.	Rhum's Phos.	Nit. Soda	Muriate Potash	Plot Yield	Check Yield	Increase by Rhum's Phosphate
300		160	50	617		
	300	160	50	672	625	47
	400	160	50	630	633	- 3
	600	160	50	607	642	-35
300		610	50	650		

**ORGANIC NITROGEN SOURCE TEST**

In this work, three replications were used, making the sum of 25 one-twentieth acre plats. All plats receiving the equivalent of 600 pounds per acre of an 8-0-4 fertilizer with the nitro-

**TABLE NO. 23**

Organic Nitrogen Sources Test—Cotton—1928

Lbs. per Acre	Analysis	Sources of Nitrogen	Lbs. of Seed Cotton per Acre		
			Plot Yield	Check Yield	Increase
600	8-0-4		667		
600	8-4-4	Nitropo	708	649	59
600	8-4-4	Fish scrap	730	630	100
600	8-4-4	Tankage	680	611	69
600	8-0-4		592		
600	8-4-4	½ Fish scrap	700	637	63
		¼ NANO 3			
600	8-4-4	½ Tankage	820	682	138
		½ NANO 3			
600	8-4-4	Cal. Nitrate	872	727	145
600	8-0-4		772		



gen plats receiving 24 pounds of actual nitrogen per acre. This fertilizer was applied on March 29, and Cleveland 54 cotton seed was planted May 4. The results show very small increase. The same thing may be said about the effects of the weather on these yields as has been said elsewhere in this circular. This cotton was poisoned three times against the boll weevil and while these got so bad towards the latter part of the season, the low yield was due largely to adverse weather conditions rather than to the weevils. Table No. 23 gives the results of this work in detail, taking the averages of the three plats in each instance.

### SEED TREATMENT TEST

The purpose of this experiment is to test out the effect that the different organic mercury has on the control of "damping off" and also the control on cotton wilt. The seed treatment test conducted in this experiment includes eleven different organic mercury treatments. Dr. D. C. Neal, formerly Plant Pathologist of A. & M. College, treated Lone Star 65 cotton seed with the various organic mercury treatments and sent the seed here to be planted. The seeds were planted on April 13, using single rows. Each treatment was replicated five times and on the fifth repli-

**TABLE NO. 24**  
Organic Mercury Treatment for Cotton—1928

Organic Mercury Used	Lbs. Fert. Used	Analysis	Pounds Seed Cotton per Acre			% Wilt Infest.
			Plot Yield	Check Yield	Increase	
Check	600	8-6-4	348			11.1
Corona Merko	600	8-6-4	445	337	108	13.2
Special Bayer Dust	600	8-6-4	352	326	26	12.7
Spe. Bayer D. 6x3%	600	8-6-4	380	316	64	9.1
Check	600	8-6-4	305			9.1
Semesan Jr.	600	8-6-4	391	329	62	9.9
Semesan	600	8-6-4	428	353	75	10.6
KI. B. Dupont	600	8-6-4	428	377	51	13.4
Check	600	8-6-4	401			11.8
K. I. C. Dupont	600	8-6-4	442	394	48	11.2
Iodine Bentonite	600	8-6-4	445	386	59	10.3
Iodine Keiselguhr	600	8-6-4	487	379	108	9.3
Check	600	8-6-4	372			12.3
Dipdust	600	8-6-4	451	383	68	7.4
Usuplum	600	8-6-4	431	394	37	9.7
Check	600	8-6-4	405			11.6

cation the seed were planted by hand, placing only five seed in a hill, every 12 inches apart. Due to a second planting we were unable to get counts on the damping off. The basis of the fertilizer used uniformly on this test was 600 pounds per acre of an 8-6-4 fertilizer, using ammonia sulphate as the source of nitrogen. Table 24 gives the results in detail.

## NITROGEN SOURCES TEST

This test was conducted on the same land for three successive years, starting in 1925. It was decided to rotate with corn, this year using the same nitrogen source test as have been used under cotton, and since there was no available land nearby, this test had to be started in another field that had not been in cultivation for the past two years.

There were 34 one-twentieth acre plats used in this test, testing seven sources of nitrogen. In this work all plats were fertilized uniformly, with 600 pounds per acre of an 8-0-4 fertilizer and 36 pounds of actual nitrogen applied from the seven sources to each plat receiving it. The fertilizer was applied on March 27, and Cleveland 54 cotton seed planted on May 4. The results show a small increase which can be attributed to adverse weather conditions. Table No. 25 gives the results of this work in detail.

TABLE NO. 25

Nitrogen Sources Test—Cotton—1928

Lbs. per Acre	Analysis	Sources of Nitrogen	Pounds Seed Cotton per Acre		
			Plot Yield	Check Yield	Increase
600	8-0-4		538		
600	8-6-4	Nitrate soda	489	510	-21
600	8-6-4	Am'onium Sul.	547	482	65
600	8-6-4	Cal. Cyanamid	607	455	65
600	8-0-4		427		
600	8-6-4	Cal. Nitrate	478	448	30
600	8-6-4	Urea	605	470	135
600	8-6-4	Cal. Urea	655	491	164
600	8-6-4	Leunasalpeter	577	513	64
600	8-0-4		535		

# REPORT OF HORTICULTURAL WORK AT SOUTH MISSISSIPPI EXPERIMENT STATION FOR 1928

By W. S. Anderson, Horticulturist.

The investigations in Horticulture at this station as conducted since the beginning of the department may be grouped under the following headings (1) Plant Selection Work; (2) Fertilizer Experiments; (3) Variety Experiments; (4) Nematode Control Experiments.

## PLANT SELECTION WORK

**Sweet Potatoes:** Mention has been made in previous reports for this station about work that has been done in an effort to bring up the producing ability of Nancy Hall sweet potatoes by mass hill selection. That is, for six years we have gone down the rows selecting all of the best hills and have isolated this selection from another one representing selections of all of the poor hills. An average of all of the increase due to this selection for six years is only 3%, which is not a favorable increase.

**Cucumbers:** Mention was made in our 1927 report of work started here that was co-operative with the American Pickle Company of Wiggins, Mississippi, in which we are attempting to improve the productivity, earliness and shape of pickle type of cucumbers by individual plant selection. The original stock seed for this work was secured from the state of Colorado through the Heinz interests. In 1927, two selections were made upon the vines' ability for producing cucumbers early. In 1928 these two lots of seed were planted in separate locations and after being carefully watched until fruits began to be seen, one of them was discarded on account of lateness. Of the other one a single vine was selected upon its ability to produce heavy crops early. This work will be continued again next year when more detailed attention will be given to the production of suitable shape cucumbers as well as retaining selections which set heavy crops early.

**Blueberries:** The work started here in 1921 with individual plant selection among something like 300 Florida blueberry plants, has been continued in 1928 with renewed interest. As has been mentioned in previous reports of this work an effort

has been made to isolate varieties by watching the habits of all of these plants during the fruiting season and noting whether the characteristics possessed were favorable ones. Three outstanding types have been selected and since their selection, have been watched through three fruiting crops. One of them produces round berries and ripens early, another makes an oblong berry which ripens early and a third one makes a round berry which ripens very late in the summer. The quality of the first two mentioned is good to excellent, while the late ripening type has only mediocre quality. The reason for selecting the late one was only for the purpose of getting ripe blueberries after all other berries are gone. We expect to take up the three plants representing the above mentioned selections this winter and divide each of them into as many plants as possible and make a new planting, including these three types only. From this planting it is expected that our Station will be in position within a few years to supply propagating material. In all of our work with this Florida type blueberry, we have found no occasion to combat insect pests or plant diseases and we are convinced that this fruit has an important place in South Mississippi horticulture.

Work was inaugurated this year which will determine the adaptability of this type of blueberry, for shipment to distant markets. A cardboard carton was made up which would carry 12 pints of this fruit. The carton was so made that it could be ventilated and the pint baskets used were ventilated paraffined paper boxes. Packages of blueberries put up in these cartons were sent to various places by express including Mississippi A. & M. College; Savannah, Georgia; Houston, Texas; Lyman, Mississippi, and Gulfport, Mississippi. Reports from all of these places tend to indicate that the berries carry exceedingly well when shipped in such a package. Work of this nature will be continued in 1929.

## FERTILIZER TESTS

**Tomatoes:** The work begun here several years ago with fertilizers under tomatoes has been conducted again on the same plats of land in 1928. Leunasalpeter was used as the source of nitrogen this year instead of nitrate of soda, applying it so as to give the same amount of nitrogen per acre as has been used heretofore when nitrate of soda was applied. Marglobe, one of the wilt resistant varieties, was used again this year and a basal mixture of 600 pounds per acre of 8-4-4 home mixed fer-

tilizer was applied to all plats previous to applying the test mixtures. The land was prepared and the fertilizer was applied on April 4. A heavy rain fell on the night of April 5 and on the next day plants were taken from the cold frame and set in the field. The plants were pruned regularly, tied to stakes and topped when four clusters had formed. Although we had prospects of a very fine crop, our results look bad since excessive rains in the fruiting season practically ruined all of our top clusters. The best net gain this year was obtained from an application of 450 pounds superphosphate, 187 pounds leunalsalpeter, and 100 pounds sulphate of potash, analyzing 6-4-4; the second best net gain was obtained from 8-4-0, or 600 pounds superphosphate and 187 pounds leunalsalpeter; and the third best net gain was from 8-4-4 composed of 600 pounds superphosphate, 187 pounds leunalsalpeter and 100 pounds sulphate of potash.

Since we have grown tomatoes on this land for four years in succession, it has become badly infected with wilt, causing some damage even to wilt resisting varieties. Due to this we are concluding the experiment on this land with this year and expect to start fertilizer tests of tomatoes on other land in 1929. We are therefore reporting herewith in Tables No. 26 and 27—a summary of four years work with this group of fertilizers. Since the work has been done in duplicate, the results are an average of eight trials of each fertilizer. Glancing at the figures in this table it seems that 1,200 pounds per acre of an 8-4-4 leads the list in point of net profit per acre where amounts per acre of this analysis was tested. These figures also show that when 1,200 pounds per acre of the various analyses was tested, an 8-6-4 gave the leading net profit, seconded by an 8-4-4, and with a 6-4-4 following, a close third. From these figures we would recommend the use of from 1,000 to 1,500 pounds per acre of either an 8-4-4 or 8-6-4.

Since there are usually many questions asked by tomato growers about the relationship between different amounts and kinds of fertilizers applied and the kinds of culls found in the production, it was decided to keep this year some records of the culls produced on our fertilizer tests. Careful counts were made of blossom-end rots, fruit rots, fruit cracks, and cat-faces, as well as recording the percentage of wilted plants and the total pounds of culls per acre. As all of these figures for this year are more or less negative, it is thought best not to publish any of them at this time.

TABLE NO. 26

Analysis Test, Tomatoes

4 Years	Application 1200 Pounds per Acre	8 Trials
	Formula	Profit per Acre
Varying Phosphorus	8-4-4	\$132.37
	6-4-4	130.02
	4-4-4	65.46
Varying Nitrogen	8-8-4	82.58
	8-6-4	138.72
	8-4-4	132.37
Varying Potash	8-4-8	86.13
	8-4-6	83.42
	8-4-4	132.37
	8-4-2	98.18
	8-4-0	108.72

TABLE NO. 27

Amounts per Acre Test of Fertilizers Under Tomatoes

4 Years		8 Trials
	Lbs. 8-4-4	Profit \$
	1200	132.37
	1800	71.59
	2400	56.51

**Sweet Potatoes:** The work with fertilizers under sweet potatoes started here in 1925 on rented land known as the "Moody Field," has been conducted again this year. As in the case of tomatoes, leunsalpeter was used as a source of nitrogen instead of nitrate of soda. The work, however, was not conducted on the same land as heretofore. In the same field experiments have been under way with fertilizers under cotton and corn using the same plat arrangement and same analyses and amounts per acre as has been used under sweet potatoes. A rotation of crops in the field this year placed the sweet potatoes following three years of cotton. The land was prepared and fertilizers applied on May 25 with plants of Porto Rico variety being set one foot apart in the row on June 5, which was a cloudy day and which was followed by a full day of rain. A perfect stand was obtained and a fine crop produced. The crop was harvested on November 8-10 inclusive, the sweet potatoes being graded and weighed on the plats as dug. Table No. 28

shows the details of results obtained from this experiment in 1928. These figures show that the highest net gain was obtained when 1,800 pounds per acre of an 8-4-4 was applied. Tables No. 29 and 30 show the average results of three years work with these fertilizers which, being done in three replications, represents an average of nine trials. Referring to this table one will note that when potash was varied, an 8-4-4 gave the leading net profit; when nitrogen was varied, an 8-4-4 gave the leading profit; and when phosphorus was varied an 8-4-4 also gave the leading net gain. Further reference to this table will show that when the different amounts per acre of an 8-4-4 were compared, 1,200 pounds led, with 1,800 pounds following closely as a second.

**Strawberries:** It will be remembered from our 1927 report that mention was made of an experiment started with fertilizers under strawberries early in that year. Although much care was given this field of strawberries during the summer of 1927 and the fertilizers applied early in the fall, our crop was almost a failure in the spring of this year. First of all, the plats were badly damaged by hogs during the winter, many of the plants being rooted up. Then in January, we had an unprecedented freeze which not only killed the leaves on all the plants but in some cases so injured the crowns that few buds were able to come out and set berries. On account of this no report is being published of the yields obtained from the tests in 1928, although a record is being kept of the production.

**Peaches:** In our 1927 report mention was made of our starting a fertilizer experiment under peaches, using the Belle of Georgia variety and a block of land containing approximately six acres which was set to trees of this variety in February of 1927. Also a legume experiment is combined with the fertilizer test, Austrian Winter Peas being grown between the trees each winter. This crop made excellent growth last winter and was turned under late in the spring. No seed were matured sufficiently to germinate. The amount of various fertilizers was increased this year by one pound per tree. Wonderful growth has been made by the trees in the orchard this year and unless some hazard overtakes the buds before next spring, it is expected that a nice crop of fruit can be harvested in 1929. Austrian Winter Peas were again planted in this orchard between the trees on the tenth of October and this crop will be turned under in the spring.

**Pecans:** The work started here in 1925, co-operative with

TABLE NO. 28  
Sweet Potato Fertilizer Record—1928

Pounds Material Applied per Acre		Formula	Pounds Potatoes			Dollars per Acre		
Super. Phos.	L. Sal. peter of Potash		Plat Yield	Check Yield	Increase Nos. 1 & 2	Value of Increase @ 2c	Cost of Fert.	Net Gain
			Nos. 1 & 2	No. 3	Nos. 1 & 2			
No fertilizer			7453	2850	7453			
300	93.5	8-4-8	14982	2610	6816	8166	163.32	8.55
300	93.5	8-4-6	14557	2940	6181	8376	167.52	7.92
300	93.5	8-4-4	14146	2876	5546	8600	172.00	7.50
No fertilizer			4911	2700	4911			
300	93.5	8-4-2	13291	2548	4740	8551	171.02	6.97
300	93.5	8-4-0	11352	2785	4569	6783	135.66	6.45
300	187	8-8-4	14299	2710	4398	9901	198.02	11.70
No fertilizer			4227	2771	4227			
300	140	8-6-4	12231	3414	4253	7978	159.56	9.60
225	93.5	6-4-4	10101	3174	4279	5822	116.44	6.94
150	93.5	4-4-4	9225	3238	4305	4920	98.40	6.37
No fertilizer			4332	2309	4332			
600	187	8-4-4	15217	3246	4873	10344	206.88	15.00
900	280	8-4-4	16858	1919	5414	11444	228.88	22.50
1200	374	8-4-4	17612	1730	5955	11657	233.14	30.03
No fertilizer			6496	2218	6496			



TABLE NO. 29

Analysis Test—Sweet Potato Fertilizers—Moody Field

3 Years

Application 600 Pounds per Acre

9 Trials

	Formula	Profit per Acre
Varying Potash	8-4-8	\$ 92.90
	8-4-6	93.91
	8-4-4	101.74
	8-4-2	83.28
	8-4-0	43.18
Varying Nitrogen	8-4-4	101.74
	8-6-4	58.84
	8-8-4	84.88
Varying Phosphorus	8-4-4	101.74
	6-4-4	93.75
	4-4-4	71.11

TABLE NO. 30

Amounts per Acre Test of Fertilizers Under Sweet Potatoes—Moody Field

3 Years

9 Trials

Pounds 8-4-4	Profit
600	\$101.74
1200	120.78
1800	110.02
2400	98.08

Governor Bilbo, testing fertilizers under pecans, has been continued. We are very sorry, however, to report no crop again last year. These trees are the Stuart variety and all Stuarts have missed fruiting again this year in this section. The trees however, have made very satisfactory growths this year and it is hoped will set fine crops of nuts in 1929.

### VARIETY TESTS

**Fruits:** The many observations of various fruit varieties have been continued in 1928 with peaches attracting major attention by producing enormous crops, especially certain varieties. In Table No. 31, we list all the varieties of peaches which bore fruit this year. This table shows the average pounds produced per tree. We might mention that one of our Hiley trees, eight years old, produced 607 pounds of fruit. All varieties bearing made peaches of good marketable size and were well colored for the variety. It will be noticed from the table that Hiley leads

**TABLE NO. 31**  
**Peach Variety Record—1928**

Name	Age of Trees, Years	Date Began Ripening	Average Lbs. per Tree	Flesh Color	Stone Character
Mayflower	8	May 26	Few Fruits	White	Cling
Alexander	8	June 16	Few Fruits	White	Cling
Greensboro	8	June 16	28	White	Semicliling
June Elberta	8	June 11	58	Yellow	Cling
Early Rose	8	June 18	43	White	Cling
Early Mamie Ross	8	July 2	294	White	Cling
Hiley	8	June 30	418	White	Free
Alton	8	June 30	135	White	Cling
Carmen	8	June 30	50	White	Cling
J. H. Hale	8	July 27	23	Yellow	Free
Slappy	8	June 30	271	Yellow	Free
Belle of Georgia	8	July 17	179	White	Free
Early Elberta	8	July 25	79	Yellow	Free
Elberta	8	July 27	13	Yellow	Free
Early Wonder	3	May 26	Few Fruits	White	Cling
Yellow Hiley	3	June 30	25	Yellow	Free
Captain Edes	3	July 26	14	Yellow	Free
Lizzie	3	Aug. 1	8	Yellow	Cling
Frank	3	July 26	40	Yellow	Cling
Brackett	3	Aug. 2	11	Yellow	Free
Gold Medal	3	July 26	Few Fruits	Yellow	Free

the list, which is usually the case, although in some years Belle of Georgia has made the highest record. Of the 35 varieties which are eight years old, we feel that for commercial use, we would recommend in extreme South Mississippi only Early Rose, Belle of Georgia, Hiley and Slappy. For the home orchardist we would add to that list Mayflower, Early Mamie Ross and possibly June Elberta and Greensboro. The varieties planted three years ago came into bearing this year and the table above referred to shows the productions from seven of those varieties. Three of the ten varieties did not bear. In this group are several yellow colored peaches which ripen rather late and which it has been hoped would be good ones to replace Elberta in South Mississippi. The latter variety still fails to bear sufficient crops to warrant its planting in this section.

The apple varieties are not showing up well. In the original planting there were 32 varieties and two trees of each variety. It will be recalled from previous reports of this work that several varieties have died out from fire-blight, while others continued

growing vigorously and bore crops. It seems that this year more diseases have developed on crops than ever before and the apple varieties here certainly suffered their part. There are now alive the following trees, two of Day, three of Red Astrachan, 2 Delicious, 2 Staymen Winesap, one Red June, one Golden Delicious, two each of Moore, Rambo and one each of Horse, King David, York, Kinnards' Choice, Fanny, and Hackworth.

The five trees we have of Pineapple pear bore their first heavy crop this year. The several varieties of pear which are being grown co-operatively with the office of Foreign Seed & Plant Introductions, are beginning to bear a few fruits. Some are going down under attacks of fire-blight while others show some resistance. Not enough is known yet about these new kinds to publish any information about them.

The several varieties of figs made excellent crops this year, but as usual the Celeste dropped much of its crop before ripening. At present it seems that Green Ischia leads the list where cultivation is practiced. In this connection it may be recalled from our 1927 report that we have started some tests of mulch culture on our fig variety orchard and that we are keeping the entire ground in this part of the orchard covered with oat straw, and are not doing any plowing at all in this section. This block includes Lemon, Magnolia and Celeste varieties. These varieties are also in the cultivated portion. At the end of two crops produced on the mulched area, we feel like saying that there is some advantage to this practice but hesitate to recommend it until we have made further studies.

The new varieties of various tree fruits introduced two years ago through the Bureau of Plant Industry including two Japanese Cherries, four Chinese jujubes, three plums and one each of Chinese Tung Oil and Chinese Evergreen Chinquapin, have made good growths in 1928. The chinquapin was killed back practically to the ground in January by a two-day occurrence of a temperature of 16 degrees F., but the roots were not injured and growth started from the stump early in the spring. The trees of this variety planted in a pasture near other trees and near a bog, have all died after making very little growth the first year.

Of the planting of some 35 varieties of bunch grapes in 1920, we have culled out for one reason or another all except Delaware, Muench, Herbemont, Ellen Scott, Lenoir and Delicious. These varieties are still making respectable crops annually. Be-

sides replanting certain of the original ones that died out, such as Niagara and Concord, we have filled the vineyard with other less common varieties which we had hoped could be grown in this section. Our muscadine varieties, James, Flowers, Thomas and Scuppernong, are still outstanding in their production as grown in a vineyard way, with annual pruning, cultivation and fertilizers. These varieties make from 50 to 75 pounds of grapes per vine each year without any attention to spraying. This group of grapes offers a wonderful opportunity for the small vineyardist who is not equipped to take care of the varieties that have to be sprayed regularly in order to produce fruit.

It will be recalled from our 1927 report that the satsuma orange planting here made excellent crops in 1927 in spite of the fact that we had a one-day minimum temperature of 16 degrees F. the previous winter. A freeze in January of 1928 at which the temperature went to 16 degrees F. for two days in succession so injured the leaves on these trees that from 95 to 100% of them dropped. Although blossom buds opened in the spring, very few fruits were held by the trees and the crop is therefore a failure for 1928. The wood of the trees, however, was not injured and excellent growth has been made this year. Of the two kinds of Kumquat, Nagami is apparently as hardy as satsumas, and Marumi more hardy. This variety bore fruit this year. The round orange varieties as well as the grapefruit varieties in this orchard were killed below the dirt mounds as well as the two lemon varieties, and although these several varieties have come out with good growth this year, we feel it quite safe to guard against planting any round orange, grapefruit, or lemon varieties in this latitude, except possibly a tree or two for home use and for novelty's sake.

The three varieties of briar berries, Van Fleet raspberry, Thornless dewberry, and Young dewberry are still showing up quite well. All three make quite respectable crops and are so resistant to small fruit diseases that they require no spraying. They are also all resistant to the cold winters we have had since planting them here. We feel that any home garden or home orchard is not complete until some of these berries are introduced but do not recommend the planting of either of them on a very large scale commercially. However, it would not be bad to have sufficient of these growing to supply whatever local demand that might arise. Especially is this true of the Young berry, which is a very fine market variety and which has shipping possibilities.

Of all the varieties of plums planted here in 1920, only one seems worth recommending and that is Munson, which has never failed to make a fine crop. We do not consider this variety worth growing to sell but it is a very fine home orchard variety. We planted two other varieties of plums two years ago and expect to introduce additional ones this winter in an effort to find some which will bear crops worthy of introducing the trees in commercial plantings.

Mention has been made in another part of this report of the test of Florida type blueberries. The work with this type has been a trial of their adaptability to the section as well as selection work. Early in 1926, there were planted seven varieties of northern type blueberries, which were obtained from the Whitesbog Nurseries at Whitesbog, New Jersey. This was the second planting of these varieties, a planting one year before having died in the summer of 1925. Accompanying the latter varieties were instructions from that nursery that we not fertilize or cultivate these blueberries for the first two or three years, but mulch the land around them heavily with leaves or straw. This was done and all of the varieties have lived and made slow growth except one, this being Cabot, which died in the summer of the first season. The other varieties in the list are as follows; Rubel, Sam, Pioneer, Harding, Grover, and Adams. None of these have set fruit, although all bloomed in the spring of 1928. Since those varieties are seemingly becoming accustomed to our climate, it is expected that under cultivation and fertilization in 1929, they should bear fruit.

**Vegetables:** This station has continued experiments in 1928 with many different strains of both Triumph and Irish Cobbler potatoes including both certified and uncertified kinds. The details of this work have already been published in Circular 80. This work was done co-operatively with the Raymond Branch Station, the Main Station at A. & M. College, and the Plant Pathology Department of the State Plant Board, and the results published co-operatively.

Work has been started this year testing several varieties of sweet potatoes not heretofore generally known in this section. About four years ago we accidentally found some roots mixed with the seed stock of Porto Rico that had a purple skin and a flesh identical with Porto Rico. These roots were carefully sorted and bedded separately. Observations during the growing season showed considerable similarity between the vine of this

sweet potato and that of Porto Rico with the difference being that the former had darker colored stems and possibly shorter vines than the latter. An effort was made last year to get identification of this variety, if indeed it be a variety, and although specimens of the vines and roots were sent to Washington and the Norfolk, Va., Truck Station, we found out nothing more than that it is possibly a bud sport from Porto Rico. Tests of this sweet potato indicate that it produces as well or better than Porto Rico and keeps excellently well, while it has quality which compares favorably with Porto Rico. It was suggested by Professor James H. Beattie of the U. S. Department of Agriculture, that this sweet potato might be Creola, but when better specimens of the roots were furnished him, his decision was quickly changed. However, Professor Beattie supplied us with a few roots of the Creola variety and we supplied him with a bushel of our purple skin kind. No report has been received from Washington as to results they had with comparative trials of this kind, this year. In our tests, Creola made 6902 pounds per acre of marketable roots and 1980 pounds of those not marketable. These results also show that the purple skin one made 9,420 pounds of marketable potatoes and 3,338 pounds of culls. Professor Beattie supplied us with approximately 30 draws (plants) of 5 seedlings which have been developed by his department in recent years and which have promising possibilities. These are unnamed and are classified by the following numbers: 224, 220, 305, 1-32 and 194. All of these were set on June 6 in a very rich spot of land near a barnyard. When harvested the first week in November, all of these varieties appeared to have gone largely to vine and we experienced quite a lot of difficulty in removing the vines enough to be able to plow up the rows. No records were kept of the relative production of the various kinds, but all of the roots produced by each kind have been saved in storage for bedding in 1929 when it is expected we will include each of these in a check list of varieties.

With the information we now have, we recommend that the Porto Rico variety be used exclusively by commercial planters of sweet potatoes.

The work started here two years ago with several varieties of watermelons was planned for continuation in 1928 when 8 varieties were planted on March 24. Just as these varieties were germinating a heavy rain followed immediately by a freeze caused a total loss of stand. On April 16 the entire test was

planted over and we regret to report that other heavy rains destroyed the stand to such an extent that the experiment was considered a failure and no records were kept.

Continued observations are made every year, of the behavior of various garden vegetables planted here in a small plat of land set apart for such work. In 1928 we grew on this block in the spring, three varieties of spinach, 2 of cabbage, 2 of carrots, 2 of beets, 2 of onions and 3 of bush beans. Observations of these crops compared with those of previous years tend to indicate that King of Denmark spinach is by far better adapted than Virginia Blight-resistant or Bloomsdale. It seems that red Bermuda onions are much more likely to produce large roots than is Prize-taker. Good results have been obtained from plants and sets of the Bermuda. With beans, we have been testing Reuter's Full Measure, Burpee's Stringless, and the Giant Stringless Green Pod. As a spring crop we would choose between Full Measure and Burpee's Stringless, the former possibly having some advantages. As a fall crop, Full Measure is certainly the best of the three, as it seems to withstand our fall droughts better. In comparing Charleston Wakefield and Flat Dutch varieties of cabbage, it seems that both should be included in the home garden since the Flat Dutch stands more cold while the other heads much earlier. Crosby Egyptian beet seems much earlier than Blood Turnip, and we would plant it in the home garden. Comparing Danvers Half Long with Early Chantenay carrots it seems that the latter is decidedly the better for our use in home gardens.

## NEMATODE CONTROL TESTS

Observations are being continued of the behavior of peach trees in the block set aside for studies of the effects of cultivation on nematode control. No results are ready to be published yet indicating the effects of sod, clean culture, or alternating culture on the control of this pest. The experiments with sod culture as a nematode control on figs was discontinued two years ago as no growth could be obtained where sod was allowed to grow around trees of this fruit. It will be remembered from our last year's report that work was started in the variety block of figs to determine what effect mulch culture would have upon this pest and part of this block is being kept heavily mulched. We are able to say little at this time in favor of mulching as a nematode control measure.