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Report, Raymond Branch Experiment Station, 1927

H. F. Wallace

REPORT
RAYMOND BRANCH EXPERIMENT STATION, 1927

By

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A. & M. College, Mississippi.
J. R. Ricks, Director

Report of Work at The Raymond Branch Experiment Station, 1927

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Introduction

This report contains a summary of the work conducted on the Raymond Branch Experiment Station for the year of 1927. Many tables included herein will give averages for a period of years, whereby results with various fertilizers and varieties will be more accurate. Other publications from this station may be secured upon request from the Mississippi Experiment Station, A. and M. College, Mississippi.

Experiments were expressly conducted to determine the kinds and quantities of fertilizers, varieties and cultural methods of cotton, corn, legumes and truck crops best suited for the southern section of the Brown Loam soil area of Mississippi. Various inoculating materials for legumes have been tested and found to give about equal results. Lime has been applied to non-lime soils and good cuttings of alfalfa have resulted when planted to this crop.

As a crop year, 1927 was good and good yields resulted from early and late crops. The growing period was long and fertilizers composed of slow acting materials gave excellent results as compared with some past years. Late maturing varieties gave good yields and ninteen varieties of corn planted July 8 all matured hard corn for the crib.

The planting season was ushered in by quite a bit of rain and temperatures were a little lower than usual, very probably due to such a vast area of the nearby delta section being under water. On April 23 a heavy frost materially injured cotton and corn that had been chopped. These crops thus affected were held at a standstill for at least two weeks or more. Serious damage resulted to corn by the appearance of the commonly called sugar cane beetle. One field of five acres on the station was damaged eighty per cent. A later planting resulted in a good stand and due to a late dry fall produced good yields. The boll weevil caused quite a bit of damage in early August, as daily showers for a period of three weeks would wash the poison off before it became effective. There is no doubt but that the 1927 yield of 192 pounds of lint cotton per acre on the average for Mississippi was caused to some extent by the boll weevil. Although 275 pounds of lint per acre was produced in 1925, the best cotton year we have experienced, the farm value of the 1927 crop was only twenty-five per cent less.

For this station, the year of 1927 was a very satisfactory crop season. Truck crops gave excellent yields, hay crops were all good, corn and soybeans were harvested in fine shape and cotton produced more than a bale per acre on the average. Many visitors came to the station and were impressed with the work being done . Much credit is due our capable farm manager, Mr. J. C. Peyton, and also to Mr. J. L. Cooley, Jr., graduate student employed by the Educational Bureau of

the Chilean Nitrate Company, who rendered material assistance with the horticultural experiments.

Cotton

The average yield of cotton per acre in Mississippi during 1927 was four pounds higher than the five year average which included the bumper crop of 1925. There seems no doubt but that Mississippi farmers are using more intelligent farming methods than in the past and this increase in yield is very probably due to soil improvement, judicious use of fertilizer, improved varieties and close spacing. Many are building up their soil by using legumes in rotations. A wise policy is to make more cotton on fewer acres and raise enough food for the home and feed for the stock. To aid increased production of cotton per acre, the following tables will reveal actual yields produced on our fields this past year.

Below may be seen the results with twenty-four leading varieties of cotton which were planted on both valley and hill land, as shown in Table 1 for the valley and Table 2 for the hill test.

TABLE 1—COTTON VARIETY TEST—VALLEY LAND—1927

Variety	Pounds per acre		Lint data				Rank in value	
	Seed cotton	Lint	Percentage	Length	Cents per lb.	Total value per acre	1927	Seven years average 1921-1927
Trice, Miss. Sta.	1608	532.2	33.1	1 1/16	21.71	137.06	8	5
Cleve., Wann.	1270	480.1	37.8	7/8 f	19.59	109.85	20	10
Cleve. 5	1277	440.6	34.5	1 1/16 f	22.03	113.79	18	
Cleve. 54	1492	541.6	36.3	1 1/16 f	20.31	129.01	14	4
Cleve., Wilson	1310	459.8	35.1	1 1/16	20.09	109.38	21	
Cleve., Pied.	1196	397.1	33.2	1 1/16	20.09	95.76	24	9
Half & Half	1247	515.0	41.3	1 1/16 f	18.75	111.20	19	8
Cook 1010	1075	442.9	41.2	7/8	19.25	97.90	23	11
Willis	1372	448.6	32.7	1 1/16	20.09	108.59	22	
Acala	1642	601.0	36.6	1	20.71	145.29	4	7
Miller	1454	498.7	34.3	1f	21.09	124.28	15	6
D. &. P. L. No. 4	1463	532.5	36.4	1f	21.09	130.91	13	
D. & P. L. No. 8	1436	555.7	38.7	1	20.71	132.69	12	
Deltatype Webber	1424	448.6	31.5	1 1/4	27.25	141.75	6	3
Delfos 910	1596	510.7	32.0	1 3/16 f	25.81	153.52	1	
Delfos 1374	1554	486.4	31.3	1 3/16 f	25.81	146.89	3	
Delfos 911	1529	510.7	33.4	1 1/8 f	23.81	141.96	5	
Delfos 1341	1460	503.7	34.5	1 1/8 f	23.81	139.06	7	
Delfos 6102	1507	480.7	31.9	1 1/8 f	23.81	134.98	11	1
D. & P. L. No. 6	1519	536.2	35.3	1 3/16	24.81	152.69	2	
Express Lightning	1454	466.7	32.1	1 3/16	24.81	135.53	10	
Lone Star 168	1522	525.1	34.5	1 1/16 f	22.03	135.62	9	
Lone Star 65, Col.	1332	467.5	35.1	1 1/16	21.71	118.78	17	2
Lone Star 65, Ray.	1371	474.4	34.6	1 1/16	21.71	120.92	16	

TABLE 2—COTTON VARIETY TEST—HILL LAND—1927

Variety	Pounds per acre		Lint data			Total Value per acre	Rank in value
	Seed cotton	Lint	Percentage	Length	Cents per lb.		
Trice, Miss. Sta.	1506	518.1	34.4	1	20.71	127.06	8
Cleve. Wann.	1392	526.2	37.8	7/8	19.25	118.61	15
Cleve. 5	1330	468.2	35.2	1	20.71	114.20	19
Cleve., 54	1396	501.2	35.9	7/8 f	19.59	116.08	16
Cleve., Wilson	1231	437.0	35.5	7/8 f	19.59	101.47	24
Cleve., Pied.	1475	528.5	35.9	7/8	19.25	120.67	13
Half and Half	1251	532.9	42.6	13/16	18.38	112.31	21
Cook 1010	1271	523.7	41.2	13/16	18.38	111.20	22
Willis	1360	471.9	34.7	7/8 f	19.59	110.21	23
Acala	1378	511.2	37.1	15/16 f	20.31	121.16	12
Miller	1319	476.2	36.1	1	20.71	115.48	17
D. & P. L. No. 4	1344	506.7	37.7	1	20.71	121.69	11
D. & P. L. No. 8	1469	574.4	39.1	15/16 f	20.31	134.55	4
Deltatype Webber	1260	407.0	32.3	1 3/16	24.81	115.09	18
Delfos 910	1349	457.3	33.9	1 1/8 f	23.81	126.72	9
Delfos 1374	1297	430.6	33.2	1 1/8 f	23.81	119.85	14
Delfos 911	1398	480.9	34.4	1 1/16 f	22.03	124.28	10
Delfos 1341	1419	516.5	36.4	1 1/16 f	22.03	131.83	6
Delfos 6102	1546	533.4	34.5	1 1/16 f	22.03	137.76	2
D. & P. L. No. 6	1509	550.8	36.5	1 1/8	23.31	147.56	1
Express, Lightning	1261	414.9	32.9	1 1/8	23.31	113.64	20
Lone Star 168	1473	531.8	36.1	1 1/16	21.71	134.28	5
Lone Star 65, Col.	1506	533.1	35.4	1 1/16	21.71	135.19	3
Lone Star 65, Ray	1423	503.7	35.4	1 1/16	21.71	127.74	7

Recommendations—For hill land, it has been found that D. & P. L. No. 4, Lone Star 65, Miss. Sta. Trice, Acala, Willis, Cleveland 54, D. & P. L. No. 8 and Miller are all good.

For valley land Delfos 6102 and any of its progenies, D. & P. L. No. 6, Lone Star 65 and Miss. Sta. Trice. If a good premium is being paid for an extra long staple, it would probably be wise to grow Deltatype Webber on the very best bottom lands. It should be borne in mind that very fertile soil maintains length guaranteed for long varieties. Many farmers plant long staple varieties on hill land of low fertility and when selling think the cotton buyer is beating them out of an eighth of an inch or so in stapling when it is really due to growing staple cotton on poor hill land.

The valley land variety test has been conducted for seven years, while the hill land test was started this year. Six hundred pounds of an 8-6-4 fertilizer was used in each case and the cotton was poisoned once. Each test was conducted in four series.

Fertilizers—Practically ninety per cent of our visitors are interested in fertilizers for cotton and appear very much surpirsed to find around ten dollars worth of a complete fertilizer almost doubling the yield of unfertilized cotton on good valley land that normally produced a thousand pounds of seed cotton per acre. One visitor remarked this past season that he used fertilizer on the poorest soils only, thinking that good land did not need it, but he realized now that it had cost him quite a bit by not using fertilizer on the good land too. Judicious use

of fertilizer will increase the yield on any land suitable for the growth of cotton.

In testing kinds of fertilizer, it is a good idea to test quantity also, so as high as 2,400 pounds of a mixed fertilizer per acre has been used on the station with a three year average net gain after paying for the fertilizer of $31.25. All fertilized plots have produced nice profits for the past three years.

According to custom, cooperative fertilizer tests were conducted in 1927. This work was confined to Madison County and was located on the farm of Dr. Boles Smith, near Canton. As will be observed, the results from this test are compiled from the first picking only, due to the fact that stock broke into this field and destroyed the plots to the extent that a second picking would give worthless results. However, it is interesting to note that the first picking increased the yield enough to pay for the fertilizer and then show a net gain, except in the case of where the potash was left out entirely. It is estimated that the figures in the table represent about half the cotton produced.

Below is to be found the general fertilizer test conducted on the Station, also the cooperative fertilizer tests conducted near Canton, Mississippi.

TABLE 3—ANALYSIS TEST—1927

Pounds of material applied per acre				Pounds of seed cotton per acre			Dollars per acre		
Acid phos.	Nitrate of soda	Mur. of potash	Analysis	Plot yield	Check yield	Increase	Increase at 7c.	Cost of fert.	Net gain
No fertilizer				934					
300	160	100	8-4-8	1683	924.50	758.50	53.09	9.33	43.76
300	160	75	8-4-6	1572	915.00	657.00	45.99	8.73	37.26
300	160	50	8-4-4	1404	905.50	498.50	34.89	8.13	26.76
No fertilizer				896					
300	160	25	8-4-2	1402	882.75	519.25	36.35	7.53	28.82
300	160	——	8-4-0	1156	869.50	286.50	20.05	6.93	13.12
300	320	50	8-8-4	1544	856.25	687.75	48.14	12.81	35.33
No fertilizer				843					
300	240	50	8-6-4	1469	864.50	604.50	42.31	10.47	31.84
225	160	50	6-4-4	1429	886.00	543.00	38.01	7.57	30.44
150	160	50	4-4-4	1435	907.50	527.50	36.92	7.00	29.92
No fertilizer				929					
600	320	100	8-4-4	1861	922.75	938.25	65.68	16.26	49.42
900	400	150	8-4-4	2017	916.50	1100.50	70.03	24.39	42.64
1200	640	200	8-4-4	1966	910.25	1055.75	73.90	32.52	41.38
No fertilizer				904					

TABLE 4—COOPERATIVE ANALYSIS TEST, MADISON COUNTY, DR. BOLES SMITH—1927

Pounds of material applied per acre				Pounds of seed cotton per acre			Dollars per acre		
Acid phos.	Nitrate of soda	Mur. of potash	Analysis	Plot yield	Check yield	Increase	Increase at 7c.	Cost of fert.	Net gain
No fertilizer				633.0					
300	160	100	8-4-8	933.0	638.6	294.7	20.63	9.33	11.30
300	160	75	8-4-6	887.1	644.1	243.0	17.01	8.73	8.28
300	160	50	8-4-4	843.5	649.7	193.8	13.57	8.13	5.44
No fertilizer				655.2					
300	160	25	8-4-2	808.0	646.2	161.8	11.33	7.53	3.80
300	160	—	8-4-0	690.0	637.0	53.0	3.71	6.93	-3.22
300	320	50	8-8-4	878.7	627.9	250.8	17.56	12.81	4.75
No fertilizer				618.5					
300	240	50	8-6-4	854.5	615.2	239.2	16.74	10.47	6.27
225	160	50	6-4-4	779.6	611.8	167.8	11.75	7.57	4.18
150	160	50	4-4-4	792.7	608.5	184.2	12.89	7.00	5.89
No fertilizer				605.1					

Note—The above represents the first picking only. Stock destroyed the field before the second picking.

Remarks—The test on the Station was conducted in three series on good valley soil and planted to Lone Star 65 cotton on April 20, 1927. A good stand was secured, which would average around two to three stalks per foot on three and one-half foot rows. The season was fairly favorable except in August when poisoning became necessary to kill the weevil and after one application of calcium arsenate rain fell every day to some extent for three weeks. It is estimated that fifteen per cent damage was done due to the weevil. The Madison County test was also conducted in three series and planted to Lone Star 65 cotton on April 25. A good stand was secured.

It is evident in these tests that each application of complete fertilizer netted cash returns after paying for the fertilizer used. Average results for the past three years indicate that where nitrogen has been increased to six per cent in a fertilizer analysis, the profits increase accordingly. Results point toward the use of eight per cent phosphorus in a fertilizer analysis and it is very evident that some form of potash is needed and at least four per cent is suggested. The formula without potash this past year produced a very small profit, as can be seen in the table.

Recommendations—Use five or six hundred pounds of a fertilizer carrying an 8-6-4 analysis. This may be made approximately by using 200 pounds of 16% acid phosphate, 160 pounds 15% nitrate of soda, and 100 pounds of 12% kainit. Any form of nitrogen or any form of potash may be substituted for the above work, provided the ratio is kept the same in terms of nitrogen and potash. Care must be taken with some forms of nitrogen in not mixing more than enough to put in one day as mechanical changes take place that make distributing difficult.

If the cotton crop follows a heavily fertilized truck crop of the preceding year, it may be safe to cut the phosphorus and potash to half and lower the nitrogen to four per cent. On lands infested with coco

or Johnson grass, apply only half the nitrogen and make side applications with the other half after the cotton has been chopped. Where heavy red clay hillsides are to be used, potash may not be necessary. Fertilizer pays on fertile soil as well as on poor soil and to make "more cotton on less acres," the judicious use of fertilizer will aid to a great extent.

TABLE 5—NITROGEN SOURCES TEST WITH COTTON—1927

Pounds of material applied per acre	Yield on 1-14.063 acre	Pounds of seed cotton per acre			Percent increase	Three year average seed cotton increase pounds
		Plot yield	Check yield	Increase		
No fertilizer	114.78	1614.15				
150 Nit. soda	123.93	1742.83	1599.38	143.45	8.97	282.2
112.5 Sul. ammonia	124.60	1752.25	1584.62	167.63	10.58	235.6
86.5 Leunasalpeter	123.60	1738.19	1569.85	168.34	10.72	279.3*
No fertilizer	110.58	1555.09				
105 Cal. cyanamid	122.40	1721.31	1535.75	185.56	12.08	190.8
150 Cal. nitrate	120.29	1691.64	1516.41	175.23	11.56	248.6
48.9 Urea	118.31	1663.79	1497.08	166.71	11.14	254.3
No fertilizer	105.08	1477.74				

*Leunasalpeter carries two years averages only.

Note—Each carrier equivalent to 150 pounds nitrate of soda.

Remarks—Quite a bit of attention has been given to finding the best nitrogen fertilizer to use in mixing fertilizers. This is the third year that this test has been conducted and as will be seen in the above table, results are tabulated for 1927 and the last column gives the three year average of all sources except leunasalpeter, which is listed as the average for only two years.

This work was conducted in three series and planted to Lone Star 65 cotton on April 20, 1927. All applications were based on twenty-two and one-half pounds of actual nitrogen per acre and the entire test, including checks, received 300 pounds of 16% acid phosphate and 40 pounds of 48% muriate of potash per acre.

The long growing season of the past year was no doubt favorable to the slowly acting nitrogens. Several new sources are certainly promising, however.

Potash Sources—For the past two years tests have been conducted with three forms of potash, namely, kainit containing 12% actual potash, sulphate of potash with 50% and muriate of potash containing 48% actual potash. These tests were conducted in three series and the phosphorus and nitrogen supplied in equal quantities to all plots. The test for 1927 was planted to Lone Star 168 cotton April 28 and an excellent stand was secured, giving the following results in pounds of seed cotton per acre only:-

300 pounds of kainit produced 1,388 pounds

75 pounds of sulphate of potash produced 1,390 pounds, and

78 pounds of muriate of potash produced 1,799 pounds of seed

cotton per acre.

No conclusions should be drawn from the one year's results, however.

In all tests where potash was left out of a formula, it was very noticeable that cotton rusted much earlier in the season and shed all leaves while other plots were still in heavy foliage. At least four per cent of potash should be used in a fertilizer analysis, and if land is used where cotton rusts badly, eight per cent will, in all probability, be beneficial. It is our opinion, after eight years observation, that the healthiest plants are usually found on the plots where nitrogen, phosphorus and potash are used in combination. In other words, a well fed plant is more able to resist disease than the partly or underfed plant.

TABLLE 6—COTTON SPACING TEST—1927

Number of stalks		Yield in seed cotton per acre	Three year average 1925-1927		
Plot	Foot		Stalks per foot	Yield per acre	Rank in yield
164	.88	1622.9	.88	1723.2	5
319	1.72	1707.9	1.59	1807.8	4
420	2.26	1657.4	2.06	1846.5	2
530	2.85	1459.0	2.64	1820.2	3
553	2.97	1678.0	2.74	1894.1	1

Remarks—Close spacing, along with good cotton years and judicious use of fertilizers and varieties, has been responsible for the over production of cotton in the last three years. A three year average indicates that where the number of stalks per foot is increased, the yield of seed cotton is also increased. Of course there is a limit and it must be borne in mind that the poorer classes of soil will stand closer spacing than the fertile valley soils. Quick maturing, medium sized, small leaf varieties will also stand closer spacing in the drill than the slow growing, large leaf varieties.

The above test was conducted in three series with Lone Star 168 cotton planted April 28 on fertile valley soil that had grown two crops of soybeans planted in corn for two years prior. The test was fertilized with 500 pounds of an 8-6-4 fertilizer and one application of calcium arsenate was made for the boll weevil. Rain at this time prevented further poisoning and weevil damage was estimated at about 25%.

Conclusions—A three year average in spacing work indicates leaving two to three stalks per foot in bunches, using three and one-half foot rows on valley land. On hill land, use three foot rows and leave three to five stalks per foot in bunches. More cotton can be made on fewer acres by the proper use of fertilizer, good varieties, practical cultural methods and close spacing as recommended above. Ordinarily, to insure good stands, do not be too hasty in chopping cotton for it is a hard proposition for any hoe hand to cut out a pretty stalk with four to six leaves. Therefore, in leaving these pretty plants, the stand is saved. If grass gets bad, run around every five or six days with a shallow cultivating side harrow and give the strong plants a chance to establish themselves before chopping.

Corn

Mississippi farmers should raise enough food for the home and feed for the livestock and then devote the balance of the time to growing cotton. Cotton made on home raised feed will show greater returns as it furnishes a profitable market for home grown feed. Corn is easily grown and if given half a chance will produce good yields most years. Too many farmers expect corn to "grow wild" as it appears they often plant poor land to this crop. Corn should be planted on the best land on the farm and each row should be planted to soybeans when the corn is planted, or peas planted broadcast at the last cultivation just before tasseling. This past year the state champion corn grower, who lives near Union, Mississippi, produced 178 bushels per acre as an average on three acres. This yield is unusual but most any of us can produce around forty of fifty bushels per acre if we give the corn crop a little attention.

The work here includes variety tests, fertilizer tests and nitrogen sources tests with corn. The variety test consisted of six series and the fertilizer and nitrogen work was in four series each, planted to Cocke's Prolific corn. Due to inroads of the sugar cane beetle, the results of the fertilizer test are being withheld as it is not believed accurate enough to publish. The variety test was planted May 18 and all fertilizer work around May 25.

TABLE 7—CORN VARIETY TEST—1927

Variety	Yield in bushels shelled corn per acre	Percentage of grain	Rank 1927	Average bushels 1922-27	Average rank 1922-27
Mosby, Station	31.7	79.36	12	30.3	8
Mosby, Delta	33.8	81.58	9	30.9	6
Mosby, D. & P. L.	32.6	82.58	11		
Mosby, Lee	27.8	85.89	19		
Mosby, Suttle	33.6	84.25	10		
Cocke's Prolific, Sta.	41.0	82.67	1	33.2	2
Cocke's Prolific, Delta	34.4	79.36	8	30.5	7
Anderson's Choice	31.3	86.11	13		
Hastings	30.7	70.69	15	29.3	9
Johnson's Prolific	31.1	82.08	14		
Delta Prolific	36.0	79.58	5		
Mexican June	35.7	77.58	7	31.5	4
Laguna	37.3	78.19	4	34.5	1
Paymaster, Neal	38.7	80.36	3	31.3	5
Paymaster, Fisher	40.0	81.89	2		
Yellow Dent, Ferguson	29.4	78.92	17		
Yellow Dent, Station	30.1	81.36	16		
Large Golden Dent	28.5	75.00	18		
Whatley Prolific, Raymond	36.0	80.89	5	32.3	3

Remarks—In the above table, the 1827 results will be found in the first three columns of figures. It will be observed that of the nineteen varieties tested there was a difference of 13.2 bushels of shelled corn per acre between the leading variety and the lowest yielding variety. This difference would make a good average acre yield for

the state as a whole, the way most corn is worked or rather—not worked.

The last two columns in the table show a six year average of nine leading varieties and there is a difference in this case between the leader and the trailer of 5.2 bushels shelled corn per acre.

The table speaks for itself as to the best varieties to use. One objection to the Mosbys is that weevils attack them badly in this section, especially if planted early. Cocke's Prolific, Whatley, Laguna, Hastings and Paymaster are good yielders, but Whatley has a very small ear, Paymaster is subject to weevil attack on account of short shucks and Hastings makes too many "nubbings" a dry year. For extra late planting use Mexican June or Laguna.

TABLE 8—NITROGEN SOURCES TEST WITH CORN—1927

Pounds material applied per acre	Bushels ear corn per acre			Per cent increase	
	Plot yield	Check yield	Increase	1927	Two year average
Check	21.4	21.4			
200 Nitrate of soda	37.4	22.8	14.6	64.0	55.1
146.3 Sul. ammonia	30.8	24.3	6.5	26.8	23.9
115.4 Leunasalpeter	35.2	25.7	9.5	37.0	30.5
Check	27.1	27.1			
138.0 Cal. cyanamid	40.8	25.8	15.0	58.1	39.2
200.0 Cal. nitrate	41.4	24.5	16.9	69.0	58.9
65.2 Urea	41.4	23.1	18.3	79.2	60.4
Check	21.8	21.8			

Note—All plots including checks received 300 pounds acid phosphate and 200 pounds of kainit per acre.

Remarks—The last column of figures in the above table represents a two year average of a nitrogen sources test with corn showing the percentage of increase over the check or plot fertilized at the rate of 300 pounds acid phosphate and 200 pounds kainit per acre. All these percentages indicate that nitrogen is very necessary in growing corn. One must be more careful in fertilizing corn than in fertilizing cotton because corn does not require the quantity demanded by cotton and, too, it is hard to show a profit on corn if large quantities are used. Urea, calcium nitrate, and nitrate of soda appear to be leaders in the nitrogen sources test work for corn.

Recommendations—General fertilizer work with corn at this station has given fair results. For general use, a mixture of 100 pounds of acid phosphate, 150 pounds of nitrate of soda, or its equivalent in pounds of nitrogen, and 50 pounds of kainit per acre will probably cover our requirements on corn land. Where good farming and frequent cultivation is to be done, from 50 to 100 pounds of nitrate of soda or sulphate of ammonia, or the equivalent in equal pounds of nitrogen from some other quick acting source, might be profitably used as a side dressing. This side dressing should be applied when the corn is about knee high, just after a good rain, if possible. Any equivalent form of potash may also be used in the place of kainit, provided the price justifies.

Soybeans

More attention should be given soybeans by our farmers. This crop not only produces hay with a high grain content but it also improves the soil. Stock can be carried over the winter on good quality soybean hay and it has come to our attention that some farmers are using this hay alone while making a crop. To get a hay of high feeding value, cut soybeans when in the dough stage. This stage is determined by detecting the first beans which have become colored for maturity. In the case of the Laredo, some of the seed begin to darken at this stage. Every corn field and every field that begins to fall off in production should be planted to soybeans or peas and given a chance to come back.

Six acres planted to Mosby corn and Otootan soybeans on the station attracted quite a bit of attention from visitors during the early fall. This field was planted the latter prat of March, the beans in the row with the corn planted with a duplex hopper, and on September 1 the corn was ready for the crib and the beans had just begun to bloom. The corn could have been harvested and fed and the beans could have been grazed or saved for hay or seed. Dairymen, especially, were impressed while any farmer easily saw where early feed might be had for an emergency.

A variety test planted June 6, 1927, turned out the highest yields of hay in order named in tons per acre: Delta 487, 3.33 tons; Laredo, 3.09; Delta 483 Black, 3.02; Goshen, 3.01; Otootan, 2.66; Delta 483 Olive, 2.48; Wilson 5, 2.01; Delta 488, 1.93; Perking, 1.91; Ebony, 1.89; Biloxi, 1.87; Lexington, 1.79; Virginia, 1.59; Mammoth Yellow, 1.43; Tar Heel Black, 1.26; and George Washington, 1.01. In justice to the Biloxi, we might add that its best and largest plot had to be cut prematurely to secure a site for a new building. The Otootan and Delta 483 Olive suffered the same fate, but were not as badly damaged by a rain that followed before weighings were made.

In a test of row against broadcast planting this past season in which Biloxi beans were used, the yield was 50% higher for broadcasting on good land. This increase may have been due to the growth of weeds, as the row beans had two cultivations. It was noticeable, however, that the size of the main stem was reduced in the broadcast planting.

For general plantings, the following varieties are recommended: Otootan, Goshen, Laredo, Biloxi and the Delta strains. If an extra early bean is desired, the Wilson, Virginia, Peking, Ebony or Lexington might be used. Where hogs gather the crop many farmers prefer the Mammoth Yellow. It shatters badly and this trouble might be expected when the extra early varieties are used unless very close attention is given as to stage of cutting.

Alfalfa

Two fields of Alfalfa were planted in the form of a fertilizer test to determine whether alfalfa could be grown in this section after applying lime. One set of plots was located on the station while the other

was north of Bolton, Mississippi, on the property of Mr. J. L. Gaddis, Jr. Three tons of limestone per acre were applied and the alfalfa was planted the latter part of March.

Crab grass ruined the Bolton plots, but the plots on the station produced a splendid first cutting, but eventually crab grass and dry weather got the advantage and at present very little alfalfa remains. It is our opinion that the late planting kept the root system from getting established before dry weather started and the plants could not combat the inroads of the crab grass. Very probably a fall planting would have given much better results. As a commercial crop, alfalfa will never be grown on the non-lime lands.

Sorghum

A variety test with surghum and other grains of this type was conducted. The tonnage of Gooseneck sorghum appeared to be the greater, while Sagrain led in the production of grain. Highly bred Dorso and Shrock Kaffir were planted on either side of Sagrain and produced excellen yields of grain. There seems to be a very slight difference in these last mentioned varieties, detectible only to the well trained eye, as was evidenced by the remarks of many visitors to the plots this past sason. In another field of low fertility, that normally produces around 20 bushels of corn per acre, a yield of close to 40 bushels of Sagrain heads was secured. Although this crop is hard on soil, it has the good feature of enduring dry weather. Two varieties of millet planted in this test matured earlier than any of the Kaffirs, Feteritas, Shrocks, Dorsos or sorghums.

Tomatoes

This station is located on the northern edge of the trucking section of Mississippi and for that reason we carry on trucking experiments on an extensive scale, in addition to our regular work. Farmers in this section derive quite a revenue from truck.

Due to the importance of the tomato, it has received more attention than the rest or the truck crops. Various tests have been conducted as to varieties, sources of nitrogen, amounts of potash and in determining the best fertilizer analysis to use in producing tomatoes. Some disease work has been done in cooperation with Mr. H. H. Wedgeworth of the State Plant Board. Cooperative nitrogen source work was capably conducted on the station farm by Mr. J. L. Cooley, Jr., a graduate student employed by the Educational Bureau of the Chilean Nitrate Company. These tests follow in tabular form.

TABLE 9—TOMATO VARIETY TEST—1927

Variety	Yields in pounds per acre		Percentage picked early		Percent of shippers	Average size of shippers, pounds
	Total	Shipping tomatoes	Total	Shipping Tomatoes		
Globe	16393	11108	59.7	70.1	67.78	.276
Gulf States	19305	13274	59.0	68.1	68.75	.317
Detroit	16058	10533	58.5	68.8	65.59	.223
Marglobe	16034	11370	57.9	62.3	70.91	.250
Marvel	17686	12801	51.3	60.5	72.37	.248
Norton, Pink	17897	11689	56.1	63.1	65.31	.253
Richards	17380	10838	60.7	71.6	62.35	.262
Crystal Springs Market	16873	10056	62.2	73.5	59.65	.345
Marvelosa	13782	8159	63.9	77.0	59.20	.182
Marvana	18143	12494	60.1	65.2	68.86	.232
Louisiana, Red	15425	10450	56.0	63.0	67.74	.207
Louisiana, Pink	13959	9006	71.3	69.9	64.58	.253

TABLE 10—TOMATO WILT TEST—1927

Variety	Yield in pounds per acre		Percentage picked early		Percentage of shippers	Average size of shippers, pounds
	Total	Shipping tomatoes	Total	Shipping tomatoes		
Globe	14341	10004	30.6	29.4	69.75	.249
Gulf States	17516	11960	33.0	38.1	68.28	.245
Detroit	19068	14099	32.9	35.4	73.97	.277
Marglobe	19584	14990	36.3	38.2	76.54	.256
Marvel	15275	10656	25.9	28.9	69.76	.223
Norton, Pink	17615	11877	44.4	52.2	66.85	.287
Richards	32259	19855	33.9	43.7	61.54	.291
Crystal Springs Market	24608	17660	42.9	50.1	71.76	.284
Marvelosa	21932	14062	29.6	35.3	64.11	.269
Marvana	19342	15132	36.5	38.1	78.23	.235
Louisiana, Red	22168	15456	25.9	26.7	69.72	.224
Louisiana Pink	15886	11440	49.5	52.9	72.01	.233

Remarks—Seed of twelve varieties of tomatoes were planted in the hotbed January 21. On February 15, 16, and 17, the plants were transferred to the cold frames. Leaf spot attacked all five frames and two applications of Fungi-Bordeaux spray four days apart controlled this disease one hundred per cent. The weather, due to rainfall and cold, made extra trouble in handling these frames, as times were very short for exposing the plants for air. The January rainfall on the station was 7.90 inches, February was 1.06 inches and March gave a total of 9.58 inches. The plants were set in the field April 5, 6, and 7, which is indeed late, but rainy weather and wet lands prevented this on an earlier date. The above test was in three series.

The wilt test was put out on April 7 on wilt infested soil. On April 17 a handful of wilt infested soil was put around each plant in the

wilt test to insure infection by this disease.

Conclusions—The Gulf States led in shipping tomateos with a total of 13,274 pounds. The Marvel and Marvana closely followed. In size the Crystal Springs Market came first with an average weight of .345 of a pound, while the Gulf States was second with an average of .317 of a pound. Many truckers mix Globe and Gulf States seed and claim to get a better pack with most of the "shake" eliminated when shipping.

In the wilt test, or the second table listed above, the Richards produced 19,855 pounds shipping tomatoes with the Crystal Springs Market second with a total of 17,660 pounds. The Richard also produced the largest tomatoes with an average of .291 of a pound. The last named variety also produced the highest percentage of early shipping tomatoes in the wilt test, with the Crystal Springs Market a close second. A careful study of the tables will bring out many points that might be of benefit in selecting varieties to use. There was a difference of around two and one-half tons of shipping tomatoes between the leader and the trailer in the main variety test.

TABLE 11—ANALYSIS TEST WITH TOMATOES 1926 AND 1927 (AVERAGE)

Analysis	Yield in pounds per acre		Percent shippers	Percent picked early		Dollars per acre		Net gain
	Total	Shippers		Total	Shippers	Value at 6c	Cost of fert.	
				(1500 pounds per acre)				
10-3-3	14312	7415	57.4	36.8	34.2	534.89	19.74	515.15
8-3-3	14481	9348	61.8	40.3	36.4	560.84	18.05	542.79
8-4-3	15354	9581	60.1	38.5	31.1	574.83	21.01	553.82
8-5-3	15533	10830	67.4	33.1	29.7	649.79	23.96	625.83
				(2000 pounds per acre)				
10-3-3	14901	9860	64.5	42.1	30.9	591.57	26.32	565.25
8-3-3	14945	9601	63.4	39.4	37.7	576.05	24.07	551.98
8-4-3	11979	7527	61.4	36.8	30.9	443.98	28.01	415.97
8-5-3	15599	10946	67.1	34.4	34.9	656.72	31.95	624.77

Remarks—The analysis test was conducted to determine the fertilizer formula best suited to producing tomatoes economically. The test was conducted in three series and the above table represents a two year average. All nitrogen was derived from equal pounds of nitrogen from nitrate of soda, sulphate of ammonia and cottonseed meal. Potash was derived from sulphate of potash. This test has not been conducted long enough to reach any final conclusions, but 1,500 pounds per acre of an 8-5-3 leads in money value with $625.83 per acre as an average for two years.

TABLE 12—AVERAGE RESULTS OF NITROGEN SOURCES TESTS WITH TOMATOES 1924-25-26 AND 27

Source of Nitrogen	Yield in pounds per acre		Percent shippers	Percent picked early		Total value, dollars
	Total	Shippers		Total	Shippers	
	(1500 pounds of an 8-4-3 per acre)					
Nitrate of soda	11329	6328	53.4	41.7	53.3	386.39
Ammonium sulphate	10110	5160	49.4	49.0	56.4	316.57
Combination	10952	6325	54.4	42.8	49.3	386.11
Urea	10500	5969	54.5	45.9	51.8	364.35
Cottonseed meal	11073	5968	51.7	43.9	50.1	365.39
	(2000 pounds of an 8-4-3 per acre)					
Nitrate of soda	11382	6216	52.5	45.5	52.8	381.01
Ammonium sulphate	11645	6207	51.3	47.9	55.3	379.65
Combination	12476	6355	50.5	47.0	54.6	390.44
Urea	12374	6876	54.1	47.4	54.0	419.64
Cottonseed meal	11985	6620	53.8	43.6	50.6	405.35

Remarks—The above test was conducted to determine the best source of nitrogen to use in a fertilizer formula for producing tomatoes commercially. Where a combination is listed it means the nitrogen was derived from equal pounds of nitrogen from nitrate of soda, sulphate of ammonia and cottonseed meal. The other nitrogen used was derived from the sources indicated, phosphorus from acid prosphate and potash from sulphate of potash.

The above table represents a four year average and the past season's work was conducted in three series. Urea appears to be the leading source in this test and where 2,000 pounds per acre of an 8-4-3 using Urea as the source of nitrogen, was used, the average net gain for four years was $419.64. The cottonseed meal plot at the same rate gave $405.35. In the 1,500 pound application nitrate of soda gave $386.39 and the combination $386.11. More data must be secured before a definite recommendation can be made as several sources are close together and look promising.

TABLE 13—RESULTS OF NITROGEN SOURCES AND RATE TEST WITH TOMATOES—1927

Amt. per acre of an 8-4-3	Source of Nitrogen	Side application, lbs. per acre	Yield per acre pounds		Per-cent ship-pers	Percent picked early		Total value dollars
			Total	Ship-pers		Total	Ship-pers	
1000	Nitrate of soda	200 Ni. So.	17527	12404	70.7	43.0	43.8	744.24
1000	Cottonseed meal							
	Nitrate of soda	200 Ni So.	16073	11170	69.4	46.3	49.6	670.20
1000	Cottonseed meal	150 Am.						
	Ammonium sulphate	Sul.	16929	11150	65.8	47.1	50.3	669.00
1000	Cottonseed meal	200 Ni. So.	17486	12388	70.8	46.7	47.2	743.28
1000	Nitrate of soda		18301	12083	66.2	46.9	53.2	724.98
2500	Nitrate of soda		19441	13928	71.1	44.7	47.2	835.68
3000	Nitrate of soda		15161	10523	69.4	47.2	48.1	631.38
1500	Nitrate of soda							
	Cottonseed meal		20339	14522	71.4	52.1	53.3	871.32
1500	Ammonium sulphate							
	Cottonseed meal		16290	10473	64.2	48.2	52.8	628.38
2000	Nitrate of soda							
	Cottonseed meal		17982	11847	65.8	52.5	57.5	710.82
2000	Ammonium sulphate							
	Cottonseed meal		18304	11403	62.2	54.1	59.9	684.18

Remarks—This is the first year that this test has been conducted. Mr. J. L. Cooley, Jr., a graduate student employed by the Educational Bureau of the Chilean Nitrate Company, handled this project as part of the special work required toward his degree. Mr. Cooley's other capable assistant has previously been acknowledged.

The prime object of this thest was to determine whether large quantities of nitrate of soda used under the plant caused the tomatoes to crack, from "puffs," cause irregular fruit and also to determine keeping qualities after long express shipments. Side applications of nitrogen fertilizers were also used ten days before first picking to determine effect on early shippers.

Two shipments of four crates each from plots using an 8-4-3 formula, where nitrate of soda was the only source of nitrogen at the rates of 1,000, 2,000, 2,500 and 3,000 pounds per acre, were shipped by express to the Bureau of Agricultural Economics, U. S. Department of Agriculture, New York City, for a careful and rigid inspection. These reports were made at intervals and only six puffy tomatoes were reported out of eight crates. Ten growth cracks were found and only one wormy tomato. The two heavy applications were reported better than the two lighter in both shipments. On ripening, the tomatoes had a good deep red color and smooth texture and presented an attractive appearance. Very few shriveled tomatoes were reported. After such a long shipment by local express, the crates being handled many times, crate marks and box scars were expected. These were comparatively few however. There were thirty-seven bacterial rots out of 633 tomatoes shipped to New York City, which might be considered a good report.

The above test was planted in three series. One year's results should not be taken too seriously, but the results of this test are cer-

tainly encouraging. This work, in all probability, will be continued another year.

TABLE 14—AVERAGE RESULTS OF POTASH TESTS WITH TOMATOES
1924-25-26 AND 27

Analysis	Yield in pounds per acre		Percent shippers	Percent picked early		Dollars per acre		
	Total	Shippers		Total	Shippers	Value at 6c.	Cost of fert.	Net gain
				(1000 pounds per acre)				
8-4-0	14001	7290	52.2	42.1	50.2	447.79	10.44	437.33
8-4-3	14810	7633	50.7	52.6	45.9	468.98	12.00	456.98
8-4-6	15856	7062	44.7	48.0	51.1	435.25	13.56	421.69
				(1500 pounds per acre)				
8-4-0	15253	7724	50.2	44.2	50.0	474.60	15.66	459.19
8-4-3	13816	7093	50.9	49.4	44.5	435.80	18.00	417.80
8-4-6	13940	7821	55.3	43.4	44.9	477.20	20.34	456.86
				(2000 pounds per acre)				
8-4-0	14717	7448	50.6	42.0	47.8	457.55	20.88	436.92
8-4-3	15449	8166	50.4	48.0	48.9	485.01	24.00	461.01
8-4-6	13953	6919	49.3	43.2	43.9	425.49	27.12	398.37

Remarks—The above table represents a four year average. The motive in this test is to determine the most economical amount of potash to use in growing tomatoes. Muriate of potash was used in all formulae, nitrogen was derived from the above mentioned combination and phosphorus from acid phosphate. The test covered three series this past year.

We feel safe in recommending at least three per cent of potash in fertilizers for tomatoes. It is our opinion that with potash present in the analysis, the nitrogen and phosphorus are in position to be more available. From observations, a more stockily built plant and a better colored fruit results from the use of some potash.

English Peas

TABLE 15—AVERAGE RESULTS OF ENGLISH PEA FERITILZER WORK
1924-25-26 AND 27

Analysis	Yield per acre pounds	Dollars per acre		
		Value at 5c	Cost of fertilizer	Net gain
		(1000 pounds per acre)		
10-3-3	3716	182.05	11.59	170.46
8-3-3	3054	152.70	10.49	142.21
8-4-3	3026	151.29	12.00	139.29
		(1500 pounds per acre)		
10-3-3	3380	168.98	17.39	151.59
8-3-3	3565	173.23	15.74	162.49
8-4-3	3280	163.98	18.00	145.98

TABLE 16—AVERAGE RESULTS OF NITROGEN SOURCES TEST WITH ENGLISH PEAS 1924-25-26 AND 27

Rate per acre of an 8-4-3, lb.	Yield pounds per acre using		
	Nitrate of soda	Sulphate of ammonia	Combination
1000	4170	4035	2980
1500	3918	4176	3279

Remarks—Tables 15 and 16 represent a fertilizer test to determine the best analysis and the source of nitrogen to use in growing English or green peas for the market. These tests were conducted in two series and the Thomas Laxton pea was used. All nitrogen in the first table was derived from the above named combination, while the latter table designates the source of nitrogen used. Both tests were planted February 10, 1927.

The tables show a four year average and indications point toward 1,000 pounds per acre of a 10-3-3 fertilizer. The nitrogen test is slightly in favor of nitrate of soda. This, however, seems immaterial.

Variety Work with English Peas—This is the first year that a variety test with English peas has been conducted. Six varieties, the World's Record, Blue Bird, Thomas Laxton, Alaska, Hundredfold and Prince Edward, were planted February 10, in three series. The Alaska did not come true to name and was discarded from the test. The entire test was fertilized with 1,000 pounds of a 10-3-3 fertilizer per acre, using the combination for the source of nitrogen and sulphate of potash for the potash.

At the first picking, the Blue Bird variety gave in yield 5.5 (28 pounds) hampers more per acre than the World's Record, or next highest, and 31.5 hampers more per acre than the Thomas Laxton, or third highest. The World's Record is slightly larger than the Blue Bird and both are smaller than the Thomas Laxton, which is still smaller than the Hundredfold, a late, stunted, vigorous growing variety. At the first picking, April 15, the Prince Edward, a very tall, vigorous growing variety, was in full bloom with no young pods at all. It is evident that for the early market the Hundredfold and the Prince Edward will not be satisfactory. The Thomas Laxton is used extensively in this section by the truckers on account of the size of the pod and the flavor.

On April 19, the second picking was made. Pod rot was very prominent on the Blue Bird, some on the World's Record and to some extent on the Hundredfold. The Prince Edward was still in full bloom with no pods in sight at the second picking.

Four pickings were made with the following results in pounds per acre: World's Record, 4,349; Thomas Laxton, 4,194; Blue Bird, 3,865; Hundredfold, 3,336; and the Prince Edward only produced 250 pounds of peas per acre during this time. On account of the size of the pod and the resistancy to disease, we slightly favor the Thomas Laxton for the commercial crop. Further experiments along this line will be conducted in the future.

We wish to acknowledge the cooperation of Lotterhos & Huber,

Crystal Springs, Mississippi, in this variety work. This progressive firm furnished all the seed for the variety test except the Alaska.

Snap Beans

TABLE 17—AVERAGE RESULTS OF SNAP BEAN FERTILIZER TEST, 1924-25-26 AND 27

Analysis	Yield pounds per acre,	Dollars per acre: Value at 5c	Dollars per acre: Cost of fertilizer	Dollars per acre: Net gain
		(1000 pounds per acre)		
10-3-3	4371	218.53	11.59	206.94
8-3-3	3950	197.49	10.49	187.00
8-4-3	3893	201.40	12.00	182.65
		(1500 pounds per acre)		
10-3-3	4130	206.50	17.39	189.11
8-3-3	4056	202.79	15.74	187.05
8-4-3	4377	220.08	18.00	202.08

TABLE 18—AVERAGE RESULTS OF NITROGEN SOURCES TESTS WITH SNAP BEANS 1924-25-26 AND 27

Rate per acre of an 8-4-3, lbs.	Yield pounds per acre using: Nitrate of soda	Sul. of ammonia	Combination
1000	3844	4081	3837
1500	4298	4480	4210

Remarks—The above tables represent an average of the four years work with snap or green beans. The combination was used in securing the nitrogen in Table 17, while in Table 18 the nitrogen was derived as indicated. The Red Valentine bean was used. The test was conducted in two series and planted March 16, 1927.

Results appear to favor 1,000 pounds per acre of a 10-3-3 fertilizer, using sulphate of ammonia as the source of nitrogen. However, the 1,500 pound application of an 8-4-3 is a close second.

Sheep manure, analyzing 2-1¼-2 was used against an 8-4-3 under beans. Twenty-five cents worth of each fertilizer was used on each plot with the following results in pounds per acre: Commercial sheep manure, 1,775, and the 8-4-3 fertilizer 5,765. The Italian truckers near Vicksburg use sheep manure quite a bit, hence this little test.

Irish Potatos

More attention should be given to the source of seed when planting an Irish potato crop. To impress this feature, this station has cooperated with the State Plant Board, in which Mr. H. H. Wedgeworth has secured certified seed from northern growers to test against seed secured locally. Disease work with this crop was studied by the Plant Board and a report of this may be had in Circular No. 75, which may be obtained from the Experiment Station, A. and M. College, Mississippi. Below is a table giving the yield produced in this test.

TABLE 19—IRISH POTATO SEED SOURCE TEST—1927

Source of Seed	Variety used	Bushels per acre: Diameter in inches: 2 or more	Bushels per acre: Diameter in inches: 1½ to 2	Bushels per acre: Culls	Bushels per acre: Total
Jackson, Mississippi	Triumph	55.2	45.0	23.0	123.2
Montana Expt. Sta., Bozeman	Triumph	39.2	44.3	23.2	106.7
Alliance, Nebraska	Triumph	40.2	50.4	22.0	112.6
Williamstown, Vermont	Cobbler	55.2	35.3	15.9	106.4
Kirksville, New York	Cobbler	60.5	45.1	17.4	123.0
Alliance, Nebraska	Cobbler	54.4	28.5	32.9	115.8
Montana Expt. Sta., Bozeman	Triumph No. 1	43.9	53.9	25.3	123.1
Charlevoix, Michigan	Cobbler	61.1	39.5	15.1	115.7
Red Stone, Montana	Triumph	38.7	53.2	24.4	116.3
Montana Expt. Sta., Bozeman	Triumph No. 2	50.9	68.3	26.4	145.6
Moorehead, Minnesota	Triumph	45.6	55.0	27.5	128.1
Washburn Maine	Cobbler	72.9	46.2	17.7	136.8
Vicksburg, Mississippi	Triumph	26.6	41.5	17.6	85.7

Cabbage Fertilizer Test

Net returns on cabbage as a truck crop were excellent this past season. This has resulted in larger plantings this winter. A small fertilizer test to determine quantity of fertilizer to use per acre was conducted on the station this past season. A 10-4-4 fertilizer was used with the following results: 1,000 pounds per acre produced 13,818 pounds of cabbage; 1,500 pounds per acre yield 12,917 pounds and 2,000 pounds per acre gave a yield of 12,098 pounds of cabbage per acre. As the quantity of fertilizer was increased per acre, the size of each head of cabbage increased.

Based on the above data and results in the past, we feel that 1,500 pounds of a 10-4-4 fertilizer per acre can be profitably used. The nitrogen in the above test was derived from equal pounds of nitrogen from nitrate of soda and sulphate of ammonia. Disease work was also conducted with cabbage by Mr. H. H. Wedgeworth of the State Plant Board. Various seed treatments were used to check or control diseases before the seed were put in the hotbed.

General Work

Rotations—It is our policy to grow a legume on all lands at least once a year. Several rotations are under way and outstanding among these is the two year rotation with cotton, vetch, corn and soybeans. This keeps a legume on the land summer and winter and does not interfere materially with either crop.

To start this, at the last cultivation of cotton, sow broadcast seventeen to twenty pounds of vetch seed to the acre. This germinates in the fall and matures seed around the middle of May and the first year must be turned under to insure a volunteer crop the following fall. After turning under, plant the land to corn and soybeans. As stated, the vetch volunteers and in the spring may be turned under or cut for

hay, as desired, and then planted to cotton. Permit vetch to mature seed every other year and be insured of a volunteer stand every year. In this connection, bur clover will also reseed itself and may be used in a similar rotation.

Vetch has been grown on very poor white land on the station and has about trebled the yield of soybeans for hay on these lands. It should be borne in mind, however, that vetch does better on good land, so to be successful with vetch plant it on good soil and give it a chance. In another field on very thin soil, the land without vetch or fertilizer produced 350 pounds of seed cotton per acre, where vetch alone was turned under the yield was 667 pounds and where 500 pounds of an 8-4-4 was applied after vetch had been turned under the yield was 1,157 pounds seed cotton per acre. This test was conducted in two series and planted to Lone Star 65 cotton on May 16.

Legumes—Much benefit has been derived from using bur clover, vetch and crimson clover as winter legumes. Crimson clover is an annual and must be planted each year. As stated above, vetch and bur clover will reseed themselves if premitted to mature seed once every two years. Austrian winter peas are being successfully grown as a winter cover crop on the station this year.

Soybeans, velvet beans, peas and lespedeza comprise the best summer legumes for this section. Lespedeza reseeds while the others must be planted each year. These legumes fit into rotations nicely and are recognized as excellent soil builders.

Pastures—Good pastures are easily obtained in this section by getting a start of bermuda, carpet grass and lespedeza. Some pastures have good white clover and in the wet places paspalum can be found. Any part of this section is well suited to dairying provided there is a nearby market, not over fifty miles away. Grazing periods are long and many cattle in this section are never housed during the winter and when any are housed it is for a very short period, during cold rainy spells. Carpet grass, lespedeza and bermuda are native in this section.

Orchards—A nice young orchard has been started and results show that with a little attention given to pruning, spraying and cultivation, anyone can produce excellent fruit. Vetch grows profusely in our orchard and contributes liberally toward the fertilizing program for the trees. This vetch was started five years ago and volunteers each year.

Boll Weevil Work—Hibernation and emergency work with the boll weevil has been done in cooperation with Mr. O. M. Chance of the State Plant Board. At present there are cages in the woods and cages in the open fields where five hundred weevils have been placed in each cage. These cages are watched daily throughout the emergence period and records are kept to determine the percentage of emergence during the season. Several cotton states are doing this work. Two weevils emerged this past year on April 3 on this station.

Improvements—Many improvements have been made on the station during the past year. A new four-room tenant house has been constructed. Most of this house was built from lumber salvaged from the foreman's old house. A concrete cattle-gap has been installed at the

entrance to the station. The director's residence and garage has been painted. An office building has been constructed of hollow tile and stucco to conform with a general program of branch station offices. Funds would not permit ceiling and plastering this new building, so a complete external job was done so as not to hurt the general appearance of the station and this other work will be done when funds become available. A new wagon has been bought for the station farm. Landscaping has come in for its share of attention and people traveling the new concrete highway into Jackson make many favorable comments as to the beauty of the place.

Conclusions—A successful year's work has come to a close. Many visitors have come to the station during the past season. We wish to express appreciation to Dr. B. M. Walker, President of the A. and M. College, and to Director J. R. Ricks of the Experiment Station for the kind and business-like manner in which they have directed the work of the Raymond Branch Experiment Station.