1900

Report of results for 1899 at Calhoun, La.

Jordan G. Lee

SECOND SERIES, NO. 62.

BULLETIN

—OF THE—

NORTH LOUISIANA EXPERIMENT STATION,

WM. C. STUBBS, PH. D, DIRECTOR.

REPORT OF RESULTS FOR 1899 AT CALHOUN, LA.

BY J. G. LEE, Assistant Director.

ISSUED BY THE STATE BOARD OF AGRICULTURE AND IMMIGRATION,
LEON JASTREMSKI, COMMISSIONER.

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LA. STATE UNIVERSITY AND A. & M. COLLEGE,
Office of Experiment Station,
Baton Rouge, La.

Gen. Leon Jastremski, Commissioner of Agriculure and Immigration:

DEAR SIR—I herewith transmit the manuscript of the report of Major J. G. Lee of the results of experiments made upon the North Louisiana Experiment Station during the year 1899. The horticultural results will be combined with those from the other stations, and published as a special bulletin later on horticulture.

I recommend that this be published as Bulletin No. 62.

Respectfully submitted,

WM. C. STUBBS,
Director.

North Louisiana Experiment Station,
Calhoun, La., December, 1899.

To W. C. Stubbs, Ph. D., Director:

Dear Sir—I hand you herewith annual report of all crops harvested at this station for the year 1899, not previously reported. The very dry season reduced the normal crop yields fully one-half on the station, as indeed it did more than one-half throughout this section. However, it is hoped that sufficient information may be gleaned from this report to profit farmers.

Respectfully,

J. G. LEE, B. S.,
Assistant Director.

REPORT.

Review of the Year.

A cold, backward, dry spring, followed by an abnormally dry summer and fall made an unsatisfactory year for experiment work as well as for general farming. Normal yields were reduced from one-half to less than half. The total rainfall for April, May and June was 4.99 inches, while for July, August, September and October it was only 6.77 inches for the four months. The rainfall for the year was 29.89 inches, showing a decreased annual rainfall of 15.11 inches. (See annual weather summary at end of report.) With this insufficient moisture large yields could not be expected on these soils. However, the comparative yields of all varieties of crops, fertilizer experiments, rotation of crops, irrigation experiments, etc., carry useful information.

THE NORTH LOUISIANA AGRICULTURAL SOCIETY

Continues to hold its monthly meetings in the agricultural hall on the Station grounds, and from early spring to late fall, they are well attended. These monthly meetings of farmers, discussing among themselves agricultural practice and method, are of inestimable value to those attending. Add to this the further advantage the opportunity affords farmers to inspect garden, orchard, dairy, poultry, live stock and crops, and to note the effect of fertilizer experiments on them, and their results to the farmer for his advancement, and two of the strongest educational forces extant result.

THE AGRICULTURAL CAMP MEETING AND FAIR

Hold annually their exhibition of agricultural products, garden truck, live stock, etc., on the grounds, while in the auditorium a daily program, consisting of practical scientific papers and lectures, is executed, the nights being devoted to discussing questions from the question box. The fair holds

for three days. No entry or admission fees are charged, the Station providing stalls for horses and cattle and pens for hogs and sheep, hall for agricultural and other exhibits, and camping grounds for farmers desiring to camp. These annual exhibitions are largely and enthusiastically attended. These are three "red letter" days to the farmers and their families of the surrounding parishes. The friendly intercourse and competition, the listening to distinguished lectures on agricultural subjects, and the participation in the discussions by the farmers themselves, offer exceptional advantages for advancement in progressive agriculture. It is hoped the coming meeting will surpass all previous ones, and to this end all citizens are appealed to for their support, attendance and assistance.

THE MODEL DAIRY

Continues successfully in pursuing the object of its erection, viz.: to teach farmers of North Louisiana how to make good, "gilt edge" butter, in the most approved manner. The dairy is supplied with modern dairy apparatus, the barn with Bidwell stalls and other comforts for the cattle, this being one of the essentials in up to date dairy work. Many farmers and their wives avail themselves of this splendid opportunity to improve their dairy practice. Some have become expert and sell their butter now at highest market price. It would be desirable that more should avail themselves.

FARM DAIRYING

Promises good profit. No section is better suited to it than this, the home of small farmers. The farm can produce most of the food stuff required, the work of the dairy can be performed by members of the family, and this common and great expense of the dairy is thus turned into profit. The droppings of the cattle will enrich land to raise more and bigger crops, the surplus milk will raise the pigs and meat.

The Jersey, Guernsey, Holstein and Devon are the breeds in use at the Station. The first two named, however, have proved to be the profitable dairy cow, and in establishing a dairy one of these or their grades should be selected.

Live Stock.

CATTLE.

Besides the breeds just mentioned—Jersey, Guernsey, Holstein and Devon—a pair of Herefords have been purchased and will be here by early spring, together with several grade Durham heifers. The object of this purchase is to conduct beef breeding and fattening for market, a work wanted and long needed in Louisiana. The Hereford was selected as representing one of the best beef types, and thought to be best suited to the conditions here prevailing. It is hoped the result of this work will receive the attention it so greatly merits.

SHEEP AND HOGS.

In sheep the Station is testing the Southdown, the Shropshire, the Merino and the Dorset.

The Southdown are heavy, compact sheep, easily fattened and fair in wool production, though the chief claim is for mutton. They are hardy and popular.

The Shropshire is of the Down family. It is superior to the Southdown for wool but inferior for mutton. Neither are they found here to be as hardy, though counted a good combination sheep.

The Merino is emphatically a wool sheep. The wool is of the finest when washed, and bucks here have sheared from fifteen to twenty-three pounds unwashed wool. They are not considered good mutton sheep, though their flesh is of good quality. They are considered fairly hardy.

The Dorset is a new breed in this section. They are large, strong and horned, and seem to combine both good mutton and wool qualities. It is claimed for them that they will attack dogs; also that they are very prolific, having two or three lambs at a time, and frequently lamb twice in one year. Our experience here with them does not justify a conclusion on these claims. But certainly they are a fine, large sheep, hardy and attractive.

With each buck a number of common ewes are placed and the work of grading up on common ewes is in progress. The

Station thinks this is the proper way to build up a good flock of sheep; then if a more pronounced combination wool and mutton sheep is desired, it advises first to grade on the Merino and from that on the Southdown.

HOGS.

The Berkshire, the Poland China and the Essex are represented.

The Berkshire are perhaps the best general purpose or pasture hogs. They combine the "streak of lean and streak of fat" more completely than any other hog. They are active, good breeders and mothers, but fatten slowly before maturity. They are great favorites.

The Poland China is emphatically the meat hog. They fatten readily at any age and fatten quickly. They are not so active as the Berkshires, nor do they distribute the lean with the fat. They are equally as prolific and as good mothers. The popularity of the two breeds is about equally divided.

The Essex is the "lot hog." Small, compact, they are easily kept and quickly fattened. They are not active; slow breeders and indifferent. They are great favorites with the small farmers, for whose purposes they are well suited.

Below are prices named by the North Louisiana Agricultural Society for live stock, etc.:

Bull calf, any breed; pure	$50.00 to $ 75.00
Heifer " " "	50.00 to 100.00
A buck or ewe, any breed; pure	7.50 to 10.00
" " " grade	5.00 to 7.50
Single cock	1.50
Chickens, pair	2.00
" trio	3.00
" eggs, per setting, 13 eggs	1.00
Service of bulls	2.00
" bucks	1.50
" boar	1.00

Cash must be paid in advance.

Poultry.

The following is a brief report from Mr. W. T. Carter, poultryman of the Station, upon the trials of different breeds of chickens during the year:

During the year 1899 a comparative test was made of the leading breeds of chickens as to their egg producing ability. The result is summarized as follows:

TEN MONTH'S TEST.	No. Hens on Trial	No. Eggs Laid.	Average per Hen.	REMARKS.
Barred Plymouth Rock	9	643	71	American Class.
White Plymouth Rock	3	123	41	American Class.
Silver Laced Wyandottes	2	70	35	American Class.
Black Java	2	106	53	American Class.
Light Brahma	4	170	42	Asiatic Class.
Black Langshan	3	153	51	Asiatic Class.
Buff Cochin	2	110	55	Asiatic Class.
Silver Gray Dorking	2	192	96	English Class.
Houdan	1	73	73	French Class.
S S Hamburg	3	166	55	Hamburg Class.
Red Caps	2	130	70	Hamburg Class.
C. I Game	5	196	39	Game Class.
B Leghorn (S. C.)	6	407	68	Mediterranean Class.

During the months of July and August the chickens were all turned out of pens, so this record is for only ten months.

AMERICAN CLASS.

The American class of chickens are considered general purpose breeds, being good table fowls and good egg producers. It will be seen by referring to the table that of this class the Barred Plymouth Rocks produced the highest average of eggs per hen. This breed seems to give good satisfaction and is a general favorite.

During the test these chickens were perfectly healthy at all times, and remained vigorous and active during their confinement to pens.

While the general characteristics of the Barred and White Plymouth Rocks are considered to be the same, excepting

color, the White Plymouth Rocks did not lay nearly as well as the Barred variety, and were not quite as vigorous, seeming not to stand confinement in pens as well as the Barred. Nor were the Wyandottes or Javas so prolific in egg production, nor did they stand confinement as well.

With professional poultrymen, the Plymouth Rocks and Wyandottes are favorites for broilers. The chicks are thrifty and hardy and grow fast, attaining the broiler size quite early in the season; hence their value.

ASIATIC CLASS.

The Asiatic class of chickens is distinctly a meat or table class and is not considered to produce good layers as other breeds, although the Langshan is a very fine winter layer. However, these fowls grow to large size, and are the heaviest of all breeds, hence their value as meat producers. These large fowls are inclined to be lazy and stand confinement more easily than most other breeds, although their tendency to lay on fat is a constant source of danger, as they cease laying when too fat and are disposed to take so little exercise, especially in warm weather, that they are inclined to have digestive troubles. This was especially noticeable in our Light Brahma pen during warm weather. This class of breeds is also inclined to be more broody than other breeds and makes good mothers, although some individuals are so large as to awkwardly trample small chicks to death. The young chicks of these breeds are very hardy.

ENGLISH CLASS.

The Silver Gray Dorking represents this class at the station. They are considered a good general purpose fowl, and although they are not considered the best egg producers, it will be seen by referring to the table that this breed averaged the largest number of eggs per hen during the test.

The Dorkings in our trials seem very hardy and bear confinement well.

FRENCH CLASS.

The Houdan represents this class at the Station, and by looking at table it will be seen that this breed ranked high

with the other breeds in egg production. Too much stress can not be put on this, however, as only one hen was in the test, and individuality may have played a greater part than breed. These fowls are considered non-sitters, and throughout the test held good to this claim. Our experience with the chicks was such that it led us to conclude that they are extremely delicate while young, and therefore harder than many other breeds to raise to maturity, especially by artificial means.

HAMBURG CLASS.

Of the Hamburg class we had the Silver Spangled Hamburg and Red Cap in the test. These are distinctly egg producers, the Hamburgs being quite small and laying a very small egg; they are, however, a very beautiful fowl. The chicks are extremely delicate while young. The Red Caps ranked much higher in the test than the Hamburgs in egg production. Young Red Cap chicks are also very delicate. These breeds bear confinement well. Both Red Caps and Hamburgs are considered non-sitters, which was substantiated throughout the test, with one exception, in the Hamburg pen.

GAME CLASS.

Of this class we had the Cornish Indian Game. Their average egg production was very low, in fact lower than all other breeds except one. The C. I. Game is a splendid table fowl, and grows rapidly while young, and at maturity is quite heavy, the flesh being extremely solid and firm. These hens showed quite broody during the season. The hens make splendid mothers, and the chicks are very hardy and thrifty. These chickens are a favorite with farmers on account of their thrifty habits, and we believe that had these chickens not been in confinement that they would have made a better showing in egg production.

MEDITERRANEAN CLASS.

This class is a class of egg producers, and although the table shows that the B. Leghorns did not rank as high as some of the other breeds in this quality, it was probably due

to the fact that they are a very nervous, restless fowl, and therefore do not bear confinement nearly so well as many other breeds; this was a very evident fact during the time they were confined. Although the B. Leghorn is considered a non-sitter, our experience of the past year shows that they will not only set, but will raise a brood of chicks to maturity. Of course this was exceptional. The Brown Leghorn has always proven a profitable fowl from the egg standpoint.

ARTIFICIAL CHICKEN RAISING.

Chickens have been raised by artificial methods for some time very successfully, and there is no reason why everyone may not raise chickens in this way. The incubator takes the place of the hen in keeping the eggs at the required temperature for hatching, allowing the hen to continue to produce eggs without stopping to raise a brood of chickens. As soon as the incubator hatches the eggs, the little chicks are kept in the brooders until old enough to live entirely in open air.

There are many dangers attendant upon the successful hatching and raising of chicks artificially, the greatest trouble is not in operating the incubator successfully, but in caring for and raising to maturity the young chicks after being hatched.

During the past year we found that in this warm climate the confinement of chickens to pens was detrimental to some extent to the production of fertile eggs, which hindered operations in raising chicks, although some chicks were successfully hatched and raised to maturity by artificial means.

It is needless to discuss the advantages of the incubator, as it is used successfully all over the country by practical poultrymen. The greatest trouble in raising young chicks is in keeping them from getting chilled, as a very slight change of temperature while they are young will bring on bowel disease, which is extremely fatal. The young chick requires very careful attention and feeding. It should have not only food of vegetable origin, but should also have some animal

food as well as plenty of grit. Neglect in feeding the chick brings on diarrhœa, which is very fatal.

Table showing standard weights in pounds of different breeds of fowls:

BREEDS.	Cock.	Hen.	Cockerel.	Pullet.
Barred Plymouth Rock	9½	7½	8	6½
White Plymouth Rock	9½	7½	8	6½
Silver Wyandotte	8½	6½	7½	5½
Black Java	9½	7½	8	6½
Light Brahma	12	9½	10	8
Black Langshan	10	7	8	6
Buff Cochin	11	8½	9	7
Silver Gray Dorking	8	6½	7	5½
Houdan	7	6	6	5
Red Cap	7½	6½	6	5

Orchard Garden.

Special report by E. J. Watson, Horticulturalist, has already been transmitted.

It is of interest to add, however, that a new orchard site has been selected and some four hundred trees, two of each variety, consisting of peach, apple, pear and plum, have already been planted, and strenuous efforts will be made to secure better results here than from the old orchard.

FIELD EXPERIMENTS.

Rotation of Crops.

The following is taken from a previous Bulletin:

"How can the worn lands of Louisiana be most speedily and economically restored to their primitive fertility? The answer would be, by proper rotation of crops, with or without fertilizers. What crops shall be selected for this rotation? Any combination which omits our cow pea would be injudicious. Several years ago the following rotation was decided upon as the best rotation attainable in this section:

corn, oats, followed by cow peas and cotton. This rotation is faulty in principle but correct in practice, and was adopted last season after two years' trial. The corn should precede the cotton, but experience has demonstrated that "Rust Proof" oats, the only variety successfully grown here, must be planted in October if maximum results are desired. Cotton cannot be removed in time for this crop, while corn can; hence this metathesis of crops. This rotation was adopted with and without fertilizers. It was begun in 1889. Three parallel strips, one-half acre wide and two acres long, were selected for the experiments. The eastern half of each is manured regularly with a fertilizer adapted to the crop, while the western half remains without fertilizer."

The appended table shows results for eleven years, per acre:

The oats in the foregoing fertilized plat were fertilized with the Station's grain fertilizer at rate of 200 pounds cotton seed meal and 100 pounds acid phosphate, mixed, and scattered and harrowed in with oats. The peas, fertilized with fifty pounds acid phosphate and fifty pounds kainite. The pea, being a nitrogen gatherer, no nitrogen was applied additionally. The cotton was fertilized with Station's compost for cotton, consisting of

One ton acid phosphate,
100 bushels stable manure,
100 bushels green cotton seed,

built in the following proportions: First layer; five bushels stable manure; second layer, five bushels cotton seed; third, 100 pounds acid phosphate, etc. The cotton seed are made perfectly wet before spreading.

The corn received the compost for corn, the ingredients the same as above, the proportion only different, being

One ton acid phosphate,
200 bushels stable manure,
200 bushels green cotton seed,

built as above, except proportion is fifty pounds acid phosphate, five bushels manure, five bushels seed.

The cultivation of the above plats, for this year, was as follows: For corn, plat A, land was broken with three-mule

How treated.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899
A	Fertilized half.	12 bus. oats, 8.45 tons pea-vines,	28 bus. corn,	35.2 bus. oats, 1300 lbs. straw, 8.10 tons pea-vines, 4.6 bus. peas, 25.5 bus oats.	1558 lbs. cotton,	24 4 bus. corn,	47 bus. oats, 1530 lbs. straw, 8 bus. peas.	1509 lbs cotton.	10¼ bus. corn.	51.50 bus. oats.	1694 lbs. cotton.	29½ bus. corn. 2032 lbs. clover.
	Unfertilized half	7¼ bus. oats, 4.22 tons pea-vines,	20.6 bus. corn,	816 lbs. straw, 2 4 tons pea-vines, 1.5 bus. peas,	331 lbs. cotton,	6.14 bus. corn,	25 bus oats, 1000 lbs. straw, 2 bus. peas.	386 lbs. cotton.	No yield from excessive drouth	18.50 bus. oats.	413 lbs cotton.	6¼ bus. corn. 450 lbs. stover.
B	Fertilized half	829 lbs. cotton	24½ bus oats, 1020 lbs. straw, 102 tons pea-vines,	1719 lbs. cotton,	34.3 bus. corn,	40 bus. oats. 1275 lbs. straw, 4 bus. peas,	2018 lbs. cotton.	23.9 bus. corn.	No yield from excessive drouth	1485 lbs. cotton.	38 bus. corn. 2560 ibs. clover.	28½ bus oats.
	Unfertilized half.....	528 lbs. cotton,	8⅝ bus. oats, 710 lbs. straw, 56 tons pea-vines,	620 lbs. cotton,	14.6 bus. corn,	22 bus. oats, 975 lbs. straw, No peas,	398 lbs. cotton.	4.8 bus. corn.	No yield from excessive drouth	85½ lbs. cotton.	12 bus. corn. 884 lbs. stover.	7¾ bus. oats.
C	Fertilized half	17 73 bus. corn,	768 lbs. cotton,	16.8 bus. corn,	47.8 bus oats,	1446.4 lbs. cotton,	26 bus. corn.	14½ bus. oats.	791 lbs. cotton.	42 bus corn.	37½ bus. oats.	1410 lbs. cotton.
	Unfertilized half	13 09 bus. corn.	429 lbs. cotton	4.8 bus. corn	22.5 bus. oats.	560 lbs. cotton.	5 bus. corn	5½ bus. oats.	147 lbs. cotton.	10⅜ bus. corn.	10¼ bus. oats	476 lbs cotton.

disc plow, 8 inches deep, in February. Rows marked off four feet apart with straight shovel, corn compost applied in this open furrow with Kemp's manure spreader, at the rate of thirty bushels per acre. A flat list was made on this, bed opened and corn planted March 21st. On May the 1st, 10th and 15th, cultivation was given with Planet Jr. Cultivator and with the last cultivation, peas, at rate of two bushels per acre, were sowed broadcast.

For oats and peas, plat B, land was deeply broken in October '98, with three-mule disc plow. A mixture of 100 pounds acid phosphate and 200 pounds cotton seed meal per acre was scattered, oats sowed two and one-half bushels per acre, and oats and fertilizer harrowed in together with an Acme harrow and then rolled. The oats were harvested May 22nd. Land was again broken and cow-peas were planted in rows, one bushel per acre, applying fifty pounds kainit and fifty pounds phosphate on fertilized half.

For cotton, plat C, the same plow and team broke the land eight inches deep in February. On April 11th, rows were marked three and one-half feet apart with straight shovel and land bedded with turning plows. Compost for cotton was drilled in water furrow, Kemp's manure spreader, thirty bushels per acre "listed on," list opened and cotton planted April 13th; cultivated May 1 with Planet Jr.; chopped to stand May 18th. Cultivated again May 28th and June 10th with Buckeye Cultivator, heelsweeps and scooters attached.

Remarks.

A careful study of the results of this rotation experiment will convince the most skeptical farmer of the wisdom of the system. The fertilized half has been built up 400 to 500 per cent. in eleven years, while that without fertilizer has gained from twelve to twenty-five per cent. It should be the aim of every farmer to so handle his land as to make it grow richer rather than poorer. By this system it can be done, and at the same time getting better crops and profits. It is perfectly practicable for a farmer to divide his farm into three equal parts, and begin his regular system of rotation with corn, peas, oats, and cotton.

An examination of the above table for eleven years will show that the fertilized plats in this rotation have given an average of 26.33 bushels corn, 33.4 bushels oats and 1380 pounds seed cotton, while the unfertilized plats have given 8.92 bushels corn, 14.2 bushels oats and 388½ pounds seed cotton.

Attention is called to the results in the extremely dry year of 1896, when the fertilized plat of corn yielded ten and one-quarter bushels of corn, while the unfertilized plat did not make even a nubbin. Neither plat produced any oats this year; 1892 and 1897 gave excellent crops of oats, 55.2 and 51½ bushels per acre for fertilized plats. Five years out of eleven, the yield of oats has been over forty bushels per acre on the fertilized plats, while the average for the eleven years has been only 33.4 bushels; 1897 was the banner year for corn, 42 bushels, followed in 1898 with 38 bushels, and in 1892 with 34.5 bushels. These are the only years out of the eleven that the yield on the fertilized plat exceeded 30 bushels per acre. Five years out of the eleven, the yield was above the average. An inspection of the above table will show that owing to the vicissitudes of the seasons that no year produced the largest yield of all of the crops grown, while even 1896, memorable as the year of prolonged drouth, gave a fairly good yield of cotton and a small crop of corn. This fact emphasizes another benefit from a good system of rotation.

An examination of the results will show the immense advantages to be derived from the moderate use of proper fertilizers in the rotation. Incidentally it may be observed that each bushel of corn will give about seventy pounds of stover, which when cured is a most excellent forage for cattle, sheep and horses.

PLAT NO. ONE.—VARIETIES OF COTTON.

No. Experiment	NAME OF VARIETY	First Picking Aug 9.	Second Picking Aug 22.	Third Picking Nov. 3	Total Yield per Experiment.	Yield per Acre, Seed Cotton.	WHERE SEED WERE OBTAINED
1	Tyler's Limb Cluster	7¼	4¾	2	14	518	Alexander Seed Co.
2	Welborn's Pet	8½	5½	1½	15¼	564¼	N. La Ex Sta.
3	Jackson Afri an Limbless	7¼	6¾	1	16	592	Alexander Seed Co.
4	Peerless	10	6½	2	18½	684½	H. C. Prevost, N. O.
5	Boyd's Prolific	11½	9½	2	23	851	H C. Prevost, N. O.
6	Dering Small Seed	10	9¼	1½	20¾	767¾	Station.
7	King's Improved	16	5½	1½	23	851	Station.
8	Peterkin Improved	10	11¾	1½	23½	860½	Alexander Seed Co.
9	Truitt's Improved	10⅛	11¼	4	25¾	952¾	Alexander Seed Co.
10	Hawkin's Prolific	9½	14½	4½	28¼	1045¼	Alexander Seed Co.
11	Texas Burr	8¼	14½	3¼	26	962	Stickler S. Co. N O.
12	Russel 's Big Boll	5	2½	3½	11	814	Stickler S Co N O.
13	Stickler New C	6	8	2	16	880	Stickler S Co. N. O.
14	Hargman	9½	13½	2	25	925	Prevost, N. O.
15	Jones' Improved	7⅛	12¼	4⅝	25¼	934½	Alexander Seed Co.
16	Excelsior	9½	10¾	2	22¼	823½	Alexander Seed Co.
17	Doughty Long Staple	7½	9	4	20⅝	758½	Alexander Seed Co.
18	Allen's Long Staple	9½	9	1½	20	740	Alexander Seed Co.
19	Hurley's Choice L Staple.	9¼	12	3	24¼	897¼	Station.
20	Holmes' Long Staple	10	7⅜	2	19¾	730¾	Holmes, Talulah, La
21	Sea Island	....	...	7½	7½	277½	Alexander Seed Co.
22	Sea Island	...	....	7¾	7¾	286¾	Prevost.
23	Sea Island	....	...	8	8	296	Stickler.
24	Nut Affi	..	....	7½	7½	277½	Sugar Stations.
25	Abassi	...	...	8	8	296	Sugar Stations.
26	Borneo	....	2	6	8	296	Sugar Stations.
27	Gold Dust	11½	6	3½	21	777	Station.

Preparation and Cultivation of Plat 1.

Cotton varieties—Land broken in February with three horse disc plow, rebroken in April with one horse turning plows and harrowed with Acme harrow. Rows marked off with straight shovel three and one-half feet apart; fertilizer at rate of 580 pounds per acre, consisting of two parts meal, one of phosphate and one half of kainite applied in drill, listed on, opened and planted April 13th. It was off-barred and chopped to stand May 22. Same date cultivated with Buckeye cultivator with small scooters and heelsweeps attached. June 6th, 15th and 26th, received some cultivation, using larger sweeps; hoed June 15th.

Remarks.

A glance at the table shows Hawkin's Prolific in the lead, followed closely by Texas Burr, Truitt's Improved, Jones' Improved and Hogerman. Noting date of picking, King proves itself again the earliest maturing.

The effect of the drouth is clearly shown on the above cottons, as indeed it does on all crops. These yields are about one-half of a normal crop.

Plat No. 2. Comparative test of three leguminous crops as nitrogen gatherers. Leguminous plants are prized for their power of abstracting free nitrogen from the atmosphere and appropriating it to their own use and subsequently transferring it to soil. The object of this test is to ascertain which one of these three popular members of this family will bring most nitrogen to the soil and incidentally the most forage. The crops selected are the Velvet bean, the unknown cow pea and the Spanish peanut. In the preparation and cultivation of soil and fertilization of the crops, they are treated exactly alike. At the end of the season the acreage production of each, in fruit and hay is ascertained, and chemical analysis made of each, including vine, leaf, fruit and roots. The chemical results will be found in separate report. Below are the results of the cured hay and peanuts, the other crops maturing no fruit this dry year:

Velvet beans, cured hay per acre, 1984 pounds; unknown cow peas, cured hay per acre, 992 pounds. Spanish peanuts, cured hay yer acre 95 pounds, peanuts per acre, 162 pounds. Preparation of land same as that already described. The velvet beans were planted April 2nd, the peanuts and peas planted April 22nd; all fertilized with 200 pounds acid phosphate per acre. The cultivation was with Planet Jr., and Buckeye cultivator, heelsweeps and scooters attached. Two plats, No. 3 and No. 9, were devoted to growing wheat, a variety test of wheats and a soil test. Plat No. 3 is what is locally known as a deep red sandy soil, with red sandy clay subsoil, somewhat stiff. Plat No. 9 is a lighter gray sandy soil, with yellow sandy clay subsoil. Below are the results:

PLAT NO. 3—WHEAT VARIETIES. RED SANDY, STIFF.

No. Experiment.	NAME OF VARIETY.	Pounds straw per acre.	Bushels grain per acre.
1	Red May	4847	16⅝
2	Purple Straw	4356	15
3	Harvest King	524 ⅛	21
4	Currell's Prolific	5602	27.90
5	Tuscan Island	5704	28.81
6	Red Wonder	5041	23.52
7	Eclipse	6453⅓	33.61
8	Fultz	6-38	24.90
9	Beardless Fulcaster	6801¼	22.69
10	Bearded Fulcaster	4-40	16.85
11	Gold Coin	499 ¼	18.91
12	White Bearded	4991	15.12

PLAT NO. 9—WHEAT VARIETIES. LIGHT GRAY SANDY SOIL.

No. Experiment.	NAME OF VARIETY.	Pounds straw per acre.	Bushels grain per acre.
1	Red May	907½	15.12
2	Purple Straw	1020	17.02
3	Harvest King	832	13.86
4	Currill's Prolific	1270	21.18
5	Tuscan Island	1271	21.18
6	Red Wonder	680	11.34
7	Eclipse	643	10.72
8	Fulz	453	7.56
9	Beardless Fulcaster	491¼	8.19
10	Bearded Fulcasser	605	10.08
11	Gold Coin	350	6.04
12	White Bearded	285	4.78

Remarks.

The results as shown by the tables are in favor of the red sandy soil, as against the light, gray sandy soil; the yields in some cases being but little more than a third of same varieties in red soil. It was also noted that all the varieties rusted worse on the light,

sandy soil. The Eclipse gives best results on red land, followed closely by Tuscan Island and Currells' Prolific.

These experiments bear out previous results on these grounds, that certain varieties can be successfully grown on the red lands of North Louisiana, and the stiffer the soil the better. Currell's Prolific and Purple Straw were the first to head out, April 28th; Fultz, April 30th; Red May, Red Wonder and Beardless Fulcaster, May 2nd; Bearded Fulcaster, Eclipse, Tuscan Island and Harvest King May 4th; White Bearded May 8th, and Red Coin May 11th. Wheats planted October 27th. Land deeply broken, three-horse mule plow, harrowed and wheat harrowed in with fertilizer, 400 pounds per acre, meal and phosphate.

PLAT NO 5—TEST, VARIETIES OF FIELD CORN.

No. Experiment.	NAME OF VARIETY.	Pounds corn per experiment.	Pounds corn per acre	Bushels corn per acre.	REMARKS.
1	Large White Flint	12	276	3.8	
2	Adoniram Early	15	345	4.7	
3	Hickory King	67	1541	21.4	
4	Early Prolific	20	2070	28.75	
5	Gentry's Early Market	60	1380	19.16	
6	Champion White Pearl Dent	86	1978	27.47	
7	Maryland Prolific	90	2070	28.75	
8	Old Cabin Home	87	2091	27.79	
9	Farmers' Pride	81	1863	25.87	
10	Blount's Prolific	82	1886	26.2	
11	Cocke's Prolific	100	2300	31 9	
12	Gandy's Improved	115	2645	36.7	
13	White Rockdale	93	2139	29.7	
14	Buists' Prize Med. S. White Snow Flake	77	1771	24.6	
15	Pride of Aiken	87	2001	27.76	
16	Mosby's Prolific	110	2030	37	
17	Red Cob	82	1886	26.2	
18	Shaw's Improved	97	2231	30.98	
19	Tenn. Premium	83	1909	26.5	
20	New Strawberry	87	2001	27.76	
21	Clarke's Early Mastodon	72	1656	23	
22	Improved Leaming	66	1518	21.08	
23	Champion Yellow Dent	61	1403	19.5	
24	Clarke's Large Red	92	2116	29.4	
25	Yellow Creole	95	2185	30.35	
26	Cuban Purple Shuck	82	1886	26.19	
27	Thompson's Prolific	49	1127	15.65	Irrigated twice. Percentages grain, cob and shuck not ascertained on account of destruction of corn by burning of barn.

Preparation, Cultivation, Etc.

Land was broken in February as already described, with three-mule disc plow, bedded with single horse turning plows, corn compost at rate of thirty bushels per acre drilled in water furrow, listed on, opened and corn planted April 3; cultivated with Planet Jr., May 7 and 15, and with Buckeye cultivator, heelsweeps and scooters attached, May 25, thinned to stand May 1 .

Mosby's Prolific leads the field with 37 bushels, followed closely by Gondy's Improved, 36.7 bushels. It will be noted that all plats are deeply broken with three-horse disc plows, and that after cultivation is shallow, with Planet Jr., and Buckeye cultivators with scooters and heelsweeps attached.

Plat No. 6 was devoted to irrigation experiments. The crops selected are sugar cane, corn, cotton, sorghum, tobacco, cow-peas and watermelons. Equal areas for each crop were selected, and one-half of the plat selected for each crop received water artificially, the other half received no water at all, except the rainfall. No fertilizer was used. It was assumed that each crop required a specific percentage of moisture for maximum production. For instance, cane requires 25 percent of moisture, corn 10 to 12 percent, cotton 6 to 8 percent, sorghum 8 to 10 pecent, cow-peas 6 to 8 percent, tobacco 8 to 10 percent and walermelons 4 to 6 percent. As nearly as possible this required percentage of moisture was maintained by irrigation. The experiment was under the direct charge of Mr. Maurice Bird, chemist of the station, who, from day to day determined the percentage of water in the soils and when the water content fell below that required for each crop, the requisite amount was calculated and applied. The water supply is provided from a large pond conveniently situated, and constructed for the purpose. A portable engine furnishing the power for pumping and conveying the water through pipes to the place required.

The recurring drouths becoming more and more common to this part of the State, prompted the station to conduct experiments in artificial irrigation in order to ascertain to what extent the bad effects of drouth may be overcome. To see the bright prospects of a good harvest destroyed by drouth is

too appalling, and the financial loss too great, not to make an effort to overcome it by irrigation, and it is proper that the experiment should be made at public expense. Greater obstacles have been surmounted, greater difficulties have been overcome in irrigation work than would be required for its successful practice in this section. By means of irrigation the arid regions of the west are rapidly coming into cultivation and certain and bountiful harvests are resulting. In some cases, great reservoirs are constructed to receive the melting snows and ice from the mountain tops, and here stored for crops, and the water piped or canaled to them at pleasure. In other cases rivers are dammed or tapped and the water diverted where required. In all cases the difficulties are great, the expense enormous, but the enterprise pays in bountiful yields and big profits. Irrigation could be practiced in Louisiana with less expense and greater profit. There is not a farm in this section but what has convenient springs or creeks that could be dammed, and the water applied to irrigation of crops, to say nothing of the possibilities of irrigation by artesian wells. Already in the rice section of the State irrigation is applied to more than 100,000 acres of rice successfully and profitably. If the system were general in the State it would be worth millions to the farmers. Below are the results together with a statement from Mr. Bird, chemist:

YIELDS OBTAINED ON IRRIGATION PLAT.

	Sugar Cane.	Corn.	Sorgh'm	Cotton	Tobacco	Peas	Watermelons.
Irrigated ...	11.50 tons.	20 85 bus. 1548 lbs stover.	3.42 tons.	1892 lbs seed cotton.	8170 lbs green 1204 lbs cured loss 85.26	No pods matured	18834 lbs
Nonirrigated	3.44 tons.	10 44 bus 744 lbs. stoves.	1.98 tons.	1548 lbs. seed cotton.	3827 lbs green 751 lbs cured loss 80 37	No pods matured	9632 lbs.

Owing to destruction by fire of the station cane mill, the juices from only comparatively small samples of cane were analyzed. These showed the following composition:

	Per cent. total solids.	Per cent. sucrose.	Per cent. glucose	Purity co-efficient.	Glucose Ratio.
Irrigated.....	18.7	16.7	.40	89.3	2.39
Non-irrigated.	17.0	14.4	.38	84.7	2.63

As stated above the experiments were made in the belief that twenty-five percent of water is the proper amount that the soil should contain to produce a maximum yield of sugar cane. It was found, however, that the soil (a red sandy clay) on which the experiment was made, would not absorb so much, the water standing on the land until removed by evaporation, and the highest percentage found in the soil after irrigation was about sixteen percent. Furthermore the crop began to suffer from excess of water, and on July 13th the water added was reduced to the requisite quantity to keep from 14 to 16 percent in the soil. In all, from May 22nd, the date of the first irrigation, till September 8th, the date of the last irrigation, water equivalent to 34.9 inches of rain was applied, producing an increase of 8.06 tons of cane per acre over the yield of the non-irrigated cane. The crop was irrigated twenty-two times.

The corn experiment was irrigated between May 22nd and August 8, sixteen times, with water equivalent to 10.6 inches of rain, which produced an increased yield of 10.41 bushels per acre, or as much again as the non-irrigated plat.

Sorghum, irrigated between May 22nd and August 8th, thirteen times, with 6.2 inches of water, gave as increase 1.44 tons per acre, while cotton irrigated between June 9th and September 8th, fourteen times, with an equivalent of 7.2

inches of rain, yielded an increase of 344 pounds of seed cotton.

Tobacco irrigated between June 5th and August 12th, with 9.8 inches of water, in sixteen applications, gave an increase of 451 pounds of cured tobacco per acre.

The experiment with watermelons shows a striking increase in yield from a small quantity of water judiciously administered, the irrigated plat giving from 1.2 inches of water, in four applications, from July 10th to August 5th, 9202 pounds of melons over the non-irrigated plat, practically doubling the yield.

The land upon which the experiments were made, while good upland soil, requires for maximum production applications of humus, as well as nitrogenous and phosphatic fertilizers, and while neither the watered or unwatered plats were fertilized, it is highly probable that the difference in yield, at least in the cases of the crops receiving large quantities of water, would have been far greater had more plant food been available.

The rainfall during the period of experiment, from May 22nd to September 8th, which was all the water received by the non-irrigated plats, and which of course was received by the irrigated plats in addition to that artificially added, was 6.12 inches, the season being an unusually dry one.

PLAT NO. 7—SUGAR CORNS, VARIETY TEST.

No. Experiment.	NAME OF VARIETY	Yield stover per acre.	Yield grain per acre—bushels	REMARKS.
1	White Cary	262½	.....	Scarcely any rain fell on corn after it was up.
2	Extra Early Cary	682½	.....	
3	First in the Market	430	.....	
4	Moore's Early Concord	1890	2.25	
5	Potter Excelsior	1470	2.25	
6	Hick x Sugar	2520	2.25	
7	Shaker Early	1522½	1.50	
8	Crosby's Early Sugar	997½	.75	
9	Perry Hybrid	945	.75	
10	Melrose	787½	75	
11	Rolyn Hybrid	215.½	8.87	
12	Stobber Pedigree	2415	6.89	
13	Early Minnesota	482½	.....	
14	Early Marblehead	525	.....	
15	Early Monmouth	1522½	1.50	
16	Black Mexican	1515	5.29	
17	Ne Plus Ultra	1680	6 89	
18	Triumph	1831	5.25	
19	Asylum	1515	.3	
20	Egyptian	1995	7.87	
21	Late Monmouth	2310	7.50	
22	Country Gentleman	2152	9.00	
23	Stowell's Evergreen	2152	7.50	
24	Kendal's Early Giant	735	1.50	
25	Crosby's Dwarf Sugar	892	.....	
26	Early Sugar	680	.....	
27	Adam's Extra Early	315	.....	

The object of this test of sugar corns was to ascertain the relative amount of grain and forage produced per acre, and the value as an early feed for horses, cattle and especially hogs. It is claimed that hogs will consume the whole stalk if fed them in roasting-ear stage, when it should be cut and thrown to them. If this be true, it is, perhaps, the best early feed for them and the most economical. The crop is disposed of by the middle or latter part of May, and a second crop of something could follow. Ordinarily the yield of grain and forage is very satisfactory if planted on rich land or land enriched by fertilizer. But this year the experiment was practically a failure on account of the severe drouth. It is well to note, however, the yields of some of

the varieties under adverse conditions, for instance, Country Gentleman, Roslyn Hybrid, Egyptian, Stowell's Evergreen, Late Monmouth, Ne Plus Ultra, Stobber Pedigree, etc. Preparation and cultivation, etc., same as other corn.

PLAT NO. 9—VARIETIES COW-PEAS AND OTHER LEGUMINOUS CROPS.

No. Experiment.	NAME OF VARIETY.	Pounds peas per Experiment.	Pounds per acre.	Bushels per acre.	REMARKS.
1	New Era	28	1120	16.00	
2	Backwoods	20½	820	11.71	
3	Whippoorwill	19	760	10.85	
4	Conch	18	1080	15.54	
5	Early Black	19½	780	11.14	
6	Coffee	15	600	8.57	
7	Calvin	13	520	7.43	
8	White Blackeye	9	360	5.14	
9	Marsh	11	440	6.28	
10	Black and White	....	....	.....	Did not mature.
11	Brown and White	15	450	6.43	
12	Red Yellow Hull	8	320	4.57	
13	Vacuum	21	840	12.00	
14	Smith's No. 4	5	200	2.85	
15	Fat Red	9	360	5.14	
16	Early White Black Eye	6	240	3.43	
17	Williams' Hybrid	5	150	2.14	
18	Indian	10	400	5.71	
19	Red Eye	16	480	6.85	
20	White Giant	....	....	.....	Did not mature.
21	Chocolate	....	....	.....	Did not mature.
22	Saddle Back	8	320	4.57	
23	Smith's No. 9	7	280	4.00	
24	Small White	....	....	.....	Did not mature.
25	Liver	7	280	4.00	
26	Smith's No. 14	....	....	....	Did not mature.
27	Watson's Hybrid	6	360	5.14	
28	Everlasting	5	200	2.85	
29	Speckled Crowder	5	600	8.57	
30	Granite	7	420	6.00	
31	Buckmoran	....	....	.....	Did not mature.
32	Lady Pea	9	540	7.71	
33	Dolichos Cultratus	....	....	.....	Did not mature.
34	Dolichos Mingo	....	....	.....	Did not mature.
35	Idaho Field or Coffee Pea	....	....	.....	Did not mature.
36	Soja Bean	....	....	.....	Did not mature.

The cow-pea is one of the most important crops to the farmer. Too little attention is paid to its cultivation. Its

feeding value and its renovating effect upon land demand a wider and more careful cultivation. There is profit in the crop for the seed alone. A careful examination of the above table will show the superiority of several early varieties, the very late ones having failed from drouth. It is important to select good varieties,—one of the best of early varieties and one of the best of late, choosing always good vining varieties, because of the greater quantity of hay and for renovating purposes.

PLAT NO 10—FORAGE CROPS.

No. Experiment.	NAME OF VARIETY.	Number.	Pounds forage per acre.	WHERE OBTAINED.
1	Colman	341	5985	From Department of Agriculture, Washington, D. C.
2	Colman	339	9450	
3	Colman	355	7560	
4	Colman	360	7875	
5	Colman	366	7875	
6	Colman	377	7875	
7	Colman	396	8190	
8	Colman	400	7875	
9	Colman	430	8190	
10	Colman	437	5670	
11	Colman	440	8505	
12	McLean	525	7560	
13	McLean	583	10,080	
14	McLean	595	6930	
15	McLean	600	8505	
16	Denton	620	6930	
17	Denton	624	8820	
18	Collier	641	8505	
19	Collier	646	9450	
20	Colman	...	7560	
21	McLean	...	8505	
22	Conir	...	3930	
23	Oklahoma	...	12,285	
24	Early Amber	...	8505	
25	Amber Orange	...	9450	
26	Folger's Early	...	10,080	
27	Early Orange	...	11,025	
28	Early Amber	...	8820	Station.
29	New Orange	...	11,970	Station.
30	Kansas Orange	...	12,600	Station.
31	Common Orange	...	13,230	Station.
32	White India	...	13,545	Station.
33	*Large African Millet	...	20,470	
34	*White Millo Maize	...	21,420	
35	*Yellow Millo Maize	...	17,955	
36	*Black Rice Corn	...	21,105	
37	*Pearl Millet	...	11,970	

No. Experiment.	NAME OF VARIETY.	Name number.	Pounds forage per acre.	WHERE OBTAINED.
38	*Te sinte	...	17,640	
39	*Evergreen Broom Corn	....	.....	
40	*Jerusalem corn	....	7245	
41	*White Kaffir corn	....	12,600	
42	*Red Kaffir corn	....	16,000	
43	Giant Beggar Weed	....	.....	Station.
44	German Millet	....	1020	Station.
45	Japan Upland Rice	....	.....	Station.

*Non-Saccharine Station

PLAT NO. 12—BRIGHT LEAF TOBACCO—FERTILIZER TESTS.

No Experiment	FERTILIZER—PER ACRE.	Green tobacco per acre.	Cured tobacco, per acre.	Percentage loss
1	No manure	2204	456	79.31
2	300 pounds acid phosphate, 100 pounds sulphate potash,	3173	494	84.4
3	300 pounds nitrate soda, 300 pounds acid phosphate, 100 pounds sulphate potash,	4332	616	85 0
4	230 pounds sulphate ammonia, 300 pounds acid phosphate, 100 pounds sulphate potash,	3154	494	84.33
5	320 pounds dried blood, 300 pounds acid phosphate, 100 pounds sulphate potash,	3553	608	82.8
6	700 pounds cotton seed meal, 300 pounds acid phosphate, 100 pounds sulphate potash,	3078	570	81.15
7	700 pounds cotton seed meal, 300 acid phosphate, 250 pounds sulphate potash,	3648	684	81.25
8	350 pounds cotton seed meal, 300 pounds acid phosphate, 250 pounds sulphate potash,	3515	551	84.32
9	1050 pounds cotton seed meal, 300 pounds acid phosphate, 250 pounds sulphate potash,	3154	684	78.31
10	300 pounds acid phosphate, 250 pounds sulphate potash,	2874	513	81.5
11	300 pounds acid phosphate	2280	456	80.0
12	700 pounds cotton seed meal	3040	560½	81 5
13	No manure	2166	456	78 96

PLAT NO. 12—VARIETY TEST—HOME RAISED VS. VIRGINIA BOUGHT SEED.

No. Experiment.	NAME OF VARIETY.	Pounds seed cotton per acre	Pounds cotton lint per acre	Percentage of loss
1	Little Oronoka, home seed	2812	551	80.40
2	Granville Yellow, home seed	3040	513	83.12
3	Kentucky Yellow, home seed	3420	617½	81 91
4	Long Leaf Gooch, home seed	3021	532	82.38
5	Yellow Oronoka, home seed	2926	503½	82.70
6	Hester, home seed	2622	475	81.90
7	Yellow Pryor, home seed	3002	532	82.29
8	Sweet Oronoka, home seed	2888	570	80.26
9	White Barley, home seed	2318	418	81.96
10	Conqueror, home seed	2565	513	80.00
11	Ragland Improved Yellow Oronoka, home seed	3382	589	82.60
1	Yellow Oronoka, Virginia seed	3762	646	82.82
2	Sterling, Virginia seed	3553	655½	81.15
3	Granville Yellow, Virginia seed	3230	655½	79.70
4	Tuckahoe, Virginia seed	3496	589	83.15
5	Worne, Virginia seed	3382	617½	81 77
6	Eastern Pride, Virginia seed	2451	408½	83.33
7	Ragland Improved Yellow Oronoka, Virginia seed	2926	437	85.06
8	Ragland Improved Hester, Virginia seed	3154	522½	83.43
9	Ragland Improved Long Leaf Gooch, Virginia seed	3648	646	82.29
10	Long Leaf Gooch, Virginia seed	3154	589	81.30
11	Conqueror, Virginia seed	3021	532	82.70

Remarks and Conclusions.

In the fertilizer test, it is evident that the addition of nitrogen materially increases the yield. Phosphate and potash used singly or combined, give but slightly increased results over no manure. Nitrogen in form of sulphate ammonia is not so good a form as cotton seed meal and nitrate soda or dried blood. Experiments number 7 and 9 gave best results, but were not as economical in a dry year as number 3.

In the variety test of home vs. bought seed, with one exception, the bought seed showed slightly better results. The same fertilizer and quantity per acre were here used, namely, one part of phosphate and two parts of meal at rate of 500 pounds per acre. The soil selected for the above experiments was a light deep sand.

Bright Leaf Tobacco on Virgin Soil.

This new soil was a deep light sand, and was thought to be the ideal tobacco soil. It was cleaned of roots and stumps as far as practicable. One acre was selected. It was determined to leave one-third without fertilizer; apply 700 pounds fertilizer, one part phosphate and two parts meal, one-third sulphate potash to a third and double the above fertilizer on the remaining third so as to note the increase of crop on new land. But by error the fertilizer was applied on two half acres, leaving none without fertilizer, therefore the natural capacity of the land is not known, but from the double ration giving an increase of seventy-two pounds over the single ration, it would indicate the advantage of fertilizer even on new land. Here are the results: Single ration, 700 pounds, green tobacco 6236 pounds per acre, cured 1076 pounds, loss 82.74 per cent; double ration, 1400 pounds, green tobacco 7088 pounds per acre, cured 1148 pounds loss 83.80. per cent.

Plat No. 12 was devoted to a general crop of bright leaf tobacco, using the Hester variety. It was fertilized with one part of phosphate to two parts of meal, and one-third part sulphate potash at rate of 1000 pounds per acre. The yield per acre was: green tobacco 4923⅓ pounds, cured 1293⅓, loss 73.73 per cent. The soil was a deep, gray, sandy sodland.

Cigar Tobacco.

One-quarter of an acre on Plat No. 7 was selected for cigar tobacco. The soil was a red sandy, with red clay subsoil, 1800 pounds of the same fertilizer as used above was applied broadcast. Cuban and Sumatra varieties were selected. The rows were two and one-half feet wide and plants stood fourteen inches apart in drill, the object of crowding being to produce a small, thin, silky leaf. The Cuba tobacco, in proeess of curing, was destroyed by fire, and the yield of cured tobabco therefore is not given. The Sumatra produced, per acre, green 4602 pounds, cured 806 pounds, loss 82.48 per cent. Cuban produced 4235 pounds green tobacco.

It is worthy of note, that practically all of the tobacco was

watered as set and for several days after, as there was such lack of moisture. The land was deeply broken, rows marked off three and one-half feet apart and fertilizer applied, plat list made on same, and plants set three feet apart, except cigar varieties. The cultivation was with scooters, heel-sweeps and hoes. The curing was the "wired stick" and flue heat process in the modern Snow tobacco barn, details of which have been given in previous Bulletins, except cigar tobacco which was "air cured." The yields were a little over half the normal crops.

Plat No. 13 was devoted to experiments in the manner of planting and cultivating of corn. The land was broken with three-horse disc plow early in March and harrowed well. Rows marked four feet apart and fertilizer applied, equal parts of meal and phosphate 600 pounds per acre applied and corn planted March 29th. Below is a table giving details and results:

No. Experiment.	MANNER OF PLANTING AND CULTIVATION.	Yield per acre, pounds.	Yield per acre, bushels.
1	Planted flat, cultivated shallow	1141½	15.85
2	Planted flat, cultivated deep	1106	15.36
3	Bedded, shallow cultivation	1036	14.38
4	Bedded, deep cultivation	1022	14.19
5	In water furrow, shallow cultivation	1295	17.98
6	In water furrow, deep cultivation	1218	16.91
7	Bedded and listed backwater furrow, shallow cultivation	1214	16.84
8	Bedded and listed backwater furrow, deep cultivation	1155	16.04

Nos. 1, 3, 5 and 7, shallow cultivation, were cultivated May 2nd, with Planet Jr., cultivator, and Nos. 2, 4, 6 and 8 with half shovels, (offbarred); Nos. 1, 3, 5 and 7 (shallow cultivation) were cultivated May 16th with heelsweeps and small scooters attached to Buckeye cultivator; Nos. 2, 4, 6 and 8 (deep cultivation) with sweeps and large scooters run deep, attached to Buckeye; Nos. 1, 3, 5 and 7 (shallow cultivation) were cultivated with Planet Jr., small scooters and

heelsweeps attached, May 29th; Nos. 2, 4, 6 and 8 (deep cultivation) were cultivated with Buckeye, large scooters and fourteen-inch heelsweeps, run deep.

Conclusions drawn from these results are that:

First—Shallow is better than deep cultivation.

Second—Flat planting is better than bedding.

Third—Planting in water furrow is best for dry years.

Fourth—Bedding land and listing back in water furrow, opening and planting, cultivating shallow, will come nearer meeting all the conditions of all seasons, possibly, than any other.

This corn, planted as late as it was, suffered most from the drouth. It bid fair at one time to make forty or fifty bushels per acre.

Plat No. 14 was devoted to Irish potatoes. Land was broken in January and potatoes, Triumph variety, were planted February 22nd. They received one working with Key cultivator and two with sweeps and scooters, and harvested June 1st. Below are the results:

PLAT NO. 14—IRISH POTATOES. PROPORTION TEST.

No. Experiment.	KIND AND QUANTITY FERTILIZER PER ACRE.	Bushels tubers per acre.	Bushels culls per acre.	Total bushels per acre.
1	800 pounds per acre, equal parts meal and phosphate..	66.4	5⅓	71.73
2	800 pounds per acre, two parts meal, one of phosphate.	58	5⅜	63⅜
3	800 pounds per acre, three parts meal, one of phosphate	57	6	63
4	800 pounds per acre, four parts meal, one of phosphate	45	7½	52½

Equal parts of meal and phosphate gave best results. Though the season was extremely dry and practically no potatoes were raised in this section, there is enough here in these experiments to indicate conclusively the need of acid phosphate to grow maximum crops. This question of proportion of meal and phosphate has been debatable, with advantage in favor of nitrogen increase.

During the fall experimental plats of grasses and clovers

were planted and good stands secured, a report of which will be made in due time. Variety test of wheats were also made. The old plat of alfalfa survived the cold of last winter and the severe drouth of the summer, and bids fair to give even better results than heretofore. Three cuttings were secured this year before the drouth stopped its growth. On red land, heavily manured with stable manure and land deeply broken and thoroughly pulverized, and then twenty pounds seed sown to the acre, it seems certain that alfalfa can be successfully grown. Its value as a hay and grazing crop, especially for hogs, will certainly justify an earnest and continued effort to grow one or more acres, anyhow.

The following is a condensed record of the weather kept by the Station since 1892, and is here given to serve as a record of the weather conditions for these years:

SUMMARY OF WEATHER AT THE NORTH LOUISIANA EXPERIMENT STATION, DURING 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899.

1892.	Maximum temperature.	Date.	Minimum temperature.	Date.	Mean temperature	Rainfall.	Snowfall.	Number of rainy days.
January	71	29	12	20	38.3	4.74	2.5	7
February	73	3	29	12	54 3	5.53	....	7
March	81	31	21	18, 19,	50.1	6.43	....	8
April	88	18	40	10	64.2	10.06	....	11
May	92	29	40	24	70.6	2.60	....	8
June	97	10	55	3	78.4	5.37	....	7
July	96	24, 25,	53	28	79.5	4.92	....	7
August	93	5 7,	65	15	78.7	4.38	....	14
September	89	26	49	15, 28,	71.0	5.01	....	3
October	86	6	32	26	65.5	.87	....	3
November	79	27	27	10	53.0	5 73	....	6
December	80	1	17	27	46.2	9.23	....	8
Total	....	....	..	....	....	64.87	2.5	89
Average	....	....	..	....	62 5	....	....	....

REMARKS.

Highest annual temperature 97 degrees, occured on June 10th.
Lowest annual temperature 12 degrees, occured on January 20th.

1893.	Maximum temperature.	Date.	Minimum tem.	Date.	Mean temperature.	Rainfall.	Snowfall.	Number of rainy days.
January	72	30	18	16, 20,	44.7	1.63	....	2
February	76	20	26	13, 23,	51.8	3.99	....	11
March	82	22	23	5	54.9	2.34	....	5
April	89	4	37	17	68.5	7.22	....	6
May	92	26	50	24	69.3	6.89	....	10
June	97	26	63	7	78.1	7.82	....	12
July	97	26	66	24	82.4	2.13	....	10
August	97	3	56	31	77	3.28	....	8
September	97	15	52	21	74	.28	....	3
October	91	1	31	31	62.8	.31	....	2
November	81	2	26	24	52.1	4.78	....	5
December	73	12, 15, 25,	23	4	49.1	2.54	....	3
Total	....	....	..	....	....	43.21	....	77
Average	....	....	..	....	63 7	....	....	....

REMARKS.

Highest annual temperature 97 degrees, occured on June 26th, July 26th, August 3rd and September 15th.

Lowest annual temperature 18 degrees, occured January 16 h and 20th.

1894.	Maximum temperature.	Date.	Minimum tem.	Date.	Mean temperature	Rainfall.	Snowfall.	Number of rainy days.
January	75	4	13	25	47.7	8.39	....	8
February	76	3	22	16	44.6	4.83	1.00	12
March	84	15, 21,	25	27	59.3	8.22	....	7
April	85	30	40	4, 5,	63.4	5.63	....	10
May	91	28	43	20	74.3	3.35	....	5
June	100.5	30	52	2	77.4	1.70	....	7
July	102	1	64	24, 27,	78.5	6.60	....	9
August	97	13	63	5	78.5	3.25	....	11
September	92	7	45	29	75.1	2.03	....	6
October	89	3	36	31	65.5	3.97	....	3
November	78	1, 16,	29	12, 18, 20,	56.7	1.32	....	2
December	72	8, 22.	12	28	48.6	6.17	....	6
Total	....	....	..	....	....	55.46	1.00	86
Average	....	....	..	....	64.1	....	....	....

Highest annual temperature 102 degrees, occured July 1st.

Lowest annual temperature 12 degrees, occured December 28th.

1895.	Maximum temperature.	Date	Minimum tem.	Date.	Mean temperature	Rainfall.	Snowfall.	Number of rainy days.
January	72	20	16	13	42 4	4.89	½	9
February	74	27	*3	8	37.2	1.26	....	4
March	84	27	28	17	56	4.07	....	6
April	88	29, 30,	35	3	64	1.86	....	3
May	90	31	45	18	70.5	4 94	....	10
June	95	2	58	7	78.2	13.15	....	17
July	99	18	70	{ 3, 10, 13. } { 21, 25 }	81.7	3.55	....	8
August	94	{ 10, 11, } { 15, 16, }	66	23	80.2	4.69	....	7
September	96	13	48	30	77 4	1.07	....	3
October	90	6	34	10, 21,	60.2	1.65	....	3
November	78	18	25	27	53.5	4.23	....	7
December	74	18	18	30	48.0	2.99	....	7
Total	.....	.....	..	.....	....	48.35	....	84
Average	.....	.....	..	.....	62 4	.....	½	...

REMARKS.

*Three degrees below zero Fahrenheit.
Highest annual temperature, 99 degrees, occurred July 18th.
Lowest annual temperature, 3 degrees below zero occurred February 8.

1896.	Maximum temperature.	Date.	Minimum tem.	Date.	Mean temperature	Rainfall.	Snowfall.	Number of rainy days.
January	70	11	12	5	44.7	3.41	....	9
February	72	26, 29,	26	9	48.2	6.27	....	10
March	86	31	27	11. 13,	54.3	4.64	....	7
April	90	26	32	3	69.6	2.47	....	3
May	99	31	57	5	76.6	1.53	....	4
June	100	28	53	13	79 4	.78	....	2
July	104	31	6*	2	85.7	.28	....	1
August	104	2	60	28, 30,	84.2	3.07	....	4
September	101	16	42	29	74.9	3.71	....	4
October	89	5	37	19	64.2	5.16	....	8
November	85	11	27	30	56.7	5 61	....	6
December	75	7	22	25	48.3	.33	....	3
Total	.....	.....	..	.....	....	37.26	....	61
Average	.....	.....	..	.....	65 6	.....	....	....

REMARKS.

Highest annual temperature, 104 degrees, occurred July 31 and Aug. 2.
Lowest annual temperature, 12 degrees, occurred January 5th.

1897.	Maximum temperature.	Date.	Minimum tem.	Date.	Mean temperature	Rainfall.	Snowfall.	Number of rainy days.
January	75	2	10	27	43	8.58	1¾	10
February	77	17, 20, 21, 22,	20	27	51.9	3.41	...	5
March	85	30	34	24	64.6	6.40	...	11
April	83	21	38	10, 17,	64.3	2.00	...	7
May	90	28	51	1, 2. 15,	70.7	2.70	...	5
June	101	22	59	5	76.9	3.93	...	4
July	100	1, 2. 5,	60	14	84.0	3.14	....	5
August	103	4	63	24	82 7	2.47	....	3
September	97	3. 4, 9,	43	22	76.5	1.62	....	3
October	92	3, 4, 18,	41	30	70.1	2.09	....	2
November	83	15	26	30	54.3	1.13	....	3
December	73	8	23	5	45.5	9.16	....	4
Total	.....	.....	..	.....	....	46.66	1¾	62
Average	.....	.....	..	.....	65.4	.....	....	....

REMARKS.

Highest annual temperature, 103 degrees, occurred August 4th.
Lowest annual temperature, 10 degrees, occurred January 27th.

1898.	Maximum temperature.	Date.	Minimum tem	Date.	Mean temperature	Rainfall.	Snowfall.	Number of rainy days.
*January	.....	.....	..	.....	....	7.91	....	9
February	72	26	23	4	48.9	2.95	....	3
March	86	22	28	5	59.5	4.03	....	7
April	83	21, 30,	32	6	61.4	4.62	....	5
May	93	29, 31,	42	7	74.1	1.37	....	4
June	93	19	65	17	79.7	8.61	....	16
July	97	21. 22,	62	14	80	3.81	....	11
August	96	23	64	11	79.9	2.26	....	6
September	93	2, 4, 5, 6.	54	8	75.9	4.62	....	9
October	89	5	31	27. 31,	61.6	5.28	....	8
November	78	4, 5,	24	22	49.8	7.18	....	8
December	73	20	16	10	43.4	2.33	....	4
Total	.....	.....	..	.....	....	54.97	....	90
Average	.....	.....	..	.....	64.9	.....	..	..

REMARKS.

*Observer absent and no temperature record kept for January.

Highest annual temperature, 97 degrees, occurred July 21st and 22nd.
The lowest annual temperature recorded, 16 degrees, occurred December 10th.

1899.	Maximum temperature.	Date.	Minimum tm.	Date.	Mean temperature.	Rainfall.	Snowfall.	Number of rainy days.
January	75	13	18	1, 2,	44.0	5.11	....	6
February	76	21	*13	13	36.5	.64	8¼	4
March	8[illegible]	26	27	6	57.8	4.83	....	8
April	91	28	34	9	62.9	1 69	....	4
May	93	29, 31,	56	11	76.7	1.36	....	4
June	96	3, 4, 5, 8,	58	18	79.6	1.96	....	6
July	101	22	54	5	81.0	1.58	....	5
August	102	9, 10,	65	31	83 8	2.22	....	7
September	100	5	39	30	73.2	.49	....	3
October	87	13, 20,	37	30, 31,	66.4	2.48	....	4
November	80	11	25	3	54.9	2.45	....	2
December	70	18	21	6, 16	44.3	5.10	....	8
Total	....	....	....	....	....	29.91	8¼	61
Average	....	....	....	....	63.4	....	....	....

REMARKS.

*Thirteen degrees below zero, Fahrenheit.

Highest annual temperature, 102 degrees, occurred August 9th and 10th.
Lowest annual temperature, 13 degrees below zero occurred February 13.

SUMMARY FOR EIGHT YEARS.

Highest temperature, 104 degrees, occurred July 31, 1895.
Lowest temperature, 13 degrees below zero, occurred February 13, 1899.
Mean annual temperature 64 degrees Fahrenheit.
Mean annual rainfall 47.58 inches.
Mean number of rainy days annually, 76.