

E. O. Sanderson

TEXAS AGRICULTURAL EXPERIMENT STATIONS.

BULLETIN No. 50.

Agricultural Section—FEBRUARY, 1899.—Field Crops and Live Stock.

Charles Brooks

COTTON EXPERIMENTS.

**COLLEGE STATION,
VARIETIES.
FERTILIZERS.**

**BEEVILLE, TEXAS,
VARIETIES.
VARIETIES AND DISTANCE.**

POSTOFFICE:
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NOTE.—*The main station is located on the grounds of the Agricultural and Mechanical College in Brazos County. The postoffice address is COLLEGE STATION, TEXAS. Reports from this station are sent to farmers of the State upon application to the Director.*

Experiments With Cotton at College Station.

B. C. PITTUCK.

SUMMARY.

The following experiments with *cotton* were carried on at this Station during the season of 1898:

1. A continuation of test with varieties—12 varieties.
2. A continuation of test with fertilizers—fertilizers applied during January, 1897; first year's work published in Bulletin No. 45 of this Station.

I.

The *five* varieties making the *largest average yields of seed cotton* during *three years*—1894, 1895 and 1898—were:

	Pounds.
(1) Beck's Big Boll	1390
(2) Dixon's Improved	1219
(3) Peerless	1196
(4) Sure Fruit	1194
(5) Cochran's Prolific	1174

The *five* varieties making the *largest yield of seed cotton* per acre during 1898 were:

	Pounds.
(1) Dixon's Improved	1390
(2) Beck's Big Boll	1328
(3) Lowry's Prolific	1296
(4) Peerless	1282
(5) Bohemian *	1221

The *five* varieties making the *largest money value* per acre during 1898 were:

	Lint.	Seed.	Total.
Beck's Big Boll (2).....	25.87	2.65	28.52
Lowry's Prolific (3).....	28.05	2.44	30.49
Peerless (4).....	25.30	2.55	27.85
Bohemian * (5).....	26.36	2.41	28.77
Sure Fruit (6).....	25.55	2.37	27.92

* Yield, and value of yield, with Bohemian Cotton represents an average of three plots—1, 6 and 13.

II.

Of the Nitrogen-Phosphoric Acid fertilizers, Cotton Seed Meal, at the rate of 500 pounds per acre, gave the largest yield—1357 pounds seed cotton.

Of the Phosphatic fertilizers, Bone Black, at the rate of 500 pounds per acre, gave the largest yield—1315 pounds seed cotton.

Of the Potash-Lime fertilizers, Wood Ashes at the rate of 2000 pounds per acre, gave the largest yield—1063 pounds seed cotton.

Of the Complete fertilizers, Acid Phosphate and Stable Manure, at the rate of 200 pounds and 4000 pounds respectively, gave the largest yield—1162 pounds seed cotton.

The largest *net* gain from the use of fertilizers (\$2.16 per acre) was given by a single application of Cotton Seed Meal at the rate of 500 pounds per acre.

The average value per acre for 1897 and 1898 shows that gains in *money value* were made by single applications of Nitrogen in the form of Cotton Seed Meal or Stable Manure; Phosphoric Acid in the form of Bone Black; Potash and Lime in the form of Wood Ashes and Cotton Seed Hull Ashes; and combinations of Acid Phosphate and Stable Manure.

VARIETY TEST.

A test of varieties with cotton was begun in 1894, and continued during the seasons of 1895 and 1898. Of 32 varieties ordered for experimental purposes during 1898 we are only able to report upon 12 distinct varieties, as a large per cent of the sacks of seed were poorly tagged and labeled, leaving many of the varieties unknown to us.

All varieties were planted April 26, and germinated to fair stands. April 28, cotton logged off; May 2, ridges harrowed with Orrick harrow; May 14, middles harrowed with Orrick harrow (set V shape); May 20, plowed with riding plow; May 30, cultivated with double stock—14-inch sweeps; June 14, hoed and thinned to stand; June 23, cultivated with double stock—14-inch sweeps; July 16, cultivated with single sweeps, running, around and splitting middles.

The growth of cotton was good throughout the entire season.

Seeds used in this test were purchased as follows:

Bohemian—Texas Experiment Station.

Beck's Big Boll—C. B. Beck, Bryan, Texas.

Cochran's Prolific—Mark W. Johnson Seed Company, Atlanta, Ga.

Smith's Improved—E. A. Smith, Conyers, Ga.

Tyler's Limbed Cluster—Alexander Drug and Seed Company, Augusta, Ga.

Sure Fruit—W. M. Girardeau, Monticello, Fla.

Peerless—H. C. Prevost, New Orleans, La.

Hawkin's Extra Prolific—Alexander Drug and Seed Company, Augusta, Ga.

Doughty's Extra Long Staple—Alexander Drug and Seed Company, Augusta, Ga.

Griffin's Drouth Proof—Mark W. Johnson Seed Company, Atlanta, Ga.

Lowry's Prolific—J. G. Lowry, Cartersville, Ga.

The following table gives date and amount of each picking, total yield seed cotton and lint, and value of seed and lint at market prices:

Varieties -Cotton.

Plot	VARIETIES	First Pick- ing Aug. 26	Second Pick- ing Sept. 9	Third Pick- ing Sept. 27	Total Seed Cotton pounds	% Lint	Total yield Lint— pounds	Total Yield Seed— pounds	Value of Lint per Classifica- tion	Value of Seed at \$6 per ton
1	<i>Bohemian</i> —(Texas Experiment Station).....	500	335	368	1203	32	385	793	\$25 98	\$2 37
2	Beck's Big Boll (C. B. Beck, Bryan, Texas)	595	350	383	1328	30	398	884	25 87	2 65
3	Cochran's Prolific (M. W. Johnson Seed Co., Atlanta, Ga.).....	535	350	269	1154	29	334	773	20 66	2 22
4	Smith's Improved (E. A. Smith, Conyers, Ga.)	550	350	196	1096	29	317	733	19 61	2 19
5	Tyler's Limbed Cluster (Alexander Seed & Drug Co., Augusta, Ga.).....	510	345	239	1094	28	306	748	19 50	2 24
6	<i>Bohemian</i> (Texas Experiment Station).....	550	385	363	1298	32	415	856	28 01	2 56
7	Sure Fruit (W. M. Girardeau, Monticello, Fla.)	665	320	230	1215	34	413	790	25 55	2 37
8	Peerless (H. C. Prevost, New Orleans, La.)....	652	320	310	1282	31	397	851	25 30	2 55
9	Hawkins' Extra Prolific (Alexander Seed & Drug Co., Augusta, Ga.).....	597	338	234	1169	30	350	752	21 65	2 25
10	Doughty's Extra Long Staple (Alexander Seed & Drug Co., Augusta, Ga.).....	481	243	246	970	27	262	682	17 52	2 04
13	<i>Bohemian</i> (Texas Experiment Station).....	409	309	446	1164	32	372	768	25 11	2 30
14	Griffin's Drouth Proof (M. W. Johnson Seed Co., Atlanta, Ga.).....	390	314	309	1013	30	304	660	19 38	1 98
15	Dixon's Improved (Capers Dixon, Oxford, Ga.)	652	361	377	1390	27	375	954	23 90	2 86
19	Lowry's Prolific, (J. G. Lowry, Cartersville, Ga.)	641	335	320	1296	34	440	815	28 05	2 44

The following table includes the average yield seed cotton of eight varieties of cotton for each of the three years, 1894, 1895 and 1898, together with the average of all yields of each variety for three years:

Varieties—Average Yields for Three Years.

VARIETIES	Yield Seed Cotton—Pounds			Average Yield for 3 years
	1894	1895	1898	
Bohemian	(8) 952	(8) 925	(8) 1060	(8) 979
Beck's Big Boll	(5) 1248	(1) 1138	(2) 1328	(1) 1238
Cochran's Prolific	(3) 1287	(2) 1083	(6) 1154	(5) 1174
Tyler's Limbed Cluster	(1) 1490	(7) 931	(7) 1094	(6) 1171
Sure Fruit	(2) 1390	(5) 1013	(4) 1180	(4) 1194
Peerless	(6) 1239	(3) 1067	(3) 1282	(3) 1196
Hawkins' Extra Prolific	(7) 1238	(4) 1063	(5) 1169	(7) 1156
Dixon's Improved	(4) 1279	(6) 959	(1) 1390	(2) 1219

SUMMARY.

The following summary of the result of experiments with varieties of cotton during 1894, 1895 and 1898 are given, that the reader may easily refer and compare the results of 1898:

SEASON OF 1895 (34 VARIETIES).

The five varieties which made the *largest yield seed cotton* per acre in 1895, *early planting*, were:

	Pounds.
(1) Dickson Early Cluster	1364
(2) Peerless	1223
(3) Cochran's Prolific	1216
(4) Texas Oak	1196
(5) Welborn's Pet.	1195

The five varieties which made the *largest money value* per acre in 1895, *early planting*, were:

Texas Oak (4)	\$35 56
Jones' Improved (2)	34 89
Cochran's Prolific (3)	34 88
Welborn's Pet (5)	34 42
Dickson's Early Cluster (1)	33 72

The five varieties which made the *largest yield seed cotton* per acre in 1895, *late planting*, were:

	Pounds.
(1) Welborn's Pet.	1175
(2) Beck's Prolific	1142
(3) Peterkin Limbed Cluster	1114
(4) Sure Fruit	1099
(5) Texas Oak	1095

The five varieties which made the *largest money value* per acre in 1895, *late planting*, were:

Welborn's Pet (1)	\$33 88
Jones' Improved (4)	32 84
Beck's Prolific (2)	31 92
Peterkin Limbed Cluster (3)	31 81
Texas Oak (5)	31 43

SEASON OF 1894 (31 VARIETIES).

The five varieties which made the *largest yield seed cotton* per acre in 1894, *early planting*, were:

	Pounds.
(1) Sure Fruit	1282
(2) Drake's Cluster	1251
(3) Peerless	1230
(4) Hawkins' Improved	1229
(5) Allen Long Staple	1224

The five varieties which made the *largest yield seed cotton* per acre in 1894, *late planting*, were:

	Pounds.
(1) Peterkin Limbed Cluster.....	1908
(2) Herlong	1760
(3) Peterkin	1538
(4) Truitt's Improved	1522
(5) Southern Hope	1518

SEASON OF 1898 (12 VARIETIES).

The five varieties making the *largest yield seed cotton* per acre were:

	Pounds.
(1) Dixon's Improved	1390
(2) Beck's Big Boll	1328
(3) Lowry's Prolific	1296
(4) Peerless	1282
(5) Bohemian	1221

The five varieties making the *largest money value* per acre were:

Lowry's Prolific (3).....	\$30 49
Bohemian (5).....	28 77
Beck's Big Boll (2).....	28 52
Sure Fruit	27 92
Peerless (4).....	27 85

DESCRIPTION OF THIRTY-ONE VARIETIES OF COTTON.

LONG STAPLE.

Allen's Long Staple.—Seed from H. C. Prevost, New Orleans, La.
Description: Long limbs put out from near the ground, short limbs (with short joins bearing cotton) put out from these long limbs and from the main stalks. Bolls medium size, long and pointed, distri-

buted on short limbs from main stalk and from the short ones growing out from the long limbs. Plant a vigorous grower, average height 4 1-2 feet, with light green foliage. Cost of seed, 75 cents per half bushel.

Coltharp's Eureka.—Seed from Coltharp Bros., Talullah, La. *Description*: Resembles Allen's Long Staple in main characteristics. Cost of seed, \$1 per half bushel.

Dalkeith's Eureka.—Seed from D. G. Humphrey's, Dalkeith, La. *Description*: Stalk very open with long limbs and long joints, bolls small; average height of plant, 3 1-2 feet, with very light green foliage. Cost of seed, \$1 per half bushel.

Hurley's Choice.—Seed from T. C. Hurley, Pottsboro, Texas. *Description*: Stalk very open, with long limbs, small bolls; average height of plant, 4 feet; vigorous, with dark green foliage. Seed donated.

Jones' Wonderful.—Seed from J. H. Jones, Herndon, Ga. *Description*: Long limbs, with long joints; bolls large, long and pointed; plant a vigorous grower; average height 4 1-2 feet, with light green foliage. Cost of seed, \$1 per half bushel.

Matthews' Extra Long Staple.—Seed from J. A. Matthews, Holly Springs, Miss. *Description*: Resembles Allen's Long Staple in main characteristics. Cost of seed, \$1 per half bushel.

Southern Hope.—Seed from E. J. McGehee, Pinckneyville, Miss. *Description*: Stalk pyramidal in shape, long drooping limbs with long joints, three to six bolls on each limb, bolls medium size, long and pointed, plant large and vigorous, average height 5 feet, with light green foliage. Seed cost \$2 per half bushel.

LONG LIMBED VARIETIES.

Beck's Big Boll.—Seed from C. B. Beck, Bryan, Texas. *Description*: Resembles Bohemian in main characteristics. Cost of seed, 75 cents per half bushel.

Bohemian.—Seed from Rudolph Simmons, College Station, Texas. *Description*: Stalk low, broad and open, with long limbs, bolls very large and round, usually containing five locks of cotton each, plant small, average height 3 1-2 feet, with dark green foliage. Cost of seed, 25 cents per half bushel.

Dixon's Improved.—Seed from Capers Dixon, Oxford, Ga. *Description*: Stalk open, long limbs with very short joints, bolls medium size and round, average height of plant 3 1-2 feet, with light green foliage. Cost of seed, \$1.25 per half bushel.

Dooley's Improved.—Seed from W. B. Dooley, Wharton, Texas. *Description*: Resembles Marston in main characteristics. Seed donated.

Jones' Improved.—Seed from V. B. Hardy, Bryan, Texas. *Description*: Stalk small, low and open, with long limbs, bolls round and above medium size, average height of plant 3 feet, with dark green foliage. Cost of seed, 75 cents per half bushel.

King's Improved.—Seed from T. J. King, Louisburg, N. C. *Description*: Stalk very open, with long limbs, bolls small, average height of plant 2 1-2 feet, with very light green foliage. Cost of seed, \$1 per half bushel.

Marston.—Seed from H. C. Prevost, New Orleans, La. *Description*: Stalk very open, long limbs put out from near the ground, limbs of medium length put out from the main stock and the long limbs, bolls medium size, plant vigorous, average height 4 feet, with light green foliage. Cost of seed, 50 cents per half bushel.

Peeler.—Seed from H. C. Prevost, New Orleans, La. *Description*: Stalk very large and open, with long drooping limbs, bolls medium size, long and pointed, plant a vigorous grower, average height 5 1-2 feet, with light green foliage. Cost of seed, \$1 per half bushel.

Peterkin Improved.—Seed from Alexander Drug and Seed Company, Augusta, Ga. *Description:* Stalk very open, with long limbs, bolls medium size, average height of plant 4 1-2 feet, with light green foliage. Cost of seed, 65 cents per half bushel.

Peterkin Limbed Cluster.—Seed from Alexander Drug and Seed Company, Augusta, Ga. *Description:* Long limbs with short joints, bolls very small, plant a vigorous grower, average height 4 1-2 feet, with dark green foliage. Cost of seed, 25 cents per half bushel.

Petit Gulf.—Seed from H. C. Prevost, New Orleans, La. *Description:* Resembles Peeler in main characteristics. Cost of seed, 38 cents per half bushel.

Sure Fruit.—Seed from W. M. Girardeau, Monticello, Fla. *Description:* Resembles Marston in main characteristics. Cost of seed, \$3 per half bushel.

Tennessee Gold Dust.—Seed from Jenkins & Trobaugh, Stewartville, Tenn. *Description:* Stalk very open, with long limbs, bolls medium size, average height of plant 3 feet, with very light green foliage. Seed cost \$4 per half bushel.

Tennessee Gold Dust.—Seed from T. C. Hurley, Pottsboro, Texas. *Description:* Seed badly mixed. Seed donated.

Texas Storm Proof.—Seed from W. J. Smilie, Baileyville, Texas. *Description:* Stalk very large, with very long limbs, bolls large and round, average height of plant 4 1-2 feet, with light green foliage. Seed donated.

Truitt's Improved.—Seed from G. W. Truitt, La Grange, Ga. *Description:* Stalk low, broad and open, with long limbs with short joints, often bearing bolls on opposite sides of the limb; bolls medium size, round; plant vigorous, with very large dark green foliage. Cost of seed, \$1 per half bushel.

Tyler's Limbed Cluster.—Seed from Alexander Drug and Seed Company, Augusta, Ga. *Description:* Stalk very open; long limbs, with very short joints; bolls small; average height 5 1-2 feet; plant vigorous, with light green foliage. Seed donated.

CLUSTER VARIETIES.

Beck's Prolific.—Seed from C. B. Beck, Bryan, Texas. *Description:* Long limbs put out from near the ground, short limbs (with short joints bearing cotton) put out from these long limbs from the main stalks; bolls medium size and round; plant small; average height of plant 3 feet, with light green foliage. Cost of seed, 75 cents per half bushel.

Cochran's Prolific.—Seed from Mark W. Johnson Seed Company, Atlanta, Ga. *Description:* Resembles Beck's Prolific in main characteristics. Cost of seed, 90 cents per half bushel.

Drake's Cluster.—Seed from R. W. Drake, Laneville, Ala. *Description:* Resembles Beck's Prolific in main characteristics. Cost of seed, \$1 per half bushel.

Hawkins' Improved.—Seed from Alexander Drug and Seed Company, Augusta, Ga. *Description:* Resembles Beck's Prolific in main characteristics. Cost of seed, \$1 per half bushel.

Herlong.—Seed from H. C. Prevost, New Orleans, La. *Description:* Resembles Beck's Prolific in main characteristics. Cost of seed, 75 cents per half bushel.

Peerless.—Seed from H. C. Prevost, New Orleans, La. *Description:* Stalk open, pyramidal in shape, long limbs with very short joints, bolls medium size, average height of plant 3 1-2 feet, with light green foliage. Cost of seed, \$1 per half bushel.

Welborn's Pet.—Seed from Jeff D. Welborn, New Boston, Texas. *Description:* Long limbs put out from near the ground, bolls form in clusters along the main stalk and long limbs, average height of plant 3 1-2 feet, with light green foliage. Seed donated.

FERTILIZERS.

This test was begun during 1897. Fertilizer applications were made during January of the same year. The results of the first year's work (1897) was published in Bulletin No. 45 of this Station. Fertilizer applications were not repeated last season as we desired to observe the continued effect of each application through a period of several years.

The crop following the application of fertilizers did not show as great a difference in yield between fertilized and unfertilized plots, as did the crop grown on same plots one season later. During 1897 no applications gave gain in money value from the use of fertilizers, but the following season (1898), which was distinctly favorable to large yields per acre in this section, showed a gain in money value in several instances. Averaging the yields of the two seasons (1897 and 1898) and computing the values at varying prices (1 5-8, 1 6-8, 1 7-8 and 2 cents per pound for seed cotton) we find that under average conditions in this section we can make profitable applications of Nitrogen and Phosphoric Acid in the form of Cotton Seed Meal or Stable Manure; Phosphoric Acid in the form of Bone Black; Potash and Lime in the form of Wood Ashes or Cotton Seed Hull Ashes; also combinations of Phosphoric Acid and Stable Manure. The average of two years' work shows a net loss in yield of seed cotton from the use of lime alone.

The percentage increase in yield of seed cotton from the use of each fertilizer during the season immediately following their application (1897) and the following season of 1898, are given below:

Plot	FERTILIZER—APPLIED JANUARY, 1897.	Per Cent. increase ^e in yield Seed cotton ⁿ from use of fertilizers		Per Cent increase. —average of two years
		1897	1898	
22	(Check)—No manure.....	.....	.....	.....
23	300 pounds Kainit in subsoil furrow; 300 pounds surface application.....	2.4	5.1	3.9
24	500 pounds Lime in subsoil furrow; 500 pounds surface application.....	.....	.79	*
25	2000 pounds Wood Ashes; 400 pounds Cot- ton Seed Meal; 300 pounds Acid Phos- phate .....	.....	32.6	17.6
26	100 pounds Kainit; 400 pounds Acid Phos- phate; 150 pounds Nitrate Soda .....	.....	39.4	16.3
32	(Check)—No Manure.....	.....	.....	.....
33	2000 pounds Wood Ashes.....	.....	30.0	16.3
34	200 pounds Muriate of Potash.....	.....	20.0	6.0
35	500 pounds Acid Phosphate	1.9	41.7	23.9
36	200 pounds Acid Phosphate; 4000 pounds stable manure.....	.77	42.1	23.6
37	300 pounds Nitrate of Soda.....	.....	22.3	12.0
38	4000 pounds stable manure.....	.....	23.5	9.9
39	500 pounds Cotton Seed Hull Ashes.....	1.4	23.5	13.6
40	500 pounds Bone Black.....	11.8	60.8	38.8
41	500 pounds Bone Meal.....	2.9	58.2	33.3
42	325 pounds Bat Guano.....	.....	43.4	23.6
43	Cotton planted broadcast; no cultivation given .....	.....	29.5	.....
44	500 pounds Cotton Seed Meal.....	7.7	65.9	39.9

*Decrease.

From the above table we infer that the fertilizers had very little effect upon the crop during the season immediately following their application—the range of increase from their use during that season running from .77 per cent to 11.8 per cent—neither being sufficient to pay the cost of any fertilizer application. During the season of 1898 the per cent increase in yield from the use of fertilizers was greater. The average per cent increase in yield for two years is given in last column.

The average yields of seed cotton for two years at 1 5-8—a low estimate—per pound (4 7-8 cents per pound for lint) plots 33 (16.3 per cent increase), 36 (23.6 per cent increase), 38 (9.9 per cent increase), 39 (13.6 per cent increase), 44 (39.9 per cent increase), gave a net gain from the use of fertilizers.

Bone Black (38.8 per cent increase) gave a loss from its use, calculating seed cotton at 1 5-8 cents; at 1 6-8 cents and above the application of Bone Black gave a net gain.

The application of Wood Ashes (\$1 per acre) made a larger net gain than a combination of acid phosphate and stable manure (\$2.50 per acre), or, single applications of stable manure (\$1 per acre), or cotton seed hull ashes (\$1.25 per acre).

The costliest fertilizer of those making net gains made the largest net gain—cotton seed meal (\$3.75 per acre).

The cost of commercial fertilizers in this State is enormous, because of high freight rates—there being no fertilizer depots of any consequence nearer than New Orleans. Consequently the farmer is limited to the home supply, such as stable manure, wood ashes, cotton seed meal, cotton seed hull ashes and lime. Of these cotton seed meal is the costliest. The first two are the cheapest.

Of the above mentioned fertilizers we may call cotton seed meal and stable manure nitrogenous fertilizers, although the former contains a fair percentage of phosphoric acid.

Wood ashes and cotton seed hull ashes are potash fertilizers and also exert a beneficent effect upon the physical condition because of the large amount of lime they contain. Lime, when applied to tight, impervious soils, makes them pliable and easier to work as well as leaving easier conditions for root penetration.

The table on next page shows the range of profit as regulated by the price of cotton. In every instance, except Plot 24, with an increase in price for cotton the per cent of increase in gain grows larger.

The actual yield on plot No. 24 was less than on unfertilized land, consequently with an increase in price we increase the loss.

In this table the value of the average yield of two years (1897 and 1898) has been estimated at 1 5-8 cents, 1 6-8 cents, 1 7-8 cents and 2 cents per pound for seed cotton; also, the net decrease or increase from the use of fertilizers at each rate.

Two Years Work with Fertilizers at College Station—1897 and 1898.

Plot	FERTILIZERS APPLIED—1897	Cost of Fertilizers applied 1897	Yield per Acre,		Average Yield Seed Cotton per acre for 1897 and 1898	*Seed Cotton at 1½c per lb.		*Seed Cotton at 1½c per lb.		*Seed Cotton at 1½c per lb.		*Seed Cotton at 2c per lb.	
			1897	1898		Value per Acre	Gain or Loss from use of fertilizers	Value per Acre	Gain or Loss from use of fertilizers.	Value per Acre	Gain or Loss from use of fertilizers.	Value per Acre	Gain or Loss from use of fertilizers.
22	Check (no manure).....	\$ —	679.4	724	701.7	\$11 40	\$ —	\$12 27	\$ —	\$13 15	\$ —	\$14 03	\$ —
23	300 lbs. Kainit in subsoil furrow; 300 lbs. surface application.....	4 42	676.9	860	768.4	12 48	—3 94	13 44	—3 90	14 40	—3 87	15 36	—3 83
24	500 lbs. Lime in subsoil furrow; 500 lbs. surface application.....	6 66	559.5	824	691.7	11 24	—7 42	12 10	—7 48	12 96	—7 55	13 83	—7 60
25	2000 lbs. Wood Ashes; 400 lbs. Cotton seed meal; 300 lbs. Acid phosphate	6 25	654.6	1084	869.3	14 22	—4 13	15 21	—3 96	16 26	—3 84	17 38	—3 64
26	100 lbs. Kainit; 400 lbs. Acid phosphate; 150 lbs. Nitrate of soda...	8 60	579.1	1140	859.5	13 96	—6 64	15 03	—6 49	16 11	—6 34	17 19	—6 18
32	(Check), no manure.....	.....	641.5	911	776.2	12 61	.....	13 58	.....	14 55	.....	15 52	.....
33	2000 lbs. Wood ashes.....	1 00	656.6	1063	859.8	13 96	+0 96	15 04	+1 12	16 11	+1 26	17 19	+1 42
34	200 lbs. Muriate of potash.....	6 00	584.1	983	783.5	12 73	—5 25	13 70	—5 22	14 68	—5 17	15 67	—5 10
35	500 lbs. Acid phosphate.....	3 75	673.0	1159	916.0	14 88	—0 87	16 03	—0 64	17 17	—0 43	18 32	—0 20
36	200 lbs. Acid phosphate; 400 lbs. stable manure.....	2 50	665.5	1162	913.7	14 84	+0 34	15 98	+0 56	17 13	+0 78	18 27	+1 00
37	300 lbs. Nitrate of soda.....	9 75	656.0	1000	828.0	13 45	—8 30	14 49	—8 17	15 52	—8 08	16 56	—7 96
38	4000 lbs. stable manure.....	1 00	614.3	1010	812.1	13 19	+0 19	14 21	+0 29	15 22	+0 37	16 24	+0 47
39	500 lbs. Cotton seed hull ashes.....	1 25	670.1	1010	840.0	13 65	+0 40	14 70	+0 53	15 75	+0 65	16 80	+0 78
40	500 lbs. Bone black.....	5 00	733.5	1315	1026.2	16 68	—0 32	17 96	+0 04	19 24	+0 39	20 53	+0 76
41	500 lbs. Bone meal.....	5 75	676.8	1294	985.4	16 01	—1 74	17 24	—1 43	18 47	—1 13	19 70	—0 82
42	325 lbs. Bat guano.....	.....	653.6	1173	913.3	14 84	.....	15 98	.....	17 12	.....	18 26	.....
43	Cotton planted broadcast. no cultivation given.....	25	275.0	1059	667.0	10 82	.....	11 65	.....	12 48	.....	13 34	.....
44	500 lbs. Cotton seed meal.....	3 75	711.6	1357	1034.3	16 80	+1 05	18 09	+1 42	19 39	+1 76	20 68	+2 16

* Seed Cotton (Bohemian), at 1½ cents per pound=4½ cents per pound for lint; 1¾ cents per pound=5¼ cents per pound for lint; 1½ cents per pound=5 cents per pound for lint; 2 cents per pound=6 cents per pound for lint.

SUMMARY OF RESULTS OF FERTILIZER APPLICATIONS FOR TWO YEARS.

NITROGENOUS.

Nitrate of Soda. 1897—Yield seed lint per acre, 656 pounds; value of seed lint at 2 cents, \$13.12; increase in yield of seed lint above check plot, 14.5 pounds; lint 11.4 pounds.

1898—Yield seed lint per acre, 1000 pounds; value of seed lint at 2 cents, \$20; increase in yield of seed lint above check plot, 183 pounds; lint 60.8 pounds.

Stable Manure. 1897—Yield seed lint per acre, 614.3 pounds; value of seed lint at 2 cents, \$12.28; decrease in yield of seed lint below check plot, 27.2 pounds; lint, 9 pounds.

1898—Yield seed lint per acre, 1010 pounds; value of seed lint at 2 cents, \$20.20; increase in yield of seed lint above check plot, 193 pounds; lint, 64.1 pounds.

Bat Guano. 1897—Yield seed lint per acre, 653.6 pounds; value of seed lint at 2 cents, \$13.07; increase in yield of seed lint above check plot, 12.1 pounds; lint, 9 pounds.

1898—Yield seed lint per acre, 1173 pounds; value of seed lint at 2 cents, \$23.46; increase in yield of seed lint above check plot, 356 pounds; lint 18.5 pounds.

Cotton Seed Meal. 1897—Yield seed lint per acre, 711.6 pounds; value of seed lint at 2 cents, \$14.23; increase in yield of seed lint above check plot, 70.1 pounds; lint, 17.8 pounds.

1898—Yield seed lint per acre, 1357 pounds; value of seed lint at 2 cents, \$27.14; increase in yield of seed lint above check plot, 540 pounds; lint, 179.8 pounds.

PHOSPHATIC.

Acid Phosphate. 1897—Yield seed lint per acre, 673 pounds; value of seed lint at 2 cents, \$13.46; increase in yield of seed lint above check plot, 31.5 pounds; lint, 2.1 pounds.

1898—Yield seed lint per acre, 1159 pounds; value of seed lint at 2 cents, \$23.18; increase in yield of seed lint above check plot, 342 pounds; lint, 113.8 pounds.

Bone Black. 1897—Yield seed lint per acre, 738.5 pounds; value of seed lint at 2 cents, \$14.77; increase in yield of seed lint above check plot, 97 pounds; lint, 20.8 pounds.

1898—Yield seed lint per acre, 1315 pounds; value of seed lint at 2 cents, \$26.30; increase in yield of seed lint above check plot, 498; lint, 165.8 pounds.

Bone Meal. 1897—Yield seed lint per acre, 676.8 pounds; value of seed lint at 2 cents, \$13.53; increase in yield of seed lint above check plot, 35.3 pounds; lint 12.3 pounds.

1898—Yield seed lint per acre, 1294 pounds; value of seed lint at 2 cents, \$25.88; increase in yield seed lint above check plot, 477 pounds; lint, 158.8 pounds.

POTASH.

Kainit. 1897—Yield seed lint per acre, 676.9 pounds; value of seed lint at 2 cents, \$13.53; increase in yield of seed lint above check plot, 16.5 pounds; lint, 12.1 pounds.

1898—Yield seed lint per acre, 860 pounds; value of seed lint at 2 cents, \$17.20; increase in yield of seed lint above check plot, 43 pounds; lint, 14.1 pounds.

Wood Ashes (Potash and Lime.) 1897—Yield seed lint per acre, 656.6 pounds; value of seed lint at 2 cents, \$13.13; increase in yield of seed lint above check plot, 15.1 pounds; lint, .16 pounds.

1898—Yield seed lint per acre, 1063 pounds; value of seed lint at 2 cents, \$21.26; increase in yield of seed lint above check plot, 246 pounds; lint, 81.8 pounds.

Muriate of Potash. 1897—Yield seed lint per acre, 584.1 pounds; value of seed lint at 2 cents, \$11.68; decrease in yield of seed lint below check plot, 57.4 pounds; lint, 17.4 pounds.

1898—Yield seed lint per acre, 983 pounds; value of seed lint at 2 cents, \$19.66; increase in yield of seed lint above check plot, 166 pounds; lint, 55.1 pounds.

Cotton Seed Hull Ashes (Potash and Lime.) 1897—Yield seed lint per acre, 670.1 pounds; value of seed lint at 2 cents, \$13.40; increase in yield of seed lint above check plot, 28.6 pounds; lint, 12.4 pounds.

1898—Yield seed lint per acre, 1010 pounds; value of seed lint at 2 cents, \$20.20; increase in yield of seed lint above check plot, 193 pounds; lint, 64.1 pounds.

COMBINATIONS.

Wood Ashes, Cotton Seed Meal, Acid Phosphate. 1897—Yield seed lint per acre, 654.6 pounds; value of seed lint at 2 cents, \$13.09; decrease in yield of seed lint below check plot, 5.8 pounds; lint, 12.8 pounds.

1898—Yield seed lint per acre, 1084 pounds; value of seed lint at 2 cents, \$21.68; increase in yield of seed lint above check plot, 267; lint, 88.8 pounds.

Kainit, Acid Phosphate, Nitrate of Soda. 1897—Yield seed lint per acre, 579.1 pounds; value of seed lint at 2 cents,

\$11.58; decrease in yield of seed lint below check plot, 81.3 pounds; lint, 18.4 pounds.

1898—Yield seed lint per acre, 1140 pounds; value of seed lint at 2 cents, \$22.80; increase in yield of seed lint above check plot, 323 pounds; lint, 107.5 pounds.

Acid Phosphate, Stable Manure. 1897—Yield seed lint per acre, 665.5 pounds; value of seed lint at 2 cents, \$13.31; increase in yield of seed lint above check plot, 24 pounds; lint, 2.4 pounds.

1898—Yield seed lint per acre, 1162 pounds; value of seed lint at 2 cents, \$23.24; increase in yield of seed lint above check plot, 345 pounds; lint, 114.8 pounds.

CHARACTER OF STAPLE.

A sample of lint was taken as the yield from each plot was ginned—varieties and fertilizers. These samples were forwarded to The Slayden-Clarkson-Robards Co., of Houston, Texas. The number of each classification corresponds with the plot from which the sample was taken.

“Houston, Texas, February 18, 1899.

“Mr. B. C. Pittuck, College Station, Texas:

“Dear Sir.—I herewith beg to submit classification on the 32 samples of cotton sent me; also, prices of same based on Houston spot quotations of this day (February 18, 1899)—6 3-8 basis middling. The extra length in staple, you will note, brings a premium. I beg to advise, however, that had these cottons been pressed and baled it would have reduced the grade about 1-4.

“Yours very truly,

“Jules Castenado.”

Varieties.

1. Bohemian—American strict middling, 1 1-8 inch staple, strong; color good; price, 6 3-4 cents.
2. Beck's Big Boll—American middling, 1 1-8 inch staple, strong; color good; price, 6 1-2 cents.
3. Cochran's Prolific—American strict low middling; poor, price, 6 3-16 cents.
4. Smith's Improved—American strict low middling; poor; good color; price, 6 3-16 cents.
5. Tyler's Limbed Cluster—American middling; poor; color good; price, 6 3-8 cents.
6. Bohemian—American strict middling, 1 1-8 inch staple, strong; color good; price, 6 3-4 cents.
7. Sure Fruit—American strict low middling; poor; color good; price, 6 3-16 cents.
8. Peerless—American middling, 28 m. m. staple; soft; color good; price, 6 3-8 cents.

9. Hawkins' Extra Prolific—American strict low middling, 28 m. m. staple, strong; color good; price, 6 3-16 cents.
10. Doughty's Extra Long Staple—American middling, 1 1-4 inch staple, strong; color good; price, 6 11-16 cents.
13. Bohemian—American strict middling, 1 1-8 inch staple, strong; color good; price, 6 3-4 cents.
14. Griffin's Drouth Proof—American middling, 28 m. m. staple, strong; color good; price, 6 3-8 cents.
15. Dixon's Improved—American middling, 28 m. m. staple, strong; color good; price, 6 3-8 cents.
19. Lowry's Prolific—American middling, 28 m. m. staple, strong; color good; price, 6 3-8 cents.

Fertilizers.

22. Check (no manure)—American strict middling, 1 1-8 inch staple, strong; color good; price, 6 3-4 cents.
23. Potash (Kainit)—American strict middling, 1 1-8 inch staple, strong; color good; price, 6 3-4 cents.
24. Lime—American strict middling, 1 1-8 inch staple, strong; color good; price, 6 3-4 cents.
25. Potash (wood ashes), Nitrogen (C. S. meal), Phosphoric Acid (acid phosphate)—American middling, 28 m. m. staple, soft; color good; price, 6 3-8 cents.
26. Potash (Kainit), Phosphoric Acid (acid phosphate), Nitrogen (nitrate of soda)—American middling, 1 1-8 inch staple, strong; color good; price, 6 1-2 cents.
32. Check (no fertilizer)—American strict middling, 1 1-8 inch staple, strong; color good; price, 6 3-4 cents.
33. Potash (wood ashes)—American middling, 1 1-8 inch staple, strong; color good; price, 6 1-2 cents.
34. Potash (muriate of potash)—American middling, 1 1-8 inch staple, strong; color good; price, 6 1-2 cents.
35. Phosphoric Acid (acid phosphate)—American middling, 1 3-16 inch staple, strong; color good; price, 6 9-16 cents.
36. Phosphoric Acid (acid phosphate) Nitrogen (stable manure)—American strict middling, 1 1-8 inch staple, strong; color good; price, 6 3-4 cents.
37. Nitrogen (nitrate of soda)—American strict middling, 28 m. m. staple, soft; color good; price, 6 5-8 cents.
38. Nitrogen (stable manure)—American middling, 1 1-8 inch staple, strong; color good; price, 6 1-2 cents.
39. Potash (C. S. hull ashes)—American strict middling, 1 3-16 inch staple, strong; color good; price, 6 13-16 cents.
40. Phosphoric Acid (bone black)—American middling, 28 m. m. staple, soft; color good; price, 6 3-8 cents.
41. Phosphoric Acid (bone meal)—American strict middling, 1 1-8 inch staple, strong; color good; price, 6 3-4 cents.
42. Nitrogen (bat guano)—American middling, 1 1-8 inch staple, strong; color good; price, 6 1-2 cents.
43. Check (no fertilizer)—American strict middling, 1 1-8 inch staple, strong; color good; price, 6 3-4 cents.
44. Nitrogen (C. S. meal)—American strict middling, 1 1-8 inch staple, strong, color good; price, 6 3-4 cents.

EXPERIMENTS WITH COTTON AT BEEVILLE.

B. C. PITTUCK AND S. A. Mc HENRY.

SUMMARY.

The following experiments were carried on with cotton at the Beeville Station during 1898:

1. A "variety" test—12 varieties.
2. A "variety and distance test"—5 varieties, the distance varying from 3-foot rows and 2 feet in the drill to 5-foot rows and 3 feet in the drill.

I.

The five varieties making the *largest yield seed cotton* per acre were:

	Pounds.
(1) Nancy Hanks	711
(2) Gilbert's Lamb Wool.....	701
(3) Hawkins' Extra Prolific.....	687
(4) Griffin's Drouth Proof	678
(5) Duncan's Mammoth Prolific.....	642

The five varieties making the *largest money value* per acre were:.

(3) Hawkins' Extra Prolific.....	\$17 05
(4) Griffin's Drouth Proof.....	16 59
(1) Nancy Hanks	15 18
(2) Gilbert's Lamb Wool.....	14 35
(5) Duncan's Mammoth Prolific.....	13 49

II.

Humphrey's Dailkieth and Strickland's Improved gave best results when planted in 3-foot rows and 2 feet in the drill.

Beck's Improved and Lowry's Improved gave best results when planted in 4-foot rows and 2 feet in the drill.

Texas Oak gave best results when planted in 4-foot rows and 3 feet in the drill.

Of the five varieties Beck's Improved gave largest yield at each distance of planting.

VARIETY TEST.

Land for a test of varieties of cotton was prepared by breaking to a depth of seven inches with Canton Disc plow during January and cross harrowed previous to planting. Cotton was planted March 21, using an Avery planter.

The following cultivation was given the growing crop:

April 9—Cultivated with a 6-shovel riding cultivator.

April 27—Same.

May 14—Cultivated with double shovel.

May 17—Chopped and thinned to 20 inches.

May 25—Cultivated with 6-shovel riding cultivator.

June 15—Cultivated with double stock—one shovel and one sweep.

July 9—Cultivated with double stock—two sweeps.

Varieties—Cotton.

Plot	VARIETIES	First Pick'g Aug. 3	Second Pick'g Aug. 17	Third Pick'g Sept. 10	Total Yield Seed Cotton	Per Cent. Lint	Total Yield Lint
66	Hawkins' Extra Prolific ...	180	307	190	687	38.3	263
67	Tyler's Limbed Cluster	235	265	85	585	33.5	196
68	Dixon's Improved	295	260	70	625	29.3	183
69	Sure Fruit	195	190	129	514	32.4	166
70	*Nancy Hanks	335	295	81	711	32.2	229
71	*Cochran's Extra Prolific ...	270	205	47	522	32.7	170
72	*Georgia Standard	250	270	79	599	33.3	199
73	Doughty's Extra Long Staple	205	250	79	534	28.4	151
74	*Duncan's Mammoth Prolific	300	250	92	642	31.7	203
75	*Griffin's Drouth Proof	230	320	128	678	33.9	230
76	Gilbert's Lamb Wool	410	230	61	701	30.7	215
82	Bohemian	54	400	54	508	31.4	159

* Mark W. Johnson, Atlanta, Ga.

VARIETY AND DISTANCE.

During the season of 1897 the land used in the test was plowed six inches deep with a 10-inch John Deere walking plow, followed in every other furrow with a Rock Island Subsoil plow, running to an average depth of 10 inches. Preparation of land for this year's work consisted of breaking land seven inches deep during January, using a Canton Disc plow.

Previous to planting land was cross-harrowed. On March 19, 1898, furrows were opened with an eight-inch shovel on a single stock, and corn planted with Canton Corn and Cotton planter.

The following cultivation was given the growing crop:

April 9—Cultivated with a six-shovel riding plow.

April 27—Cultivated with a six-shovel riding plow.

May 2—Cultivated with a double-shovel plow.

May 4—Chopped and thinned to the following stands:

Plots 6, 7, 8, 9, 10—3 feetx2 feet.

Plots 16, 17, 18, 19, 20—4 feetx2 feet.

Plots 26, 27, 28, 29, 30—4 feetx3 feet.

Plots 36, 37, 38, 39, 40—5 feetx3 feet.

May 7—Cultivated with six-shovel riding cultivator.

May 25—Same.

June 15—Cultivated with double stock—one sweep and one shovel.

July 8—Cultivated with double stock—two sweeps.

Variety and Distance—Cotton.

Group	Plot	VARIETY	First Pick'g Aug. 3	Second Pick'g Aug. 17	Third Pick'g Sept. 10	Yield Seed Cotton	Yield Lint
Group I. 3 ft. x 2 ft.	6	Beck's Improved.....	293	355	.....	648	197
	7	Humphrey's Dalkeith.....	270	249	.....	519	132
	8	Strickland's Improved.....	195	346	27	568	178
	9	Lowry's Improved.....	337	213	36	586	175
	10	Texas Oak.....	124	301	55	479	159
Group II. 4 ft. x 2 ft.	16	Beck's Improved.....	260	360	90	710	215
	17	Humphrey's Dalkeith.....	150	250	77	477	122
	18	Strickland's Improved.....	120	265	83	468	146
	19	Lowry's Improved.....	285	280	50	615	183
	20	Texas Oak.....	135	205	123	463	154
Group III. 4 ft. x 3 ft.	26	Beck's Improved.....	148	370	148	666	202
	27	Humphrey's Dalkeith.....	115	255	82	452	115
	28	Strickland's Improved.....	110	256	160	526	164
	29	Lowry's Improved.....	240	290	80	610	182
	30	Texas Oak.....	105	260	168	533	178
Group IV. 5 ft. x 3 ft.	36	Beck's Improved.....	208	320	16	544	165
	37	Humphrey's Dalkeith.....	136	192	16	344	88
	38	Strickland's Improved.....	80	184	56	320	100
	39	Lowry's Improved.....	148	144	24	316	94
	40	Texas Oak.....	75	198	178	451	150

Distance—Yield Seed Cotton.

	Beck's Improved	Humphrey's Dalkeith	Strickland's Improved	Lowry's Improved	Texas Oak
Group I.—3 ft. x 2 ft.....	648	519	568	586	479
Group II.—4 ft. x 2 ft.....	710	477	468	615	463
Group III.—4 ft. x 3 ft.....	666	452	526	610	533
Group IV.—5 ft. x 3 ft.....	544	344	320	316	451
Total yield of each variety, (4 acres)...	2568	1792	1882	2127	1926
Average yield per acre.....	642	448	470.5	531.7	481.5