
CANE BRAKE

Agricultural Experiment Station,

Uniontown, Alabama.

BULLETIN NO. 3.

JANUARY, 1889.

SUBJECTS.

CORN—Upon drained and undrained land.

—With different fertilizers.

—After peas:—(a) turned in green; (b) cut for hay; (c) left on the land.

—Effects of different methods of preparation and cultivation of the soil.

—Effects of pulling fodder.

FORAGE CROPS—Yield of hay compared.

DRAINAGE—Influence upon soil temperature.

—Relation of outflow to rainfall.

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REPORT OF ASSISTANT DIRECTOR.

EXPERIMENTS WITH CORN.

Parallel experiments were conducted upon black slough bottom and the prairie land known as "shell ridge," for the purpose of ascertaining what fertilizers, if any, will pay upon the varieties of prairie soil. The results give little promise of profit from the use of fertilizers of any character.

The effects of drainage are somewhat more encouraging, but expectations have not been realized.

On the slough bottom each fertilized plat extended across drained and undrained land. The tile drains were laid three years since—some thirty and some forty feet apart—all four feet deep.

The following tabulated statement gives results from different fertilizers upon both drained and undrained land :

RESULTS ON SLOUGH BOTTOM.

Plot.	FERTILIZERS PER ACRE.										UNDRAINED.							
	DRAINED.					UNDRAINED.					Plots.	Good Corn.	Nubbins.	Total.	% Good Corn.	% Nubbins.	Gain over no manure.	Loss.
	Good Corn.	Nubbins.	Total.	% Good Corn.	% Nubbins.	Gain over no manure.	Loss.	Gain in yield by drainage.	Loss in yield by drainage.	Plots.								
bus. bus.	bus. bus.	bus. bus.	%	%	bus. bus.	bus. bus.	bus. bus.	bus. bus.	bus. bus.	bus. bus.	bus. bus.	bus. bus.	bus. bus.	%	%	bus. bus.	bus. bus.	
1	200 lb acid phos.	21.07	5.00	26.07	80.82	19.17	0.35	0.92	1.21	53.55	46.26	99.79	77.20	22.22	4.60	1.51		
2	200 lb acid phos. & 200 lb c. s. m.	27.32	4.82	32.14	85.00	15.00	5.72	3.22	2.30	53.4	83.35	36.86	34.13	65.12	9.97	5.04		
3	200 lb a. phos., 200 lb c. s. m. & 200 lb kainit	27.14	3.21	30.35	89.42	10.57	3.93	7.07	3.20	89.2	39.23	28.89	73.10	26.0.89	2.03	3.11		
4	200 lb acid phos. & 200 lb kainit.	22.31	4.64	26.95	82.78	17.21	0.53	2.53	4.18	00.6	42.24	42.73	71.26	28.2.03	1.51	5.04		
5	200 lb acid phos. & 200 lb c. s. h. a.	27.32	3.75	31.07	87.93	12.06	4.65	10.19	5.17	67.3	21.20	88.84	62.15	37.4.97	5.04	3.11		
6	200 lb c. s. h. a.	22.52	3.39	25.89	86.90	13.09	0.53	8.54	6.15	10.2	25.17	35.87	03.12	96.4.97	5.04	3.11		
7	200 lb c. s. h. a.	24.60	4.28	28.88	85.18	14.81	2.46	9.60	7.18	32.0	96.19	2.95	02.4.97	5.04	3.11			
8	No manure.	22.85	3.57	26.42	86.48	13.51	0.72	6.11	8.18	00.4	39.22	39.80	39.19	60.3.80	5.04	3.11		
9	200 lb c. s. meal	21.42	4.28	25.70	83.34	16.65	0.72	6.11	9.16	67.2	92.19	59.85	09.14	90.1.20	5.04	3.11		
10	500 lb crushed c. seed.	23.21	3.75	26.96	86.09	13.90	0.54	5.77	10.17	02.4	17.21	19.80	32.19	67.1.37	5.04	3.11		
11	1500 lb killed c. seed.	17.67	2.67	20.34	86.87	13.12	0.68	0.68	12.18	64.1	60.20	24.92	09.7.90	2.15	0.22	3.11		
12	200 lb c. s. m. & 200 lb kainit.	24.28	1.78	26.06	93.16	6.83	0.36	5.82	13.18	96.3	21.22	17.85	52.14	47.0.22	0.22	3.11		
13	200 lb crushed c. seed & 200 lb a. phos.	20.71	3.75	24.46	84.66	15.33	1.96	2.29	14.18	00.1	28.19	28.93	36.6.62	3.11	1.50	5.04		
14	2000 lb stable manure.	22.86	2.32	25.18	90.78	9.21	1.25	5.89	15.18	32.2	57.20	89.87	69.12	30.1.50	1.50	5.04		
15	2000 lb stable manure & 200 lb a. phos.	21.78	3.39	25.17	86.53	13.46	1.25	4.28	15.18	32.2	57.20	89.87	69.12	30.1.50	1.50	5.04		

RESULTS ON SHELL RIDGE, DRAINED.

Plots.	FERTILIZERS PER ACRE.																
	Good Corn.	Nubbins.	Total.	% Good Corn.	% Nubbins.	Gain over no manure.	Loss.	Gain in yield by drainage.	Loss in yield by drainage.	Plots.	Good Corn.	Nubbins.	Total.	% Good Corn.	% Nubbins.	Gain from use of Fertilizers.	Loss from use of Fertilizers.
	bus. bus.	bus. bus.	bus. bus.	%	%	bus. bus.	bus. bus.	bus. bus.	bus. bus.	bus. bus.	bus. bus.	bus. bus.	bus. bus.	%	%	bus. bus.	bus. bus.
1	200 lb acid phos.	21.60	4.00	25.60	84.37	15.62	1.20	0.92	19.40	3.00	22.40	86.60	13.39	8.00	8.00	2.20	
2	200 lb acid phos. and 200 lb cotton seed meal	19.40	3.00	22.40	86.60	13.39	0.80	0.80	18.80	3.80	22.60	83.18	16.81	8.20	8.20	0.60	
3	200 lb acid phos., 200 lb cotton seed meal and 200 lb kainit.	14.60	2.88	17.48	83.52	16.47	3.08	0.60	13.20	1.80	15.00	88.00	12.00	0.60	0.60	0.06	
4	200 lb acid phos. and 200 lb kainit.	11.66	2.80	14.46	80.55	19.44	0.06	0.06	9.60	2.60	12.20	78.68	21.31	2.20	2.20		
5	200 lb acid phos. and 200 lb c. s. h. a.	12.00	2.40	14.40	83.33	16.66	0.06	0.06	17.78	3.00	20.78	85.56	14.43	6.38	6.38		
6	200 lb kainit	13.28	1.20	14.48	91.66	8.33	0.06	0.06	12.80	2.80	15.60	82.05	17.94	1.20	1.20		
7	200 lb cotton seed hull ashes	12.80	2.80	15.60	82.05	17.94	1.20	1.20	12.80	2.80	15.60	82.05	17.94	1.20	1.20		
8	No manure	12.00	2.40	14.40	83.33	16.66	0.06	0.06	13.28	1.20	14.48	91.66	8.33	0.06	0.06		
9	200 lb cotton seed meal.	13.28	1.20	14.48	91.66	8.33	0.06	0.06	12.80	2.80	15.60	82.05	17.94	1.20	1.20		
10	200 lb crushed cotton seed.	12.80	2.80	15.60	82.05	17.94	1.20	1.20	12.80	2.80	15.60	82.05	17.94	1.20	1.20		
11	200 lb crushed cotton seed and 200 lb phos.	12.80	2.80	15.60	82.05	17.94	1.20	1.20	12.80	2.80	15.60	82.05	17.94	1.20	1.20		

CORN ON SLOUGH BOTTOM.

	DRAINED.						UNDRAINED.							
	Good Corn.	Nubbins.	Total.	% Good Corn.	% Nubbins.	Gain by shallow cultivation.	Gain by drain-age.	Plots.	Good Corn.	Nubbins.	Total.	% Good Corn.	% Nubbins.	Gain by shallow cultivation.
	bus.	bus.	bus.	bus.	bus.	bus.	bus.		bus.	bus.	bus.	bus.	bus.	bus.
SHALLOW AND DEEP CULTIVATION.														
Cultivated shallow.....	20.53	3.75	24.28	84.55	15.44	1.43	3.93	1	16.85	3.50	20.35	82.80	17.19	4.29
“ deep.....	20.00	2.85	22.85	87.52	12.47			2	15.10	0.96	16.06	94.02	5.97	
FODDER PULLING SLOUGH BOTTOM.														
Tops cut.....	19.82	2.50	22.32	88.79	11.20			1	14.40	1.28	15.68	91.83	8.16	
All the fodder pulled.....	19.28	2.50	21.78	88.52	11.47			2	14.28	1.92	16.20	88.14	11.85	
No fodder pulled.....	13.57	3.39	16.96	80.01	19.98			3	14.78	2.57	17.35	85.18	14.81	

CORN ON SHELL RIDGE, DRAINED LAND.

	FODDER PULLING.			Plots.			Good Corn.			Nubbins.			Total.			% Good corn.			% Nubbins.				
	bus.	bus.	bus.	1	2	3	bus.	bus.	bus.	bus.	bus.	bus.	bus.	bus.	bus.	bus.	bus.	bus.	bus.	bus.	bus.		
All fodder pulled.....							13.20	2.80	16.00	82.50	17.50												
Tops cut.....							15.20	6.00	21.20	71.69	28.30												
Fodder pulled below ear.....							16.40	4.00	20.40	80.39	19.60												
Fodder not pulled.....							16.40	5.48	21.88	74.95	25.04												

DIFFERENT METHODS OF PREPARATION.

Plat.	PREPARATION.	PREPARATION.			Per cent. of Good Corn.	Per cent. of Nubbins.
		Good Corn.	Nubbins.	Total.		
		bus.	bus.	bus.		
1	Flushed bed and planted flat	16.80	2.20	19.00	88.42	11.57
2	Planted on the hard.....	14.28	5.71	19.99	71.43	28.56
3	Plowed dry	16.00	4.28	20.28	78.89	21.10
4	Plowed wet.....	20.28	3.14	23.42	86.59	13.40

METHODS OF APPLYING MANURE.

1	Applied with seed.....	15.42	6.57	21.99	70.12	29.97
2	Bedded on	18.28	5.23	23.56	77.58	22.41

CRUSHED GREEN COTTON SEED AS MANURE.

(1)	200 lbs. crushed cotton seed.....	15.00	4.80	19.80	75.75	24.24
(2)	200 lbs. crush. c. s. & 200 lbs. A. Phos.	15.60	3.20	18.80	82.97	17.02
(3)	No manure	13.20	4.60	17.80	74.15	25.84

EXPERIMENT WITH PEA VINES FOLLOWED BY CORN.

1	Plowed in green	14.12	1.22	15.34	92.04	7.96
2	Left till spring.....	16.58	6.75	23.33	71.06	28.93
3	Cut for hay	16.58	6.14	22.72	72.97	27.02

YIELD OF FORAGE PLANT

Sown May 8th, and cut July 13th.

Plat.	NAME.	Yield per Acre Fodder.
		Lbs.
1	Common corn.....	3,020
2	German millet.....	2,176
3	Sorghum.....	5,280

One-fourth acre of black, undrained slough bottom was sown broadcast in each of the above forage plants, and the dry hay cured from them compared.

METEOROLOGY.

Two sets of soil thermometers are similarly exposed, except that one set is in soil which is tile drained, and the other in that not artificially drained. The bulbs of the thermometers are 1, 3, 6, 9, 12, 24 and 36 inches, respectively, under ground, and the scale protected from the direct rays of the sun, but exposed to a free circulation of the air. The accompanying statement shows results of observations for five months, ending December 31st, 1888.

SOIL THERMOMETERS.

MONTHS.	DRAINED.			Gain in Temperature by drainage.	Loss in Temperature by drainage.	UNDRAINED.		
	Depth in inches.	Monthly Mean.	Monthly Range.			Depth.	Monthly Mean.	Monthly Range.
AUGUST.	1	79.85	19	1.91	...	1	77.94	14.5
	3	79.05	15	1.43	...	3	77.62	11
	6	79.61	9.5	1.91	...	6	77.70	9
	9	79.25	7.5	1.43	...	9	77.82	7
	12	79.34	6.5	1.65	...	12	77.69	6
	24	79.02	5	2.02	...	24	77.00	4.5
36	77.20	4.5	1.18	...	36	76.02	2.5	
SEPTEMBER.	1	72.15	22	0.96	...	1	71.19	21
	3	72.09	17.5	0.81	...	3	71.28	18
	6	72.55	14.5	0.85	...	6	71.70	14.5
	9	73.40	11.5	1.20	...	9	72.20	12
	12	73.97	9	1.33	...	12	72.64	11
	24	74.97	6	1.67	...	24	73.30	8
36	74.94	4.5	1.64	...	36	73.30	5	
OCTOBER.	1	63.73	19.5	3.31	...	1	60.42	18.5
	3	63.42	13	1.11	...	3	62.31	12.5
	6	63.94	8.5	0.87	...	6	63.07	8.0
	9	64.74	6.5	0.73	...	9	64.01	5.5
	12	65.76	5	1.07	...	12	64.69	5
	24	67.36	4.5	0.81	...	24	66.55	4
36	69.24	4.5	1.67	...	36	67.57	4	
NOVEMBER.	1	55.95	31	0.61	...	1	55.34	29
	3	56.11	26	0.51	...	3	55.60	25.5
	6	57.06	25.5	0.23	...	6	56.83	21.5
	9	58.33	20.5	0.12	...	9	58.21	19.5
	12	59.85	17	0.54	...	12	59.31	16.5
	24	62.66	11.5	0.80	...	24	61.86	11.5
36	64.59	7.5	0.90	...	36	63.69	7.0	
DECEMBER.	1	45.30	22	0.92	...	1	44.38	18
	3	45.17	16	0.36	...	3	44.81	15
	6	46.06	15.5	6	46.06	14
	9	47.43	12	0.15	...	9	47.28	12
	12	48.72	11.5	0.19	...	12	48.53	10
	24	53.36	4.5	0.35	...	24	53.01	3.5
36	56.41	5	0.34	...	36	56.07	4.5	