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DEPTH AND METHOD OF SOIL PREPARATION AND CULTIVATION FOR CORN AND COTTON

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SUMMARY

CORN

1. Depth of plowing.—

a. Six-inch plowing gave nearly maximum yields in all trials.

b. Neither subsoiling nor extra-deep disk plowing proved profitable.

2. Cultivation of the growing crop.—

a. A decided difference was found between the more granular and gravelly types of soil that characterize East and Middle Tennessee and a typical silt loam of West Tennessee. The latter has an appreciably higher silt and lower clay content. On the more granular soils, no cultivation, with weed growth controlled by scraping or very shallow cutting with a hoe, gave unsurpassed yields; but on the high silt soil no cultivation resulted in decidedly decreased yields.

b. On the more granular soil types, cultivation was valuable only for weed control. Therefore, cultivation with the sole object of maintaining a soil mulch is not justified.

c. If no cultivation is excepted, the yields on all soils were practically uninfluenced by the method of cultivation.

COTTON

1. Depth of plowing and bedding, on poor land and on rich land.—

a. Under level culture, 3-inch plowing resulted in as large crops as 6-inch plowing in both series.

b. Where land was bedded but not flat-broken, the yields were favorable to 6-inch bedding rather than 3-inch, in both series.

2. Bedding with and without previous plowing.—

a. In the poor-land series, plowing preparatory to bedding proved distinctly unprofitable.

b. In the rich-land series, the preparatory plowing proved profitable.

3. Early versus late soil preparation.—

a. Early plowing and early bedding gave appreciably better yields both at the 3-inch and the 6-inch depth of preparation.

b. Under level planting, early plowing was notably superior.

4. No cultivation (except weeds scraped off) compared with good cultivation, on poor land and on rich land.—

a. In the poor-land series, good cultivation resulted in yields nearly 30 percent larger, on the average, than were obtained under no cultivation.

b. In the rich-land series the average yields from good cultivation and no cultivation were practically identical.

The difference in outcome between the poor-land and the rich-land series is attributed to the more granular condition of the rich soil.

DEPTH AND METHOD OF SOIL PREPARATION AND CULTIVATION FOR CORN AND COTTON

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INTRODUCTION

A good deal of propaganda recently has been directed to the furthering of a theory that plowing is not essential to successful crop production, and that the use of the mold-board plow is not to be recommended. Certain experiments conducted by the Tennessee Agricultural Experiment Station have a significant bearing on this question.

The data involve two crops, corn and cotton, and show the relation of methods and depths of soil preparation and cultivation to yields. In the case of cotton, the effect of time of soil preparation is included.

EXPERIMENTS WITH CORN

SUBSOILING AND DEEP PLOWING

The prevailing soils in Tennessee are silt loams with heavy subsoils. True sandy soils are rare; and outside of the Cumberland Plateau, fine sandy loams are not prominent. On the other hand, heavy clay loams are not uncommon, especially in East Tennessee. Because of the heavy and often compacted nature of the subsoils, the question frequently arises as to the value of subsoiling and deep plowing. To answer the question completely would require more experimental work than has been possible. Enough has been done, however, to give at least important indications.

ON CUMBERLAND LOAM AT KNOXVILLE

A Cumberland loam of fair productivity with a heavy, red, compact subsoil was selected for trials of the following methods of plowing: (1) to a depth of 6 to 7 inches; (2) deep plowing, with a very heavy disk plow, to a depth of 9 to 10 inches; (3) subsoiling, with a subsoil plow run at a depth of 5 to 6 inches immediately behind the turn plow. The plowings were done April 9, 1910, under soil conditions considered favorable for such work. Both the after-preparation and the cultivation of the corn crop were the same over the entire area. Corn was planted at each of four dates. The yields the first season under the various conditions are given in table 1.

Discussion of Table 1

The 6-inch plowing made appreciably the highest average yield, 48.4 bushels per acre. Subsoiling, and deep plowing, gave similar yields—41.4 and 40.2 bushels per acre, respectively—or an average of 7.6 bushels less than the 6-inch plowing.

The following year, 1911, the entire area was plowed to a uniform depth of 6 to 7 inches, prepared, and seeded broadcast to three crops—clay peas, sorghum, and soybeans—across the three strips prepared in 1910.

Table 1—*Acre yields of corn at various dates of planting the first season,* 1910.

Soil—Cumberland loam

Date of planting	Plowed 6 inches		Plowed and subsoiled		Deep-plowed, 9-10 inches	
	Grain	Stover	Grain	Stover	Grain	Stover
	Bushels	Tons	Bushels	Tons	Bushels	Tons
April 15	49.6	1.57	42.4	1.46	42.9	1.49
May 2	49.4	1.40	38.6	1.29	41.9	1.21
May 14	48.9	1.53	45.5	1.26	38.6	1.11
June 1	45.8	1.64	39.1	1.33	37.3	1.11
Average	48.4	1.54	41.4	1.34	40.2	1.23

Table 2 gives the acre yields of the green crops. It shows that the highest yields of all three crops were made on the deep-plowed area. The plowed and the subsoiled areas yielded alike, within the limits of error for work of this kind.

In 1912 the entire area was plowed again to a uniform depth of about 6 inches and planted to corn.

Table 2—*Acre yields of green crops harvested in* 1911, *following uniform plowing to a depth of 6 to 7 inches.*

Crop	Preparation in 1910		
	Plowed	Plowed and subsoiled	Deep-plowed
	Tons	Tons	Tons
Clay peas	10.60	10.70	13.00
Sorghum	16.68	16.28	17.94
Soybeans	6.38	5.91	7.14
Average	11.22	10.96	12.69

The yields of corn in 1912 (table 3) are the reverse of those of the broadcast-sown crops of the previous year, the deep-plowed area being the least productive. The plowed area and the subsoiled area made like yields, averaging 6.3 bushels per acre more than the deep-plowed area.

Table 3—*Acre yields of corn obtained the third year,* 1912, *under the conditions specified.*

Plowed in 1910	Plowed and subsoiled in 1910	Deep-plowed in 1910
Bushels	Bushels	Bushels
38.8	38.0	32.1

Conclusion

In these trials on Cumberland loam, neither deep plowing nor subsoiling was profitable. In fact, where the soil was deep-plowed there was a decided reduction in yield of corn, besides the extra expense incurred.

ON OLIVIER SILT LOAM AT THE WEST TENNESSEE STATION

In the series on Cumberland loam, reported above, the effects of subsoiling and deep-plowing only were obtainable; there was nothing to measure the value of the 6-inch plowing alone and nothing to show what a shallower plowing would do. An excellent series of experiments along this line was carried out for 14 years on Olivier silt loam at the West Tennessee Station, at Jackson.

The Olivier silt loam is closely related to the Lintonia silt loam and is a

common type found in West Tennessee. The surface soil is grayish-yellow. The upper layer of subsoil is a yellowish silty clay loam, heavy but friable.

The area selected had been cropped for many years, with little or no manuring, so that the naturally good fertility had been greatly reduced. Farmyard manure was therefore applied annually for the first 7 years, 1915-1921, and in 1923. The average annual application for the first 9 years was 5½ tons per acre. Light applications of superphosphate and a nitrogenous fertilizer were made throughout the same period. Neither manure nor fertilizer was applied during the last 5 years.

The plowing usually was done in April and was continued annually throughout the 14-year period. The experimental plan involved a comparison of 5 depths of soil preparation, as follows:

1. No preparation by either plowing or disking
2. 3-inch plowing
3. 6-inch plowing
4. 10-inch plowing
5. 6-inch plowing and 6-inch subsoiling

The time of planting was the same in all cases, and the same method was followed in the cultivation of the growing crops. The first working was deep, with a double-shovel; the later workings were shallow, such as are customary with a 7-tooth or other shallow-running cultivator, and as frequent as required to keep down weed growth, but they were not continued late in the season. The experimental series was conducted in duplicate for the first 5 years, and in quadruplicate for the last 9 years.

Table 4 gives the annual yields under the various experimental conditions.

Discussion of Table 4

The data of table 4 show a marked advantage of plowing over no plowing, in increased yields of both grain and stover, with highly profitable increases as the depth of plowing increased, up to and including 6 inches. The increase in grain production from the 3-inch plowing over no plowing was 5 bushels per acre. A further increase of 8 bushels per acre was obtained from 6-inch plowing over 3-inch plowing, or 13 bushels over no plowing. The 10-inch plowing and the subsoiling gave only 1½ bushels additional increase in each case—not enough to justify the extra expense involved.

Table 4—*Acre yields of corn obtained under different depths of plowing, continued annually for 14 years.*

Soil—Olivier silt loam

Year	Depth of plowing									
	None		3 inches		6 inches		10 inches		6 inches and subsoiled 6 inches	
	Grain	Stover	Grain	Stover	Grain	Stover	Grain	Stover	Grain	Stover
	Bushels	Tons	Bushels	Tons	Bushels	Tons	Bushels	Tons	Bushels	Tons
1915	37.9	1.16	46.2	1.21	50.9	1.39	53.8	1.57	51.2	1.47
1916	50.7	2.76	48.7	2.59	48.4	2.70	47.9	3.20	51.2	2.89
1917	77.5	2.62	71.5	3.47	71.4	2.90	77.1	3.80	77.0	3.52
1918	38.2	1.09	40.4	1.29	37.4	1.10	45.7	1.42	37.5	1.27
1919	32.1	.95	52.7	2.00	60.0	2.04	56.6	2.59	57.7	2.34
1920	48.1	1.32	56.9	1.51	62.0	1.49	62.6	1.76	64.0	1.68
1921	40.9	1.68	48.6	2.04	63.8	2.52	63.6	2.68	70.5	2.87
1922	26.1	1.55	37.3	1.58	49.4	1.74	53.5	1.97	53.9	1.91
1923	37.3	1.32	44.5	1.56	54.7	2.22	57.1	2.27	57.4	2.32
1924	20.0	1.27	21.5	1.28	34.0	1.67	33.3	1.74	32.3	1.72
1925	31.3	.87	36.6	.97	48.8	1.33	49.2	1.39	50.8	1.43
1926	24.7	.96	27.9	1.07	35.9	1.33	38.3	1.52	34.7	1.50
1927	15.0	1.03	16.1	1.13	26.5	1.56	24.8	1.62	22.2	1.53
1928	13.6	.88	14.3	1.22	31.4	1.55	32.8	1.61	35.1	1.64
Avg.	35.2	1.39	40.2	1.64	48.2	1.82	49.7	2.08	49.7	2.01

CULTIVATION OF THE GROWING CROP

After the land is plowed and prepared for planting and the young plants are large enough to be cultivated, the question arises as to the best depth of cultivation. For experimental purposes four methods of cultivation were carried out under like conditions as to time, manner of preparing the seedbed, variety of corn, and date of planting:

1. Standard.—The standard method was to cultivate first with a double-shovel run fairly deep so as to break up the soil that might have become compacted by rains. Afterward only shallow cultivation was given by some kind of shallow-running implement. This was done as often as appeared necessary to control weeds, usually three or four times.

2. Deep.—The double-shovel was the only implement used for crop cultivation.

3. Shallow.—Only the 7-tooth or other shallow-running implement was used, no deep working being done at any time.

4. None.—There was no cultivation, but the weeds were scraped or cut off the surface with a hoe, cutting into or disturbing the soil as little as possible.

TRIALS IN EAST AND MIDDLE TENNESSEE

Table 5 gives the results obtained in (1) a 5-year trial at Knoxville, 3 years on a good bottom-land soil—Huntington silt loam—and 2 years on a good upland—Cumberland loam; and (2) a 4-year trial on Baxter silt loam, a common gray gravelly soil of the Highland Rim in Middle Tennessee.

Discussion of Table 5

The results obtained on rich bottom land and on upland of good fertility at the main Station, at Knoxville, are in close agreement and may be summed up as showing no positive difference between any two methods of cultivation. That is, the differences are only such as might be expected in field experiments of this nature if all plots had been cultivated alike.

In the case of the 4-year trial on the Highland Rim soil, however, the yields each year were appreciably in favor of the area where the weeds were

Table 5—*Acre yields of corn from various methods of cultivation of the growing crop.*

Year	Soil	Standard		Deep		Shallow		None	
	At Knoxville	Bushels	Tons	Bushels	Tons	Bushels	Tons	Bushels	Tons
1911	Bottom land (Huntington fine sandy loam)	69.3	1.66	67.9	1.52	68.2	1.64	70.4	1.56
1915	Ditto	82.3	3.97	84.4	4.08	76.7	3.54	80.9	3.52
1917	Do	70.0	2.25	71.1	2.09	71.2	2.27	73.3	2.08
	Average	73.9	2.63	74.5	2.56	72.0	2.48	74.9	2.39
	At Knoxville								
1916	Upland (Cumberland loam)	53.4	2.29	56.2	2.18	55.3	2.33	54.9	2.17
1917	Ditto	41.6	.....	38.6	.....	43.7	.....	45.0	.....
	Average	47.5	2.29	47.4	2.18	49.5	2.33	50.0	2.17
	On Highland Rim								
1914	Baxter silt loam	37.3	1.01	39.6	1.06	40.4	1.15	46.2	1.13
1915	Ditto	52.9	.....	58.8	.....	53.2	.....	60.9	.....
1916	Do	13.6	.89	12.2	.87	16.7	.85	26.1	.97
1917	Do	39.8	1.29	37.6	1.37	34.9	1.24	45.8	1.61
	Average	35.9	1.06	37.1	1.10	36.3	1.08	44.8	1.24
	Average all 3 sets	52.4	1.99	53.0	1.95	52.6	1.96	56.6	1.93

only scraped off, or were cut off as close to the surface as possible with a hoe. It may be noted also, in both the bottom-land and the upland experiments at Knoxville, that the no-tillage areas were unsurpassed in yield.

All three sets were on granular soils and the brace roots easily penetrated the soil. Moreover, at the close of the season there was little or no difference in the compactness of the soil resulting from the different methods of cultivation. Soils of this character predominate in both East and Middle Tennessee.

The general conclusion is therefore reached that on soils like these, weed control is the one important item. There may be soils of other types which, like the Highland Rim soil, will make the highest yield where the surface is almost undisturbed. In other words, on these soils the cultivation of the corn crop to keep a loose soil mulch and prevent loss of moisture by evaporation is unprofitable—wasted effort—and may actually reduce yields.

TRIALS IN WEST TENNESSEE

Table 6 shows the yields of corn obtained at the West Tennessee Station in a comparison between the standard and the no-cultivation method as previously defined. The comparison extended over a period of 13 years. The soil was Olivier silt loam. This type of soil belongs to a class that is higher in silt than the prevailing types found in other divisions of the State. The mixture of clay, silt, and sand is such that it is much less granular than any of the types previously discussed. The result is that it "bakes", or surface-hardens, to a far greater extent. In these trials the experimental areas where

Table 6—*Acre yields of corn obtained at the West Tennessee Station in a 13-year comparison of standard and the no-cultivation method, following like preparation for the two sets.*

Soil—Olivier silt loam

Year	Standard method		No cultivation—weeds scraped off	
	Bushels	Tons	Bushels	Tons
1915	50.9	1.39	38.0	1.12
1916	48.4	2.70	44.4	2.42
1917	71.4	2.90	65.0	2.92
1919	60.0	2.04	42.1	1.94
1920	62.0	1.49	56.3	1.24
1921	63.8	2.52	54.8	1.96
1922	49.4	1.74	47.9	1.56
1923	54.7	2.22	47.2	1.64
1924	34.0	1.67	18.6	1.35
1925	48.8	1.33	37.5	1.02
1926	35.9	1.33	31.3	1.31
1927	26.5	1.56	20.7	1.08
1928	31.4	1.55	24.3	1.32
Average	49.0	1.88	40.6	1.61

the soil was not cultivated, except to keep the weeds cut off by very shallow surface hoeing, were readily distinguished at a distance in the late summer by the partly lodged crop due to inability of the brace roots to penetrate the soil. Only occasionally were the yields comparable to those obtained where the standard method was followed. On the average, the yield by the standard method was 8.4 bushels per acre larger than where the no-cultivation method was followed. On this soil, then, the cultivation performed a useful function in addition to weed control.

EXPERIMENTS WITH COTTON

OBJECTIVES

Long-time production of cotton in West Tennessee and other parts of the State has given rise to certain methods of soil preparation which are recognized as customary, or standard. The rows usually are bedded; that is, ridges are prepared, either with or without previous plowing, on which planting is done. The beds vary in height, but are intended principally to keep the plants away from standing water. Bedding usually is done with a lister, a double mold-board plow, and therefore is a form of plowing.

The experimental work reported below was planned chiefly to determine the effects on crop yield of (1) depth of plowing, (2) bedding with and without previous plowing, and (3) early compared with late soil preparation.

KIND OF SOIL

Lintonia silt loam, including different levels of productivity, was used, and the work was conducted at the West Tennessee Station. The experiments were continued over a considerable period of time, as opportunity was afforded. The results are reported in tables 7 to 10, inclusive.

Discussion of Table 7

The data of table 7 were secured on upland of average productivity, producing in the neighborhood of 2/5 of a bale of lint cotton per acre. The fact that the trial ran for 10 years makes it of more than ordinary value.

The results may be summarized as follows:

1. Within the limits of error, level planting after 3-inch plowing gave as good yields as level planting after 6-inch plowing. On the other hand, without previous plowing, 6-inch bedding outyielded 3-inch, whether the bedding was early or late, the average increase being 62 pounds of seed cotton per acre.
2. Early bedding, whether preceded by the flat-breaking (plowing) of the land or not, invariably increased the yield over late bedding, the average increase being 53 pounds of seed cotton per acre.
3. The highest average yield, 637 pounds of seed cotton per acre, was obtained where the land was bedded early but not flat-broken. The next highest yield, 631 pounds per acre, was obtained where the land was flat-broken and bedded early. In this series, therefore, the flat-breaking was without return.
4. In the level-planted series, the no-preparation test, which was given good cultivation after the crops came up, made an average yield of 444 pounds of seed cotton per acre, or only 72.5 percent of that obtained where the 6-inch plowing was done. The no-preparation and no-cultivation plot, where weeds were merely scraped off with a hoe, made the lowest yield, 335 pounds of seed cotton per acre.
5. The late-bedded plot following 6-inch plowing, with no cultivation of the growing crop, except that the weeds were scraped off with a hoe, made an average yield of only 445 pounds of seed cotton per acre, practically identical with the yield from the no-plowing and no-preparation plot, which was given good cultivation.

Table 7—*Acre yields of seed cotton in tillage experiments on poor land.*

Soil—Lintonia silt loam
Good cultivation in all cases unless otherwise specified

Year	Date of early plowing and bedding[1]	Date of planting, also of late bedding	No prep., no cult.	No prepa-tion	Turned 3 in., level-planted	Turned 6 in., level-planted	Bedded 3 in. early	Bedded 3 in. late	Bedded 6 in. early	Bedded 6 in. late	Turned 6 in. early, bedded early	Turned 6 in. early, bedded late	Turned 6 in. early, bedded late, No cult.
			Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
1930	March 17	April 24	380	440	560	496	500	464	568	460	448	464	448
1931	Feb. 3	April 24	288	400	748	616	544	540	728	620	660	612	648
1932	March 23	May 4	448	484	664	668	568	548	648	644	696	684	552
1933	March 24	April 28	428	552	560	564	580	560	612	664	676	640	440
1934	March 14	April 26	268	284	528	440	436	348	452	392	544	436	280
1935	March 29	April 23	284	260	384	424	448	376	476	372	444	332	300
1936	April 1	May 6	348	496	612	644	668	612	784	640	664	604	400
1937	April 8	May 7	452	664	796	920	804	720	996	876	912	840	696
1938	April 4	April 29	348	408	576	664	564	516	656	580	656	548	456
1939	March 25	May 4	104	456	596	684	616	552	448	592	608	588	232
Average			335	444	602	612	573	524	637	584	631	575	445

[1]Plots other than early-bedded were plowed and/or bedded at planting time.
Note: Good-cultivation plots were cultivated 4 to 6 times per crop.

Table 8—*Average acre yields of seed cotton in tillage experiments on poor land for ten years and on rich land for twelve years.*

Soil—Lintonia silt loam
Good cultivation in all cases unless otherwise specified.

Kind of land	Years in trial	Level planting				Not plowed—bedded		Plowed 6 inches—bedded	
		No prep., weeds scraped off	No prep., good cultivation	3-inch plowing	6-inch plowing	3 inches	6 inches	Good cultiva-tion	Weeds scraped off
	Number	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
Poor	10	335	444	602	612	524	584	575	445
Rich	12	1089	1367	1586	1576	1532	1552	1691	1682
Average		712	906	1094	1094	1028	1068	1133	1064

Discussion of Table 8

Table 8 gives the average yields obtained in two comparable experimental series, one conducted on poor land for 10 years—reported in detail in table 7—and the other on rich land for 12 years. The latter is the average of two series, one conducted from 1916 to 1922 and reported in detail in Bulletin 127 of this Station, and the other of a continuation of the same series during the years 1925-1929.

The results, summarized below, show very close agreement between the poor-land and rich-land trials, almost without exception.

1. Level planting.—

a. No preparation, and weeds scraped off with a hoe, resulted in decidedly the lowest yield in each series—only 55 percent of the maximum crop in the poor-land series and 64 percent in the rich-land series.

b. The second poorest yields in each series were obtained where there was no preparation but good cultivation. In the poor-land trial the average yield was 73 percent of the maximum; in the rich-land it was 81 percent.

c. In both the poor- and the rich-land series there was almost no difference in the yields from the two depths of plowing, 3-inch and 6-inch.

2. Land bedded but not plowed.—

a. The two series were in agreement to this extent, that 6-inch bedding gave the higher yields. In the poor-land series the increase over 3-inch bedding was significant—11 percent, in round numbers—whereas in the rich-land series it was only 1 percent.

b. In both series, bedding without plowing yielded less than level culture, but the reduction was pronounced only as to the 3-inch depth; the 6-inch bedding yielded the same as 6-inch plowing and level culture, within the limits of error.

3. Comparison between good cultivation and weeds scraped off.—

In each series, lower yields were obtained where the weeds were scraped off without cultivation; but only in the poor-land series was the reduction pronounced. There the yield was 77 percent as large as that where good cultivation was given.

EARLY COMPARED WITH LATE SOIL PREPARATION

Early plowing and early bedding generally are considered better than late plowing and late bedding. The data in table 7 as related to the question were favorable to early bedding, but additional information on this important subject is furnished in tables 9 and 10. Table 9 gives the dates of the early and late plowing and bedding for each of the 7 years. There was a material variation in the dates from year to year. The early dates

Table 9—*Dates of plowing and bedding of experiments reported in table* 10.

Year	Early plowing and early bedding	Late plowing and late bedding
1930	March 17	April 24
1931	February 2	April 23
1932	March 23	May 3
1933	March 24	April 28
1934	March 14	April 25
1935	March 29	April 23
1936	April 1	May 5
Average	March 16	April 27

varied from February 2 to April 1, the average date being March 16. The late dates varied from April 23 to May 5, the average being April 27. The average difference between the dates of early and late plowing and bedding was 42 days. The results are shown in table 10 for 7 years, 1930-1936, under each of 7 different preparatory conditions, with a comparison of early and late preparation. Important supplementary data relating to depth of plowing are included.

Discussion of Table 10

The average yields for the 7-year period may be summarized as follows:

Series 1 to 5.—1. Early plowing and early bedding gave appreciably higher yields than late plowing and late bedding, for both the 3-inch and the 6-inch depth. The average yield for the 3-inch early preparation was 1214 pounds of seed cotton per acre, compared with 1136 pounds for late preparation. Similarly, 6-inch early preparation gave an average yield of 1244 pounds of seed cotton, compared with 1161 pounds for late preparation.

2. Early 6-inch plowing with late bedding reduced the yield slightly, the average being only 1208 pounds per acre, compared with the 1244 pounds from the early plowing and early bedding.

Series 6 and 7.—In series 6, the 6-inch plowing was done early and in series 7 the same depth of plowing was done late. Both sets were level-planted. The yields were decidedly in favor of the early plowing, the average yield for which was 1283 pounds of seed cotton per acre, compared with 1142 pounds for the late plowing.

Table 10—*Early compared with late soil preparation—acre yields of seed cotton under various methods of soil preparation for cotton.*

Conducted in duplicate each year on Lintonia silt loam.

Year	Series 1	Series 2	Series 3	Series 4	Series 5	Series 6	Series 7
	Plowed 3 in. early and bedded early	Plowed 3 in. late and bedded late	Plowed 6 in. early and bedded early	Plowed 6 in. late and bedded late	Plowed 6 in. early and bedded late	Plowed 6 in. early and level-planted	Plowed 6 in. late and level-planted
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
1930	928	928	984	896	930	1096	932
1931	1668	1456	1720	1648	1632	1736	1500
1932	1472	1336	1432	1268	1436	1408	1260
1933	1292	1296	1360	1288	1316	1416	1276
1934	980	1020	1012	1084	980	1056	1040
1935	743	740	704	692	740	864	700
1936	1412	1172	1496	1248	1424	1404	1284
Average	1214	1136	1244	1161	1208	1283	1142