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UNIVERSITY OF ILLINOIS Agricultural Experiment Station

BULLETIN No. 327

CROP YIELDS FROM ILLINOIS SOIL EXPERIMENT FIELDS IN 1928

By F. C. BAUER

URBANA, ILLINOIS, MAY, 1929

LOCATION OF THE THIRTY-ONE EXPERIMENT FIELDS IN ILLINOIS FROM
WHICH DATA ARE PRESENTED IN THIS BULLETIN

CROP YIELDS FROM ILLINOIS SOIL EXPERIMENT FIELDS IN 1928

By F. C. BAUER, Chief, Soil Experiment Fields

Variation in crop producing power is a natural characteristic of agricultural soils. It is evident not only between soils in different locations, but also on the same soil in different seasons. Frequently it is quite marked. With some soils their productive power assumes a gradual upward trend, while with others it assumes a gradual downward trend. Obviously, the causes of these variations and the control of them are matters of considerable importance in the successful management of farm lands.

The crop-producing powers of soils, in a broad sense, vary because of the natural differences between soils and the systems of farming practiced upon them. Altho nature tends to work in accordance with natural laws, the influence of natural conditions on soil productivity may be accelerated or retarded by the work of man. The best use of farm lands, therefore, will depend to considerable extent upon the knowledge which farmers possess concerning the soils upon their farms and the cropping and treatment practices which they will use upon them. In general, the farmer is interested in the simplest things he may do that will give him the maximum benefits from the use of his land.

In order to furnish the farmers of the state with information that would be helpful to them in planning systems of soil treatment for their farms, the Illinois Agricultural Experiment Station for a number of years has conducted field investigations in all sections of the state on extensive soil types, varying widely in productiveness, to test the effectiveness of different systems of soil treatment on the yield of farm crops. Altho some investigations along this line had been in progress at Urbana since 1876, the first outlying soil experiment fields were not established until the fall of 1901. Some of the original fields are still in operation. In all more than fifty soil experiment fields have been established in Illinois. Some have been abandoned at one time or another for various reasons. During the crop season of 1928 thirty-one of these fields were in operation. The location of them within the state may be ascertained by referring to the accompanying map.

The complete results from all the Illinois soil experiment fields up to and including 1924 were reported in Bulletin 273. Subsequent results have been reported in Bulletins 280, 296, and 305. The present bulletin is a continuation of this series of publications, being a record of the yields for the year 1928.

In these publications the crop yields are presented as a matter of record without comment or discussion. In a broad sense, of course, the results speak for themselves, and carry definite lessons to those who have been following the investigations of the station. Discussions of these investigations have appeared from time to time in former station publications and further discussion of an interpretative nature will appear in future publications.

Explanation of Tables and Symbols

The results reported on the following pages are for the individual fields arranged alphabetically rather than by location or by soil types. All yields, except those in parentheses, indicate acre yields in bushels. Yields in parentheses indicate acre yields in tons.

The following symbols have been used in this bulletin to denote the soil treatments applied:

0 = No treatment	rP = Rock phosphate
M = Manure	sP = Superphosphate
R = Crop residues	bP = Bone phosphate
Le = Legume catch crop	S = Flowers of sulfur
L = Limestone	KCl = Muriate of potash
K = Potash	

The crop residues are chiefly cornstalks and sweet clover plowed down as a green manure. In some cases the second crop of clover and other legume residues have also been plowed down.

When legumes are used as a catch crop, they are seeded in small grain to be plowed down the following year for succeeding crops.

TABLE 1.—ALEDO FIELD: MAIN SERIES

Serial plot No.	Soil treatment	Series 100		Series 200	Series 300	Series 400	
		Oats	Stubble clover (hubam)	Second- year corn	First- year corn	Wheat	Stubble clover (sw. cl.)
WEST HALF							
1	0.....	73.4	(0)	61.4	54.2	28.3	....
2	M.....	79.7	(0)	73.6	71.2	41.0	....
3	ML.....	81.6	(.59)	73.2	69.4	42.7	....
4	MLrP.....	90.0	(.69)	75.4	70.6	43.3	....
5	0.....	64.7	(0)	58.6	54.4	35.0	....
6	R.....	73.4	(0)	64.6	68.6	37.7	(0)
7	RL.....	77.2	(.52)	70.6	74.6	41.3	(1.93)
8	RLrP.....	82.8	(.80)	74.2	73.4	39.7	(2.07)
9	RLrPK.....	85.0	(.57)	73.6	77.6	44.2	(2.42)
10	0.....	70.9	(0)	59.8	59.6	30.8	....
EAST HALF							
1	RL.....	70.3	(.37)	67.2	69.6	38.0	(.78)
2	MrP.....	84.4	(0)	76.2	69.8	41.7	....
3	MLbP.....	92.2	(.61)	74.6	69.8	44.3	....
4	MLrP.....	91.9	(.69)	67.0	70.6	41.3	....
5	RsP.....	76.9	(0)	65.8	64.4	38.2	(0)
6	RrP.....	80.9	(0)	72.8	70.6	39.3	(0)
7	RLsP.....	81.9	(.55)	71.0	72.8	40.5	(1.93)
8	RLrP.....	81.3	(.63)	70.4	77.2	36.8	(1.86)
9	RLrPK.....	84.4	(.59)	71.6	80.2	42.7	(2.51)
10	RLrP.....	76.6	(.62)	69.8	69.0	38.3	(2.19)

Note.—In 1924 the plots on these series were divided into east and west halves in order to provide for additional phosphorus studies. The plots on the west halves of all series continue under the original soil treatment but the plots on the east halves receive the treatment designated above. No more rock phosphate will be applied to the phosphate plots on the west halves for an indefinite period, these plots having received a total of 8,000 pounds an acre.

On the east halves all phosphorus fertilizers will be applied twice in the rotation, ahead of the wheat crop and the first corn crop, at the following annual acre rates: rock phosphate 500 pounds, superphosphate 200 pounds, bone meal 200 pounds. The minimum amount of limestone necessary for the successful growth of the clover green-manure crop will be applied to Plots 1-E and 10-E, 4,000 pounds an acre having been applied in 1924.

TABLE 2.—ALEDO FIELD: MINOR SERIES

Serial plot No.	Series 500		Corn	Series 600		Corn
	Soil treatment			Soil treatment		
1	R.....		69.8	R.....		71.3
2	RbP.....		71.7	RsP.....		73.2
3	RLbP.....		78.3	RLsP.....		74.9
4	RL.....		72.0	RL.....		74.4

(Table concluded on page 214)

TABLE 2.—*Concluded*

	Series 700	Corn	Series 800	Corn
	Soil treatment		Soil treatment	
1	R.....	72.3	R.....	70.4
2	RrP.....	74.3	R, slag P.....	69.3
3	RLrP.....	76.5	RL, slag P.....	71.0
4	RL.....	74.6	RL.....	75.1

TABLE 3.—ANTIOCH FIELD: SERIES 100

Plot No.	Soil treatment	Oats	Plot No.	Soil treatment	Oats
1	0.....	53.8	6	LRbP.....	76.3
2	LrP.....	62.5	7	LRK.....	52.2
3	LRrP.....	71.3	8	LKbP.....	72.5
4	LbP.....	75.9	9	LRKbP.....	66.3
5	LKrP.....	60.0	10	RKbP.....	73.4

Note.—At Antioch, beginning with 1924, rock phosphate has been applied to Plots 2, 3 and 5 at the annual acre rate of 500 pounds; one-half of the rotation application is made ahead of the oats crop and one-half ahead of the wheat crop. The soil treatment remains unchanged on the other plots.

TABLE 4.—BLOOMINGTON FIELD: SERIES 100

Plot No.	NORTH HALF	Corn	SOUTH HALF	Corn
	Soil treatment		Soil treatment	
1	R.....	49.0	0.....	33.4
2	RLbP.....	52.2	RL.....	35.2
3	RLrP.....	64.6	RLsP.....	59.6
4	RLbP.....	49.6	RLbP.....	60.0
5	RLKrP.....	56.2	RLKsP.....	55.6
6	RLbP.....	55.8	RLbP.....	60.4
7	RLKrP.....	58.4	RLKsP.....	62.8
8	RLKbP.....	56.2	RLKbP.....	63.0
9	RLKbP.....	60.4	RLKbP.....	62.6
10	RKbP.....	51.2	RKbP.....	58.0
11	RrP.....	47.4	RsP.....	57.2

Note.—At Bloomington in 1924 an additional plot was laid out at the east end of the series. All plots were divided into north and south halves and the soil treatment planned as follows: Residues (cornstalks, the second crop of red clover, legume green-manure crops) to be turned under on all plots except Plot 1-S. Different phosphorus carriers to be applied at the following acre rates per rotation: bone meal, 1,000 pounds, to Plots 2-N, 4-N, 6-N, 8-N, 9-N, and 10-N; rock phosphate, 2,500 pounds, to Plots 3-N, 5-N, 7-N, and 11-N; superphosphate, 1,000 pounds, to Plots 3-S, 5-S, 7-S, and 11-S. Two-fifths of the rotation application of these phosphates is to be made ahead of the oats crop, two-fifths ahead of the wheat crop, and one-fifth ahead of the first corn crop.

TABLE 5.—CARLINVILLE FIELD: MAIN SERIES

Serial plot No.	Soil treatment	Series 100	Series 200	Series 300	Series 400
		Corn	Oats	Oats ¹	Clover-alfalfa
1	0.....	32.5	30.2	39.5	(1.51)
2	M.....	42.9	40.8	51.3	(2.27)
3	ML.....	60.2	43.1	60.5	(3.94)
4	MLrP.....	61.5	44.2	59.5	(4.28)
5	0.....	22.0	31.7	52.0	(1.92)
6	R.....	22.7	25.6	53.6	(1.99)
7	RL.....	46.1	35.0	60.5	(3.29)
8	RLrP.....	48.7	38.0	59.2	(3.85)
9	RLrPK.....	59.1	41.1	60.9	(4.69)
10	0.....	26.9	31.1	47.5	(1.87)

¹Wheat winterkilled; oats grown as a substitute crop.

TABLE 6.—CARLINVILLE FIELD: MINOR SERIES

Serial plot No.	Series 700	Oats ²	Series 800	Oats ²
	Soil treatment ¹		Soil treatment ¹	
1	LeL (1,000).....	40.9	LeL (5,000).....	43.1
2	LeL (4,000).....	40.9	LeL (20,000).....	53.4
3	LeL (2,000).....	39.1	LeL (10,000).....	57.5
4	LeL (2,000), treble sP.....	47.5	LeL (10,000), treble sP.....	59.1
5	LeL (2,000), sP.....	47.8	LeL (10,000), sP.....	62.5
6	LeL (2,000), rP.....	46.3	LeL (10,000), rP.....	60.3
7	L (2,000).....	37.2	L (10,000).....	54.1

¹The figures in parentheses refer to the total amounts of limestone per acre since 1921. ²Oats grown as a substitute for winter wheat.

TABLE 7.—CARTHAGE FIELD: MAIN SERIES

Serial plot No.	Soil treatment	Series 100	Series 200	Series 300		Series 400
		Oats	Corn	Wheat	Stubble clover (sw. cl.)	Clover
1	0.....	43.8	38.4	24.6	.....	(1.04)
2	M.....	60.6	58.4	18.3	.....	(1.70)
3	ML.....	68.8	70.2	30.4	.....	(2.45)
4	MLrP.....	72.7	67.9	37.1	.....	(2.78)
5	0.....	48.8	37.8	15.8	.....	(1.89)
6	R.....	56.6	54.8	17.5	(0.0)	(1.37)
7	RL.....	62.2	60.8	30.0	(.82)	(1.04)
8	RLrP.....	62.5	61.7	32.9	1.06	(1.94) ¹
9	RLrPK.....	63.3	69.9	37.1	(1.30)	(1.70)
10	0.....	39.8	46.0	22.1	.....	(1.05)

¹The clover on Plot 408 was damaged by water standing on the plot in the early spring.

TABLE 8.—CARTHAGE FIELD: MINOR SERIES

Serial plot No.	Soil treatment ¹	Series 500		Series 600		Series 700	
		First-year corn West	East	Oats	Stubble clover ² West	Second-year corn West	East
1	RL.....	60.0	60.0	45.0	(1.40)	46.4	42.4
2	RLrP (100).....	64.0	61.2	43.4	(1.30)	47.6	50.4
3	RLrP (100), gypsum (100).....	59.6	71.6	44.1	(1.30)	48.4	45.6
4	RLrP (200).....	64.4	72.4	42.5	(1.00)	43.6	53.6
5	RLrP (200), gypsum (200).....	63.6	66.4	46.6	(1.10)	38.0	56.4
6	RLrP (400).....	68.6	78.0	47.2	(.90)	46.0	46.0
7	RLrP (400), gypsum (400).....	74.0	74.0	48.8	(.90)	45.2	45.2
8	RL.....	70.4	72.0	47.2	(.90)	51.6	49.2

¹The figures in parentheses indicate the annual acre rates (pounds) at which rock phosphate and gypsum are applied. ²The fall growth of sweet clover is regularly removed from the west halves of the series and the corn following is harvested by half plots.

TABLE 9.—CLAYTON FIELD

Serial plot No.	Soil treatment	Series 100	Series 200	Series 300		Series 400
		Oats	Corn	Wheat	Stubble clover (sw. cl.)	Clover
1	0.....	41.3	46.6	23.3	....	(.45)
2	M.....	56.3	81.7	34.0	....	(.90)
3	ML.....	72.5	91.2	42.7	....	(1.69)
4	MLrP.....	76.6	89.6	45.4	....	(1.76)
5	0.....	51.3	40.7	19.8	....	(.45)
6	R.....	53.8	54.8	27.5	(.0)	(.08)
7	RL.....	73.8	71.5	39.0	(1.09)	(1.04)
8	RLrP.....	74.4	67.9	39.6	(1.15)	(.87) ¹
9	RLrPK.....	75.0	86.4	41.4	(1.74)	(1.56)
10	0.....	52.8	46.9	18.9	....	(.41)

¹Clover on Plot 40S was damaged in spring by standing water.

(See opposite page for Table 10)

TABLE 11.—DIXON FIELD: MINOR SERIES

Serial plot No.	Soil treatment	Series 500	Series 600	Series 700	Series 800
		Alfalfa	Second-year corn	First-year corn	Oats
1-N	K.....	(.0)	49.6	53.6	50.3
1-S	0.....	(.0)	47.2	49.4	62.5
2-N	MK.....	(.0)	55.6	65.2	54.1
2-S	M.....	(.0)	62.2	59.0	60.0
3-N	MLK.....	(1.74)	67.2	67.8	70.0
3-S	ML.....	(1.50)	65.6	63.2	54.1
4-N	MLrPK.....	(2.56)	68.2	69.8	70.0
4-S	MLrP.....	(2.29)	63.4	56.6	57.5

TABLE 10. DIXON FIELD: MAIN SERIES

Serial plot No.	Soil treatment	Series 100 Oats	Series 200 Corn	Series 300 Wheat	Series 400 Soybeans ¹
SOUTH HALF					
1	0.....	44.4	47.6	14.7	(1.66)
2	M.....	60.9	65.8	23.5	(1.62)
3	ML.....	71.9	74.2	36.7	(1.67)
4	MLrP.....	71.9	74.6	39.0	(1.68)
5	0.....	45.6	38.2	22.3	(1.66)
6	R.....	37.8	35.8	25.5	(1.72)
7	RL.....	56.3	58.2	32.2	(1.59)
8	RLrP.....	54.1	61.2	31.2	(1.56)
9	RLrPK.....	54.1	66.0	36.8	(1.49)
10	0.....	41.6	36.8	20.0	(1.48)
NORTH HALF					
1	RL.....	43.8	49.2	19.3	(1.55)
2	MrP.....	62.8	69.4	32.3	(1.71)
3	MLbP.....	67.8	73.8	35.8	(1.43)
4	MLrP.....	60.0	78.4	37.2	(1.59)
5	RbP.....	49.4	52.8	27.0	(1.63)
6	RrP.....	43.8	58.6	26.5	(1.59)
7	RLbP.....	52.5	66.0	31.8	(1.56)
8	RLrP.....	48.8	66.2	35.5	(1.47)
9	RLrPK, gypsum.....	53.1	72.6	41.3	(1.40)
10	RLrP.....	49.7	47.2	27.5	(1.58)

Note. — In 1921 the plots on these series were divided into north and south halves, and some additional investigations were begun. The plots on the south halves of all series continue under the original soil treatment, but the plots on the north halves receive the treatment designated above. No more rock phosphate will be applied to the phosphate plots on the south halves for an indefinite period, these having received a total of 8,000 pounds an acre. The same holds true for the north half of Plot 9 of all series.

On the north halves the phosphatic fertilizers and gypsum are applied twice in the rotation, one-half of the rotation quota ahead of wheat, and one-half ahead of corn, at the following annual acre rates: rock phosphate 500 pounds, superphosphate 200 pounds, bone meal 200 pounds, gypsum 200 pounds.

The minimum amount of limestone necessary for the successful growth of clovers will be applied to Plots 1-N and 10-N on all series, 1,000 pounds an acre having been applied in 1921.

¹Soybeans were grown on Series 100 as a substitute for clover.

TABLE 12.—ELIZABETHTOWN FIELD: MAIN SERIES

Serial ¹ plot No.	Soil treatment	Series 100 Corn	Series 200 Wheat	Series 300 Clover- alfalfa	Series 400 Wheat	Series 500 Alfalfa
1	0.....	14.5	.2	(0)	1.7	(0)
2	M.....	11.8	.2	(.60)	2.9	(0)
3	ML.....	29.8	2.4	(1.39)	6.5	(1.37)
4	MLrP.....	33.1	7.2	(1.88)	6.8	(2.32)
5	0.....	3.5	.4	(0)	1.7	(0)
6	R.....	2.6	.7	(0)	1.2	(0)
7	RL.....	21.0	4.9	(1.01)	3.2	(.76)
8	RLrP.....	30.7	11.1	(1.85)	3.5	(1.50)
9	RLrPK.....	30.9	10.2	(2.28)	4.3	(2.36)
10	0.....	15.2	4.5	(0)	1.6	(0)

¹Plot 1 on Series 100, 300, and 400, and Plot 10 on Series 100 and 200, lie on lower ground and are naturally more productive.

TABLE 13.—ELIZABETHTOWN FIELD: MINOR SERIES

Soil treatment	Plot A Corn	Plot B Soybeans	Plot C Barley ¹
RLsP.....	38.0	(1.63)	7.1
RLrP.....	41.0	(1.52)	4.6

¹Barley was grown on Plot C as a substitute for wheat.

TABLE 14.—ENFIELD FIELD: MAIN SERIES

Serial plot No.	Soil treatment	Series 100 Oats	Series 200 Corn	Series 300 Oats ¹	Series 400 Timothy- hubam
1	0.....	10.5	.5	24.8	(.60)
2	M.....	17.2	1.8	28.9	(.82)
3	ML.....	35.9	35.6	57.8	(2.04)
4	MLrP.....	40.6	50.2	57.2	(2.29)
5	0.....	13.1	.6	25.2	(.57)
6	R.....	13.3	1.1	28.1	(.64)
7	RL.....	38.8	38.6	55.2	(1.95)
8	RLrP.....	41.4	42.4	55.2	(1.77)
9	RLrPK.....	56.1	44.1	67.2	(2.37)
10	0.....	12.5	1.7	25.3	(.61)

¹Oats were grown on Series 300 as a substitute for wheat.

TABLE 15.—ENFIELD FIELD: MINOR SERIES

Serial plot No.	Soil treatment ¹	Series 700 Oats ²	Series 800 Corn
1-W	L.....	24.4	19.4
1-E	L.....	30.0	19.5
2-W	LrP (2,000) sP (100), sweet clover.....	30.6	19.9
2-E	LrP (2,000) sP (100), red clover.....	40.0	19.9
3-W	LrP (2,000), sweet clover.....	24.4	18.8
3-E	LrP, (2,000), red clover.....	40.6	20.0
4-W	LrP (2,000) sP (200), sweet clover.....	23.8	16.5
4-E	LrP (2,000), sP (200), red clover.....	38.8	18.4
5-W	LrP (2,000), sweet clover.....	23.1	16.9
5-E	LrP (2,000), red clover.....	33.8	17.7
6-W	L, sweet clover.....	19.4	12.4
6-E	L, red clover.....	26.2	16.3

¹The figures in parentheses indicate the total applications of phosphates since 1923. ²Oats were grown on Series 800 as a substitute for wheat.

TABLE 16.—EWING FIELD: MAIN SERIES

Serial plot No.	Soil treatment	Series 100 Oats	Series 200 Corn	Series 300 Oats ¹	Series 400 Hubam clover
1	0.....	.5	.4	8.0	(0)
2	M.....	7.7	1.4	12.8	(0)
3	ML.....	33.9	50.1	35.9	(1.38)
4	MLrP.....	35.9	50.0	40.5	(1.58)
5	0.....	4.1	.1	15.5	(0)
6	R.....	2.3	.3	13.3	(0)
7	RL.....	26.6	27.0	38.3	(.90)
8	RLrP.....	28.4	17.5	34.5	(1.13)
9	RLrPK.....	38.8	45.3	48.6	(1.54)
10	0.....	1.6	.5	15.5	(0)

¹Oats were grown on Series 300 as a substitute for wheat.

TABLE 17.—EWING FIELD: MINOR SERIES

Serial plot No.	Soil treatment	Series 500-N Oats ¹	Series 500-S Oats	Series 600 Corn
1	MLrPK, no clover.....	27.0	16.8	22.4
2	MLrPK, white biennial sweet clover....	30.1	17.0	35.2
3	MLrPK, red clover.....	34.8	19.2	28.8
4	MLrPK, hubam clover.....	33.8	19.5	24.3
5	MLrPK, alsike clover.....	33.0	22.0	30.1
6	MLrPK, yellow biennial sweet clover...	31.2	28.0	28.2

Note.—These series were replotted from what were formerly Plots A and B. Prior to 1917 fertilizers had been applied as follows: manure 8 tons, limestone 8 tons, rock phosphate 6,000 pounds, and kainit 2,400 pounds per acre. With the exception of limestone used when necessary to grow the clovers, no more fertilizing materials will be added. A study will be made of relative value of different clovers as the source of organic manure in a rotation of corn, oats, and wheat (clover catch crop).

¹Oats were grown on Series 500-N as a substitute for wheat.

TABLE 18.—EWING FIELD: MINOR SERIES

Serial plot No.	Soil treatment ¹	Series 700 Oats ²	Series 800 Corn	Series 900 Oats
1	Le.....	15.9	1.4	2.8
2	LeL.....	20.6	6.6	4.4
3	LeLsP (100).....	27.5	6.0	13.1
4	LeLrP (200).....	31.3	8.2	19.4
5	LeL.....	23.4	5.8	3.1
6	LeLsP (200).....	26.6	6.1	9.7
7	LeLrP (400).....	24.7	8.0	6.9

¹The figures in parentheses indicate the annual acre rate at which the phosphates are applied. ²Oats were grown on Series 700 as a substitute for wheat.

TABLE 19. —HARTSBURG FIELD: MAIN SERIES

Serial plot No.	Soil treatment	Series 100 Oats	Series 200 Second-year corn	Series 300 First-year corn	Series 400 Barley ¹
WEST HALF					
1	O.....	63.1	53.4	36.8	35.4
2	M.....	64.4	63.6	63.2	44.2
3	ML.....	60.3	66.2	74.0	50.0
4	MLrP.....	62.2	64.2	71.2	50.0
5	O.....	56.9	55.2	43.0	42.7
6	R.....	46.6	57.0	78.0	47.5
7	RL.....	45.9	58.4	79.4	53.3
8	RLrP.....	58.8	64.6	82.0	46.9
9	RLrPK.....	52.2	64.0	68.8	55.6
10	O.....	54.4	52.2	57.2	45.8
EAST HALF					
1	RL.....	51.3	55.0	72.8	40.6
2	MrP.....	58.4	65.4	68.2	48.4
3	MLbP.....	67.2	68.4	67.6	45.8
4	MLrP.....	64.7	70.2	69.4	49.0
5	R-P.....	52.2	57.8	82.0	51.9
6	RrP.....	53.4	66.2	85.0	51.2
7	RLsP.....	56.6	65.6	88.4	54.2
8	RLrP.....	56.9	63.6	83.4	47.9
9	RLrPK, gypsum.....	55.0	61.4	80.0	54.2
10	RLrP.....	50.9	63.6	76.6	42.9

Note. — In 1924 the plots on these series were divided into west and east halves and additional investigations were begun. The plots on the west halves of all series continue under the original soil treatment but the plots on the east halves receive the treatment designated above. No more rock phosphate will be applied to the phosphate plots on the west halves for an indefinite period, these plots having received a total of 8,000 pounds an acre. The same holds true for the east half of Plot 9 on all series.

On the east halves the phosphatic fertilizers and gypsum are applied twice in the rotation, one-half ahead of the wheat crop and one-half ahead of the first corn crop, at the following annual acre rates: rock phosphate 500 pounds, superphosphate 200 pounds, bone meal 200 pounds, gypsum 200 pounds.

The minimum amount of limestone necessary to secure successful growth of the legume catch crop will be applied to Plots 4-E and 10-E on all series, 4,000 pounds an acre having been applied in 1924.

¹Barley was grown on Series 100 as a substitute for wheat.

TABLE 20. —HARTSBURG FIELD: SERIES 500

Plot No.	Soil treatment	Oats	Plot No.	Soil treatment	Oats	Plot No.	Soil treatment	Oats
501	O.....	63.6	506	R.....	57.5	511	LeM.....	57.7
502	M.....	60.6	507	RL.....	53.0	512	LeML.....	61.4
503	ML.....	70.2	508	RLrP.....	56.9	513	LeMLrP.....	68.1
504	MLrP.....	69.2	509	RLrPK.....	56.9	514	LeMrP.....	64.7
505	O.....	60.2	510	O.....	54.5	515	O.....	47.7

TABLE 21.—JOLIET FIELD: MAIN SERIES

Serial plot No.	Soil treatment	Series 100 Oats	Series 200 Alfalfa ¹	Series 300 Second-year corn	Series 400 First-year corn	Series 500 Wheat	Series 600 Mixed hay
1	O.....	57.3	(0)	26.8	19.3	2.5	(.97)
2	M.....	59.4	(0)	32.6	46.3	8.7	(1.16)
3	ML.....	72.2	(.44)	51.0	59.9	12.2	(1.36)
4	MLrP.....	72.5	(1.34)	52.2	60.0	24.2	(2.19)
5	O.....	49.7	(0)	19.6	17.9	6.7	(.96)
6	R.....	48.9	(0)	20.0	23.6	8.4	(1.02)
7	RL.....	63.4	(.04)	34.6	31.3	10.2	(1.00)
8	RLrP.....	67.5	(1.60)	47.6	32.9	33.6	(1.63)
9	RLrPK.....	70.3	(2.53)	50.6	47.7	40.0	(1.92)
10	O.....	54.2	(.88)	25.6	20.7	7.2	(.93)

¹Alfalfa was badly winterkilled.

TABLE 22.—JOLIET FIELD: MINOR SERIES

Serial plot No. ¹	Soil treatment	Series 700 Oats ²	Series 800 Barley	Series 900 Corn	Series 1000 Legume hay
1	L, red clover.....	43.1	23.1	43.2	(0)
2	LrP, red clover.....	54.1	28.5	57.4	(0)
3	LrP, gypsum, red clover	49.7	34.8	62.2	(0)
4	L, red clover.....	43.8	26.5	55.8	(0)
5	L, alfalfa.....	41.6	29.0	48.6	(.73)
6	LrP, alfalfa.....	48.8	30.6	54.8	(1.60)
7	LrPL (8,000), alfalfa...	49.4	32.1	57.6	(1.36)
8	LrP, KCl, alfalfa.....	49.1	34.6	57.0	(1.50)
9	L, KCl, alfalfa.....	44.7	35.2	43.8	(.68)
10	L, alfalfa.....	43.4	29.2	50.0	(0)
11	L, red clover.....	45.6	....	54.8	....
12	LsP, red clover.....	47.8	....	55.4	....
13	LrP, red clover.....	51.3	....	51.6	....

Note.—In 1924 the rotation on the minor series at Joliet was changed to corn, barley, wheat, and biennial legumes (red clover on Plots 1 to 4 on all series and on Plots 11, 12, and 13 on Series 700 and 900, alfalfa on Plots 5 to 10). All plots had received limestone at the rate of 5,000 pounds an acre prior to 1924. At that time Plot 7 on all series received 8,000 pounds of limestone an acre. Fertilizers as designated in Table 22 are applied at the following annual acre rates: rock phosphate 400 pounds, potassium chloride 100 pounds, gypsum 100 pounds. These fertilizers are applied twice in the rotation, ahead of the wheat and corn crops. Superphosphate is applied for the wheat crop at the rate of 250 pounds an acre.

¹Plots 11, 12, and 13 appear only on Series 700 and 900.

²Oats were grown on Series 700 as a substitute for wheat.

TABLE 23.—KEWANEE FIELD: MAIN SERIES

Serial plot No.	Soil treatment	Series 100	Series 200	Series 300	Series 400
		Oats	Corn	Wheat	Clover
1	O.....	55.0	62.4	19.9	(1.64)
2	M.....	79.4	78.2	21.8	(1.93)
3	ML.....	75.3	91.6	29.2	(2.30)
4	MLrP.....	79.4	94.6	34.3	(2.68)
5	O.....	62.5	74.0	16.7	(1.17)
6	R.....	61.4	74.6	17.0	(.59)
7	RL.....	67.3	83.6	23.8	(1.01)
8	RLrP.....	77.7	86.2	29.6	(1.00)
9	RLrPK.....	75.9	90.4	35.1	(1.30)
10	O.....	65.0	56.6	16.7	(.43)

TABLE 24.—KEWANEE FIELD: MINOR SERIES

Serial plot No.	Soil treatment	Series 500	Series 600	Series 700	Series 800
		Oats	Corn	Wheat	Clover
1	RrP.....	82.3	88.0	35.2	(.64)
2	RsP.....	76.9	85.5	33.2	(.50)
3	RLrP.....	68.6	96.1	27.0	(.49)
4	RLsP.....	78.8	104.1	40.0	(.58)

TABLE 25.—LA MOILLE FIELD: MAIN SERIES

Serial plot No.	Soil treatment	Series 100	Series 200	Series 300	Series 400	
		Oats	Second- year corn	First- year corn	Whea	Stubble clover (sw. cl.)
1	O.....	66.6	68.4	41.0	24.0	....
2	M.....	73.8	71.6	73.5	32.6	....
3	ML.....	69.1	71.5	73.6	38.7	....
4	MLrP.....	65.9	68.1	70.6	40.4	....
5	O.....	55.8	51.1	56.0	31.8	....
6	R.....	61.6	61.0	60.8	35.1	(.12)
7	RL.....	68.0	65.6	67.3	15.2	(1.69)
8	RLrP.....	69.1	69.2	69.1	13.5	(1.77)
9	RLrPK.....	69.1	69.7	69.8	40.0	(2.03)
10	O.....	53.0	51.1	47.6	21.8	....

TABLE 26.—LEBANON FIELD: MAIN SERIES

Serial Plot No.	Soil treatment	Series 100	Series 200	Series 300		Series 400	
		Soybeans	Corn	Wheat	Stubble clover (sw. cl.)	Wheat	Stubble clover (hubam)
1	O.....	(.50)	17.6	2.8	....	.2	(0)
2	M.....	(1.16)	27.0	4.6	....	.6	(0)
3	ML.....	(1.52)	37.4	24.1	....	9.5	(1.32)
4	MLrP.....	(2.38)	38.2	26.4	....	11.6	(1.30)
5	O.....	(2.16)	22.2	3.3	....	1.1	(0)
6	R.....	(2.61)	25.8	2.4	(0)	.9	(0)
7	RL.....	(2.25)	57.2	11.7	(1.40)	10.3	(1.10)
8	RLrP.....	(2.68)	55.8	18.3	(1.06)	12.8	(1.29)
9	RLrPK.....	(2.61)	71.4	15.6	(1.26)	12.2	(1.53)
10	O.....	(2.18)	26.6	1.2	....	.7	(0)

TABLE 27.—LEBANON FIELD: MINOR SERIES

Serial plot No.	Soil treatment	Series 500	Series 600	Series 700
		Corn	Oats	Oats ¹
1-W	Le.....	43.0	38.8	41.3
1-E	LesP.....	27.8	39.1	41.6
2-W	LeM.....	49.0	45.3	44.4
2-E	LeMsP.....	39.8	48.4	43.4
3-W	LeML.....	53.8	50.0	45.0
3-E	LeMLsP.....	56.0	56.6	63.1
4-W	LeMLrP.....	52.6	49.1	42.5
4-E	LeMLrP.....	64.6	53.1	54.4

¹Oats were grown on Series 700 as a substitute for wheat.

(See opposite page for Table 28)

TABLE 29.—McNABB FIELD

Serial plot No.	Soil treatment	Series 100	Series 200	Series 300	Series 400
		Corn	Clover	Wheat	Oats
1	R.....	75.8	(2.09)	38.3	75.6
2	RrP.....	77.2	(1.94)	42.0	84.7
3	O.....	88.4	(2.93)	42.8	78.4
4	MrP.....	86.0	(3.34)	45.7	92.5
5	M.....	84.2	(3.11)	46.5	91.3

TABLE 28. LEBANON FIELD: MINOR SERIES

Serial plot No.	Soil treatment	Series 800	Series 900
		Wheat	Potatoes
1	LeM.....	24.7	112.7
2	LesP.....	26.3	118.0
3	LerP.....	26.0	98.0
4	LesPK.....	23.0	100.0
5	LerPK.....	24.3	107.3
6	Le, straw.....	17.7	195.7
7	LesP, straw.....	19.0	230.3
8	LerP, straw.....	18.7	207.7
9	Le, treble superphosphate.....	26.7	95.0
10	Le, potassium phosphate.....	22.3	102.7

Note. In 1925 Series 800 and 900 were laid out on land which had received 8,000 pounds of limestone, 2,000 pounds of rock phosphate, and 15 tons of manure an acre in 1911. The land grew alfalfa almost continuously from 1911 to 1925. A rotation of wheat (sweet-clover catch crop) and potatoes is planned. Fertilizers are applied as indicated in Table 28. The phosphates are supplied annually, rock phosphate 400 pounds, superphosphate 200 pounds, treble superphosphate 100 pounds and potassium phosphate 200 pounds an acre. Kainit 200 pounds an acre is applied for each potato crop. Two tons of manure an acre is applied for potatoes. Straw is applied as a mulch when the potatoes are coming thru the ground.

TABLE 30. MINONK FIELD

Serial plot No.	Soil treatment	Series 100	Series 200	Series 300		Series 400	
		Oats	Second-year corn	First-year corn		Wheat	
				North half ¹	South half	North half ²	South half
1	O.....	58.4	54.6	55.8	49.4	5.7	2.3
2	M.....	57.2	61.2	75.4	67.4	11.2	16.0
3	ML.....	53.1	61.0	70.2	69.0	21.7	20.7
4	MLrP.....	47.5	60.6	73.4	70.4	27.0	25.3
5	O.....	48.4	52.6	54.6	47.3	18.3	15.7
6	R.....	57.8	57.8	66.5	68.6	19.7	20.5
7	RL.....	60.9	52.6	69.7	70.6	21.5	19.8
8	RLrP.....	56.6	57.8	69.7	72.0	24.3	24.2
9	RLrPK.....	57.8	57.6	68.8	66.7	28.7	27.5
10	O.....	42.5	41.2	51.9	43.9	23.0	20.2

¹The north halves of all plots of Series 300 received nitrogen fertilizers as follows: 75 pounds ammonium sulfate per acre hll-dropped at planting time and 125 pounds sodium nitrate per acre as a side dressing when the corn was about 12 inches high.
²Early in March 200 pounds of sodium nitrate per acre was applied to the north halves of all plots of Series 400 as a top dressing for the wheat.

TABLE 31.—MT. MORRIS FIELD: MAIN SERIES

Serial plot No.	Soil treatment	Series 100	Series 200	Series 300	Series 400
		Oats	Corn	Wheat	Clover
1	0.....	48.4	36.0	13.2	(0)
2	M.....	63.8	58.8	16.0	(0)
3	ML.....	72.2	74.5	22.1	(2.26)
4	MLrP.....	71.3	71.9	23.7	(2.26)
5	0.....	49.5	35.7	11.0	(0)
6	R.....	50.9	46.4	16.6	(0)
7	RL.....	66.4	64.7	27.5	(.56)
8	RLrP.....	69.1	70.0	28.3	(.68)
9	RLrPK.....	76.6	71.1	33.1	(1.13)
10	0.....	49.4	45.3	7.7	(0)

TABLE 32.—MT. MORRIS FIELD: MINOR SERIES

Serial plot No.	Soil treatment	Series 500	Series 600	Series 700	Series 800
		Alfalfa	Barley	Corn	Mixed hay
1	0.....	(0)	32.3	57.6	(2.64)
2	M.....	(0)	36.7	72.2	(3.19)
3	ML.....	(1.86)	47.1	79.4	(3.90)
4	MLrP.....	(2.38)	47.1	77.6	(3.89)

TABLE 33.—NEWTON FIELD: MAIN SERIES

Serial plot No.	Soil treatment	Series 100	Series 200	Series 300	Series 400
		Corn	Mixed hay	Spring wheat	Oats
1	0.....	13.2	(.43)	.5	15.3
2	M.....	25.2	(.50)	.8	28.8
3	ML.....	49.0	(1.13)	14.3	40.0
4	MLrP.....	53.8	(1.95)	14.7	33.4
5	0.....	19.2	(.45)	.3	9.7
6	R.....	17.4	(.47)	.5	14.1
7	RL.....	29.6	(1.29)	7.2	37.8
8	RLrP.....	34.6	(1.46)	6.7	37.8
9	RLrPK.....	48.1	(2.06)	17.7	36.3
10	0.....	13.0	(.50)	.2	14.4

TABLE 34.—NEWTON FIELD: LIME EXPERIMENT

Serial plot No.	Soil treatment	Limestone fineness (meshes per inch)	High-calcium Lime				Dolomitic lime				
			Series 700 ¹	Series 900	Series 600	Series 800 ¹	Series 1000				
			Timothy	Sweet clover	Spring wheat	Stubble clover	Corn	Timothy	Sweet clover	Spring wheat	Stubble clover
1	RrPK	20 6	.42	0	7 0	(0)	19 6	.42	0	6 8	(0)
2	RrPKL	1 down	1 67	.28	10 3	(.11)	37 4	2 08	.20	12 3	(.22)
3	RrPKL	4 to 10	2 29	.40	9 7	(.21)	49 8	2 08	.20	12 5	(.21)
4	RrPKL	10 down	1 67	.20	11 5	(.50)	45 4	1 88	.20	13 0	(.23)
5	RrPKL	50 down	2 08	.20	12 2	(.29)	47 0	1 88	.20	11 5	(.24)
6	RrPKL	Burnt	1 67	.20	13 2	(.23)	31 8	2 08	.20	11 7	(.24)
7	RrPK	14 2	.63	0	6 2	(0)	16 6	.83	0	7 5	(0)
8	RrPKL	1 down	3 54	.28	15 0	(.74)	37 6	3 75	.50	15 7	(.67)
9	RrPKL	4 to 10	2 92	.28	14 2	(.69)	39 2	3 75	.50	15 0	(.67)
10	RrPKL	10 down	3 33	.50	15 0	(.67)	39 0	3 54	.50	16 8	(.63)
11	RrPKL	50 down	2 92	.40	14 7	(.61)	34 8	2 92	.50	16 2	(.63)
12	RrPKL	Burnt	2 50	.68	14 3	(.41)	35 0	2 92	.50	11 5	(.60)
13	RrPK	11 4	.21	0	9 2	(0)	17 8	1 01	0	10 8	(0)
14	RrPKL	4 down	2 29	1 38	14 2	(1 22)	43 4	3 54	.78	15 0	(.68)
15	RrPKL	4 to 10	2 50	1 18	14 3	(1 12)	51 2	3 75	.68	17 0	(.90)
16	RrPKL	10 down	2 50	1 08	17 2	(1 26)	50 8	3 54	1 38	19 0	(1 11)
17	RrPKL	50 down	2 71	.98	18 3	(.98)	51 4	3 75	1 38	20 0	(.99)
18	RrPKL	Burnt	2 50	1 57	20 2	(1 26)	46 2	4 17	1 77	18 8	(1 29)
19	RrPK	7 6	.42	0	9 2	(0)	12 2	.83	0	9 8	(0)

Note.—Lime materials have been applied in amounts equivalent to pure calcium carbonate as follows: to Plots 2 to 6, 500 pounds an acre a year; to Plots 8 to 12, 1,000 pounds; to Plots 14 to 18, 2,000 pounds. The total amounts applied since 1913 are 3,000 pounds, 6,000 pounds and 12,000 pounds respectively. No more will be applied until there appears to be need for it.

¹A mixture of timothy and sweet clover on Series 700 and 800 was threshed and the seed separated after threshing.

TABLE 35.—NEWTON FIELD: MINOR SERIES

Serial plot No.	Soil treatment	Series 1100-N		Series 1100-S	Series 1200
		Seed	Redtop Hay	Oats ¹	Soybeans
1	LeLrP.....	4.36	(1.34)	36.6	(2.02)
2	LeL.....	3.66	(1.00)	36.9	(1.68)
3	LeLrP.....	3.67	(1.12)	37.2	(1.80)
4	LeL.....	3.68	(.98)	36.9	(1.90)
5	LeLrP.....	4.34	(.96)	33.4	(2.18)

Note.—Prior to 1923 these series were used in plant-breeding projects and all plots had received uniform soil treatment. From 1923 to 1926 wheat, soybeans, and timothy were grown. In 1927 the rotation was changed to wheat (sweet clover), soybeans, and redtop, the redtop to occupy a given series for three years while wheat and soybeans are grown alternately on the other two series. The plan of fertilization is as follows: Limestone in sufficient amounts to grow sweet clover. Rock phosphate: Plot 1 received an application sufficient to bring the phosphorus content of the surface soil up to 2,000 pounds per acre by analysis. Plot 3 will receive phosphate at the annual acre rate of 200 pounds (400 pounds applied for wheat and 600 pounds for redtop). Plot 5 to receive phosphate at the annual acre rate of 400 pounds (800 pounds for wheat and 1,200 pounds for redtop).

¹Oats were grown on Series 1100-S as a substitute for wheat.

(See opposite page for Table 36)

TABLE 37.—ODIN FIELD: MAIN SERIES

Serial plot No.	Soil treatment	Series 100	Series 200	Series 300	Series 400
		Oats ¹	Sweet clover	Corn	Soybeans
1	O.....	7.8	0	2.0	15.2
2	R.....	13.4	0	4.3	16.6
3	RL.....	21.4	.01	9.8	30.1
4	RLbP.....	17.5	.09	8.3	18.4
5	RLbPK.....	19.4	0	14.9	25.5
6	O.....	6.9	0	1.5	9.6
7	R.....	16.9	.33	7.3	13.3
8	RL.....	34.4	2.17	16.9	18.0
9	RLbP.....	42.0	.62	14.4	17.7
10	RLbPK.....	35.8	1.55	25.5	30.2

¹Oats were grown on Series 100 as a substitute for wheat.

TABLE 38.—ODIN FIELD: MINOR SERIES

Serial plot No.	Soil treatment	Light lime		Heavy lime	
		Series 500	Series 600	Series 700	Series 800
		Corn	Oats ¹	Corn	Oats ¹
1	LeLbPK.....	26.0	16.9	25.0	23.4
2	LeLk.....	26.6	25.9	24.2	31.3
3	LeLsPK.....	20.0	12.8	19.2	24.7
4	LeLrPK.....	24.6	16.6	15.6	19.7
5	LeLk.....	23.4	28.4	25.2	25.9
6	LeL, slag P, K.....	27.8	25.3	17.2	17.8

¹Oats were grown on Series 600 and 800 as a substitute for wheat.

TABLE 36.—OBLONG FIELD: MAIN SERIES

Serial plot No.	Soil treatment	Series 100 Oats	Series 200 Corn	Series 300 Oats ¹	Series 400 Mixed hay
SOUTH HALF					
1	0.....	15.0	12.0	41.3	(.64)
2	ML.....	40.6	26.4	46.6	(1.11)
3	ML.....	40.0	60.0	55.3	(2.08)
4	MLrP.....	35.9	63.6	56.9	(2.12)
5	0.....	19.1	22.8	45.6	(.94)
6	R.....	24.4	23.6	50.3	(1.17)
7	RL.....	43.4	36.2	51.3	(1.71)
8	RLrP.....	43.8	40.6	53.8	(2.23)
9	RLrPK.....	45.0	66.4	51.6	(2.41)
10	0.....	20.3	18.2	45.0	(.77)
NORTH HALF					
1	RLsP.....	17.5	22.0	50.9	(1.15)
2	MLrP.....	27.6	42.0	62.8	(1.45)
3	MLbP.....	37.5	62.8	50.6	(1.91)
4	MLrP.....	40.9	58.6	67.2	(2.12)
5	RL, underacidulated P.....	18.8	21.0	51.1	(1.45)
6	RLrP.....	20.9	35.8	60.9	(1.29)
7	RLbP.....	46.6	40.8	51.7	(1.71)
8	RLrP.....	47.2	38.4	52.2	(2.00)
9	RLrPK.....	44.7	60.4	46.6	(2.23)
10	RL, potassium P.....	21.9	32.6	50.0	(1.35)

Note. In 1925 these series were divided into north and south halves for the purpose of studying the relative values of different phosphorus carriers. The plots on the south halves of all series, as well as Plots 1, 8, and 9 on the north halves, continue under the original soil treatment.

On the north halves the new soil treatment is as follows: An initial application of 1,000 pounds of limestone an acre to Plots 1, 2, 5, 6, and 10; subsequent applications to be governed by the clover requirements. Rock phosphate to Plots 2 and 6; 1,000 pounds an acre ahead of wheat and 600 pounds ahead of corn. Bone meal to Plots 3 and 7; 500 pounds an acre ahead of wheat and 300 pounds ahead of corn. Superphosphate to Plot 1; underacidulated phosphate to Plot 5; and potassium phosphate to Plot 10; all in the same amounts and applied for the same crops as the bone meal. Residues to be turned under on Plots 1, 5, and 10 as on the original residue plots.

¹Oats were grown on Series 300 as a substitute for wheat.

TABLE 39.—ODIN FIELD: SWEET CLOVER EXPERIMENT

Rotation	Soil treatment	Corn	Soybeans	Oats ¹	Sweet clover
3-year sweet-clover rotation.....	RLbP	1.1	17.8	32.3	...
4-year sweet-clover rotation.....	RLbP	50.3	22.8	22.9	.33

¹Oats were grown as a substitute for wheat.

TABLE 40.—OQUAWKA FIELD

Serial plot No.	Soil treatment	Series 100 Sweet clover	Series 200 Alfalfa ¹	Series 300 Rye	Series 400 Soy-beans	Series 500 Corn	Series 600 Wheat
1	0.....	0	(1.78)	11.2	11.6	13.0	8.3
2	M.....	0	(4.14)	13.3	19.7	36.0	10.7
3	ML.....	1.80	(4.35)	18.8	25.2	68.4	21.8
4	MLrP.....	1.37	(4.38)	19.5	23.8	63.6	22.3
5	0.....	0	(3.92)	11.6	13.4	8.8	5.3
6	R.....	0	(4.00)	13.4	14.2	21.8	1.8
7	RL.....	.73	(4.20)	13.8	18.6	71.2	13.2
8	RLrP.....	1.25	(4.39)	14.5	20.7	71.4	13.5
9	RLrPK.....	1.18	(4.42)	14.5	27.1	61.8	15.8
10	0.....	0	(3.15)	8.8	15.4	28.0	1.3

¹After the first crop of alfalfa had been removed, rock phosphate was applied as a top dressing for the alfalfa, 500 pounds per acre to Plots 4, 8, 9 and 1,000 pounds per acre to Plot 10.

TABLE 41.—PALESTINE FIELD: MAIN SERIES

Serial plot No.	Soil treatment	Series 100 Sweet clover	Series 200 Oats	Series 300 Corn	Series 400 Spring wheat	Series 500 Alfalfa
1	LeL.....	.87	19.4	26.0	8.5	(3.67)
2	LeLM.....	.48	21.3	34.0	13.3	(4.06)
3	LeLMsP.....	.38	23.1	25.8	15.0	(4.08)
4	LeLMrP.....	.48	25.6	26.6	16.7	(3.83)
5	LeL.....	.58	23.1	26.4	13.0	(4.27)
6	LeL, KCl.....	.70	18.1	26.8	13.7	(4.20)
7	LeLsP, KCl.....	1.17	19.2	25.8	13.0	(3.83)
8	LeLrP, KCl.....	.97	23.4	27.2	16.3	(4.21)
9	LeLrP, kainit.....	1.17	22.5	26.4	18.3	(4.67)
10	0.....	.10	11.6	19.0	6.3	(3.14)

Note.—In 1928 the rotation was changed to wheat (standard mixture catch crop, corn (hairy vetch seeded at last cultivation), oats, red clover-alfalfa mixture, and alfalfa. KCl is applied at the rate of 250 pounds per acre for the corn crop; kainit, at the rate of 500 pounds per acre for wheat and 500 pounds for corn; super-phosphate, at the rate of 300 pounds per acre for wheat, 300 pounds for oats, and 150 pounds for corn; rock phosphate, at the rate of 600 pounds per acre for wheat, 600 pounds for oats, and 300 pounds for corn. Limestone has been applied in sufficient amounts to grow clovers and subsequent applications will be governed by the requirement of the legume crops. Plots 2, 3, 4 will receive manure in amounts equivalent to the crops removed from Plot 2 of all series, applied for corn.

TABLE 42.—PALESTINE FIELD: MINOR SERIES

Serial plot No.	Soil treatment	Series 600	Series 700	Series 800
		Alfalfa	Corn	Spring wheat
1	LeLsP.....	(2.96)	15.9	2.1
2	LeLrP.....	(3.86)	17.8	1.6
3	LeL.....	(3.18)	19.1	2.1
4	LeL, flowers of sulfur.....	(1.46)	20.9	1.6
5	LeLrP, flowers of sulfur.....	(2.16)	21.6	3.4
6	LeL.....	(2.51)	17.4	4.3
7	LeL, gypsum.....	(2.46)	21.8	5.3
8	LeLrP, gypsum.....	(2.53)	21.9	2.9

Note.—These series were laid out in the fall of 1925. A rotation of wheat (sweet clover), corn, and alfalfa is grown, wheat and corn alternating on two series for three years, while alfalfa occupies the third series for the same period. The following plan of soil treatment was adopted: An initial application of 6,000 pounds of limestone an acre, future applications to be governed by the crop needs. Rock phosphate, 600 pounds an acre for wheat, 300 pounds for corn, and 600 pounds for the second crop of alfalfa. Superphosphate, 300 pounds an acre for wheat, 150 pounds for corn, and 300 pounds for the second crop of alfalfa. Flowers of sulfur, 50 pounds an acre for wheat and 50 pounds for the second crop of alfalfa. Gypsum, 300 pounds an acre for wheat and 300 pounds for the second crop of alfalfa.

TABLE 43.—PALESTINE FIELD: SERIES 900

Plot No.	Soil treatment	Corn	Plot No.	Soil treatment	Corn
1	Le.....	8.1	5	LerP (400).....	6.7
2	LesP (100).....	9.3	6	LeL.....	10.3
3	LerP (200).....	6.4	7	LeLsP (100).....	10.6
4	LesP (200).....	5.3	8	LeLsP (200).....	9.1

Note.—This experiment was planned to study the effects of vetch green manure on the following corn crop. Temporarily a single crop system is planned. Corn with a catch crop of hairy vetch will be grown. The vetch will be seeded in the corn late in August and the growth plowed under the following spring.

An initial application of 6,000 pounds of limestone per acre was made on Plots 6, 7, 8. Superphosphate is applied to Plots 2 and 7 at the rate of 100 pounds, and to Plots 4 and 8 at the rate of 200 pounds per acre per year. Rock phosphate is applied to Plots 3 and 5 at the annual acre rates of 200 and 400 pounds respectively.

TABLE 44.—RALEIGH FIELD

Serial plot No.	Soil treatment	Series 100 Oats	Series 200 Corn	Series 300 Oats ¹	Series 400 Timothy- hubam
WEST HALF					
1	O.....	24.1	.6	8.1	(0)
2	M.....	31.9	3.2	22.2	(0)
3	ML.....	45.9	40.8	44.4	(2.00)
4	MLrP.....	46.9	38.0	42.2	(2.11)
5	O.....	31.3	.6	10.3	(0)
6	R.....	25.9	4.0	11.6	(0)
7	RL.....	37.5	34.2	28.4	(.24)
8	RLrP.....	41.3	40.6	33.1	(.38)
9	RLrPK.....	42.2	40.2	39.1	(1.40)
10	O.....	21.3	3.6	18.8	(0)
EAST HALF					
1	RL.....	21.6	3.4	23.4	(.80)
2	MrP.....	33.4	.1	34.4	(0)
3	MLbP.....	48.8	35.2	56.3	(1.98)
4	MLrP.....	49.7	40.0	53.8	(2.63)
5	RsP.....	13.8	0	21.9	(0)
6	RrP.....	16.6	0	31.3	(0)
7	RLsP.....	33.8	41.2	40.0	(.39)
8	RLrP.....	42.5	44.6	43.8	(.39)
9	RLrPK, gypsum.....	39.1	49.8	38.1	(2.63)
10	RLrP.....	21.6	29.2	41.9	(1.62)

Note.—In 1924 the plots on these series were divided into west and east halves and additional investigations were begun. The plots on the west halves of all series continue under the original soil treatment, but the plots on the east halves receive the treatment indicated above.

No more rock phosphate will be applied to the phosphate plots on the west halves for an indefinite period, these plots having received a total of 8,500 pounds an acre. The same holds true for the east half of Plot 9 of all series.

On the east halves the phosphatic fertilizers and gypsum are applied twice in the rotation, one-half the rotation quota ahead of wheat and one-half ahead of corn at the following annual acre rates: rock phosphate 500 pounds, superphosphate 200 pounds, bone meal 200 pounds, gypsum 200 pounds.

The minimum amount of limestone necessary to the successful growth of clovers will be applied to Plots 1-E and 10-E of all series, 1,000 pounds an acre having been applied in 1921 and 2,000 pounds in 1927.

¹Oats were grown on Series 300 as a substitute for wheat.

TABLE 45. SIDELL FIELD

Serial plot No.	Soil treatment	Series 100 Corn ¹	Series 200 Alfalfa ²	Series 300 Corn ¹	Series 400 Clover	Series 500 Oats
1	0.....	17.8	(.62)	23.9	(2.34)	62.2
2	M.....	39.1	(.73)	29.0	(2.43)	72.0
3	ML.....	46.0	(.88)	31.5	(2.07)	64.8
4	MLrP.....	55.1	(1.01)	30.3	(2.24)	71.6
5	0.....	23.7	(.70)	12.1	(1.76)	55.6
6	R.....	28.3	(.56)	12.7	(1.85)	60.5
7	RL.....	36.3	(.88)	23.1	(1.80)	57.2
8	RLrP.....	37.9	(1.11)	26.0	(2.21)	58.1
9	RLrPK.....	44.8	(1.13)	31.8	(2.06)	64.1
10	0.....	29.4	(.82)	14.8	(1.63)	56.3

¹Series 100 and 300 were planted to different varieties of corn about the middle of June in a study of Corn-borer control. Yields given are the averages of five varieties. ²Only one crop of alfalfa removed.

TABLE 46.—SPARTA FIELD: MAIN SERIES

Serial plot No.	Soil treatment	Series 100 Corn	Series 200 Sweet clover	Series 300 Oats ¹	Series 400 Soy- beans
1	0.....	11.0	0	24.4	(.43)
2	M.....	14.6	0	21.9	(.60)
3	ML.....	36.8	3.25	39.1	(.97)
4	MLrP.....	31.2	1.92	40.0	(1.18)
5	0.....	11.6	0	8.1	(.50)
6	R.....	12.2	0	16.9	(.50)
7	RL.....	35.0	2.12	34.4	(.88)
8	RLrP.....	33.4	1.62	32.5	(.91)
9	RLrPK.....	38.0	4.03	34.7	(1.09)
10	0.....	18.4	0	15.0	(.17)

¹Oats were grown on Series 300 as a substitute for wheat.

TABLE 47. SPARTA FIELD: MINOR SERIES

Serial plot No.	Soil treatment	Series 500 Corn	Series 600 Cowpeas	Series 700 Soybeans ¹	Series 800 Oats ²
1	0.....	13.2	(1.36)	(1.37)	13.8
2	M.....	26.0	(1.60)	(1.80)	30.0
3	ML.....	67.0	(1.72)	(1.89)	48.8
4	MLrP.....	63.6	(1.58)	(1.99)	62.5
5	MLrPK.....	65.8	(1.38)	(1.74)	62.5
6	0.....	10.6	(.80)	(.72)	35.6

¹Soybeans were grown on Series 700 as a substitute for timothy. ²Oats were grown on Series 800 as a substitute for wheat.

TABLE 48.—SPARTA FIELD: MINOR SERIES

Soil treatment	Plot A Wheat	Plot B Corn	Plot C Alfalfa	Plot D Alfalfa	Plot E		Plot F	
					Soybeans		Cowpeas	Soy- beans
					Virginia	Laredo		
MLrPK....	10.7	25.2	(1.81)	(1.14)	....	....	....	....
MrPK.....	0	2.8	(.98)	(.32)	....	....	....	....
LeL.....	....	....	....	....	(1.14)	(1.37)	(1.26)	(1.50)

TABLE 49.—SPRING VALLEY FIELD: MAIN SERIES

Serial plot No.	Soil treatment	Series 100	Series 200	Series 300	Series 400
		Oats	Corn	Wheat	Soybeans ¹
1	0.....	19.4	43.6	39.2	(1.83)
2	M.....	30.0	58.8	45.2	(2.47)
3	ML.....	48.8	64.2	45.8	(2.55)
4	MLrP.....	48.1	69.8	49.0	(2.56)
5	0.....	28.8	32.4	42.7	(2.27)
6	R.....	44.1	50.2	44.7	(2.28)
7	RL.....	51.3	57.8	46.5	(2.26)
8	RLrP.....	43.8	55.0	44.8	(2.14)
9	RLrPK.....	57.8	60.8	48.5	(2.19)
10	0.....	43.8	35.0	38.2	(2.28)

¹Soybeans were grown on Series 400 as a substitute for wheat.

TABLE 50.—SPRING VALLEY FIELD: MINOR SERIES

Serial plot No.	Soil treatment	Series 500	Series 600	Series 700	Series 800
		Oats	Soybeans ¹	First-year corn	Second-year corn
1	0.....	47.5	(2.88)	47.6	69.0
2	RM.....	61.3	(2.82)	62.6	78.4
3	RML.....	60.0	(2.82)	65.4	74.6
4	RMLrP.....	50.0	(2.73)	70.4	73.4

¹Soybeans were grown on Series 600 as a substitute for alfalfa.

TABLE 51.—TOLEDO FIELD: MAIN SERIES

Serial plot No.	Soil treatment	Series 100	Series 200	Series 300	Series 400
		Oats	Corn	Spring wheat	Mixed hay
SOUTH HALF					
1	0.....	20.0	30.4	3.2	(.43)
2	LeM.....	24.7	40.0	4.8	(.54)
3	LeML.....	41.3	61.0	8.5	(2.02)
4	LeMLrP.....	38.4	60.0	9.5	(1.98)
5	0.....	17.5	21.0	2.7	(.52)
6	R.....	28.1	26.0	2.3	(.67)
7	RL.....	44.7	30.6	7.8	(1.74)
8	RLrP.....	41.3	31.6	9.0	(1.87)
9	RLrPK.....	33.8	47.0	17.3	(2.33)
10	0.....	19.7	20.2	1.3	(.43)
NORTH HALF					
1	RL.....	20.3	37.4	5.2	(.88)
2	LeMrP.....	19.1	43.6	9.7	(.81)
3	LeMLbP.....	30.0	57.0	9.5	(2.02)
4	LeMLrP.....	34.1	54.8	11.0	(2.15)
5	RsP.....	7.2	16.2	2.7	(.50)
6	RrP.....	41.9	24.0	5.2	(.65)
7	RLsP.....	38.8	37.8	8.0	(1.61)
8	RLrP.....	36.9	33.8	7.5	(1.84)
9	RLrPK, gypsum.....	37.2	58.4	20.2	(2.33)
10	RLrP.....	19.1	32.6	7.8	(2.36)

Note.—In 1924 the plots on these series were divided into north and south halves and additional studies were begun. The plots on the south halves of the series continue under the original soil treatment but the plots on the north halves receive the soil treatment designated above. No more rock phosphate will be applied to the phosphate plots on the south halves for an indefinite period, these plots having received a total of 8,000 pounds. The same holds true of the north half of Plot 9 of all series. Both halves of Plots 2, 3, and 4 will receive the sweet-clover catch crop in the same manner as the residue plots.

On the north halves the phosphatic fertilizers and gypsum are applied twice in the rotation, one-half of the rotation quota ahead of corn and one-half ahead of wheat at the following annual acre rates: rock phosphate 500 pounds, superphosphate 200 pounds, bone meal 200 pounds, gypsum 200 pounds.

The minimum amount of limestone necessary to the successful growth of clovers will be applied to Plots 1-N and 10-N, 4,000 pounds having been applied in 1924.

TABLE 52.—UNIONVILLE FIELD: MAIN SERIES

Serial plot No.	Soil treatment	Series 100 Cotton ¹	Series 200 Corn	Series 300 Wheat	Series 400 Soybeans
WEST HALF					
1	0.....	....	0	1.3	(1.36)
2	M.....	....	1.0	1.3	(2.03)
3	ML.....	....	6.4	4.3	(2.34)
4	MLrP.....	....	5.4	5.5	(2.34)
5	0.....	....	0	1.0	(1.61)
6	R.....	....	0	.5	(1.42)
7	RL.....	....	20.0	5.7	(1.47)
8	RLrP.....	....	24.0	10.3	(1.42)
9	RLrPK.....	....	30.2	10.0	(1.94)
10	0.....	....	0	1.7	(1.40)
EAST HALF					
1	L.....	....	1.6	3.3	(1.21)
2	MLrP.....	....	4.0	4.3	(1.32)
3	ML, KCl.....	....	5.6	6.3	(1.61)
4	MLrP, KCl.....	....	7.0	8.8	(1.67)
5	LsP.....	....	.6	5.8	(1.11)
6	L, NaNO ₃	....	.8	6.7	(1.32)
7	RLsP, KCl.....	....	18.0	10.2	(1.65)
8	RLrP, KCl.....	....	22.4	10.8	(1.72)
9	RLrP, kainit.....	....	33.6	10.3	(1.90)
10	LsP, NaNO ₃	....	7.6	6.5	(1.30)

Note.—In 1925 these series were divided into west and east halves and new investigations were begun. All plots on the west halves and Plot 9 on the east halves of all series will continue under the original soil treatment; but the plots on the east halves, with the exception of Plot 9, receive the treatment indicated above. No more rock phosphate will be applied to any of the original phosphate plots for an indefinite period, these plots having received a total of 8,000 pounds an acre.

The soil treatment on the east halves is as follows: Limestone to Plots 1, 2, 5, 6, 10 at the rate of 4,000 pounds an acre; subsequent applications to be governed by the requirement of the legume crops. Rock phosphate to Plot 2; 400 pounds an acre for wheat, 500 pounds for cotton, and 300 pounds for corn. Superphosphate, 200 pounds for wheat, 250 pounds for cotton, and 150 pounds for corn. KCl, 150 pounds for cotton and 150 pounds for corn. NaNO₃, 200 pounds for cotton. No more residues to Plot 6.

¹Crop failure.

TABLE 53.—UNIONVILLE FIELD: MINOR SERIES

Serial plot No.	Soil treatment	Series 500	Series 700	Series 800
		Wheat	Cowpeas	Timothy
1	0.....	11.8	(.50)	(.33)
2	MLrP.....	10.6	(1.17)	(2.23)
3	RLrP.....	13.1	(1.07)	(1.67)
4	RLrP, kainit.....	16.4	(1.15)	(1.37)
5	RLrP, shale.....	12.2	(.97)	(1.74)
6	RLrP, common salt.....	15.0	(1.00)	(1.55)
7	RLrP, Omaha K.....	12.8	(.99)	(1.62)
8	0.....	3.4	(.57)	(.76)

Note.—Due to severe washing and non-uniformity of soil, Series 600 has been dropped from this experiment. A three-crop system will be practiced on Series 500, 700, and 800. Wheat (sweet-clover catch crop) and cowpeas will alternate on two series for three years while a mixture of red clover and timothy will occupy the third series.

TABLE 54.—URBANA, DAVENPORT PLOTS

Serial plot No.	Soil treatment	Series 100 Barley ¹	Series 200 Oats	Series 300 Soy- beans ²	Series 400 Alfalfa	Series 500 Corn
WEST HALF						
1	0.....	47.1	63.1	23.1	(.83)	49.6
2	R.....	50.0	64.2	23.3	(.54)	50.8
3	M.....	48.7	76.9	26.0	(.49)	63.6
4	RL.....	48.7	58.1	27.2	(1.16)	60.0
5	ML.....	48.3	75.0	29.4	(1.40)	74.4
6	RLrP.....	50.0	73.8	31.6	(1.79)	73.6
7	MLrP.....	52.1	84.4	36.6	(3.44)	77.6
8	RLrPK.....	48.7	76.2	38.0	(3.69)	81.2
9	MLrPK.....	50.0	76.2	39.5	(3.50)	75.2
10	M ² LrP ²	55.0	76.2	36.7	(2.75)	78.8
EAST HALF						
1	0.....	39.2	60.6	22.4	(1.11)	53.6
2	R.....	42.5	68.1	22.2	(.84)	47.2
3	M.....	47.9	80.0	26.0	(.63)	61.2
4	RL.....	47.1	65.0	27.3	(1.28)	57.6
5	ML.....	49.2	80.0	28.4	(1.26)	70.4
6	RLrP.....	49.2	75.0	32.7	(2.49)	74.0
7	MLrP.....	54.2	82.5	37.8	(3.23)	72.8
8	RLrPK.....	51.7	75.0	40.0	(3.76)	74.8
9	MLrPK.....	50.8	76.2	38.2	(3.68)	67.2
10	M ² LrP ²	52.1	70.6	36.6	(2.86)	72.4

¹Barley was grown on Series 100 as a substitute for wheat. ²Soybeans were grown on Series 300 as a substitute for clover.

TABLE 55.—URBANA, MORROW PLOTS

Section of plot	Soil treatment	Plot 3 (Continuous corn) Corn	Plot 4 (Corn and oats rotation) Oats	Plot 5 (Corn, oats, and clover rotation) Corn
NW	0.....	15.6	34.4	40.8
SW	MLrP.....	32.8	73.1	74.4
NE	0.....	22.0	34.4	47.6
SE	MLbP.....	32.0	70.6	70.4

TABLE 56.—WEST SALEM FIELD: MAIN SERIES

Serial plot No.	Soil treatment	Series 100 Mixed hay	Series 200		Series 300 Soybeans	Series ² 400 Corn	Series ² 500 Spring wheat
			Oats	Stubble hay			
1	0.....	(0)	7.8	(0)	(.40)	5.0	.2
2	ML ¹	(.51)	28.0	(.29)	(1.18)	15.5	7.9
3	ML.....	(1.24)	35.2	(.47)	(1.58)	28.5	8.2
4	MLrP.....	(2.01)	32.5	(.58)	(1.70)	32.4	11.6
5	L ¹	(.35)	5.6	(.01)	(.72)	13.0	4.6
6	RL ¹	(.41)	8.9	(.07)	(.85)	23.8	6.2
7	RL.....	(1.04)	28.3	(.20)	(1.18)	32.1	7.8
8	RLrP.....	(1.60)	39.5	(.46)	(1.55)	30.3	12.5
9	RLrPK.....	(1.98)	42.0	(.64)	(1.80)	35.0	16.7
10	0.....	(0)	6.9	(0)	(.40)	....	....

¹Initial application of limestone only. ²Series 400 and 500 contain only 9 plots each.

TABLE 57.—WEST SALEM FIELD: MINOR SERIES

Soil treatment	Plot A Mixed hay	Plot B Sweet clover	Plot C Spring wheat	Plot D Mixed hay	Plot E Corn	Plot F Spring Wheat
MLrPK.....	(2.84)	.39	18.2	(2.29)	36.2	10.2
MrPK.....	(0)	0	5.3	(.12)	16.0	3.4

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