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THE 1920 WHEAT, OATS, AND CORN YIELDS FROM SOIL EXPERIMENT FIELDS IN ILLINOIS

BY THE DEPARTMENT OF AGRONOMY

In the following tables are reported the 1920 yields of wheat, oats, and corn from a large number of the University soil experiment fields located in different parts of Illinois. These results confirm those of previous years, and they demonstrate again the possibility of improving the yields of our important crops by systems of soil treatment which take into consideration both profitable production and permanent agriculture. A more complete report of experiments conducted on these fields may be found in Bulletin 219, "Illinois Crop Yields from Soil Experiment Fields" (108 pp., 1919).

EXPLANATION OF DATA

CROP ROTATION PRACTICED

The usual rotation practiced on these fields is wheat, corn, oats, and clover.

SOIL TREATMENT

Animal Manures.—Animal manures, consisting of excreta from animals with stable litter, are applied to the respective plots in amounts proportionate to previous crop yields.

Plant Manures.—All crop residues produced on the land, such as stalks, straw, and chaff, are returned to the soil, and in addition a green manure crop of sweet clover is seeded in small grains to be plowed under in preparation for corn. (On plots without limestone the sweet clover seldom survives.)

Mineral Manures.—The yearly acre-rates of application are: for limestone, 1,000 pounds; for raw rock phosphate, 500 pounds; and for potassium, the equivalent of 200 pounds of kainit. The initial application of limestone is usually 4 tons per acre.

NOTE.—The terms *animal manures* and *plant manures* are introduced here in place of the terms *manures* and *crop residues* used in previous publications. The principal reason for this change in terminology is the fact that the expression *crop residues* is not sufficiently comprehensive, giving no recognition to the green manures used in the system, which, after all, probably play as important a rôle as the residues, if not more important.

TABLE 1.—WHEAT YIELDS FROM EXPERIMENT FIELDS IN SOUTHERN ILLINOIS, 1920
(Bushels per acre)

Soil treatment applied	Lebanon	Odin	Oblong	Newton	West Salem	Union-ville	Sparta	Average
None (except crop rotation)	24.6	3.6	1.6	1.7	.2	3.3	8.3	6.2
Animal manures	27.7	.....	1.0	.3	3.5	5.6	20.5	9.8
Animal manures, limestone	32.8	.....	8.7	4.3	3.8	5.2	27.2	13.7
Animal manures, limestone, phosphorus	31.4	.....	17.2	11.2	4.8	9.8	27.5	17.0
Plant manures	19.1	9.7	2.0	1.7	.9	4.2	9.7	6.8
Plant manures, limestone	29.3	21.3	12.2	4.2	2.7	9.4	20.8	14.3
Plant manures, limestone, phosphorus	30.1	26.2	15.2	11.8	3.5	12.3	22.2	17.3
Plant manures, limestone, phosphorus, potas.	29.5	22.5	15.8	10.3	7.8	11.9	26.7	17.8

TABLE 2.—WHEAT YIELDS FROM EXPERIMENT FIELDS IN CENTRAL ILLINOIS, 1920
(Bushels per acre)

Soil treatment applied	Harts-burg	Sidell	Pana	Clayton	Carthage	Minonk	Urbana	Carlin-ville	Average
None (except crop rotation)	29.5	14.0	10.6	15.5	25.4	39.7	35.0	16.1	23.2
Animal manures	22.0	15.0	14.8	30.8	32.3	47.5	40.5	19.5	27.8
Animal manures, limestone	43.1	14.1	25.2	27.5	39.3	42.4	40.2	39.4	33.9
Animal manures, limestone, phosphorus	44.7	14.9	22.8	32.8	41.1	46.0	51.1	39.1	36.6
Plant manures	37.8	9.6	7.5	11.5	18.7	40.2	33.8	15.0	21.8
Plant manures, limestone	34.4	8.0	17.8	19.6	36.8	35.8	39.8	34.3	28.3
Plant manures, limestone, phosphorus	38.2	14.2	20.8	21.9	32.1	39.0	51.2	37.8	31.9
Plant manures, limestone, phos., potas.	37.7	14.9	15.0	22.7	41.6	35.6	45.3	36.7	31.2

TABLE 3.—WHEAT YIELDS FROM EXPERIMENT FIELDS IN NORTHERN ILLINOIS, 1920
(Bushels per acre)

Soil treatment applied	Mt. Morris	Dixon	Spring Valley	Kewanee	Oquawka	Joliet	La Moille	Aledo	Average
None (except crop rotation)	31.1	16.9	22.7	28.9	2.8	26.0	32.1	35.9	24.6
Animal manures	42.5	30.8	23.8	31.2	3.3	33.6	43.3	41.5	31.2
Animal manures, limestone	46.2	33.2	26.7	29.3	6.5	36.4	41.2	39.7	32.4
Animal manures, limestone, phosphorus	46.1	36.9	29.3	35.3	5.0	46.5	40.8	43.2	35.4
Plant manures	31.8	18.7	24.3	29.2	4.2	32.7	33.7	29.9	25.6
Plant manures, limestone	42.0	20.7	33.8	29.4	8.2	33.2	36.9	31.7	29.5
Plant manures, limestone, phosphorus	48.3	26.4	33.5	38.4	10.3	47.4	40.6	38.5	35.4
Plant manures, limestone, phos., potas.	48.5	27.9	26.7	35.9	10.8	48.3	37.7	38.2	34.2

(Bushels per acre)

Soil treatment applied	Lebanon	Odin	Newton	Toledo	West Salem	Unionville	Elizabethtown	Enfield	Raleigh	Oblong	Ewing	Average
None (except crop rotation)	3.8	21.9	18.3	16.5	8.2	26.0	31.5	34.8	16.8	11.9	8.2	18.0
Animal manures	8.4	.....	21.2	35.3	22.1	35.4	29.7	42.6	26.4	14.0	25.5	26.1
Animal manures, limestone	10.8	.....	50.0	49.8	33.9	49.4	45.4	54.9	56.9	39.5	38.2	42.9
Animal manures, limestone, phosphorus	13.8	.....	52.4	44.0	35.7	48.3	60.7	52.4	60.7	39.4	50.7	45.8
Plant manures	2.4	23.6	23.4	15.4	14.1	37.1	18.5	34.5	22.6	18.8	12.7	20.3
Plant manures, limestone	8.9	27.3	39.0	30.5	11.2	59.5	48.0	51.0	42.8	25.2	24.3	33.4
Plant manures, limestone, phosphorus	10.2	24.1	39.0	34.8	25.3	57.6	60.2	51.2	44.8	20.3	21.1	35.3
Plant manures, limestone, phos., potas.	15.8	40.7	57.0	47.9	44.9	65.3	55.9	53.7	59.7	27.8	47.2	46.9

TABLE 5.—CORN YIELDS FROM EXPERIMENT FIELDS IN CENTRAL ILLINOIS, 1920
(Bushels per acre)

Soil treatment applied	Hartsburg	Sidell	Pana	Clayton	Carthage	Minonk	Virginia	Urbana	Carlinville	Average
None (except crop rotation)	50.4	45.6	30.3	47.9	39.8	52.0	30.8	67.4	8.7	41.4
Animal manures	58.3	46.5	35.2	66.4	40.6	67.0	49.8	82.2	15.9	51.3
Animal manures, limestone	63.0	54.6	31.6	75.1	48.3	68.1	57.6	87.4	23.2	56.5
Animal manures, limestone, phosphorus	61.7	55.6	33.0	76.7	51.2	61.7	56.6	93.2	27.8	57.5
Plant manures	65.2	45.6	42.8	59.2	43.7	62.0	43.6	70.8	7.7	49.0
Plant manures, limestone	67.9	50.5	46.1	65.7	57.3	61.6	43.8	82.6	11.7	54.1
Plant manures, limestone, phosphorus	64.3	52.7	47.8	70.1	49.3	65.8	59.4	91.0	15.9	57.4
Plant manures, limestone, phosphorus, potas.	59.0	57.4	53.3	71.6	52.0	64.2	62.6	90.8	17.1	58.7

TABLE 6.—CORN YIELDS FROM EXPERIMENT FIELDS IN NORTHERN ILLINOIS, 1920
(Bushels per acre)

Soil treatment applied	Mt. Morris	Dixon	Union Grove	La Moille	Joliet	Kewanee	Aledo	Spring Valley	Oquawka	Average
None (except crop rotation)	37.7	37.9	36.9	55.6	34.5	53.3	64.0	37.6	13.1	41.2
Animal manures	54.9	42.9	.....	75.5	48.6	65.3	73.8	54.0	16.4	53.9
Animal manures, limestone	51.6	48.3	63.3	76.8	51.1	59.6	68.3	53.8	26.6	56.6
Animal manures, limestone, phosphorus	50.4	54.2	62.2	74.0	48.9	72.4	75.4	55.0	32.4	58.3
Plant manures	42.1	46.9	43.4	55.8	46.0	51.9	74.5	47.4	13.2	46.8
Plant manures, limestone	63.2	53.6	63.2	58.7	42.8	61.4	80.2	50.6	50.3	58.2
Plant manures, limestone, phosphorus	61.9	52.3	59.6	61.4	47.4	64.7	81.1	53.0	54.0	59.5
Plant manures, limestone, phosphorus, potas.	64.6	55.2	70.2	56.3	51.3	68.9	79.0	53.4	62.6	62.4

TABLE 7.—OAT YIELDS FROM EXPERIMENT FIELDS IN SOUTHERN ILLINOIS, 1920
(Bushels per acre)

Soil treatment applied	Lebanon	West Salem	Toledo	Raleigh	Ewing	Enfield	Elizabeth-town	Average
None (except crop rotation)	37.7	3.9	9.6	7.3	7.4	11.0	20.8	14.0
Animal manures	42.3	15.0	15.0	9.7	10.7	11.8	17.2	17.4
Animal manures, limestone	46.6	16.2	22.9	12.6	22.0	23.6	28.0	24.6
Animal manures, limestone, phosphorus	45.2	23.1	23.2	12.0	21.7	27.0	26.2	25.5
Plant manures	43.1	13.3	10.1	7.6	5.1	9.8	21.2	15.7
Plant manures, limestone	54.8	16.6	19.1	13.0	11.8	24.5	23.1	23.3
Plant manures, limestone, phosphorus	50.6	19.4	23.1	13.1	17.4	29.1	24.7	25.3
Plant manures, limestone, phosphorus, potassium	58.0	15.6	22.3	13.4	21.6	28.8	20.6	25.8

TABLE 8.—OAT YIELDS FROM EXPERIMENT FIELDS IN CENTRAL ILLINOIS, 1920
(Bushels per acre)

Soil treatment applied	Sidell	Harts-burg	Pana	Clayton	Carth-age	Minonk	Virginia	Urbana	Carlin-ville	Average
None (except crop rotation)	71.8	62.6	42.2	31.4	33.8	69.2	53.4	49.8	35.9	50.0
Animal manures	86.1	70.0	38.9	38.1	36.6	73.4	58.1	65.8	37.2	56.0
Animal manures, limestone	80.6	70.8	58.6	32.8	42.0	67.5	57.5	70.9	63.3	60.4
Animal manures, limestone, phosphorus	82.7	73.3	45.3	40.6	48.1	63.4	48.4	63.3	57.2	58.0
Plant manures	69.7	58.6	43.4	43.1	28.9	96.6	45.6	46.8	35.6	52.0
Plant manures, limestone	67.3	62.8	53.1	52.8	46.4	92.5	38.4	57.9	54.7	58.5
Plant manures, limestone, phosphorus	68.9	68.0	56.2	55.5	43.8	94.4	51.9	79.9	52.0	63.4
Plant manures, limestone, phos., potas.	76.7	63.0	50.3	51.9	44.5	89.4	35.3	87.5	48.2	60.8

TABLE 9.—OAT YIELDS FROM EXPERIMENT FIELDS IN NORTHERN ILLINOIS, 1920
(Bushels per acre)

Soil treatment applied	Mt. Morris	Dixon	Joliet	La Moille	Aledo	Ke-wanee	Spring Valley	Average
None (except crop rotation)	64.2	50.2	58.6	72.2	71.7	62.0	51.3	61.5
Animal manures	85.2	64.2	67.5	77.0	73.4	65.8	51.6	69.2
Animal manures, limestone	85.0	76.2	69.5	75.8	65.8	74.7	50.6	71.1
Animal manures, limestone, phosphorus	88.4	86.6	93.1	76.7	84.4	75.6	60.0	80.7
Plant manures	66.6	66.9	61.7	75.8	71.7	63.0	40.0	63.7
Plant manures, limestone	93.8	77.7	62.5	78.4	72.3	64.5	46.9	70.9
Plant manures, limestone, phosphorus	93.4	87.2	72.5	81.2	77.7	67.5	52.2	76.0
Plant manures, limestone, phosphorus, potassium	77.0	83.9	71.7	77.0	79.7	70.0	58.8	74.0