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PRELIMINARY CROP AND SOIL DATA FOR THE COOPERATIVE STUDY OF AVAILABLE PLANT FOOD.

The data obtained from the crops which have been grown in the cooperative soil work, as outlined by this Bureau, are compiled in the tables on pages 6 to 9, inclusive.

The plan was for each station which cooperated in the work to grow the four cereals, oats, barley, rye, and wheat, on adjacent plots 30 feet square. At the juncture of these four plots the sample of soil was taken. This was done by laying off a definite area, 4 square feet, and taking the soil out to successive depths of 9 inches, three depths being taken. These samples of soil were forwarded to the Department of Agriculture.[1] Here control pot experiments were conducted, the oat plant being used, about 25 kilos of the first 9 inches and of the second 9 inches being put in separate pots in each case. The soil from the third 9 inches was not seeded.

Table A shows the data from the plots calculated to pounds per acre. The crops were harvested even with the ground and the grain was not separated. The numbering is the same throughout the tables and corresponds to the number on the soil samples that were sent out. The blanks indicate that the crops were failures, but pot experiments were conducted on all the soils represented.

Table B gives the data from the pots on the growth of oats. The pairs of columns in parallel indicate the first 9 inches and corresponding second 9 inches of the same soil. The weight of the soil in the pots is given in the first pair of columns, the weight of the total crop in the next pair. In the third pair the crop weight is calculated to parts per 100,000 of the soil, in order that they may be comparable. This is necessary, as the weights of the soil used were not constant. In the fourth pair of columns the figures represent what the yield would have been on an acre in area and to the same depth and under the same conditions as existed in the pot. The other columns represent the amount of plant food that was removed, expressed in parts per million of the soil.

[1]The samples were put through a 2 mm. sieve and were very accurately subsampled by a sampling machine. A 4-pound sample of each of the first and second 9 inches from every station was sent to each station. Reserve samples are on hand and can be supplied when wanted.

Table C shows the percentage composition of the crops that were grown on the plots, and Table D that of the crops which were grown in the pots.

Letters were addressed to the stations, asking that a history of the soils be furnished. At this time six have not replied. The data on these will be furnished later. The questions asked were as follows:

What is the native vegetation of the soil in this locality?
What was the vegetation on the plot when prepared for the experiment?
Was the soil virgin?
If cultivated, give crop, yield, and fertilizer used for the years 1901, 1900, 1899, 1898, 1897.
Was the season favorable for the experimental crops grown this year?
Were the crops on these plots injured by insect or plant diseases?
Is the soil alkali? Was it irrigated?
Give geological origin as far as possible.

DESCRIPTIONS OF SOILS.

North Dakota, Soil No. 1.—Native vegetation consists of prairie grass, weeds, and rosebushes. This land has been under cultivation twenty-two years, every year in wheat, with possibly one or two exceptions when other grains were grown.

The early season was wet, making the planting time three weeks late. Crops not injured by insects or disease. Soil is somewhat alkali. Was not irrigated, and the season was quite unfavorable for an average crop. The soil was formerly a part of the bed of Lake Agassiz.

Minnesota, Soil No. 5.—Native vegetation is scrub oak. Plot vegetation was timothy, in 1901 yielding 1.84 tons. Ten tons of farm manure were added per acre. In 1900, timothy yielding .65 ton; in 1899, timothy yielding 1.25 tons; in 1898, wheat and flax as nurse crop seeded with timothy, the nurse crop being cut for hay. In 1897 the crop was corn, cut for fodder, yielding about 14 tons of green fodder.

Season favorable. Insects injured wheat. Is not alkali; not irrigated. Geological formation is glacial drift.

Wisconsin, Soil No. 7.—Native vegetation is oak, maple, and elm. Crop for 1901 was clover, yielding 2.8 tons per acre. In 1900, oats and clover. Oats cut for hay, yielding 2.6 tons. Clover cut, yielding .9 ton. In 1899, clover for silage, 17 tons per acre. Dressing of barnyard manure added. In 1898 and 1897, hay. Crop was not weighed.

Season was very unfavorable. No insect or disease injury to crops. Not alkali; not irrigated. Geological formation, glacial drift.

Michigan, Soil No. 9.—Native vegetation, beech, maple, and ash. No vegetation on plot previous to experiment. No cropping in the last five years.

Season was too wet. Crops injured by rust. Soil not alkali; not irrigated. Geological formation is drift, glacial, or possibly alluvial.

Vermont, Soil No. 11.—The native vegetation is a grass similar to

bluegrass. The native woods are largely conifers. The plot had been in sod for the eleven years it was owned by the station and for some years before. Hay had been cut off yearly. No fertilizer had been applied during the eleven years.

Season favorable for these crops. No injuries of any account. Not alkali; not irrigated. Geological formation is glacial drift.

Maine, Soil No. 13.—The native vegetation is a mixed forest growth. The plot used was a cultivated garden spot. In the past five years various kinds of garden truck have been grown, the soil being treated with stable manure and complete chemical fertilizer.

The season was favorable. Oats slightly, and barley severely, rusted. Not alkali; not irrigated.

Iowa, Soil No. 15.—Native vegetation grass. An upland prairie. The plot was stubble land. In 1901 cereals were grown. In 1900, sorghum. In 1899, sugar beets. In 1898, winter wheat. In 1897, clover. No fertilizers used and no record of yields. Soil not alkali; not irrigated.

Illinois, Soil No. 17.—Native vegetation is prairie grass. Plot was in oat stubble. No records of the yield. Had been used for miscellaneous testing of varieties.

Season was favorable but very poor germination of seed, or too light seeding. Soil not alkali; not irrigated.

Ohio, Soil No. 19.—Native vegetation is white oak and dogwood, with occasional chestnut. Plot was in short corn stubble. Soil under cultivation sixty years or more. In 1901 corn was grown; in 1900 and 1899, clover and timothy; in 1898, wheat; and in 1897, oats. Season was moderately favorable; no injury of any kind to crops. Soil not alkali; not irrigated. Geographical formation is a thin sheet of glacial drift lying upon and largely modified by calcareous sandstone.

Missouri, Soil No. 23.—Native vegetation is rather large forest trees of oak, walnut, elm, and hickory. For the past five years the land has been in wheat, followed by cowpeas, these latter being cut for hay each year. In 1887 an application of barnyard manure was made. Since that time no fertilizer has been added. This soil will produce about 25 bushels of wheat in an ordinary season.

The season was fairly favorable, but the seed for the crop was received too late for that climate. Wheat, rye, and barley are not well adapted for the climate, and the oats should have been sown much earlier. The crops were not seriously injured by insects nor disease. The soil is not alkali; usually shows a slight acid reaction. Was not irrigated. Geologically the soil is derived from a fairly pure limestone decayed in place. The surface soil is about 18 inches deep, with a stiff, retentive subsoil underlying. The depth of the soil to the limestone is about 30 feet.

Kentucky, Soil No. 25.—The native vegetation is black walnut, sugar

maple, blue ash, elm, oak, hickory, Kentucky coffee tree, buckeye, locust. Wild flowers, such as violets, spring beauty, adder's tongue. Weeds, as ragweed, Jamestown weed, bull thistle, sneeze weed. Besides bluegrass, the following grasses are occasionally observed: Elymus, canadensis, virginicus, festuca nutans, agrostis alba. The plot had been a Kentucky bluegrass sod for a number of years, at least as far back as 1886. It was cleared and cultivated many years ago.

The season was too dry and the stand obtained was not good. No observations of injuries due to insects or disease. Soil not alkali; not irrigated. Geologically the soil rests upon what the Kentucky geologist calls the upper part of the Trenton limestone. These beds are designated Lexington limestone and Flanagan chert by the U. S. Geological Survey, the Flanagan chert being a very characteristic horizon. The soil is thought to have been formed in place by the disintegration of the limestone above the horizon, more particularly the lower Hudson and the upper layers of the Trenton, the latter being very phosphatic, thus giving a very high per cent of phosphate in the soil.

Virginia, Soil No. 27.—Native vegetation is bluegrass. Plot had been used many years, but no manure applied for several seasons. Corn and beans grown mostly for some years.

Season very bad and dry. Soil is not alkali; not irrigated. Geologically a limestone-clay soil.

Arlington, Soil No. 29.—This soil is from one of the Department's experimental farms, located at Arlington, Virginia. Previous to its purchase for this purpose it was an old field that had been in grass sod for some time. The sod had been taken off and used elsewhere previous to this year's work. There is no crop history and no knowledge of the application of fertilizers.

The season was fair and all the crops started well but made no headway, two of them dying out. The crops were not injured by insects nor disease. Soil is not alkali; was not irrigated. The soil rests upon a stiff clay subsoil and is all very poor and worked down in this vicinity.

Potomac Flats, Soil No. 31.—This is a soil from a second experimental farm belonging to the Department and located in the District of Columbia. It is a very unusual soil, being a river deposit to a depth of about 50 feet. The deposit is one of the system of the Potomac flats which has been made artificially. The soil is very light and always moist, being about the river level. All crops grow abundantly on it, and cereals are apt to grow rank and fall down before maturing. This was the case with two of the crops grown on the plot. The other two had to be harvested green to save them. The crops were not injured by insect or disease. The soil is not alkali; was not irrigated. This was the first year the plot was used, it having been in weeds prior to this time.

North Carolina, Soil No. 33.—Native vegetation is scrub oak and

pine. The plot was in corn in 1901 and had been under cultivation but the one year. Fertilizer was added that year as follows: Acid phosphate and nitrate of soda at the rate of 250 and 100 pounds per acre, respectively. Corn was grown on the plot instead of the cereals used in other cases, which were secured too late. The data for this crop are not yet complete. The corn crop suffered from insects. Soil is not alkali; was not irrigated.

Geologically the soil is of the Lamentian system and is formed principally by the decomposition of granites, gneisses, and schists, but has been modified to some extent by the influence of water. The soil has been termed a sandy loam to a depth of 7 inches, and is underlaid by clay. The top soil contains from 40 to 60 per cent of quartz fragments, varying in size from a sand grain to double fists, the most common size being from 2 to 3 mm. in diameter.

Washington State, Soil No. 41.—The native vegetation is bunch grass. The plot has been in wheat stubble and has been under cultivation fifteen years. In 1901 wheat was grown, also in 1900. In 1899, peas; in 1898, wheat; and in 1897, vetch.

Season was very favorable; crops not injured by insects or disease. Soil is not alkali; was not irrigated. Geologically a decomposed basalt, volcanic origin, evidently wind-drifted. No sand in it.

Wyoming, Soil No. 47.—At this station the crops were killed by a frost in July. The native vegetation is Western blue stem and other grasses. In 1901 the plot was sown in winter wheat and killed by hail. In 1900 the crop was oats; in 1899, 1898, and 1897, alfalfa was grown, giving 3 to 4 tons each year. The soil is not alkali; is irrigated.

The season was so unfavorable that no results were obtained, except in early grains and potatoes.

New Mexico, Soil No. 49.—The seed were received very late for planting and failed to make any crops. The native vegetation is tornillo, mesquite, and cachania. In 1901 the plot had been in rape; in 1900, corn; in 1899, millet; and in 1898 and 1897, alfalfa. No fertilizer had been used. The soil is not alkali; is irrigated. Geologically it is a silt deposited by the Rio Grande.

C. C. Moore,
Chief of Soil and Fertilizer Laboratory.

Approved:

James Wilson,
Secretary of Agriculture.

Washington, D. C., *January 8, 1903.*

TABLE A.—*Plot data, showing yield of crops and constituents removed from soil (pounds per acre).*

No.	State.	Soil weight per acre.		Yield of crops.				Nitrogen removed.				Phosphoric acid removed.				Potash removed.				Lime removed.				Magnesia removed.			
		First 9 inches.	Second 9 inches.	Oats.	Barley.	Rye.	Wheat.	Oats.	Barley.	Rye.	Wheat.	Oats.	Barley.	Rye.	Wheat.	Oats.	Barley.	Rye.	Wheat.	Oats.	Barley.	Rye.	Wheat.	Oats.	Barley.	Rye.	Wheat.
		Million lbs.	*Million lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs*	*Lbs.*	*Lbs*	*Lbs*	*Lbs*	*Lbs*	*Lbs*	*Lbs*	*Lbs.*	*Lbs.*	*Lbs*	*Lbs.*	*Lbs*	*Lbs*	*Lbs*	*Lbs*	*Lbs*	*Lbs*	*Lbs*	*Lbs*
1	North Dakota	1.90	2.85	3,820	4,100	4,540	4,200	38.8	58.6	43.6	54.0	25.6	23.1	21.8	20.5	109.0	78.4	72.7	68.5	7.3	6.0	4.0	4.9	12.8	10.6	9.5	14.8
3	South Dakota	2.26	2.35	3,860	2,800	2,470	3,110	59.3	56.5	31.7	44.1	12.3	10.8	6.4	11.1	67.9	29.3	24.9	44.3	10.6	4.4	4.4	6.4	12.1	6.0	7.3	10.0
5	Minnesota	2.09	2.19	5,070	4,170	3,040	4,650	48.7	46.9	35.3	69.9	28.4	25.6	15.4	27.6	81.6	39.0	40.3	59.7	11.7	5.1	4.8	5.1	11.2	7.0	4.6	7.5
7	Wisconsin	1.98	2.81	5,960	5,620	4,620	6,390	93.0	109.5	93.8	93.9	67.0	58.0	37.9	56.2	104.0	78.3	68.8	142.0	24.7	17.2	13.4	13.0	20.7	9.5	8.6	14.8
9	Michigan	2.94	2.52	5,320	4,240	3,840	2,950	85.8	93.6	47.8	47.8	28.0	27.5	17.8	13.4	92.0	54.0	49.9	44.7	21.6	17.0	14.1	6.4	15.6	8.4	8.0	6.9
11	Vermont	1.53	2.47	4,450	3,440	3,310	3,880	60.0	48.7	47.6	53.6	35.0	30.6	25.6	24.0	138.0	45.4	44.1	31.1	11.5	9.9	7.0	7.3	12.1	7.9	5.5	8.6
13	Maine	1.48	1.72	5,670	2,630	4,560	4,870	57.8	35.3	32.8	49.1	65.7	15.0	20.0	19.2	101.0	22.0	36.6	63.0	8.4	2.4	5.7	6.4	8.4	4.4	5.1	7.1
15	Iowa	1.98	2.39	5,930	2,680	3,120	5,490	75.4	52.0	49.3	67.0	36.8	21.2	22.7	29.3	79.4	23.8	49.8	45.0	18.3	4.6	7.7	11.3	12.8	5.1	6.2	10.4
17	Illinois	2.05	2.10	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
19	Ohio	2.27	2.89	3,100	1,540	2,170	------	34.6	25.1	26.0	----	14.3	9.5	9.0	----	60.2	7.3	24.0	------	11.0	2.4	4.6	----	9.0	3.5	3.7	----
21	Kansas	2.33	2.95	4,150	2,610	3,060	------	62.6	70.1	43.6	----	19.4	15.9	11.5	----	120.0	53.1	58.4	------	12.1	5.5	7.3	----	8.8	4.8	4.0	----
23	Missouri	1.95	1.96	3,610	2,870	1,960	2,270	54.2	46.7	21.6	38.1	14.5	13.0	5.5	11.7	35.9	23.4	17.0	21.8	8.4	3.7	4.2	3.8	8.4	4.8	2.6	4.8
25	Kentucky	2.49	3.01	2,980	3,410	1,940	770	42.3	65.8	24.5	13.7	36.7	33.1	14.3	5.7	50.5	65.4	32.4	11.2	13.3	8.8	4.0	1.5	10.8	6.6	4.8	1.3
27	Virginia	2.27	2.52	4,740	3,350	2,640	------	51.1	28.9	34.6	----	31.1	26.4	16.8	5.8	142.0	65.0	44.5	------	14.5	5.7	5.1	----	10.6	7.5	3.5	----
29	Arlington	2.24	2.20	2,780	------	2,400	------	38.6	------	39.9	----	8.8	----	8.6	----	69.2	------	49.8	------	6.0	----	8.2	----	7.3	----	5.7	----
31	Potomac Flats	2.20	2.20	5,160	------	------	5,750	72.7	------	----	95.4	22.7	----	----	26.2	188.0	------	----	181.0	29.6	----	----	37.9	18.5	----	----	9.4
33	North Carolina	2.37	1.71	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
35	South Carolina	2.26	1.91	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
37	Florida	2.85	2.50	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
39	Oregon	1.96	1.96	2,340	1,400	2,810	2,470	21.2	16.3	30.2	20.9	20.0	11.5	15.6	14.3	47.2	19.7	34.2	27.5	4.6	2.6	4.6	4.2	4.0	4.2	3.5	5.9
41	Washington	2.31	3.48	5,290	2,860	4,720	4,650	45.4	27.1	43.9	38.6	27.7	16.3	26.4	22.7	95.2	31.7	56.6	44.1	11.0	6.0	8.9	5.7	9.5	7.3	9.5	8.2
43	Colorado	2.08	2.32	4,790	4,220	4,510	5,500	63.3	50.3	78.4	46.3	26.2	28.0	15.0	16.7	189.0	54.0	76.5	131.0	13.7	7.0	17.7	10.4	13.0	7.4	9.7	11.0
45	Utah	2.23	2.48	4,310	4,630	4,720	3,780	49.6	59.7	45.8	37.5	23.1	32.2	29.1	23.8	103.5	113.0	77.8	74.9	10.1	4.8	15.0	4.0	12.8	1.7	15.4	9.9
47	Wyoming	2.39	2.53	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
49	New Mexico	2.34	2.38	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE B.—*Pot data (oats), showing yield of crop and constituents removed from soil.*

No.	State.	Soil in pots.		Total crop weight.		Crop per 100,000 parts of soil.		Crop equivalent per acre area.		Parts per million removed.									
										Nitrogen.		Phosphoric acid.		Potash.		Lime.		Magnesia.	
		First 9 inches.	Second 9 inches.	First 9 inches.	Second 9 inches.	First 9 inches.	Second 9 inches.	First 9 inches.	Second 9 inches.	First 9 inches.	Second 9 inches.	First 9 inches.	Second 9 inches.	First 9 inches.	Second 9 inches.	First 9 inches.	Second 9 inches.	First 9 inches.	Second 9 inches.
		Kilos.	*Kilos.*	*Grams.*	*Grams.*			*Pounds*	*Pounds*										
1	North Dakota	24.8	25.9	39.9	17.5	161	68	4,880	2,150	30	11	8	4	64	22	9	5	12	5
3	South Dakota	24.6	25.0	46.0	18.8	187	75	5,630	2,300	21	7	8	4	37	14	18	5	13	5
5	Minnesota	23.3	23.8	43.3	13.0	186	54	5,290	1,590	23	5	19	5	38	10	19	4	14	3
7	Wisconsin	24.5	25.0	51.1	18.0	208	72	6,250	2,200	26	7	35	8	38	16	17	4	13	5
9	Michigan	24.6	27.0	21.1	15.3	186	56	2,580	1,870	9	5	8	2	19	17	6	5	5	3
11	Vermont	24.4	25.9	37.6	11.8	154	45	4,590	1,440	20	5	17	4	22	7	9	3	9	3
13	Maine	23.5	25.7	44.0	6.8	187	26	5,380	830	21	3	10	2	62	8	10	2	9	1
15	Iowa	23.9	24.1	89.0	46.8	372	194	10,850	6,060	53	22	40	16	56	24	21	14	29	12
17	Illinois	24.6	24.6	33.1	16.8	135	68	4,040	2,050	20	9	9	4	34	13	9	5	8	5
19	Ohio	24.5	24.9	33.1	10.1	135	40	4,040	1,230	24	4	9	2	31	8	10	3	7	3
21	Kansas	25.9	24.8	66.2	7.2	256	29	8,080	880	34	4	12	1	60	6	23	3	14	2
23	Missouri	25.6	25.3	39.2	4.0	153	16	4,790	490	19	2	7	½	30	3	11	2	7	1
25	Kentucky	24.3	25.3	35.2	11.7	145	46	4,300	1,430	21	5	25	10	28	9	16	6	8	2
27	Virginia	25.6	25.0	58.7	12.6	229	50	7,160	1,540	35	5	31	8	62	12	17	5	10	3
29	Arlington	24.5	25.2	21.0	5.9	85	23	2,570	720	10	3	3	½	15	3	5	1½	4	½
31	Potomac Flats	21.5	22.8	63.2	53.7	294	235	7,710	6,570	38	36	24	22	77	51	27	21	15	12
33	North Carolina	26.6	21.9	12.9	1.3	48	6	1,570	160	8	-----	2	-----	9	1	2	-----	2	-----
35	South Carolina	24.8	23.4	12.7	5.5	51	23	1,550	670	7	2	4	1	13	5	4	1	2	½
37	Florida	27.3	28.0	12.1	4.0	44	14	1,480	490	5	2	4	1	7	2	4	1	3	1
39	Oregon	25.7	25.7	23.6	9.0	92	35	2,890	1,100	10	3	14	2	25	10	7	3	5	2
41	Washington	25.7	25.2	32.3	11.1	125	144	3,950	1,350	14	4	10	3	47	15	10	4	5	2
43	Colorado	26.7	26.7	63.6	13.4	247	52	7,760	1,640	36	5	14	2	76	14	26	10	10	3
45	Utah	26.4	26.3	68.3	12.2	259	46	8,340	1,490	44	7	26	2	113	18	29	9	18	2
47	Wyoming	26.6	27.0	29.4	7.1	115	26	3,590	870	14	4	11	2	36	8	9	4	6	2
49	New Mexico	25.8	24.2	43.1	17.5	167	75	5,270	2,140	19	8	14	3	33	15	19	9	7	3

TABLE C.—*Percentage composition of plot crops.*

No.	State.	Nitrogen (N).				Phosphoric acid (P_2O_5).				Potash (K_2O).				Lime (CaO).				Magnesia (MgO).			
		Oats.	Barley.	Rye.	Wheat.	Oats.	Barley.	Rye.	Wheat.	Oats.	Barley.	Rye.	Wheat.	Oats.	Barley.	Rye.	Wheat.	Oats.	Barley.	Rye.	Wheat.
1	North Dakota	1.02	1.43	.96	1.29	.67	.78	.48	.49	2.85	1.92	1.60	1.65	.19	.15	.08	.12	.33	.26	.21	.27
3	South Dakota	1.54	1.66	1.29	1.42	.32	.39	.26	.40	1.76	1.04	1.01	1.53	.27	.16	.18	.22	.31	.21	.30	.34
5	Minnesota	.96	1.13	1.16	1.50	.56	.61	.51	.60	1.60	.94	1.33	1.29	.23	.12	.17	.11	.22	.17	.15	.18
7	Wisconsin	1.74	1.95	1.85	1.47	1.12	1.03	.82	.88	1.75	1.39	1.48	2.23	.41	.31	.29	.20	.35	.17	.18	.23
9	Michigan	1.67	2.21	1.65	1.62	.53	.65	.45	.50	1.73	1.27	1.28	1.52	.41	.40	.36	.22	.29	.20	.20	.23
11	Vermont	1.35	1.48	1.44	1.38	.79	.89	.77	.62	3.10	1.32	1.33	.81	.26	.29	.21	.19	.27	.23	.17	.22
13	Maine	1.02	1.34	.72	1.01	1.16	.57	.44	.40	1.78	.84	.80	1.29	.15	.10	.12	.13	.15	.17	.11	.14
15	Iowa	1.27	1.94	1.58	1.22	.62	.79	.73	.54	1.34	.89	1.60	1.23	.31	.17	.25	.21	.22	.19	.20	.19
17	Illinois																				
19	Ohio	1.12	1.63	1.20		.46	.62	.56		1.95	.50	1.49		.36	.17	.28		.29	.23	.23	
21	Kansas	1.51	2.69	1.43		.46	.60	.37		2.88	2.04	1.93		.29	.21	.24		.22	.19	.13	
23	Missouri	1.50	1.63	1.10	1.68	.41	.46	.28	.52	1.00	.82	.87	.96	.23	.13	.22	.17	.23	.17	.13	.22
25	Kentucky	1.42	1.90	1.26	1.76	1.23	.97	.74	.75	1.77	1.92	1.67	1.47	.47	.26	.21	.19	.36	.20	.25	.18
27	Virginia	1.08	1.52	1.31	1.66	.66	.79	.64	.46	3.00	1.94	1.69	3.16	.31	.17	.19	.25	.22	.22	.13	.17
29	Arlington	1.39		1.66		.32		.37		2.49		2.08		.22		.35		.26		.24	
31	Potomac Flats	1.41				.44				3.62				.56				.31			
33	North Carolina																				
35	South Carolina																				
37	Florida																				
39	Oregon	.91	1.16	1.08	.86	.85	.82	.56	.59	2.02	1.20	1.22	1.12	.20	.20	.16	.17	.17	.29	.12	.24
41	Washington	.86	.95	.93	.83	.53	.56	.50	.49	1.80	1.11	1.08	.94	.21	.21	.18	.12	.18	.25	.18	.17
43	Colorado	1.32	1.19	1.74	1.03	.55	.67	.33	.37	3.97	1.67	1.66	2.91	.28	.17	.40	.23	.27	.19	.22	.25
45	Utah	1.15	1.29	.97	.97	.54	.70	.62	.63	2.39	2.44	1.65	1.99	.24	.39	.32	.12	.29	.37	.33	.27
47	Wyoming																				
49	New Mexico																				

TABLE D.—*Percentage composition of pot crops (oats).*

No.	State.	Nitrogen (N).		Phosphoric acid (P_2O_5).		Potash (K_2O).		Lime (CaO).		Magnesia (MgO).	
		First 9 inches.	Second 9 inches.	First 9 inches.	Second 9 inches.	First 9 inches.	Second 9 inches.	First 9 inches.	Second 9 inches.	First 9 inches.	Second 9 inches.
1	North Dakota	1.87	1.66	.53	.64	4.01	3.18	.58	.54	.76	.73
3	South Dakota	1.14	.91	.45	.37	1.98	1.86	.94	.71	.70	.74
5	Minnesota	1.24	1.03	1.00	.89	2.03	1.90	1.00	.74	.73	.58
7	Wisconsin	1.26	1.02	1.68	1.15	1.82	2.24	.80	.56	.65	.65
9	Michigan	1.04	.88	.96	.28	2.19	3.04	.75	.97	.54	.61
11	Vermont	1.33	1.17	1.08	.98	1.43	1.58	.58	.65	.60	.57
13	Maine	1.14	1.27	.55	.77	3.29	3.04	.57	.60	.47	.45
15	Iowa	1.42	1.14	1.09	.80	1.50	1.24	.59	.75	.74	.62
17	Illinois	1.51	1.32	.67	.56	2.56	1.85	.72	.85	.60	.80
19	Ohio	1.77	1.02	.68	.58	2.28	2.13	.80	.72	.55	.80
21	Kansas	1.35	1.27	.48	.33	2.33	2.04	.90	1.23	.56	.71
23	Missouri	1.24	1.29	.49	.23	1.96	1.69	.74	1.34	.47	.69
25	Kentucky	1.44	1.19	1.74	2.16	1.97	1.94	1.10	1.34	.53	.51
27	Virginia	1.55	.95	1.35	1.62	2.71	2.35	.75	.95	.45	.53
29	Arlington	1.22	1.15	.33	.29	1.73	1.41	.56	.40	.55	.29
31	Potomac Flats	1.31	1.52	.82	.92	2.62	2.18	.91	.89	.52	.51
33	North Carolina	1.62		.40	.19	1.89	1.57	.43	.56	.50	.34
35	South Carolina	1.42	.88	.74	.47	2.50	2.23	.73	.60	.32	.30
37	Florida	1.21	1.09	.95	.60	1.52	1.51	.90	.81	.80	.60
39	Oregon	1.11	.91	1.56	.68	2.74	2.97	.78	.85	.56	.57
41	Washington	1.13	1.02	.79	.61	3.74	3.41	.83	1.01	.38	.41
43	Colorado	1.47	.96	.58	.32	3.09	2.62	1.06	2.08	.41	.55
45	Utah	1.70	1.49	1.00	.35	4.39	3.87	1.11	2.05	.71	.35
47	Wyoming	1.21	1.47	.97	.95	3.15	3.20	.80	1.46	.55	.65
49	New Mexico	1.15	1.04	.85	.40	1.98	2.00	1.11	1.19	.45	.36