

UNIVERSITY OF MISSOURI      COLLEGE OF AGRICULTURE  
AGRICULTURAL EXPERIMENT STATION

F. B. MUMFORD, *Director*

Registration, Labeling and  
Inspection of Commercial  
Fertilizers; 1937

F. B. MUMFORD, *Director*

L. D. Haigh and E. W. Cowan, *Chemists*

COLUMBIA, MISSOURI

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# Registration, Labeling and Inspection of Commercial Fertilizers; 1937

F. B. MUMFORD, *Director*

L. D. HAIGH AND E. W. COWAN, *Chemists*

## INSPECTION

The Missouri Agricultural Experiment Station under the authority of the Missouri Fertilizer Law, are reporting herewith the results of inspection of fertilizer stocks and analysis of the collected samples, for the spring and fall seasons of the calendar year, 1937.

In the spring visits were made to 208 dealers and farmers located in 96 towns and 49 counties and 171 samples were obtained for analysis. In the fall 218 dealers, farmers and users of fertilizer were interviewed: this represented visits to 116 towns and 35 counties, and 263 more samples were drawn and brought to the station for analysis. Discrepancies in labeling, failures of producers to register and attach tags were noted and are reported upon in subsequent paragraphs.

## THE MISSOURI FERTILIZER LAW

In the process of offering fertilizers for sale in Missouri the persons responsible are required under the law to carry out the following provisions:

(1) All brands, mixtures or materials to be so offered for sale must be registered before such sales are made. The following facts must be declared;—the name and address of the manufacturer, the name under which the fertilizer is sold, the guaranteed analysis giving the percentage of nitrogen, the percentage of available phosphoric acid and the percentage of water soluble potash. For a chemically undissolved bone the percentage of total phosphoric acid is used in place of available phosphoric acid. Registration must be filed before sales are made and is in force until the close of that calendar year. Registrations must therefore be filed annually by all companies. No registration fee is charged.

(2) Each separate package of fertilizer sold must have a label setting forth the same facts required in the registration and reading exactly the same as in the registration. Additional statements as to composition are permitted on the label, but these must be clearly stated as equivalents. The label must be on the outside of the container, conspicuously displayed, and must be plainly printed. The label may be printed directly on the container, or on a tag attached to the container.

(3) Each separate package of fertilizer sold must carry a registration tag or label, conspicuously seen on the outside of the package. The size of this tag will depend upon the weight of the contents of the package, and the year printed on the tag corresponds with the year of the registration on file and legally in force at the time the package is sold by the manufacturer. Registration tags are used to be attached to sacks, and sticker labels to paper or package containers, at the option of the manufacturer. These registration tags must remain attached to the package as long as the fertilizer contents are present. These tags remain upon the package during all subsequent sales regardless of the year. If the fertilizer is transferred to a new container and then offered for sale, the registration tag must be placed upon the new container. If the contents of any container are emptied into a number of smaller containers to be offered for sale, both labels and registration tags corresponding to the new size of the container and of the same year as the original tag, must be provided for each of the new containers. Registration tags of a year previous to the year of sale, must not be placed by the manufacturer on the sacks thus sold. Provision is made for the exchange of these tags for tags of the current year, for a small exchange charge. Application must be made to F. B. Mumford, Director, for this exchange, or for the purchase of all new tags.

The full text of the law setting forth the above provisions, giving information about size and cost of tags and duties of the administrators of the law, may be had on application to the Missouri Agricultural Experiment Station, Columbia, Missouri.

### **VIOLATIONS OF THE MISSOURI FERTILIZER LAW**

The following violations of the Fertilizer Law were noted during the spring and fall seasons, 1937.

**Violations with respect to registration.**—Registration was not on file, at the time of sale, for the following stocks: Grogreen Fern Food from American Soda Products Co., sold to F. W. Woolworth and Co., St. Louis; 20 per cent Superphosphate and Old Fort Rais More 2-12-2 fertilizer, sold by Fort Smith Cotton Oil Co., to Cassville Seed Co., Cassville; Bushong and Co., Abesville; Crane Feed Store, Crane; Boots Milling Co., Springfield; Wagner Bros., Granby; Floyd Plant Food Money Maker 0-14-6, sold by Federal Chemical Co., to Farm Bureau Service Co., of Palmyra; G and O Plant Food from Goulard and Olena, New York sold to Sears Roebuck and Co., Kansas City; Pulverized Sheep Manure sold by Independent Packing Co., Kansas City, to Archias Seed Store, Sedalia; Kruse's Perfection

Plant Food from W. H. Kruse, St. Louis, being sold by the Flower Shop, Scruggs-Vandervoort-Barney Store, St. Louis; Master Bone Meal sold by Master Meat Products Co., Detroit, to S. S. Kresge's Store, St. Louis and St. Joseph.

**Violations with respect to labeling.**—Labels were entirely missing from a shipment of Darling's Pure Ground Bone sold to Farmers Exchange, Houston.

Labels were incomplete as to the guaranteed analysis in the following cases: AA Half and Half Fertilizer sold by American Agricultural Chemical Co., to M. R. Kelly, Maywood; Big Crop Bone Meal and Superphosphate, sold by Armour Fertilizer Works to P. O. Foristell, Foristell; Red Steer Half and Half Fertilizer sold by Swift and Co. Fertilizer Works to Frank Cunningham, Montgomery City.

Labels on the goods of the Arkansas Fertilizer Co., and of the Newhouse Chemical and Supply Co., did not carry the brand names on the labels as given in the registration.

**Violations with respect to the registration tags.**—The following lots of fertilizer on sale were not provided with registration tags:

Sulphate of Ammonia sold by American Agricultural Chemical Co., to Bristol Supply Co., St. Joseph; Arcadian Nitrate of Soda and Arcadian Sulphate of Ammonia sold by the Thompson-Hayward Chemical Co., Kansas City and by the Harnden Seed Co., Kansas City; Big Crop 16 per cent Superphosphate sold by Armour Fertilizer Works to the Ozark Feed and Seed Co., Mountain Grove; 25 lb. sacks of Armour's Lawn and Garden Fertilizer sold to Beeny and Sons, Sheldon; Steer Head Raw Bone Meal and Special Lawn Fertilizer sold by Blood and Bone Fertilizer Corporation to West-over Nurseries, St. Louis; Interstate 16 per cent Superphosphate and Interstate Potato Special fertilizer sold by Crocker Packing Co., to Carlson Seed Co. and O. B. Davison Seed Co., Joplin, respectively.

Ford Ammonium Sulphate in 100 lb. sacks being sold by Lawler Grant Motor Co., St. Joseph, Mo.; Hoffman's Sheep Manure in package sold by A. H. Hoffman, Inc., to F. W. Woolworth Store, St. Louis; Darling's Pure Ground Bone sold by Darling and Co., to Farmers Exchange, Houston; Bone Meal Fertilizer and Moo-Cow Natural Fertilizer in packages sold by F. Rynveld and Sons, New York to F. W. Woolworth and Co., and Neisner Bros., St. Louis, respectively; Red Steer 4-8-6 fertilizer sold from Swift and Co., warehouse, Kansas City, Kansas, to Carrollton Feed and Grain Association, Carrollton, and to Jules Chapman, Henrietta, respectively; Red Steer Half and Half Fertilizer from Swift and Co., warehouse, Kansas City, Kansas, on hand at Hardin Farmers Exchange,

Hardin; V. C. 3-12-4 fertilizer sold to State Hospital No. 4, Farmington by Virginia Carolina Chemical Corporation.

Registration tags had been torn off from the following stocks:

Darling's Potato Special Fertilizer in the warehouse of the Carthage Cash Mercantile Co., Carthage; Big Crop Bone Meal in the warehouse of H. L. Shacklett, Golden City.

### THE CHEMICAL ANALYSES SUMMARIZED

Table 1 is introduced into this report in order to express the results of all the different analyses of each company by means of a single number called the ratio number. Deficient results here and there appear in the reports of all companies but to what extent they affect the amount of overrun on other samples cannot be judged unless the entire data is reduced to one average value. This table shows the index figure or ratio number for each kind of fertilizer for each company and for all the companies taken together and the ratio number for all the fertilizers taken together of each company and for all the companies taken together. The method of calculating this ratio number from the percentages of plant food found, is given in the report for 1936 Bulletin 381.

The ratio number may be used to figure the value of any fertilizer from any company. If the lowest obtainable cash price of any brand be multiplied by the ratio number for that brand of each of the companies, the relative cash values of the brand as furnished by each company can be obtained.

Table 2 gives the number of deficiencies shown for each constituent by each company and for all the companies considered together. The samples this year show more deficiencies for all constituents than was exhibited last year. This caused a decrease in the final ratio number from 108.4 of last year to 106.2 this year.

TABLE 1.—SUMMARY OF AVERAGE VARIATIONS FROM MANUFACTURER'S GUARANTEE—SPRING AND FALL SAMPLES, 1937

Manufacturer	Superphosphate		Bone Fertilizer			Mixed Fertilizer				All Fertilizers	
	No. Samples	Available P <sub>2</sub> O <sub>5</sub>	No. Samples	Total Nitrogen	Total P <sub>2</sub> O <sub>5</sub>	No. Samples	Total Nitrogen	Available P <sub>2</sub> O <sub>5</sub>	Potash	No. Samples	All Constituents
		Ratio No. of found value'		Ratio No. of found value'	Ratio No. of found value'		Ratio No. of found value'	Ratio No. of found value'	Ratio No. of found value'		
American Agricultural Chemical Company	13	105.5	3	119.7	101.9	49	104.3	104.8	108.0	65	105.2
Arkansas Fertilizer Co.	3	100.1	0	.....	.....	7	105.0	101.4	100.9	10	101.2
Armour Fertilizer Works	8	109.2	3	119.7	104.8	20	105.1	108.1	108.3	31	107.8
Blood and Bone Fertilizer Corporation	0	.....	1	111.0	110.8	1	153.0	141.3	.....	2	122.0
Crocker Packing Company	4	107.9	1	88.4	121.7	7	108.2	114.9	109.5	12	111.7
Cudahy Packing Company	2	105.5	0	.....	.....	1	120.5	127.6	140.5	3	112.0
Darling and Company, Darling's Brands	7	103.8	7	124.1	102.4	11	107.7	101.5	118.9	25	104.3
Darling and Company, M.F.A. Brands	19	104.8	2	115.9	100.0	37	101.8	106.7	114.7	58	106.3
Davison Chemical Corporation	10	108.3	0	.....	.....	6	102.1	105.1	141.0	16	108.8
Federal Chemical Co. Globe and Daybreak Brands	6	107.0	2	110.3	105.4	14	101.5	105.7	107.5	22	106.0
Federal Chemical Co. Floyd Money Maker Brands	8	102.9	0	.....	.....	14	100.1	105.5	108.8	22	104.5
Fort Smith Cotton Oil Co.	1	108.3	0	.....	.....	3	97.8	98.6	116.5	4	103.0
A. H. Hoffman, Inc.	0	.....	1	134.1	97.0	4	99.1	129.2	105.8	5	109.7
Newhouse Chemical and Supply Co.	2	102.2	0	.....	.....	3	108.0	103.1	106.2	5	103.4
Pulverized Manure Co.	0	.....	0	.....	.....	6	102.7	140.8	207.0	6	145.9
Sewerage Commission, Milwaukee	0	.....	0	.....	.....	3	94.9	102.5	.....	3	96.8
Smith Agricultural Chemical Co.	0	.....	0	.....	.....	2	108.4	105.1	111.1	2	106.9
Swift and Co. Fertilizer Works	16	107.2	9	113.2	107.7	46	102.9	105.1	105.8	71	106.0
Tennessee Corporation	0	.....	0	.....	.....	2	103.1	111.2	109.1	2	108.0
Virginia-Carolina Chemical Corp.	13	109.7	1	111.6	100.4	23	104.3	104.4	108.3	42	106.5
Westover Nurseries Co.	0	.....	1	140.6	84.4	1	181.0	93.0	151.5	2	97.6
<b>Totals</b>	<b>112</b>	<b>106.3</b>	<b>31</b>	<b>117.7</b>	<b>104.1</b>	<b>265</b>	<b>103.5</b>	<b>105.8</b>	<b>110.6</b>	<b>408</b>	<b>106.2</b>





## RESULTS OF CHEMICAL ANALYSIS

The results obtained by chemical analysis on the 434 samples of fertilizer gathered by the inspectors are given in detail in Table 3. The samples obtained in the spring inspection are indicated by 6- in the first column to the left and the fall samples, correspondingly by 11-. The guaranteed analysis of each brand, is compared with the analysis of each single sample and with the average analysis, if there are a number of samples of the same kind. Black faced figures appearing in the percentage columns indicate that this result is below the guarantee, by a minute or a noticeable amount. An examination of some of these black faced figures in comparison with the guarantee, shows that the deficiency is so small that the fertilizing value of the material is hardly affected. Especially should it be mentioned that the black faced figures are not intended to indicate that the fertilizer in question is condemned for sale.

The nitrogen report appears in two columns,—the first column to the left indicates the percentage of total nitrogen present; the second column carrying the figures in italics, indicates the percentage of the total nitrogen which is soluble in water. If this figure is 66.6 or higher, the nitrogen is considered to be of satisfactory quality. If this result is below 66.6, the permanganate test is applied to determine its chemical activity. The result of testing the samples by the permanganate procedure indicate that the following samples contain nitrogen of inferior quality:— 6-44, 6-45, 6-46, 6-47, 6-97, 6-100, 6-106, 6-107, 6-108, 6-109, 6-110, 6-111, 6-116, 6-119, 6-171, 11-81.

Dealers and other buyers occasionally request analyses of registered fertilizers which they have purchased, a sample of which they have taken themselves. Such requests must be accompanied with the full reading of the label of the container from which the sample was taken. These are not considered official samples and the results cannot be considered a reliable indication of deficiency, even though such may appear on analysis. The report on all such samples sent in appears at the close of Table 3. For a reliable judge of composition, the report on the official samples should be consulted.

TABLE 3.—FERTILIZER ANALYSES AND GUARANTEES; 1937

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P <sub>2</sub> O <sub>5</sub> , Potash K <sub>2</sub> O			
			Total	Water Soluble to Total	Total in Bone	Insoluble	Available	Water Soluble
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
<b>Agricultural Laboratories, Inc.</b>								
<b>Columbus, Ohio</b>								
6-1	Stim-U-Plant -----	Chesmore Seed Co., St. Joseph ----- Guaranteed Analysis	12.37 11.00	99.8 -----	----- -----	0.02 -----	11.92 12.00	23.55 15.00
<b>American Agricultural Chemical Co.</b>								
<b>National Stock Yards, Ill.</b>								
<b>A. A. Brands</b>								
6-2	16% Superphosphate-----	Perryville Milling Co., Perryville -----	-----	-----	-----	0.68 0.80	17.47 17.10	-----
6-3	16% Superphosphate-----	Love & Woods, Anderson Average Analysis Guaranteed Analysis	-----	-----	-----	----- 0.50	17.29 16.00	-----
11-1	16% Superphosphate-----	McClure & Wyatt, Jonesburg -----	-----	-----	-----	1.30	16.10	-----
11-2	16% Superphosphate-----	Wm. C. Rueter, Wentzville -----	-----	-----	-----	1.18	16.60	-----
11-3	16% Superphosphate-----	Rimel Feed Store, Cabool -----	-----	-----	-----	0.97	16.43	-----
11-4	16% Superphosphate-----	L. S. Montague, Dixon Average Analysis Guaranteed Analysis	-----	-----	-----	1.12 ----- 0.50	16.31 16.36 16.00	-----
6-4	20% Superphosphate-----	Farmers Grain & Produce Co., Hamilton -----	-----	-----	-----	1.20	22.60	-----
6-5	20% Superphosphate-----	Producers Grain Co., Eldorado Springs ----- Average Analysis Guaranteed Analysis	-----	-----	-----	----- ----- 0.50	22.69 22.65 20.00	-----
11-5	20% Superphosphate-----	Farmers Coop. Elevator & Supply Co., Hawk Point -----	-----	-----	-----	1.23	21.42	-----
11-6	20% Superphosphate-----	Wilder & Taylor, Ladonia -----	-----	-----	-----	1.55	21.10	-----
11-7	20% Superphosphate-----	Rimel Feed Store, Cabool -----	-----	-----	-----	1.52	20.68	-----
11-8	20% Superphosphate-----	Farmers Exchange, Nevada ----- Average Analysis Guaranteed Analysis	-----	-----	-----	1.52 ----- 0.50	20.88 21.02 20.00	-----
11-9	45% Superphosphate-----	Taylor & Witte, Edina Guaranteed Analysis	-----	-----	-----	1.53 0.50	45.97 45.00	-----
11-10	Elm Mixture-----	J. W. Summers & Son, Stockton ----- Guaranteed Analysis	-----	-----	-----	0.69 0.50	17.76 16.00	6.16 6.00
6-6	Red Dragon Fertilizer----	W. T. Craig, McCredie, Perryville -----	2.08	96.6	-----	1.18	13.20	2.29
6-7	Red Dragon Fertilizer----	Perryville Milling Co., Perryville -----	2.12	92.0	-----	0.96	12.80	2.27
6-8	Red Dragon Fertilizer----	Love & Woods, Anderson Average Analysis Guaranteed Analysis	2.07 2.09 2.00	93.2 93.9 -----	-----	0.75 ----- 0.50	13.35 13.12 12.00	2.39 2.32 2.00
11-11	Red Dragon Fertilizer----	McClure & Wyatt, Jonesburg -----	2.21	89.6	-----	1.57	12.41	2.24
11-12	Red Dragon Fertilizer----	Jerabek & Sons, Truesdall -----	2.10	90.9	-----	1.75	12.05	2.27
11-13	Red Dragon Fertilizer----	Farmers Coop. Elevator & Supply Co., Hawk Point -----	2.21	89.6	-----	1.40	12.02	2.19
11-14	Red Dragon Fertilizer----	Stuart & Sons, Center -----	2.23	88.8	-----	1.56	12.26	2.38
11-15	Red Dragon Fertilizer----	Farmers Elevator & Exchange, Ewing -----	2.07	88.9	-----	1.78	11.72	2.22
11-16	Red Dragon Fertilizer----	Richard Bros., Mountain Grove -----	2.04	87.8	-----	1.00	12.48	2.32
11-17	Red Dragon Fertilizer----	J. W. Summers & Son, Stockton ----- Average Analysis Guaranteed Analysis	2.12 2.14 2.00	89.2 89.3 -----	-----	1.10 ----- 0.50	12.68 12.23 12.00	2.33 2.28 2.00
11-18	Farmer's Friend-----	L. Haubein & Sons, Lockwood ----- Guaranteed Analysis	2.16 2.00	96.3 -----	-----	0.80 0.50	12.54 12.00	4.33 4.00

TABLE 3.—FERTILIZER ANALYSES AND GUARANTEES; 1937 (Continued)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P <sub>2</sub> O <sub>5</sub>			Potash K <sub>2</sub> O Water Soluble
			Total	Water Soluble to Total	Total in Bone	Insoluble	Available	
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
11-19	Antler Fertilizer	Hawkins Bros. Milling Co., Ozark	2.13	95.3	-----	1.78	12.02	6.65
11-20	Antler Fertilizer	J. W. Summers & Son, Stockton	2.14	94.4	-----	1.40	12.38	6.47
		Average Analysis	2.14	-----	-----	-----	12.20	6.56
		Guaranteed Analysis	2.00	-----	-----	0.50	12.00	6.00
11-21	Two in One Fertilizer	Farmers Equity Exchange, Bowling Green	4.31	97.5	-----	0.69	17.16	4.36
11-22	Two in One Fertilizer	Taylor & Witte, Edina	4.30	98.1	-----	0.80	17.25	4.38
11-23	Two in One Fertilizer	Farmers Produce Co., Norwood	4.31	97.9	-----	1.00	17.10	4.08
		Average analysis	4.31	97.8	-----	-----	17.17	4.27
		Guaranteed Analysis	4.00	-----	-----	0.50	16.00	4.00
6-9	Harvest Moon Fertilizer	Love & Woods, Anderson	3.83	97.4	-----	0.49	8.11	6.20
		Guaranteed Analysis	4.00	-----	-----	0.50	8.00	6.00
11-24	Half & Half <sup>1</sup>	M. R. Kelley, Maywood	1.08	26.8	-----	8.10	12.90	-----
		Guaranteed Analysis	1.00	-----	-----	8.00	12.00	-----
11-25	Steam Bone Meal	M. R. Kelley, Maywood	2.41	12.0	27.00	-----	-----	-----
11-26	Steam Bone Meal	Farmers Elevator & Exchange, Ewing	2.48	19.4	27.30	-----	-----	-----
11-27	Steam Bone Meal	Carpenter & Blodgett, Fairview	2.30	16.9	27.50	-----	-----	-----
		Average Analysis	2.40	16.1	27.27	-----	-----	-----
		Guaranteed Analysis	2.00	-----	27.00	-----	-----	-----
6-10	Sulphate of Ammonia <sup>2</sup>	Bristol Supply Co., St. Joseph	20.57	100.0 <sup>3</sup>	-----	-----	-----	-----
		Guaranteed Analysis	20.56	-----	-----	-----	-----	-----
11-28	Agrico for Cereals <sup>4</sup>	Fredericks Cash Store, Houston	4.18	97.6	-----	1.36	12.24	4.29
11-29	Agrico for Cereals	B. J. Fechtel, Freeburg	4.05	96.8	-----	1.30	12.46	4.09
		Average Analysis	4.12	97.2	-----	-----	12.35	4.19
		Guaranteed Analysis	4.00	-----	-----	0.50	12.00	4.00
6-11	Agrico for Corn	W. T. Craig, McCredie	3.14	96.5	-----	0.96	15.67	6.58
6-12	Agrico for Corn	L. F. Dreibelbis, Sarcoux	3.16	99.4	-----	1.03	15.35	6.82
		Average Analysis	3.15	98.0	-----	-----	15.51	6.60
		Guaranteed Analysis	3.00	-----	-----	0.50	14.00	6.00
11-30	Agrico for Corn	Patterson Supply Co., Carthage	3.26	99.4	-----	0.90	14.73	6.80
		Guaranteed Analysis	3.00	-----	-----	0.50	14.00	6.00
11-31	Agrico for Grain	McClure & Wyatt, Jonesburg	2.16	92.1	-----	1.50	12.00	4.42
11-32	Agrico for Grain	Jerabek & Sons, Truesdail	2.19	89.5	-----	1.75	12.17	4.49
11-33	Agrico for Grain	Wm. C. Rueter, Wentzville	2.14	94.9	-----	0.90	12.22	4.44
11-34	Agrico for Grain	Farmers Elevator & Supply Co., Moscow Mills	2.15	96.3	-----	1.10	12.00	4.26
11-35	Agrico for Grain	A. M. Hamilton Feed Store, Truxton	2.06	92.7	-----	1.23	12.13	4.19
11-36	Agrico for Grain	Vandalia Roller Mills, Vandalia	2.20	91.4	-----	1.20	12.04	4.40
11-37	Agrico for Grain	M. R. Kelley, Maywood	2.04	92.2	-----	1.24	11.76	4.06
11-38	Agrico for Grain	Mitchell Implement Co., Kirksville	2.16	91.2	-----	1.23	12.05	4.25
11-39	Agrico for Grain	Brookshire Hardware Co., Diamond	2.14	93.0	-----	1.10	12.02	4.28
11-40	Agrico for Grain	Rimel Feed Store, Cabool	2.16	92.6	-----	1.24	12.24	4.37
11-41	Agrico for Grain	Fredericks Cash Store, Houston	2.15	90.7	-----	1.55	12.02	4.14
11-42	Agrico for Grain	R. T. Leach, Lebanon	2.10	90.0	-----	1.63	12.16	4.40
11-43	Agrico for Grain	O. L. Thomas, Fair Play	2.19	90.4	-----	1.65	12.15	4.36
		Average Analysis	2.14	92.1	-----	-----	12.07	4.31
		Guaranteed Analysis	2.00	-----	-----	0.50	12.00	4.00
11-44	Agrico for Lawns, Trees & Shrubs	Patterson Supply Co., Carthage	9.72	96.4	-----	0.19	6.95	4.17
		Guaranteed Analysis	10.00	-----	-----	0.50	6.00	4.00

<sup>1</sup>Incomplete labels. <sup>2</sup>Without registration tags or stickers. <sup>3</sup>Samples drawn from less than five sacks. <sup>4</sup>Not actually determined.

TABLE 3.—FERTILIZER ANALYSES AND GUARANTEES; 1937 (Continued)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P <sub>2</sub> O <sub>5</sub>			Potash K <sub>2</sub> O Water Soluble
			Total	Water Soluble to Total	Total in Bone	Insol- uble	Avail- able	
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
6-13	Agrico for Potatoes-----	J. S. Seward, Camden----	4.06	98.8	-----	0.63	8.57	6.07
6-14	Agrico for Potatoes-----	Bristol Supply Co., St. Joseph-----	4.18	98.8	-----	0.83	8.85	6.27
6-15	Agrico for Potatoes-----	Huntsville Flour & Feed Co., Huntsville-----	4.18	98.8	-----	0.73	8.35	6.37
		Average Analysis-----	4.14	98.8	-----	-----	8.59	6.24
		Guaranteed Analysis-----	4.00	-----	-----	0.50	8.00	6.00
6-17	Agrico for Tobacco-----	Bristol Supply Co., St. Joseph-----	3.92	99.2	-----	0.65	11.11	6.43
6-18	Agrico for Tobacco-----	Weston Elevator Co., Weston-----	4.03	99.3	-----	0.70	10.74	6.55
		Average Analysis-----	3.98	99.3	-----	-----	10.93	6.49
		Guaranteed Analysis-----	4.00	-----	-----	0.50	10.00	6.00
6-19	Agrico for Tomatoes-----	Bristol Supply Co., St. Joseph-----	2.12	92.9	-----	0.87	13.33	6.19
6-20	Agrico for Tomatoes-----	L. F. Dreibelbis, Sarcoxie Average Analysis-----	2.06	96.6	-----	0.52	12.92	6.69
		Guaranteed Analysis-----	2.09	94.8	-----	-----	13.13	6.44
		Guaranteed Analysis-----	2.00	-----	-----	0.50	12.00	6.00
6-16	Agrico for Truck-----	Eaton & Sons, Steelville	4.19	99.8	-----	0.88	10.96	6.38
6-21	Agrico for Truck-----	Bristol Supply Co., St. Joseph-----	4.06	98.8	-----	0.77	10.81	6.80
6-22	Agrico for Truck <sup>9</sup> -----	Love & Woods, Anderson Average Analysis-----	4.02	99.0	-----	0.67	11.23	6.34
		Guaranteed Analysis-----	4.09	99.2	-----	-----	11.00	6.51
		Guaranteed Analysis-----	4.00	-----	-----	0.50	10.00	6.00
11-45	Agrico for Truck-----	Patterson Supply Co., Carthage-----	4.10	99.3	-----	0.74	10.18	6.40
		Guaranteed Analysis-----	4.00	-----	-----	0.50	10.00	6.00
	American Cyanamid Co. Niagara Falls, Canada							
6-23	21% Aero Cyanamid-----	Pearson-Ferguson Co., Kansas City-----	21.60	-----	-----	-----	-----	-----
		Guaranteed Analysis-----	21.00	-----	-----	-----	-----	-----
	American Soda Products Co. Moorestown, New York							
6-24	Grogreen Fern Food <sup>2</sup> -----	F. W. Woolworth & Co., St. Louis-----	5.12	88.7	-----	0.94	9.40	3.03
		Guaranteed Analysis-----	3.00	-----	-----	-----	8.00	3.00
	Arkansas Fertilizer Co. <sup>1</sup> Little Rock, Arkansas White Diamond Brands							
11-46	16% Superphosphate <sup>4</sup> -----	Clarence Harris & Phil Everhard, Wentworth-- Guaranteed Analysis-----	-----	-----	-----	0.17	16.51	-----
		Guaranteed Analysis-----	-----	-----	-----	0.50	16.00	-----
11-47	20% Superphosphate-----	Wise Feed & Seed Co., Springfield-----	-----	-----	-----	0.17	20.28	-----
11-48	20% Superphosphate-----	L. D. Elrod, Fair Play-- Average Analysis-----	-----	-----	-----	0.66	19.24	-----
		Guaranteed Analysis-----	-----	-----	-----	-----	19.76	-----
		Guaranteed Analysis-----	-----	-----	-----	0.50	20.00	-----
11-49	Southern King-----	Wise Feed & Seed Co., Springfield-----	2.24	95.1	-----	1.05	12.41	2.15
11-50	Southern King-----	L. D. Elrod, Fair Play--	2.40	94.6	-----	1.41	12.01	2.09
11-51	Southern King-----	George Helm, Stockton-- Average Analysis-----	2.17	95.8	-----	0.89	12.03	2.20
		Guaranteed Analysis-----	2.27	95.2	-----	-----	12.15	2.15
		Guaranteed Analysis-----	2.00	-----	-----	-----	12.00	2.00
11-52	Prize Wheat Grower-----	Wise Feed & Seed Co., Springfield-----	2.18	94.5	-----	1.29	15.06	1.95
11-53	Prize Wheat Grower-----	L. D. Elrod, Fair Play-- Average Analysis-----	1.96	91.8	-----	1.53	16.17	2.01
		Guaranteed Analysis-----	2.07	93.2	-----	-----	15.62	1.98
		Guaranteed Analysis-----	2.00	-----	-----	-----	16.00	2.00
11-54	3-8-6-----	Wise Feed & Seed Co., Springfield-----	3.10	97.1	-----	1.17	9.45	6.14
		Guaranteed Analysis-----	3.00	-----	-----	-----	8.00	6.00

<sup>1</sup>Incomplete labels. <sup>2</sup>Not registered prior to sale. <sup>4</sup>Wrong registration tags.<sup>9</sup>Samples drawn from less than five sacks.

TABLE 3.—FERTILIZER ANALYSES AND GUARANTEES; 1937 (Continued)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P <sub>2</sub> O <sub>5</sub>			Potash K <sub>2</sub> O	
			Total	Water Soluble to Total	Total in Bone	Insoluble	Available	Water Soluble	
11-55	Crop Getter -----	Wise Feed & Seed Co., Springfield -----	3.80	98.4	-----	1.17	12.07	3.63	
	Armour Fertilizer Works Chicago Heights, Illinois Big Crop Brands	Guaranteed Analysis	4.00	-----	-----	-----	12.00	4.00	
6-27	16% Superphosphate -----	Farrell Feed Co., Bel- grade -----	-----	-----	-----	0.48	19.92	-----	
		Guaranteed Analysis	-----	-----	-----	-----	16.00	-----	
11-56	16% Superphosphate -----	P. O. Foristell, Foristell	-----	-----	-----	0.17	17.68	-----	
11-57	16% Superphosphate <sup>2</sup> -----	Ozark Feed & Seed Co., Mountain Grove -----	-----	-----	-----	0.32	17.11	-----	
11-58	16% Superphosphate -----	Mitch Quinn, Willow Springs -----	-----	-----	-----	0.87	16.06	-----	
11-59	16% Superphosphate -----	Farmers Exchange, Ne- vada -----	-----	-----	-----	0.81	17.32	-----	
		Average Analysis	-----	-----	-----	-----	17.04	-----	
		Guaranteed Analysis	-----	-----	-----	-----	16.00	-----	
6-28	20% Superphosphate <sup>2</sup> -----	Farmers Coop. Assn. No. 82, Brunswick -----	-----	-----	-----	0.40	22.10	-----	
		Guaranteed Analysis	-----	-----	-----	-----	20.00	-----	
11-60	20% Superphosphate -----	P. O. Foristell, Foristell	-----	-----	-----	0.62	21.43	-----	
11-61	20% Superphosphate -----	W. E. Stinett, Went- worth -----	-----	-----	-----	0.47	21.28	-----	
		Average Analysis	-----	-----	-----	-----	21.36	-----	
		Guaranteed Analysis	-----	-----	-----	-----	20.00	-----	
11-62	0-14-4 -----	Ladwig & Ladwig, Bra- shear -----	-----	-----	-----	0.47	14.68	4.57	
		Guaranteed Analysis	-----	-----	-----	-----	14.00	4.00	
6-29	2-12-2 -----	Farrell Feed Co., Bel- grade -----	2.14	88.3	-----	0.34	13.50	2.47	
6-30	2-12-2 -----	Beeny & Sons, Sheldon	2.12	86.8	-----	0.40	13.06	2.53	
		Average Analysis	2.13	87.6	-----	-----	13.28	2.50	
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	2.00	
11-63	2-12-2 -----	J. D. Heckmaster, Dia- mond -----	1.86	86.0	-----	0.52	12.58	2.22	
11-64	2-12-2 -----	Carthage Supply Co., Carthage -----	2.14	82.7	-----	0.63	12.49	2.25	
		Average Analysis	2.00	84.4	-----	-----	12.54	2.24	
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	2.00	
6-32	2-12-4 -----	Haubein Hardware, Lock- wood -----	2.15	89.8	-----	0.66	13.45	4.34	
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	4.00	
11-65	2-12-4 -----	P. O. Foristell, Foristell	2.03	84.7	-----	0.95	12.73	4.29	
11-66	2-12-4 -----	Harris & Green, Curry- ville -----	2.18	90.8	-----	2.90	12.04	4.18	
11-67	2-12-4 -----	J. G. Manes, Webb City	2.01	91.0	-----	1.42	13.72	3.85	
11-68	2-12-4 -----	G. H. Lane & Son, Marshfield -----	2.18	91.3	-----	1.71	13.14	4.15	
11-69	2-12-4 -----	Carter Mill & Elevator Co., Jasper -----	2.07	90.8	-----	0.48	12.86	4.34	
		Average Analysis	2.09	89.7	-----	-----	12.90	4.16	
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	4.00	
11-70	2-12-6 -----	Stroud Canning Co., Fairview -----	2.16	89.8	-----	0.92	12.48	6.34	
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	6.00	
11-71	2-16-2 -----	Carter Mill & Elevator Co., Jasper -----	2.25	90.7	-----	0.82	17.08	2.67	
		Guaranteed Analysis	2.00	-----	-----	-----	16.00	2.00	
11-72	3-18-3 -----	P. O. Foristell, Foristell	3.25	93.2	-----	1.13	19.47	3.60	
		Guaranteed Analysis	3.00	-----	-----	-----	18.00	3.00	
6-31	4-8-6 -----	Haubein Hardware, Lockwood -----	3.92	94.4	-----	0.18	9.06	6.08	
		Guaranteed Analysis	4.00	-----	-----	-----	8.00	6.00	

<sup>2</sup>Without registration tags or stickers.

TABLE 3.—FERTILIZER ANALYSES AND GUARANTEES; 1937 (Continued)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P <sub>2</sub> O <sub>5</sub>			Potash K <sub>2</sub> O Water Soluble
			Total	Water Soluble to Total	Total in Bone	Insoluble	Available	
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
11-73	4-8-6 -----	E. M. Hale, Willow Springs -----	3.94	95.7	-----	0.10	8.44	6.12
		Guaranteed Analysis	4.00	-----	-----	-----	8.00	6.00
11-74	4-12-4 -----	A. L. Schmidt, Laddonia -----	4.31	93.0	-----	0.90	12.50	4.00
		Guaranteed Analysis	4.00	-----	-----	-----	12.00	4.00
6-33	Bone Meal 2-27-----	Harnden Seed Co., Kansas City -----	2.26	26.6	28.85	-----	-----	-----
		Guaranteed Analysis	2.00	-----	27.00	-----	-----	-----
11-77	Bone Meal <sup>9</sup> -----	P. O. Foristell, Foristell -----	2.48	17.3	28.00	-----	-----	-----
11-78	Bone Meal <sup>2</sup> -----	Morrison Grain Co., Golden City -----	2.44	22.9	28.00	-----	-----	-----
		Average Analysis	2.46	20.1	28.00	-----	-----	-----
		Guaranteed Analysis	2.00	-----	27.00	-----	-----	-----
6-25	Armour's Garden & Lawn Fertilizer -----	Sears Roebuck & Co., Kansas City -----	4.29	98.4	-----	1.45	8.91	6.52
6-26	Armour's Garden & Lawn Fertilizer -----	Springfield Seed Co., Springfield -----	3.95	98.2	-----	1.26	8.80	6.72
		Average Analysis	4.12	98.3	-----	-----	8.86	6.62
		Guaranteed Analysis	4.00	-----	-----	-----	8.00	6.00
11-76	Bone Meal & Superphosphate <sup>1</sup> -----	P. O. Foristell, Foristell -----	1.51	35.8	-----	5.35	16.40	-----
		Guaranteed Analysis	1.00	-----	-----	8.00	14.00	-----
	The Barrett Co. New York, New York							
6-34	Arcadian the American Nitrate of Soda <sup>2</sup> -----	Thompson Hayward Chemical Co., Kansas City -----	16.14	100.0 <sup>3</sup>	-----	-----	-----	-----
6-35	Arcadian the American Nitrate of Soda <sup>2 9</sup> -----	Harnden Seed Co., Kansas City -----	16.04	100.0 <sup>3</sup>	-----	-----	-----	-----
		Average Analysis	16.09	-----	-----	-----	-----	-----
		Guaranteed Analysis	16.00	-----	-----	-----	-----	-----
6-36	Arcadian Sulphate of Ammonia <sup>2</sup> -----	Thompson Hayward Chemical Co., Kansas City -----	20.86	100.0 <sup>3</sup>	-----	-----	-----	-----
		Guaranteed Analysis	20.56	-----	-----	-----	-----	-----
	<b>Blood &amp; Bone Fertilizer Corp.</b>							
	National City, Illinois							
	Steer Head Brands							
6-38	Raw Bone Meal <sup>2</sup> -----	Westover Nursery Co., St. Louis -----	3.64	27.8	22.15	-----	-----	-----
		Guaranteed Analysis	3.28	-----	20.00	-----	-----	-----
6-39	Special Lawn Fertilizer <sup>2</sup> -----	Westover Nursery Co., St. Louis -----	1.53	35.3	-----	4.70	16.95	-----
		Guaranteed Analysis	1.00	-----	-----	8.00	12.00	-----
	<b>The Colorado Fuel &amp; Iron Co.</b>							
	Denver, Colorado							
6-40	Silvertip Sulphate of Ammonia -----	Pearson Ferguson Co., Kansas City -----	20.28	100.0 <sup>3</sup>	-----	-----	-----	-----
		Guaranteed Analysis	20.00	-----	-----	-----	-----	-----
	<b>Crocker Packing Co.</b>							
	Joplin, Missouri							
	Interstate Brands							
6-41	Superphosphate, 16% <sup>2</sup> -----	Carlson Seed Co., Joplin -----	-----	-----	-----	0.25	18.35	-----
		Guaranteed Analysis	-----	-----	-----	-----	16.00	-----
11-79	Superphosphate, 16%-----	Factory, Joplin -----	-----	-----	-----	0.70	16.55	-----
		Guaranteed Analysis	-----	-----	-----	-----	16.00	-----
6-42	Superphosphate, 20%-----	Carlson Seed Co., Joplin -----	-----	-----	-----	0.06	21.64	-----
		Guaranteed Analysis	-----	-----	-----	-----	20.00	-----

<sup>1</sup>Incomplete labels. <sup>2</sup>Without registration tags or stickers. <sup>3</sup>Samples drawn from less than five sacks.<sup>9</sup>Not actually determined.

TABLE 3.—FERTILIZER ANALYSES AND GUARANTEES; 1937 (Continued)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P <sub>2</sub> O <sub>5</sub>			Potash	
			Total	Water Soluble to Total	Total in Bone	Insoluble	Available	K <sub>2</sub> O Water Soluble	
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	
11-80	Superphosphate, 20%-----	Brookshire Hardware Co., Diamond	-----	-----	-----	-----	0.88	21.12	-----
6-43	2-12-2 <sup>o</sup> -----	Nichol Bros., Southwest City	2.72	83.1	-----	-----	0.49	13.05	3.85
	Guaranteed Analysis		2.00	-----	-----	-----	-----	12.00	2.00
11-81	2-12-2 -----	Factory, Joplin	2.03	61.1	-----	-----	0.63	12.27	2.71
	Guaranteed Analysis		2.00	-----	-----	-----	-----	12.00	2.00
6-44	2-12-6 -----	Nichol Bros., Southwest City	2.34	56.0	-----	-----	1.04	13.62	6.69
	Guaranteed Analysis		2.00	-----	-----	-----	-----	12.00	6.00
6-45	Potato Special 2-8-10 <sup>2</sup> °	O. B. Davison Seed Co., Joplin	2.14	59.4	-----	-----	0.34	8.94	8.68
6-46	Potato Special 2-8-10 <sup>o</sup> -----	Carlson Seed Co., Joplin	2.15	61.4	-----	-----	0.66	9.82	11.23
	Average Analysis		2.15	60.4	-----	-----	-----	9.88	9.96
	Guaranteed Analysis		2.00	-----	-----	-----	-----	8.00	10.00
6-47	Lawn, Vegetable & Flower Grower -----	Carlson Seed Co., Joplin	4.00	65.8	-----	-----	0.60	9.20	6.26
	Guaranteed Analysis		4.00	-----	-----	-----	-----	8.00	6.00
11-82	Steam Bone Fertilizer & Phosphate 1¼-20 -----	Factory, Joplin	1.06	51.9	-----	-----	7.50	18.10	-----
	Guaranteed Analysis		1.20	-----	-----	-----	6.00	14.00	-----
11-83	Steam Bone Fertilizer -----	Factory, Joplin	2.21	42.5	29.20	-----	-----	-----	-----
	Guaranteed Analysis		2.50	-----	24.00	-----	-----	-----	-----
	<b>Cudahy Packing Company</b> Kansas City, Kansas Bigwin Brands								
6-48	20% Superphosphate -----	Farmers Feed & Supply Co., Lawson	-----	-----	-----	-----	0.60	20.15	-----
6-49	20% Superphosphate -----	Farmers Elevator Co., Salisbury	-----	-----	-----	-----	0.55	22.05	-----
	Average Analysis		-----	-----	-----	-----	-----	21.10	-----
	Guaranteed Analysis		-----	-----	-----	-----	1.00	20.00	-----
6-50	2-12-2 <sup>o</sup> -----	Producers Grain Co., El- dorado Springs	2.41	51.5	-----	-----	3.57	15.31	2.81
	Guaranteed Analysis		2.00	-----	-----	-----	-----	12.00	2.00
	<b>Darling and Company</b> Chicago, Illinois Darling's Brands								
11-84	16% Superphosphate -----	Producers Exchange, Mountain Grove	-----	-----	-----	-----	1.66	17.59	-----
	Guaranteed Analysis		-----	-----	-----	-----	-----	16.00	-----
6-51	20% Superphosphate <sup>2</sup> -----	Cameron Coop. Elevator Assn., Cameron	-----	-----	-----	-----	0.53	21.27	-----
	Guaranteed Analysis		-----	-----	-----	-----	-----	20.00	-----
11-85	20% Superphosphate -----	Farmers Elevator & Sup- ply Co., Troy	-----	-----	-----	-----	0.84	20.81	-----
11-86	20% Superphosphate -----	Allman Grain Co., Stark City	-----	-----	-----	-----	0.55	20.20	-----
11-87	20% Superphosphate -----	Farmers Exchange, Hous- ton	-----	-----	-----	-----	0.89	20.86	-----
11-88	20% Superphosphate -----	Farmers Exchange, Lick- ing	-----	-----	-----	-----	0.72	20.28	-----
11-89	20% Superphosphate -----	Carthage Cash Mercantile Co., Carthage	-----	-----	-----	-----	0.86	20.14	-----
	Average Analysis		-----	-----	-----	-----	-----	20.46	-----
	Guaranteed Analysis		-----	-----	-----	-----	-----	20.00	-----
6-52	Big Harvest -----	Carthage Cash Merc. Co., Carthage	2.18	85.8	-----	-----	0.25	12.69	2.43
	Guaranteed Analysis		2.00	-----	-----	-----	-----	12.00	2.00
11-90	Big Harvest -----	Curryville Elevator Co., Curryville	2.22	82.0	-----	-----	1.48	12.03	2.63
11-91	Big Harvest -----	Westphalia Milling Co., Westphalia	2.10	83.3	-----	-----	1.71	12.08	2.26

<sup>2</sup>Without registration tags or stickers. <sup>o</sup>Samples drawn from less than five sacks.

TABLE 3.—FERTILIZER ANALYSES AND GUARANTEES; 1937 (Continued)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P <sub>2</sub> O <sub>5</sub>			Potash
			Total	Water Soluble to Total	Total in Bone	Insoluble	Available	K <sub>2</sub> O Water Soluble
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
11-92	Big Harvest	Farmers Elevator & Supply Co., Troy	2.15	83.7		1.18	12.62	2.46
		Average Analysis	2.16	83.0			12.24	2.45
		Guaranteed Analysis	2.00				12.00	2.00
11-93	2-12-4	Neosho Milling Co., Wheaton	2.31	87.9		1.45	12.19	4.48
		Guaranteed Analysis	2.00				12.00	4.00
11-94	Bumper Crop	Farmers Elevator & Supply Co., Troy	2.13	91.1		1.10	16.15	2.97
11-95	Bumper Crop	Farmers Elevator & Supply Co., Troy	2.14	91.1		1.15	16.20	2.92
11-96	Bumper Crop	Carthage Cash Mercantile Co., Carthage	2.08	90.4		1.48	16.06	2.35
		Average Analysis	2.12	90.9			16.14	2.75
		Guaranteed Analysis	2.00				16.00	2.00
6-53	Potato Special	Carthage Cash Merc. Co., Carthage	4.27	97.7		0.17	8.97	7.61
		Guaranteed Analysis	4.00				8.00	7.00
11-97	Potato Special <sup>2</sup>	Carthage Cash Mercantile Co., Carthage	4.37	96.3		0.34	8.62	7.95
		Guaranteed Analysis	4.00				8.00	7.00
11-98	Bone & Superphosphate Half & Half	Farmers Exchange, Lockwood	0.97	27.8		8.00	12.50	
		Guaranteed Analysis	1.00			6.00	14.00	
6-54	Pure Ground Bone	H. P. Noel, Paris	2.22	20.7	29.00			
6-55	Pure Ground Bone	Greene County Farmers Sales Assn., Springfield	2.49	18.5	28.25			
		Average Analysis	2.36	19.6	28.63			
		Guaranteed Analysis	1.85		28.00			
11-99	Pure Ground Bone	T. T. Lemens, Durham	2.04	22.6	28.50			
11-100	Pure Ground Bone	Neosho Milling Co., Wheaton	2.17	16.1	29.70			
11-101	Pure Ground Bone <sup>3 5 9</sup>	Farmers Exchange, Houston	2.21	14.9	29.10			
11-102	Pure Ground Bone	Farmers Exchange, Rolla	2.69	12.3	27.40			
11-103	Pure Ground Bone	Farmers Cooperative Co., Dixon	2.25	19.1	28.70			
		Average Analysis	2.27	17.0	28.68			
		Guaranteed Analysis	1.85		28.00			
6-56	Sulphate of Ammonia	Greene County Farmers Sales Assn., Springfield	20.48	100.0 <sup>8</sup>				
		Guaranteed Analysis	20.56					
<b>M. F. A. Brands</b>								
6-57	16% Superphosphate	Rosebud Grain & Farmers Produce Ex., Rosebud				0.42	17.48	
6-58	16% Superphosphate	Producers Grain Co., Eldorado Springs				0.29	17.09	
6-59	16% Superphosphate	Farmers Exchange, Weaubleau				0.49	18.44	
6-60	16% Superphosphate	Greene Co. Farmers Sales Assn., Springfield				0.32	17.21	
		Average Analysis					17.56	
		Guaranteed Analysis					16.00	
11-104	16% Superphosphate	Producers Exchange, Truesdail				0.98	16.52	
11-105	16% Superphosphate	Cooperative Assn. No. 20, Wentzville				0.64	16.66	
11-106	16% Superphosphate	Farmers Produce Exchange, Perry				0.52	17.93	
11-107	16% Superphosphate	Farmers Exchange, Carthage				0.70	17.15	
11-108	16% Superphosphate	Farmers Exchange, Mansfield				0.42	16.78	

<sup>2</sup>Without registration tags or stickers. <sup>5</sup>Without labels. <sup>8</sup>Not actually determined.<sup>9</sup>Samples drawn from less than five sacks.



TABLE 3.—FERTILIZER ANALYSES AND GUARANTEES; 1937 (Continued)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P <sub>2</sub> O <sub>5</sub>			Potash K <sub>2</sub> O Water Soluble
			Total	Water Soluble to Total	Total in Bone	Insol- uble	Avail- able	
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
11-109	16% Superphosphate	Farmers Exchange, Wil- low Springs	----	----	----	0.57	16.93	----
11-110	16% Superphosphate	Farmers Coop. Co., Dixon Average Analysis	----	----	----	0.44	17.06	----
		Guaranteed Analysis	----	----	----	----	17.00	----
6-61	20% Superphosphate	Producers Exchange No. 148, California	----	----	----	0.48	21.27	----
6-62	20% Superphosphate	Greene Co. Farmers Sales Assn., Springfield	----	----	----	0.40	17.88	----
6-63	20% Superphosphate	Farmers Exchange, Weaubleau	----	----	----	0.48	21.82	----
		Average Analysis	----	----	----	----	20.32	----
		Guaranteed Analysis	----	----	----	----	20.00	----
11-111	20% Superphosphate	Producers Grain Co., Montgomery City	----	----	----	1.07	20.98	----
11-112	20% Superphosphate	Cooperative Assn. No. 20, Wentzville	----	----	----	1.10	21.20	----
11-113	20% Superphosphate	Farmers Exchange, Ma- con	----	----	----	0.66	21.09	----
11-114	20% Superphosphate	Farmers Exchange, Crane	----	----	----	0.25	20.85	----
11-115	20% Superphosphate	Farmers Exchange, Rogersville	----	----	----	0.95	17.65	----
		Average Analysis	----	----	----	----	20.35	----
		Guaranteed Analysis	----	----	----	----	20.00	----
11-116	0-16-6	Farmers Exchange, Jas- per	----	----	----	0.98	17.37	6.01
		Guaranteed Analysis	----	----	----	----	16.00	6.00
6-64	2-12-2	Trenton Farmers Ex- change, Trenton	1.99	87.9	----	0.50	13.82	2.39
6-65	2-12-2	Producers Exchange No. 148, California	1.67	85.6	----	0.50	14.40	2.05
6-66	2-12-2	Greene County Farmers Sales Assn., Springfield	2.12	87.7	----	0.55	12.81	2.76
6-67	2-12-2	Farmers Exchange, Weaubleau	2.14	86.5	----	0.35	13.37	2.69
		Average Analysis	1.98	86.9	----	----	13.60	2.47
		Guaranteed Analysis	2.00	----	----	----	12.00	2.00
11-117	2-12-2	Producers Grain Co., Montgomery City	2.13	81.7	----	0.90	12.85	2.63
11-118	2-12-2	Farmers Elevator Co., Jonesburg	2.06	82.5	----	0.78	12.60	2.62
11-119	2-12-2	Producers Exchange, Truesdail	2.18	83.0	----	1.05	12.55	2.39
11-120	2-12-2	Farmers Elevator, Wright City	2.12	83.5	----	0.95	12.80	2.73
11-121	2-12-2	M. F. A. Coop. Assn., Ladsonia	2.09	82.3	----	0.52	13.48	2.58
11-122	2-12-2	Farmers Coop. Exchange & Shipping Co., Kirks- ville	1.97	82.2	----	0.61	13.27	2.49
11-123	2-12-2	Farmers Exchange, Ma- con	2.00	81.5	----	0.65	13.20	2.23
11-124	2-12-2	M. F. A. Coop. Exchange, Cairo	2.15	82.3	----	0.60	13.03	2.71
11-125	2-12-2	Farmers Exchange, Exe- ter	2.05	84.4	----	0.73	12.92	2.29
11-126	2-12-2	Farmers Exchange, Car- thage	2.20	83.6	----	1.30	12.33	2.33
11-127	2-12-2	Farmers Exchange, Ford- land	2.12	83.0	----	0.70	13.05	2.32
11-128	2-12-2	Producers Exchange, Mountain Grove	2.16	83.8	----	0.80	12.63	2.17
11-129	2-12-2	Farmers Exchange, Ray- mondville	2.11	82.0	----	1.30	12.40	2.33
11-130	2-12-2	Farmers Exchange, Rolla	2.25	85.3	----	1.48	12.07	2.03
		Average Analysis	2.11	82.9	----	----	12.80	2.42
		Guaranteed Analysis	2.00	----	----	----	12.00	2.00

\*Composition not according to label.

TABLE 3.—FERTILIZER ANALYSES AND GUARANTEES; 1937 (Continued)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P <sub>2</sub> O <sub>5</sub>			Potash
			Total	Water Soluble to Total	Total in Bone	Insoluble	Available	K <sub>2</sub> O Water Soluble
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
11-131	2-12-4 -----	Producers Exchange, Truesdail -----	2.14	88.3	-----	2.33	12.02	4.31
11-132	2-12-4 -----	Farmers Exchange, Ash Grove -----	2.26	90.7	-----	1.52	12.41	4.08
11-133	2-12-4 -----	Farmers Exchange, Jasper -----	2.32	88.8	-----	2.06	12.07	4.36
		Average Analysis -----	2.24	89.3	-----	-----	12.17	4.25
		Guaranteed Analysis -----	2.00	-----	-----	-----	12.00	4.00
6-68	2-12-6 -----	Greene Co. Farmers Sales Assn., Springfield -----	1.97	91.9	-----	0.46	13.88	6.12
		Guaranteed Analysis -----	2.00	-----	-----	-----	12.00	6.00
11-134	2-12-6 <sup>9</sup> -----	M. F. A. Farmers Exchange, Moberly -----	2.11	87.2	-----	1.35	12.03	6.90
		Guaranteed Analysis -----	2.00	-----	-----	-----	12.00	6.00
11-135	2-14-4 -----	Farmers Exchange, Jasper -----	2.07	87.9	-----	1.54	14.09	4.12
		Guaranteed Analysis -----	2.00	-----	-----	-----	14.00	4.00
11-136	2-16-27 -----	Farmers Exchange, Macon -----	2.02	90.1	-----	.94	13.51	6.25
		Guaranteed Analysis -----	2.00	-----	-----	-----	16.00	2.00
6-69	3-8-6 -----	Greene Co. Farmers Sales Assn., Springfield -----	3.17	94.0	-----	0.03	8.64	6.86
6-70	3-8-6 -----	Farmers Exchange, Buffalo -----	3.11	94.5	-----	0.15	9.17	6.37
		Average Analysis -----	3.14	94.3	-----	-----	8.91	6.62
		Guaranteed Analysis -----	3.00	-----	-----	-----	8.00	6.00
6-71	4-8-7 -----	Trenton Farmers Exchange, Trenton -----	3.90	97.2	-----	0.20	9.12	7.09
6-72	4-8-7 <sup>9</sup> -----	Producers Exchange No. 148, California -----	4.02	97.3	-----	0.17	8.77	7.86
		Average Analysis -----	3.96	97.3	-----	-----	8.95	7.48
		Guaranteed Analysis -----	4.00	-----	-----	-----	8.00	7.00
6-73	4-12-4 -----	Greene Co. Farmers Sales Assn., Springfield -----	4.36	95.0	-----	0.41	12.81	4.60
		Guaranteed Analysis -----	4.00	-----	-----	-----	12.00	4.00
11-137	4-12-4 -----	Farmers Exchange, Cassville -----	3.95	92.1	-----	1.39	12.49	4.04
11-138	4-12-4 -----	Farmers Exchange, Cabool -----	4.09	92.4	-----	1.16	12.97	4.32
11-139	4-12-4 <sup>7</sup> -----	Farmers Exchange, Jasper -----	2.37	90.3	-----	1.66	12.34	4.12
		Average Analysis -----	4.02	92.3	-----	-----	12.60	4.18
		Guaranteed Analysis -----	4.00	-----	-----	-----	12.00	4.00
6-74	4-16-4 -----	Producers Exchange No. 148, California -----	4.28	98.1	-----	0.70	17.58	4.27
6-75	4-16-4 -----	Farmers Exchange, Lamar -----	3.78	94.2	-----	0.77	16.53	4.20
6-76	4-16-4 -----	Greene County Farmers Sales Assn., Springfield -----	4.31	98.6	-----	0.51	17.49	4.46
		Average Analysis -----	4.12	97.0	-----	-----	17.20	4.31
		Guaranteed Analysis -----	4.00	-----	-----	-----	16.00	4.00
11-140	4-16-4 -----	Farmers Exchange, Rogersville -----	4.00	98.0	-----	1.03	18.37	4.17
		Guaranteed Analysis -----	4.00	-----	-----	-----	16.00	4.00
11-141	Pure Ground Bone -----	Producers Grain Co., Montgomery City -----	1.95	3.6	23.90	-----	-----	-----
11-142	Pure Ground Bone -----	Greene Co. Farmers Sales Assn., Springfield -----	2.34	8.1	28.00	-----	-----	-----
		Average Analysis -----	2.15	5.9	28.45	-----	-----	-----
		Guaranteed Analysis -----	1.85	-----	28.00	-----	-----	-----
	Davison Chemical Corporation Read Phosphate Division Nashville, Tennessee	Producers Grain Co., Eldorado Springs -----	-----	-----	-----	1.08	17.37	-----

<sup>7</sup>Composition not according to label. <sup>9</sup>Samples drawn from less than five sacks.

TABLE 3.—FERTILIZER ANALYSES AND GUARANTEES; 1937 (Continued)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P <sub>2</sub> O <sub>5</sub>			Potash K <sub>2</sub> O Water Soluble
			Total	Water Soluble to Total	Total in Bone	Insoluble	Available	
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
6-78	16% Superphosphate	Farmers Exchange, Bolivar	-----	-----	-----	0.85	17.45	-----
		Average Analysis	-----	-----	-----	-----	17.41	-----
		Guaranteed Analysis	-----	-----	-----	-----	16.00	-----
11-148	16% Superphosphate	Dean Produce Co., Lebanon	-----	-----	-----	1.01	16.99	-----
		Guaranteed Analysis	-----	-----	-----	-----	16.00	-----
6-79	Davco Granulated 20% Superphosphate	Producers Grain Co., Eldorado Springs	-----	-----	-----	0.25	20.85	-----
		Guaranteed Analysis	-----	-----	-----	-----	20.00	-----
11-144	Davco Granulated 20% Superphosphate	Neosho Seed Co., Neosho	-----	-----	-----	0.26	21.44	-----
11-145	Davco Granulated 20% Superphosphate	Farmers Exchange, Everton	-----	-----	-----	0.45	22.05	-----
11-146	Davco Granulated 20% Superphosphate	W. C. Trogdon, Ash Grove	-----	-----	-----	0.36	21.99	-----
11-147	Davco Granulated 20% Superphosphate	Producers Exchange, Mountain Grove	-----	-----	-----	0.55	21.95	-----
11-148	Davco Granulated 20% Superphosphate	Burchfield Mill, Marshfield	-----	-----	-----	0.28	22.12	-----
11-149	Davco Granulated 20% Superphosphate	Farmers Exchange, Nevada	-----	-----	-----	0.73	21.37	-----
		Average Analysis	-----	-----	-----	-----	21.32	-----
		Guaranteed Analysis	-----	-----	-----	-----	20.00	-----
6-80	Premium Grain Grower	Beeny & Sons, Sheldon	1.84	81.5	-----	0.93	12.63	2.51
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	2.00
11-150	Davco Homogeneous Granulated 2-12-2	Allman Grain Co., Stark City	2.05	91.2	-----	0.67	12.63	2.43
11-151	Davco Homogeneous Granulated 2-12-2	Willard Flour & Feed Mill, Willard	1.93	88.1	-----	0.83	12.97	2.76
11-152	Davco Homogeneous Granulated 2-12-2	Farmers Exchange, Mansfield	2.14	90.2	-----	0.68	12.57	2.28
11-153	Davco Homogeneous Granulated 2-12-2	Allman Grain Co., Stark City	2.06	87.9	-----	0.72	12.71	2.43
		Average Analysis	2.05	89.4	-----	-----	12.73	2.48
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	2.00
6-81	Red Diamond 2-12-4 <sup>7</sup>	Farmers Exchange, Bolivar	2.23	87.9	-----	0.83	12.11	7.34
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	4.00
	Federal Chemical Co. E. St. Louis, Illinois Globe and Daybreak Brands							
11-154	16% Superphosphate	W. A. Hagel, Fordland	-----	-----	-----	1.67	16.73	-----
11-155	16% Superphosphate	Mansfield Produce Co., Mansfield	-----	-----	-----	2.30	17.55	-----
11-156	16% Superphosphate	Widener Mill, Edgar Springs	-----	-----	-----	1.33	17.32	-----
		Average Analysis	-----	-----	-----	-----	17.20	-----
		Guaranteed Analysis	-----	-----	-----	-----	16.00	-----
6-82	20% Superphosphate	H. Upchurch, Lutesville	-----	-----	-----	1.79	20.21	-----
		Guaranteed Analysis	-----	-----	-----	-----	20.00	-----
11-157	20% Superphosphate	P. N. Day, Lewistown	-----	-----	-----	0.35	22.15	-----
11-158	20% Superphosphate	Harry Bruton Co., Seymour	-----	-----	-----	1.61	21.59	-----
		Average Analysis	-----	-----	-----	-----	21.37	-----
		Guaranteed Analysis	-----	-----	-----	-----	20.00	-----
11-159	0-12-4	Young Bros., Jasper	-----	-----	-----	0.52	13.28	4.33
		Guaranteed Analysis	-----	-----	-----	-----	12.00	4.00

<sup>7</sup>Composition not according to label.

TABLE 3.—FERTILIZER ANALYSES AND GUARANTEES; 1937 (Continued)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P <sub>2</sub> O <sub>5</sub>			Potash
			Total	Water Soluble to Total	Total in Bone	Insoluble	Available	K <sub>2</sub> O Water Soluble
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
6-83	Standard Corn & Wheat Grower 2-10-2 -----	H. Upchurch, Lutesville	1.88	73.4	-----	1.08	10.12	2.42
		Guaranteed Analysis	2.00	-----	-----	-----	10.00	2.00
6-84	Loam Land Fertilizer ----	H. Upchurch, Lutesville	2.21	74.2	-----	0.80	13.34	2.13
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	2.00
11-160	Loam Land Fertilizer ----	F. L. Reynolds & Son, Macon -----	2.21	81.5	-----	1.28	12.52	2.23
11-161	Loam Land Fertilizer ----	Rathbun Tobacco Co., Ozark -----	2.28	81.1	-----	1.00	12.85	2.15
11-162	Loam Land Fertilizer ----	Stroud Canning Co., Fairview -----	2.03	76.8	-----	1.79	12.51	2.27
11-163	Loam Land Fertilizer ----	W. A. Hagel, Fordland	2.11	77.7	-----	1.38	13.92	2.37
11-164	Loam Land Fertilizer ----	Widener Mill, Edgar Springs -----	2.20	71.8	-----	1.40	12.53	2.37
		Average Analysis	2.17	77.8	-----	-----	12.87	2.23
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	2.00
11-166	2-12-4 -----	Stemmons Produce Co., Jasper -----	2.10	82.9	-----	0.84	12.81	3.93
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	4.00
11-165	2-12-6 -----	Stemmons Produce Co., Jasper -----	2.36	84.3	-----	0.75	12.45	6.15
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	6.00
11-167	2-14-4 Official Formula ---	Leo McMenamy, O'Fallon	2.27	82.4	-----	0.53	14.52	4.12
11-168	2-14-4 Official Formula ---	Stemmons Produce Co., Jasper -----	2.17	80.2	-----	1.05	14.45	4.22
		Average Analysis	2.22	81.3	-----	-----	14.49	4.17
		Guaranteed Analysis	2.00	-----	-----	-----	14.00	4.00
6-85	3-8-6 Fertilizer -----	R. E. Larkin, Esther	2.58	86.1	-----	0.98	8.12	5.66
		Guaranteed Analysis	3.00	-----	-----	-----	8.00	6.00
6-86	4-10-6 Fertilizer -----	R. E. Larkin, Esther	3.03	85.5	-----	1.28	9.95	6.26
		Guaranteed Analysis	4.00	-----	-----	-----	10.00	6.00
11-169	Steamed Bone <sup>d</sup> -----	Farmers Exchange, Lick- ing -----	1.97	17.8	28.40	-----	-----	-----
11-170	Steamed Bone -----	G. H. Lane & Son, Marshfield -----	2.44	18.4	28.50	-----	-----	-----
		Average Analysis	2.21	47.0	28.45	-----	-----	-----
		Guaranteed Analysis	2.00	-----	27.00	-----	-----	-----
<b>Floyd Money Maker Brands</b>								
6-87	16% Superphosphate -----	Guy Nixon, Potosi	-----	-----	-----	1.38	16.50	-----
6-88	16% Superphosphate -----	Todd & Peck, Wheatland	-----	-----	-----	1.30	17.38	-----
		Average Analysis	-----	-----	-----	-----	16.94	-----
		Guaranteed Analysis	-----	-----	-----	-----	16.00	-----
11-171	16% Superphosphate <sup>e</sup> -----	Farm Bureau Service Co., Palmyra -----	-----	-----	-----	1.07	17.43	-----
11-172	16% Superphosphate -----	Farmers Cash Produce Co., Crocker -----	-----	-----	-----	1.24	17.46	-----
		Average Analysis	-----	-----	-----	-----	17.45	-----
		Guaranteed Analysis	-----	-----	-----	-----	16.00	-----
6-89	20% Superphosphate -----	Guy Nixon, Potosi	-----	-----	-----	2.28	20.57	-----
		Guaranteed Analysis	-----	-----	-----	-----	20.00	-----
11-173	20% Superphosphate -----	Farm Bureau Service Co., Palmyra -----	-----	-----	-----	0.81	20.89	-----
11-174	20% Superphosphate -----	Ralls Co. Farm Bureau Service, New London	-----	-----	-----	0.34	21.66	-----
		Average Analysis	-----	-----	-----	-----	21.28	-----
		Guaranteed Analysis	-----	-----	-----	-----	20.00	-----
11-175	32% Superphosphate -----	Ralls Co. Farm Bureau Service, New London	-----	-----	-----	1.64	23.61	-----
		Guaranteed Analysis	-----	-----	-----	-----	32.00	-----
11-176	0-12-6 -----	H. T. Deters & Sons, St. Clements -----	-----	-----	-----	0.96	12.96	6.14
		Guaranteed Analysis	-----	-----	-----	-----	12.00	6.00
11-177	0-14-6 <sup>g</sup> -----	Farm Bureau Service Co., Palmyra -----	-----	-----	-----	1.59	13.54	6.32
		Guaranteed Analysis	-----	-----	-----	-----	14.00	6.00

<sup>d</sup>Not registered prior to sale. <sup>e</sup>Labeled incorrectly. <sup>g</sup>Samples drawn from less than five sacks.

TABLE 3.—FERTILIZER ANALYSES AND GUARANTEES; 1937 (Continued)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P <sub>2</sub> O <sub>5</sub>			Potash
			Total	Water Soluble to Total	Total in Bone	Insoluble	Available	K <sub>2</sub> O Water Soluble
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
6-90	2-12-2 Fertilizer	Guy Nixon, Potosi	1.98	73.2	-----	1.08	13.32	2.31
6-91	2-12-2 Fertilizer	Todd & Peck, Wheatland	2.08	74.0	-----	1.21	13.19	2.53
		Average Analysis	2.03	73.6	-----	-----	13.26	2.42
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	2.00
11-178	2-12-2	H. T. Deters & Sons., St. Clements	2.14	75.3	-----	1.51	12.13	2.18
11-179	2-12-2	Ralls Co. Farm Bureau Service, New London	2.03	74.4	-----	1.54	12.58	2.46
11-180	2-12-2	Farm Bureau Service Co., Palmyra	2.23	78.9	-----	1.52	12.20	2.29
11-181	2-12-2	Farmers Exchange, Seymour	2.22	82.4	-----	1.58	12.34	2.22
11-182	2-12-2	Farmers Exchange, Licking	1.82	75.4	-----	1.12	12.12	2.03
		Average Analysis	2.09	77.3	-----	-----	12.27	2.24
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	2.00
11-183	2-12-4	Farm Bureau Service Co., Palmyra	2.42	84.3	-----	1.39	14.53	4.06
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	4.00
11-184	2-12-6	H. T. Deters & Sons, St. Clements	2.09	89.9	-----	1.41	12.23	6.45
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	6.00
6-92	4-8-6 Fertilizer	Cooper & Sons, Fredericktown	3.82	86.1	-----	0.98	8.76	6.68
		Guaranteed Analysis	4.00	-----	-----	-----	8.00	6.00
6-93	4-12-4 Fertilizer	A. H. Raaf, Gerard	3.59	83.8	-----	1.40	12.74	4.98
		Guaranteed Analysis	4.00	-----	-----	-----	12.00	4.00
11-185	4-12-4	Ralls Co. Farm Bureau Service, New London	3.62	89.5	-----	1.02	12.48	3.76
		Guaranteed Analysis	4.00	-----	-----	-----	12.00	4.00
	<b>Ford Motor Company</b> Dearborn, Michigan							
6-94	Ford Ammonium Sulphate <sup>3</sup>	Lawler Grant Motor Co., St. Joseph	20.91	100.0 <sup>8</sup>	-----	-----	-----	-----
		Guaranteed Analysis	20.80	-----	-----	-----	-----	-----
	<b>Ft. Smith Cotton Oil Co.</b> Ft. Smith, Arkansas <sup>3</sup> Rais More Brands							
11-186	20% Superphosphate	Cassville Feed Co., Cassville	-----	-----	-----	0.14	21.66	-----
		Guaranteed Analysis	-----	-----	-----	-----	20.00	-----
11-187	2-12-2 <sup>9</sup>	Bishong & Co., Abesville	2.07	82.6	-----	0.44	11.64	2.39
11-188	2-12-2	Crane Feed Store, Crane	1.88	80.9	-----	0.49	11.75	2.39
11-189	2-12-2 <sup>3</sup>	Boots Milling Co., Springfield	1.92	80.7	-----	0.52	12.12	2.21
		Average Analysis	1.96	81.4	-----	-----	11.84	2.33
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	2.00
	<b>Goulard &amp; Olena, Inc.</b> 140 Liberty St. New York, New York							
6-95	G & O Plant Food <sup>3</sup>	Sears Roebuck & Co., Kansas City	11.42	99.4	-----	0.33	16.57	22.25
		Guaranteed Analysis	11.00	-----	-----	-----	15.00	20.00
	<b>A. H. Hoffman, Inc.</b> Landisville, Pa.							
6-96	Hoffman's Bone Meal	McGoary's 5 & 10 Cent Store, St. Louis	4.96	13.7	19.40	-----	-----	-----
		Guaranteed Analysis	3.70	-----	20.00	-----	-----	-----
6-97	Cow Manure (dehydrated)	S. S. Kresge Co., St. Louis	1.95	35.9	-----	0.15	1.48	1.97
		Guaranteed Analysis	2.00	-----	-----	-----	2.00	2.00
6-98	Hoffman's Plant Food	F. W. Woolworth & Co., St. Louis	5.05	76.6	-----	0.64	11.68	5.90

<sup>2</sup>Without registration tags or stickers. <sup>3</sup>Not registered prior to sale. <sup>9</sup>Samples drawn from less than five sacks. <sup>8</sup>Not actually determined.

TABLE 3.—FERTILIZER ANALYSES AND GUARANTEES; 1937 (Continued)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P <sub>2</sub> O <sub>5</sub>			Potash
			Total	Water Soluble to Total	Total in Bone	Insoluble	Available	K <sub>2</sub> O Water Soluble
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
6-99	Hoffman's Plant Food	S. S. Kresge Co., St. Louis	4.98	72.3	-----	0.78	10.18	6.25
		Average Analysis	5.02	74.5	-----	-----	10.43	6.08
		Guaranteed Analysis	5.00	-----	-----	-----	8.00	6.00
6-100	Hoffman's Sheep Manure <sup>2</sup>	F. W. Woolworth & Co., St. Louis	1.74	22.4	-----	0.13	1.21	2.81
	Independent Packing Co. 955 State Line Kansas City, Mo.	Guaranteed Analysis	1.85	-----	-----	-----	1.00	2.00
6-101	Pulverized Sheep Manure <sup>3</sup>	Archias Seed Store, Sedalia	1.19	27.7	-----	0.12	0.55	1.26
	W. H. Kruse 2846 Arsenal St. Louis, Mo.	Guaranteed Analysis	2.00	-----	-----	-----	2.00	1.00
6-102	Kruse's Perfection Plant Food <sup>1</sup>	Flower Shop Scruggs-Vandervoort Barney, St. Louis	3.02	12.9	-----	0.28	4.07	0.88
	W. J. Largent Carthage, Missouri	Guaranteed Analysis	-----	-----	-----	-----	-----	-----
11-190	Raw Bone	W. J. Largent, Golden City	4.30	7.4	24.50	-----	-----	-----
	Master Meat Products Co. 2500 22nd St. Detroit, Michigan	Guaranteed Analysis	4.00	-----	22.00	-----	-----	-----
6-103	Master Bone Meal <sup>3</sup>	S. S. Kresge Co., St. Joseph	4.24	13.4	25.10	-----	-----	-----
	Newhouse Chemical & Supply Co. <sup>1</sup> Little Rock, Arkansas Triangle Brands	Guaranteed Analysis	4.00	-----	25.00	-----	-----	-----
11-191	16% Superphosphate	J. B. Implement Co., Golden City	-----	-----	-----	0.15	16.20	-----
		Guaranteed Analysis	-----	-----	-----	0.50	16.00	-----
11-192	20% Superphosphate	Boots Milling Co., Springfield	-----	-----	-----	0.20	20.60	-----
		Guaranteed Analysis	-----	-----	-----	0.50	20.00	-----
6-104	Triangle Brand 2-12-2 Fertilizer	Boots Feed & Seed Co., Springfield	2.28	95.2	-----	1.32	12.16	2.37
		Guaranteed Analysis	2.00	-----	-----	0.50	12.00	2.00
11-193	2-12-2	Boots Milling Co., Springfield	2.17	98.6	-----	1.28	12.52	2.02
		Guaranteed Analysis	2.00	-----	-----	0.50	12.00	2.00
11-194	2-12-6	J. B. Implement Co., Golden City	2.03	98.5	-----	1.10	12.42	6.23
	Pearson Ferguson Company Kansas City, Mo.	Guaranteed Analysis	2.00	-----	-----	0.50	12.00	6.00
6-105	Pearson Ferguson Brand 9-18-18 High Grade <sup>1</sup>	Pearson Ferguson Co., Kansas City	8.03	97.8	-----	0.55	18.05	20.22
	Pulverized Manure Company Chicago, Illinois Wizard Brands	Guaranteed Analysis	9.00	-----	-----	-----	18.00	18.00
6-106	Cow Manure	A. H. Hummert Seed Co., St. Louis	1.95	12.3	-----	0.17	1.09	1.32
6-107	Cow Manure	Harnden Seed Co., Kansas City	2.17	17.1	-----	0.15	1.22	2.30
		Average Analysis	2.06	14.7	-----	-----	1.16	1.81
		Guaranteed Analysis	2.00	-----	-----	-----	1.00	1.00

<sup>1</sup>Incomplete labels. <sup>2</sup>Without registration tags or stickers. <sup>3</sup>Not registered prior to sale.<sup>4</sup>Wrong registration tags.

TABLE 3.—FERTILIZER ANALYSES AND GUARANTEES; 1937 (Continued)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P <sub>2</sub> O <sub>5</sub>			Potash
			Total	Water Soluble to Total	Total in Bone	Insoluble	Available	K <sub>2</sub> O Water Soluble
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
6-108	Pulverized Sheep Manure	St. Louis Seed Co., St. Louis	2.00	33.5	-----	0.18	1.38	3.91
6-109	Pulverized Sheep Manure	Palmer Seed Co., St. Louis	2.01	28.4	-----	0.19	1.58	4.27
6-110	Pulverized Sheep Manure	Springfield Seed Co., Springfield	2.12	31.6	-----	0.15	2.02	4.85
		Average Analysis	2.04	31.2	-----	-----	1.66	4.34
		Guaranteed Analysis	2.00	-----	-----	-----	1.00	2.00
6-111	Garden Mulch	St. Louis Seed Co., St. Louis	2.07	17.9	-----	0.17	1.16	1.98
		Guaranteed Analysis	2.00	-----	-----	-----	1.00	1.00
	E. Rauh & Sons Fertilizer Co. Indianapolis, Indiana							
11-195	Rauh's Red Star 2-12-2	Lebanon Produce Co. Lebanon	2.00	97.5	-----	0.61	12.43	2.08
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	2.00
	Ruhm Phosphate & Chemical Co. Mt. Pleasant, Tennessee							
11-335	Ruhm's Phosphate Rock*	Walter Carr, Fayette	-----	-----	-----	30.00	4.15	-----
		Guaranteed Analysis	-----	-----	-----	34.30	-----	-----
	F. Rynveld & Sons, Inc. New York, New York							
6-112	Bone Meal Fertilizer <sup>2</sup>	F. W. Woolworth & Co., St. Louis	2.94	19.4	25.25	-----	-----	-----
		Guaranteed Analysis	2.47	-----	22.00	-----	-----	-----
6-116	Moo Cow Natural Fertilizer <sup>2</sup> (Shurbloom Bulb Co.)	Neisner Bros. 5c to \$1.00 Store, St. Louis	1.43	27.3	-----	0.16	0.86	1.90
		Guaranteed Analysis	1.42	-----	-----	-----	0.96	0.44
	Sewerage Commission Milwaukee, Wisconsin							
6-113	Milorganite	St. Louis Seed Co., St. Louis	5.65	12.0	-----	0.51	2.09	-----
6-114	Milorganite	Soil Service Co., Kansas City	5.73	15.0	-----	0.52	2.00	-----
6-115	Milorganite	T. Lee Adams Seed Co., Kansas City	5.71	13.1	-----	0.48	2.06	-----
		Average Analysis	5.70	13.4	-----	-----	2.05	-----
		Guaranteed Analysis	6.00	-----	-----	0.75	2.00	-----
	Smith Agricultural Chemical Co. Columbus, Ohio							
6-117	Sacco Plant Food	Ed. F. Mangelsdorf & Bro., St. Louis	4.31	93.3	-----	0.71	12.53	4.48
6-118	Sacco Plant Food	Soil Service Co., Kansas City	4.36	92.7	-----	0.65	12.69	4.41
		Average Analysis	4.34	93.0	-----	-----	12.61	4.45
		Guaranteed Analysis	4.00	-----	-----	-----	12.00	4.00
	Stockdale Fertilizer Co. Morris, Illinois							
6-119	Ovene	S. S. Kresge Co., St. Louis	2.24	22.3	-----	0.24	1.35	2.26
		Guaranteed Analysis	2.00	-----	-----	-----	1.00	2.00
	Swift & Co. Fertilizer Works National Stock Yards, Ill. Red Steer Brands							
6-120	16% Superphosphate	Jamesport Flour & Feed Store, Jamesport	-----	-----	-----	0.43	16.92	-----
6-121	16% Superphosphate	Baker Bros., Madison	-----	-----	-----	0.25	17.35	-----
6-122	16% Superphosphate	I. H. Shell & Son, Lutesville	-----	-----	-----	0.63	17.12	-----
		Average Analysis	-----	-----	-----	-----	17.13	-----
		Guaranteed Analysis	-----	-----	-----	-----	16.00	-----

\*Labels show Total Phosphoric Acid only.

<sup>2</sup>Without registration tags or stickers.

TABLE 3.—FERTILIZER ANALYSES AND GUARANTEES; 1937 (Continued)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P <sub>2</sub> O <sub>5</sub>			Potash
			Total	Water Soluble to Total	Total in Bone	Insoluble	Available	K <sub>2</sub> O Water Soluble
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
11-196	16% Superphosphate	Frank Cunningham, Montgomery City	----	----	----	0.72	16.28	----
11-197	16% Superphosphate	Miller Milling Co., Miller	----	----	----	0.67	16.33	----
11-198	16% Superphosphate	Williams & Sons, Houston	----	----	----	0.50	17.35	----
		Average Analysis	----	----	----	----	16.65	----
		Guaranteed Analysis	----	----	----	----	16.00	----
6-123	20% Superphosphate	Green & Tooley Elevator, Patonsburg	----	----	----	0.64	21.11	----
6-124	20% Superphosphate	Kellogg Kelly Seed Co., St. Joseph	----	----	----	0.60	22.05	----
6-125	20% Superphosphate	Phil Ratliff, Anderson	----	----	----	0.70	21.70	----
		Average Analysis	----	----	----	----	21.62	----
		Guaranteed Analysis	----	----	----	----	20.00	----
11-199	20% Superphosphate	Frank Cunningham, Montgomery City	----	----	----	0.07	21.68	----
11-200	20% Superphosphate	Farmers Coop. Elevator & Supply Co., Hawk Point	----	----	----	0.05	21.50	----
11-201	20% Superphosphate	Vandalia Roller Mills, Vandalia	----	----	----	0.66	21.14	----
11-202	20% Superphosphate	T. R. Legg, Monticello	----	----	----	0.07	22.13	----
11-203	20% Superphosphate	Clarence Grain Co., Clarence	----	----	----	0.02	21.48	----
11-204	20% Superphosphate	Greenfield Milling Co., Greenfield	----	----	----	0.77	21.23	----
11-205	20% Superphosphate	Rolla Exchange Mill, Rolla	----	----	----	0.39	21.91	----
		Average Analysis	----	----	----	----	21.58	----
		Guaranteed Analysis	----	----	----	----	20.00	----
6-126	0-14-7	Swift & Co. Warehouse, Kansas City, Kan.	----	----	----	0.15	14.98	7.09
		Guaranteed Analysis	----	----	----	----	14.00	7.00
11-206	1-12-4	Omer Webb, Jasper	1.08	83.3	----	0.60	12.44	4.38
		Guaranteed Analysis	1.00	----	----	----	12.00	4.00
6-127	2-12-2	Swift & Co. Warehouse, Trenton	2.18	86.7	----	0.60	12.83	2.29
6-128	2-12-2	Kellogg-Kelly Seed Co., St. Joseph	1.98	85.9	----	0.91	12.77	2.05
6-129	2-12-2	Hahn Feed Co., Union	2.00	84.5	----	1.02	12.32	2.03
6-130	2-12-2	W. C. Bennet, Marquand	2.06	85.0	----	1.00	12.43	2.24
6-131	2-12-2 <sup>a</sup>	C. E. Queen, Southwest City	2.00	83.5	----	1.58	12.02	2.16
		Average Analysis	2.04	85.1	----	----	12.48	2.15
		Guaranteed Analysis	2.00	----	----	----	12.00	2.00
11-207	2-12-2	Frank Cunningham, Montgomery City	2.00	79.5	----	0.13	12.93	2.01
11-208	2-12-2	Farmers Coop. Elevator & Supply Co., Hawk Point	1.97	84.8	----	1.56	11.92	2.20
11-265	2-12-2*	Farmers Coop. Elevator & Supply Co., Hawk Point	2.22	90.5	----	0.47	13.41	2.61
11-209	2-12-2	Vandalia Roller Mills, Vandalia	2.09	86.6	----	1.62	11.82	2.24
11-210	2-12-2	Farmers Elevator & Exchange Co., Palmyra	2.08	85.6	----	2.26	11.66	2.06
11-211	2-12-2	Tom Johnson, Maywood	2.00	85.5	----	1.51	12.01	2.27
11-212	2-12-2	Haldeman & Sons, Labelle	2.09	86.1	----	1.53	11.67	2.01
11-213	2-12-2	Clarence Grain Co., Clarence	1.99	84.9	----	1.30	12.42	2.05
11-214	2-12-2	Lester Williams, Fordland	1.92	84.9	----	1.60	11.73	2.32

\*Resacked. <sup>a</sup>Samples drawn from less than five sacks.



TABLE 3.—FERTILIZER ANALYSES AND GUARANTEES; 1937 (Continued)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P <sub>2</sub> O <sub>5</sub>			Potash
			Total	Water Soluble to Total	Total in Bone	Insoluble	Available	K <sub>2</sub> O Water Soluble
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
11-215	2-12-2	Ozark Flour & Feed Co., Seymour	2.05	85.8	-----	1.40	12.01	2.01
11-216	2-12-2	Mountain Grove Feed Co., Mountain Grove	2.14	90.7	-----	1.43	11.87	2.01
11-217	2-12-2	Williams & Sons, Hous- ton	2.11	85.3	-----	0.94	12.10	2.13
11-218	2-12-2	Omer Webb, Jasper	2.04	85.8	-----	1.24	12.04	2.69
11-219	2-12-2	Tucker Seed House, Carth- age	2.01	81.6	-----	1.17	12.04	2.22
		Average Analysis	2.05	85.5	-----	---	12.11	2.20
		Guaranteed Analysis	2.00	-----	-----	---	12.00	2.00
11-220	2-12-4	Greenfield Milling Co., Greenfield	2.16	86.6	-----	1.31	11.99	4.33
11-221	2-12-4	Omer Webb, Jasper	2.11	85.8	-----	1.07	12.21	4.24
		Average Analysis	2.14	86.2	-----	---	12.10	4.29
		Guaranteed Analysis	2.00	-----	-----	---	12.00	4.00
6-132	2-12-6	Kellogg-Kelly Seed Co., St. Joseph	1.97	85.3	-----	0.61	12.87	6.27
6-133	2-12-6	Farmers Grain & Supply Co., Golden City	2.21	88.2	-----	1.49	12.11	6.44
6-134	2-12-6	Phil Ratliff, Anderson	2.02	86.1	-----	0.75	12.39	6.32
		Average Analysis	2.07	86.5	-----	---	12.46	6.34
		Guaranteed Analysis	2.00	-----	-----	---	12.00	6.00
11-222	2-14-4	Omer Webb, Jasper	2.06	86.4	-----	0.89	14.23	4.00
		Guaranteed Analysis	2.00	-----	-----	---	14.00	4.00
6-135	2-16-2	Swift's Warehouse, Tren- ton	2.00	85.5	-----	1.00	16.18	2.27
		Guaranteed Analysis	2.00	-----	-----	---	16.00	2.00
11-223	2-16-2 <sup>9</sup>	A. W. Rouner, Brashear	2.42	86.8	-----	0.81	16.94	2.55
11-224	2-16-2	Nixa Hardware Co., Nixa	2.05	84.9	-----	1.08	16.27	2.22
		Average Analysis	2.24	85.9	-----	---	16.61	2.39
		Guaranteed Analysis	2.00	-----	-----	---	16.00	2.00
6-136	3-8-6	Madison Co. Farmer's Co- op. Assn., Frederick- town	2.96	91.9	-----	0.72	8.94	5.86
		Guaranteed Analysis	3.00	-----	-----	---	8.00	6.00
6-137	4-8-6 <sup>2 9</sup>	Carrollton Feed & Grain Assn., Carrollton	3.96	92.9	-----	0.55	8.55	6.06
6-138	4-8-6 <sup>2</sup>	Jules Chapman, Henrietta	3.89	93.1	-----	0.46	8.64	6.32
		Average Analysis	3.93	93.0	-----	---	8.80	6.19
		Guaranteed Analysis	4.00	-----	-----	---	8.00	6.00
11-225	4-8-6	Crocker Hdwe. Co., Crocker	4.06	92.1	-----	0.79	8.69	6.04
		Guaranteed Analysis	4.00	-----	-----	---	8.00	6.00
6-139	4-8-8	Swift & Co. Warehouse, Trenton	4.37	95.4	-----	0.33	8.39	7.91
		Guaranteed Analysis	4.00	-----	-----	---	8.00	8.00
6-140	4-12-4	St. Mary's Seminary, Perryville	4.16	94.0	-----	0.85	12.59	4.24
		Guaranteed Analysis	4.00	-----	-----	---	12.00	4.00
11-226	4-12-4	Farmer's Equity Ex- change, Bowling Green	3.62	89.5	-----	1.44	12.36	4.04
		Guaranteed Analysis	4.00	-----	-----	---	12.00	4.00
6-141	4-16-4	Kellogg-Kelly Seed Co., St. Joseph	4.12	93.7	-----	0.54	16.49	4.16
6-142	4-16-4	Madison Co. Farmer's Co- op. Assn., Frederick- town	4.01	92.0	-----	0.43	16.77	4.32
6-143	4-16-4	Tucker Seed House, Carth- age	4.15	94.0	-----	0.47	16.33	4.18
		Average Analysis	4.09	93.2	-----	---	16.53	4.22
		Guaranteed Analysis	4.00	-----	-----	---	16.00	4.00

<sup>9</sup>Samples drawn from less than five sacks.<sup>2</sup>Without registration tags or stickers.

TABLE 3.—FERTILIZER ANALYSES AND GUARANTEES; 1937 (Continued)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P <sub>2</sub> O <sub>5</sub>			Potash
			Total	Water Soluble to Total	Total in Bone	Insoluble	Available	K <sub>2</sub> O Water Soluble
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
11-227	4-16-4 -----	A. L. Schmidt, Laddonia	3.97	91.2	-----	1.17	16.33	4.10
11-228	4-16-4 -----	Nixa Hardware Co., Nixa	3.96	92.7	-----	1.10	16.70	4.12
11-229	4-16-4 -----	Tucker Seed House, Carthage	4.04	93.1	-----	1.16	16.74	4.22
		Average Analysis	3.99	92.3	-----	-----	16.59	4.15
		Guaranteed Analysis	4.00	-----	-----	-----	16.00	4.00
6-144	Half & Half Fertilizer	Swift & Co. Warehouse, Trenton	1.40	75.0	-----	3.49	17.51	-----
		Guaranteed Analysis	1.00	-----	-----	8.00	12.00	-----
11-230	Half & Half <sup>1</sup>	Frank Cunningham, Montgomery City	1.12	65.2	-----	4.15	18.15	-----
		Guaranteed Analysis	1.00	-----	-----	8.00	12.00	-----
11-231	Raw Bone Fertilizer	Wheaton Hardware Co., Wheaton	4.10	7.6	25.35	-----	-----	-----
		Guaranteed Analysis	3.70	-----	23.00	-----	-----	-----
6-145	2 and 26 Bone Fertilizer	St. Louis Seed Co., St. Louis	2.26	29.2	27.30	-----	-----	-----
6-146	2 and 26 Bone Fertilizer	Palmer Seed Co., St. Louis	2.22	28.4	27.45	-----	-----	-----
6-147	2 and 26 Bone Fertilizer	Swift & Co. Warehouse, Kansas City, Kan.	1.92	31.3	30.50	-----	-----	-----
		Average Analysis	2.13	29.8	28.42	-----	-----	-----
		Guaranteed Analysis	2.00	-----	26.00	-----	-----	-----
11-232	2 and 26 Bone Fertilizer	A. L. Schmidt, Laddonia	2.25	20.4	27.30	-----	-----	-----
11-233	2 and 26 Bone Fertilizer	Phil Ratliff, Neosho	2.75	22.6	27.20	-----	-----	-----
11-234	2 and 26 Bone Fertilizer	Roberts Bros., Cabool	2.60	20.4	26.70	-----	-----	-----
11-235	2 and 26 Bone Fertilizer	Tucker Seed House, Carthage	2.48	10.9	27.05	-----	-----	-----
		Average Analysis	2.52	18.6	27.06	-----	-----	-----
		Guaranteed Analysis	2.00	-----	26.00	-----	-----	-----
6-148	2¼ and 26 Bone Fertilizer	Swift & Co. Warehouse, Kansas City, Kan.	2.00	21.0	29.85	-----	-----	-----
		Guaranteed Analysis	2.25	-----	26.00	-----	-----	-----
6-149	Nitrate of Soda <sup>2</sup>	Tucker Seed House, Carthage	15.93	100.0 <sup>3</sup>	-----	-----	-----	-----
		Guaranteed Analysis	15.00	-----	-----	-----	-----	-----
6-150	Sulphate of Ammonia	A. H. Hummert Seed Co., St. Louis	20.56	100.0 <sup>3</sup>	-----	-----	-----	-----
		Guaranteed Analysis	20.75	-----	-----	-----	-----	-----
6-151	Vigoro	A. H. Hummert Seed Co., St. Louis	4.49	97.8	-----	0.49	13.61	4.60
		Guaranteed Analysis	4.00	-----	-----	-----	12.00	4.00
	Tennessee Corporation 61 Broadway New York, New York							
6-152	Loma	Palmer Seed Co., St. Louis	5.15	91.7	-----	0.27	11.25	4.35
		Guaranteed Analysis	5.00	-----	-----	0.65	10.00	4.00
6-153	Soil Prep <sup>1</sup>	St. Louis Seed Co., St. Louis	4.13	69.0	-----	0.31	2.09	2.20
		Guaranteed Analysis	4.00	-----	-----	-----	2.00	2.00
	Virginia-Carolina Chemical Corp. E. St. Louis, Ill. V-C Brands							
6-154	16% Superphosphate	Potosi Mill & Elevator, Potosi	-----	-----	-----	0.98	17.22	-----
		Guaranteed Analysis	-----	-----	-----	-----	16.00	-----
11-286	16% Superphosphate	Ozark Flour & Feed Co., Rolla	-----	-----	-----	1.00	17.50	-----
		Guaranteed Analysis	-----	-----	-----	-----	16.00	-----
6-155	20% Superphosphate	Conklin & Farrah, Benton City	-----	-----	-----	1.07	21.98	-----

<sup>1</sup>Incomplete labels. <sup>2</sup>Not actually determined. <sup>3</sup>Samples drawn from less than five sacks.

TABLE 3.—FERTILIZER ANALYSES AND GUARANTEES; 1937 (Continued)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P <sub>2</sub> O <sub>5</sub>			Potash K <sub>2</sub> O Water Soluble
			Total	Water Soluble to Total	Total in Bone	Insoluble	Available	
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
6-156	20% Superphosphate	Potosi Mill & Elevator, Potosi	-----	-----	-----	1.06	21.79	-----
6-157	20% Superphosphate	Cuba Roller Mill, Cuba	-----	-----	-----	1.10	22.15	-----
6-158	20% Superphosphate	Producer's Exchange, Eldorado Springs	-----	-----	-----	0.95	22.05	-----
6-159	20% Superphosphate	Northern Feed Co., Springfield	-----	-----	-----	0.98	22.22	-----
		Average Analysis	-----	-----	-----	-----	22.04	-----
		Guaranteed Analysis	-----	-----	-----	-----	20.00	-----
11-237	20% Superphosphate	Farmer's Elevator & Supply Co., Troy	-----	-----	-----	0.45	21.65	-----
11-238	20% Superphosphate	Chas. Lemon, New London	-----	-----	-----	0.54	22.16	-----
11-239	20% Superphosphate	J. J. Cornelius & Sons, Edina	-----	-----	-----	0.73	21.82	-----
11-240	20% Superphosphate	Macon Elevator Co., Macon	-----	-----	-----	0.88	21.72	-----
11-241	20% Superphosphate	Producer's Exchange, Mountain Grove	-----	-----	-----	1.12	21.88	-----
11-242	20% Superphosphate	Lebanon Produce Co., Lebanon	-----	-----	-----	0.85	22.35	-----
		Average Analysis	-----	-----	-----	-----	21.93	-----
		Guaranteed Analysis	-----	-----	-----	-----	20.00	-----
11-243	0-14-4 Fertilizer	Clay Pennington, Olney	-----	-----	-----	0.48	15.02	4.09
		Guaranteed Analysis	-----	-----	-----	-----	14.00	4.00
6-160	0-14-6	Rosser Produce Co., Farmington	-----	-----	-----	0.41	15.34	6.34
		Guaranteed Analysis	-----	-----	-----	-----	14.00	6.00
6-161	2-12-2	Owensville Roller Mills, Owensville	2.06	94.2	-----	0.45	13.19	2.46
6-162	2-12-2	Madison County Farmer's Assn., Fredericktown	2.17	93.5	-----	0.55	12.53	2.36
6-163	2-12-2	Lipscomb Feed & Grain Co., Irwin	2.26	92.9	-----	0.81	12.53	2.24
6-164	2-12-2	Northern Feed Co., Springfield	2.09	92.8	-----	0.52	12.10	2.29
		Average Analysis	2.15	93.4	-----	-----	12.59	2.34
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	2.00
11-244	2-12-2 Fertilizer	R. V. Rogers, Perry	2.22	90.5	-----	1.17	12.11	2.03
11-245	2-12-2 Fertilizer	Macon Elevator Co., Macon	2.09	89.5	-----	0.86	12.74	2.01
11-246	2-12-2 Fertilizer	R. L. Barr Hardware Co., Exeter	2.06	89.8	-----	0.81	12.43	2.10
11-247	2-12-2 Fertilizer	Lendon Howard, Diggins	2.02	90.1	-----	0.83	11.96	2.32
11-248	2-12-2 Fertilizer	Berry Produce Co., Seymour	2.06	91.3	-----	0.95	11.97	2.12
11-249	2-12-2 Fertilizer	Farmer's Elevator & Supply Co., Troy	2.12	88.2	-----	1.18	11.78	2.13
11-250	2-12-2 Fertilizer	Westphalia Milling Co., Westphalia	2.06	82.5	-----	1.32	11.88	2.07
		Average Analysis	2.09	88.9	-----	-----	12.12	2.11
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	2.00
6-165	2-12-4	Lipscomb Feed & Grain Co., Irwin	2.14	94.4	-----	0.57	12.45	4.42
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	4.00
11-251	2-12-4 Fertilizer	Farmer's Elevator & Supply Co., Troy	2.08	91.8	-----	0.92	12.00	3.98
11-252	2-12-4 Fertilizer	Crane Feed Co., Crane	2.11	91.9	-----	1.05	12.03	4.01
11-253	2-12-4 Fertilizer	Carter Mill & Elevator Co., Jasper	2.12	92.5	-----	0.86	12.10	4.49
		Average Analysis	2.10	92.1	-----	-----	12.04	4.16
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	4.00
6-166	2-12-6	Guinn Feed & Grain, Bolivar	2.15	93.5	-----	0.83	12.37	6.65
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	6.00

TABLE 3.—FERTILIZER ANALYSES AND GUARANTEES; 1937 (Continued)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P <sub>2</sub> O <sub>5</sub>			Potash
			Total	Water Soluble to Total	Total in Bone	Insoluble	Available	K <sub>2</sub> O Water Soluble
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
11-254	2-12-6 Fertilizer	Warren Davis Brokerage Co., Mansfield	2.18	93.1	-----	0.86	12.02	6.96
11-255	2-12-6 Fertilizer	Carter Mill and Elevator Co., Jasper	2.06	92.2	-----	0.65	12.27	6.57
		Average Analysis	2.12	92.7	-----	-----	12.15	6.77
		Guaranteed Analysis	2.00	-----	-----	-----	12.00	6.00
11-256	2-14-4 Fertilizer	Carter Mill & Elevator Co., Jasper	2.13	92.0	-----	1.09	14.59	4.60
		Guaranteed Analysis	2.00	-----	-----	-----	14.00	4.00
6-167	3-12-4 <sup>2</sup>	State Hospital No. 4, Farmington	3.14	96.2	-----	0.53	13.47	4.31
		Guaranteed Analysis	3.00	-----	-----	-----	12.00	4.00
6-168	4-8-7	Northern Feed Co., Springfield	3.34	97.4	-----	0.33	8.77	7.82
		Guaranteed Analysis	4.00	-----	-----	-----	8.00	7.00
11-257	4-8-7 Fertilizer <sup>9</sup>	Ozark Flour & Feed Co., Rolla	3.90	95.9	-----	0.33	8.51	7.19
		Guaranteed Analysis	4.00	-----	-----	-----	8.00	7.00
6-169	4-12-4	Guinn Feed & Grain, Bolivar	4.22	96.4	-----	0.51	13.39	4.09
		Guaranteed Analysis	4.00	-----	-----	-----	12.00	4.00
11-258	4-16-4 Fertilizer	Berry Cash Store, Fairview	3.98	94.7	-----	0.95	17.09	4.42
11-259	4-16-4 Fertilizer	R. V. Rogers, Perry	4.04	95.3	-----	0.30	16.70	4.22
		Average Analysis	4.01	95.0	-----	-----	16.90	4.32
		Guaranteed Analysis	4.00	-----	-----	-----	16.00	4.00
11-260	Half & Half Fertilizer	Clay Pennington, Olney	1.34	24.6	-----	6.70	14.90	-----
		Guaranteed Analysis	1.00	-----	-----	10.00	13.00	-----
11-261	Raw Bone Meal	Neosho Seed Co., Neosho	4.13	23.5	23.10	-----	-----	-----
		Guaranteed Analysis	3.70	-----	23.00	-----	-----	-----
		Wallace Bros. Packing Co. Joplin, Mo.						
11-262	Wallace's Bone Meal Fertilizer	Factory, Joplin	3.29	46.2	26.00	-----	-----	-----
		Guaranteed Analysis	3.22	-----	25.94	-----	-----	-----
		Westover Nursery Co. 8100 Olive Street Road Clayton, Mo.						
6-170	Westover Rosegro Special Rose Plant Food	Westover Nursery Co., St. Louis	4.64	33.8	21.10	-----	-----	-----
		Guaranteed Analysis	3.30	-----	25.00	-----	-----	-----
6-171	Wesgro Cattle Manure	Westover Nursery Co., St. Louis	1.81	29.8	-----	0.16	0.93	3.03
		Guaranteed Analysis	1.00	-----	-----	-----	1.00	2.00
		Samples Sent In—Not Official						
		Armour Fertilizer Works Chicago Heights, Ill.						
3-136	Armour's Multiphos, 45% Superphosphate	Roy W. Carpenter, Monroe City	-----	-----	-----	0.08	47.10	-----
		Guaranteed Analysis	-----	-----	-----	-----	45.00	-----
5-142	Big Crop 20% Superphosphate*	B & H Feed & Produce Co., Farmington	-----	-----	-----	0.52	21.41	-----
		Guaranteed Analysis	-----	-----	-----	-----	20.00	-----

<sup>2</sup>Without registration tags or stickers. <sup>9</sup>Samples drawn from less than five sacks.

\*1936 Goods. Lot received subsequent to sacks sampled and reported, as 11-53, Bulletin 381, page 12.

TABLE 3.—FERTILIZER ANALYSES AND GUARANTEES; 1937 (Continued)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P <sub>2</sub> O <sub>5</sub>			Potash
			Total	Water Soluble to Total	Total in Bone	Insoluble	Available	K <sub>2</sub> O Water Soluble
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
Darling & Co. E. St. Louis, Ill.								
11-264	Big Crop 2-16-2 -----	Lloyd Redd, Clinton --- Guaranteed Analysis..	2.06 2.00	----	-----	0.68 -----	17.00 16.00	2.52 2.00
6-286	M. F. A. 20% Superphosphate -----	Greene County Farmer's Sales Assn., Springfield Guaranteed Analysis..	----	----	-----	0.39 -----	21.01 20.00	-----
12-29	M. F. A. Raw Bone Meal..	Martinsburg Farmer's Elevator, Martinsburg -- Guaranteed Analysis..	4.00 3.25	----	23.40 22.00	----	-----	-----
Soil Builders, Inc. Orlando, Fla.								
7-44	Mineral Colloids -----	Sample from Company --	----	----	-----	25.40	3.13	----
7-114	Mineral Colloids	Olga Elliott, Carthage -- Guaranteed Analysis..	----	----	-----	20.30 18.00	2.60	-----
Virginia-Carolina Chemical Corporation E. St. Louis, Illinois								
1-119	V-C 2-16-2 -----	J. F. Murphy, Elvins -- Guaranteed Analysis..	1.80 2.00	----	-----	0.67 -----	17.95 16.00	2.48 2.00
12-30	V-C 0-14-6 -----	Don D. Lee, Verona --- Guaranteed Analysis..	----	----	-----	0.67 -----	14.91 14.00	6.43 6.00
12-31	V-C 2-12-6 -----	Don D. Lee, Verona ---- Guaranteed Analysis..	1.95 2.00	----	-----	0.99 -----	12.28 12.00	6.49 6.00

### BUYING REGISTERED FERTILIZERS

A complete list of companies and their registered brands has been printed each year for the guidance of all fertilizer buyers. Table 4 gives this list for the calendar year of 1938. To all prospective purchasers we would say—buy only the brands and from the companies listed in this table. If you do not find the company or brand here, write to the Missouri Agricultural Experiment Station for information.

TABLE 4.—BRANDS AND GUARANTEED ANALYSES OF FERTILIZERS REGISTERED AND OFFERED FOR SALE IN MISSOURI; 1938

Fertilizer	Nitrogen Per cent	Phosphoric Acid (P <sub>2</sub> O <sub>5</sub> )			Potash (K <sub>2</sub> O) Per cent
		Total in Bone Per cent	Avail- able Per cent	Insol- uble Per cent	
<b>Agricultural Laboratories, Inc.</b> Columbus, Ohio					
Stimulant -----	11.00	-----	12.00	0.04	15.00
<b>American Agricultural Chemical Co.</b> National Stock Yards, Illinois					
Agrico for Potatoes -----	4.00	-----	8.00	0.50	6.00
Agrico for Truck -----	4.00	-----	10.00	0.50	6.00
Agrico for Tobacco -----	4.00	-----	10.00	0.50	6.00
Agrico for Corn -----	3.00	-----	14.00	0.50	6.00
Agrico for Grain -----	2.00	-----	12.00	0.50	4.00
Agrico for Tomatoes -----	2.00	-----	12.00	0.50	6.00
AA Harvest Moon Fertilizer -----	4.00	-----	8.00	0.50	6.00
AA Triumph Fertilizer -----	4.00	-----	12.00	0.50	4.00
AA Two-In-One Fertilizer -----	4.00	-----	16.00	0.50	4.00
AA Excelsior Fertilizer -----	4.00	-----	8.00	0.50	12.00
AA Paramount Fertilizer -----	3.00	-----	8.00	0.50	6.00
AA Antler Fertilizer -----	2.00	-----	12.00	0.50	6.00
AA Red Dragon Fertilizer -----	2.00	-----	12.00	0.50	2.00
AA Challenge Fertilizer -----	2.00	-----	14.00	0.50	4.00
AA Gilt Edge Fertilizer -----	2.00	-----	16.00	0.50	2.00
AA 16 per cent Superphosphate -----	-----	-----	16.00	0.50	-----
AA 20 per cent Superphosphate -----	-----	-----	20.00	0.50	-----
AA Apex Mixture -----	-----	-----	14.00	0.50	4.00
AA Elm Mixture -----	-----	-----	16.00	0.50	6.00
Sulphate of Ammonia -----	20.55	-----	-----	-----	-----
Steam Bone Meal Fertilizer -----	2.00	27.00	-----	-----	-----
AA Half and Half Bone Phosphate -----	1.00	-----	12.00	8.00	-----
Kainit 20 per cent -----	-----	-----	-----	-----	20.00
Pure Raw Bone -----	3.29	20.00	-----	-----	-----
Agrico for Lawns, Trees and Shrubs -----	7.00	-----	7.00	0.50	5.00
Agrico for Gardens -----	4.00	-----	10.00	0.50	4.00
Agrico for Pastures and Top Dressing -----	10.00	-----	6.00	0.50	4.00
<b>American Cyanamid Company</b> 30 Rockefeller Plaza New York, New York					
21 per cent Aero Cyanamid Granular -----	21.00	-----	-----	-----	-----
Ammo-Phos. 11-48-0 -----	11.00	-----	48.00	-----	-----
Ammo-Phos. 16-20-0 -----	16.00	-----	20.00	-----	-----
32 per cent Aero Super Phosphate Granular -----	-----	-----	32.00	-----	-----
<b>Anaconda Copper Mining Company</b> Anaconda, Montana					
Anaconda Ammoniated Phosphate -----	10.00	-----	52.00	1.00	-----
Anaconda Treble Superphosphate -----	-----	-----	43.00	3.00	-----
<b>Archias' Seed Store</b> Sedalia, Missouri					
Archias' Fairy Brand Plant Food -----	10.00	-----	12.00	-----	11.00
<b>Arkansas Fertilizer Co.,</b> Little Rock, Arkansas					
White Diamond 10-6-4 -----	10.00	-----	6.00	-----	4.00
White Diamond 6-8-12 -----	6.00	-----	8.00	-----	12.00
White Diamond Economy -----	6.00	-----	12.00	-----	6.00
White Diamond 4-16-4 -----	4.00	-----	16.00	-----	4.00
White Diamond Crop Getter -----	4.00	-----	12.00	-----	4.00
White Diamond 4-10-6 -----	4.00	-----	10.00	-----	6.00
White Diamond Farmers' Choice -----	4.00	-----	10.00	-----	4.00
White Diamond Jack Rabbit -----	4.00	-----	8.00	-----	6.00
White Diamond Old Reliable -----	4.00	-----	8.00	-----	4.00
White Diamond Early Boll -----	3.00	-----	10.00	-----	3.00
White Diamond 3-8-6 -----	3.00	-----	8.00	-----	6.00
White Diamond 2-16-0 -----	2.00	-----	16.00	-----	-----
White Diamond Prize Wheat Grower -----	2.00	-----	16.00	-----	2.00
White Diamond 2-14-4 -----	2.00	-----	14.00	-----	4.00
White Diamond Gro-Fast -----	2.00	-----	12.00	-----	6.00
White Diamond Southern King -----	2.00	-----	12.00	-----	2.00
White Diamond 2-10-2 -----	2.00	-----	10.00	-----	2.00
White Diamond 0-15-6 -----	-----	-----	15.00	-----	6.00
White Diamond 0-14-7 -----	-----	-----	14.00	-----	7.00
White Diamond 0-14-4 -----	-----	-----	14.00	-----	4.00
White Diamond 0-12-12 -----	-----	-----	12.00	-----	12.00
White Diamond Kali-Superphosphate -----	-----	-----	12.00	-----	4.00

TABLE 4.—BRANDS AND GUARANTEED ANALYSES OF FERTILIZERS REGISTERED AND OFFERED FOR SALE IN MISSOURI; 1938 (Continued)

Fertilizer	Nitrogen	Phosphoric Acid (P <sub>2</sub> O <sub>5</sub> )			Potash (K <sub>2</sub> O)
		Total in Bone	'Avail-able	Insol-uble	
	Per cent	Per cent	Per cent	Per cent	Per cent
White Diamond 20 per cent Superphosphate	-----	-----	20.00	0.50	-----
White Diamond 18 per cent Superphosphate	-----	-----	18.00	0.50	-----
White Diamond 16 per cent Superphosphate	-----	-----	16.00	0.50	-----
White Diamond Steamed Bone Meal	1.65	27.00	-----	-----	-----
White Diamond Pure Raw Bone Meal	3.70	23.00	-----	-----	-----
White Diamond Muriate of Potash	-----	-----	-----	-----	50.00
White Diamond "Extra Dry" Sulphate of Ammonia	20.00	-----	-----	-----	-----
White Diamond 16 per cent Nitrate of Soda	16.00	-----	-----	-----	-----
White Diamond Kainit	-----	-----	-----	-----	20.00
<b>Armour Fertilizer Works</b>					
<b>Chicago Heights, Illinois</b>					
Armour's Big Crop 4-16-4 Fertilizer	4.00	-----	16.00	-----	4.00
Armour's Big Crop 4-12-4 Fertilizer	4.00	-----	12.00	-----	4.00
Armour's Big Crop 4-8-12 Fertilizer	4.00	-----	8.00	-----	12.00
Armour's Big Crop 4-8-6 Fertilizer	4.00	-----	8.00	-----	6.00
Armour's Big Crop 3-18-3 Fertilizer	3.00	-----	18.00	-----	3.00
Armour's Big Crop 3-8-6 Fertilizer	3.00	-----	8.00	-----	6.00
Armour's Big Crop 2-16-2 Fertilizer	2.00	-----	16.00	-----	2.00
Armour's Big Crop 2-14-4 Fertilizer	2.00	-----	14.00	-----	4.00
Armour's Big Crop 2-12-6 Fertilizer	2.00	-----	12.00	-----	6.00
Armour's Big Crop 2-12-4 Fertilizer	2.00	-----	12.00	-----	4.00
Armour's Big Crop 2-12-2 Fertilizer	2.00	-----	12.00	-----	2.00
Armour's Big Crop 0-14-6 Fertilizer	-----	-----	14.00	-----	6.00
Armour's Big Crop 0-14-4 Fertilizer	-----	-----	14.00	-----	4.00
Armour's Big Crop 0-12-12 Fertilizer	-----	-----	12.00	-----	12.00
Armour's Big Crop 0-12-6 Fertilizer	-----	-----	12.00	-----	6.00
Armour's Big Crop 20 per cent Superphosphate	-----	-----	20.00	-----	-----
Armour's Big Crop 16 per cent Superphosphate	-----	-----	16.00	-----	-----
Armour's Big Crop Bone Meal	2.00	27.00	-----	-----	-----
Armour's Big Crop Raw Bone Meal	3.75	22.00	-----	-----	-----
Armour's Bone Meal and Superphosphate	1.00	-----	14.00	6.00	-----
Armour's Multiphos 45 per cent Superphosphate	-----	-----	45.00	-----	-----
Armour's Kainit	-----	-----	-----	-----	20.00
Armour's Sulphate of Ammonia	20.50	-----	-----	-----	-----
Armour's Special Tree Food 10-8-6	10.00	-----	8.00	-----	6.00
Armour's Special Turf Fertilizer 10-8-6	10.00	-----	8.00	-----	6.00
Armour's Special Florists' Mixture 5-15-5	5.00	-----	15.00	-----	5.00
Armour's Garden and Lawn Fertilizer 4-8-6	4.00	-----	8.00	-----	6.00
Armour's Rose Grower Bone Meal	3.75	22.00	-----	-----	-----
Armour's Bone, Blood and Sulphate of Potash, 5-8-7	5.00	8.00	-----	-----	7.00†
Pulverized Sheep Manure	2.00	-----	1.00	-----	2.00
<b>Barada and Page, Inc.</b>					
<b>Kansas City, Missouri</b>					
B-P Ammonia Sulphate	20.50	-----	-----	-----	-----
<b>The Barrett Company</b>					
<b>40 Rector Street</b>					
<b>New York, New York</b>					
Arcadian the American Nitrate of Soda	16.00	-----	-----	-----	-----
Arcadian Sulphate of Ammonia	20.56	-----	-----	-----	-----
Sulphate of Ammonia	20.56	-----	-----	-----	-----
<b>Blood and Bone Products, Inc.</b>					
<b>East St. Louis, Illinois</b>					
<b>Steer Head Brands</b>					
Special Truck Grower	4.00	-----	8.00	-----	6.00
Two-Sixteen Two Fertilizer	2.00	-----	16.00	-----	2.00
Two Twelve Six Fertilizer	2.00	-----	12.00	-----	6.00
Missouri Special Fertilizer	2.00	-----	12.00	-----	2.00
Special Wheat Grower	2.00	-----	10.00	-----	3.00
Twelve Six Fertilizer	-----	-----	12.00	-----	6.00
Superphosphate, 16 per cent	-----	-----	16.00	-----	-----
Superphosphate, 20 per cent	-----	-----	20.00	-----	-----
Raw Bone Meal	3.28	20.00	-----	-----	-----
Steam Bone Meal	1.00	30.00	-----	-----	-----
Phosphate and Bone Mixture, Half and Half	1.00	-----	12.00	8.00*	-----
Special Lawn Grower	2.00	-----	10.00	10.00*	-----
Flower Grower (Blood and Bone Tankage)	3.30	25.00	-----	-----	-----

†Potash from Sulphate.

\*From Bone.

TABLE 4.—BRANDS AND GUARANTEED ANALYSES OF FERTILIZERS REGISTERED AND OFFERED FOR SALE IN MISSOURI; 1938 (Continued)

Fertilizer	Nitrogen	Phosphoric Acid (P <sub>2</sub> O <sub>5</sub> )			Potash (K <sub>2</sub> O)
		Total in Bone	Available	Insoluble	
	Per cent	Per cent	Per cent	Per cent	Per cent
<b>Bone Products Co.</b> Washington, Missouri					
Raw Bone Meal -----	3.25	26.50	-----	-----	-----
<b>Buffalo Roller Mills</b> Buffalo, Missouri					
Buffalo Bone Meal -----	3.50	18.00	-----	-----	-----
<b>Chilean Nitrate Sales Corporation</b> 120 Broadway New York, New York					
Champion Brand Chilean Nitrate of Soda -----	16.00	-----	-----	-----	-----
Old Style Chilean Nitrate of Soda -----	16.00	-----	-----	-----	-----
<b>Colorado Fuel and Iron Corporation</b> Denver and Pueblo, Colorado					
Silver Tip Sulphate of Ammonia -----	20.00	-----	-----	-----	-----
<b>Crocker Packing Company</b> Joplin, Missouri					
Inter-State Steam Bone -----	2.50	24.00	-----	-----	-----
Inter-State 4-12-8 -----	4.00	-----	12.00	-----	8.00
Inter-State 4-12-4 -----	4.00	-----	12.00	-----	4.00
Inter-State 4-8-6 -----	4.00	-----	8.00	-----	6.00
Inter-State 4-8-4 -----	4.00	-----	8.00	-----	4.00
Inter-State 2-16-6 -----	2.00	-----	16.00	-----	6.00
Inter-State 2-16-2 -----	2.00	-----	16.00	-----	2.00
Inter-State 2-12-8 -----	2.00	-----	12.00	-----	8.00
Inter-State 2-12-2 -----	2.00	-----	12.00	-----	2.00
Inter-State 2-12-6 -----	2.00	-----	12.00	-----	6.00
Inter-State 2-8-5 -----	2.00	-----	8.00	-----	5.00
Inter-State 2-8-10 Potato Special -----	2.00	-----	8.00	-----	10.00
Inter-State 0-16-0 Superphosphate 16 per cent -----	-----	-----	16.00	-----	-----
Inter-State 0-20-0 Superphosphate 20 per cent -----	-----	-----	20.00	-----	-----
Inter-State 0.50-15-2 -----	0.50	-----	15.00	-----	2.00
"Aero" Superphosphate granular -----	-----	-----	32.00	-----	-----
Lawn Vegetable and Flower Grower -----	4.00	-----	8.00	-----	6.00
Inter-State Half and Half -----	1.20	-----	14.00	6.00	-----
Milorganite -----	6.06	-----	2.15	0.65	-----
Muriate of Potash -----	-----	-----	-----	-----	60.72
Sulphate of Ammonia -----	20.60	-----	-----	-----	-----
<b>Cudahy Packing Company</b> 221 N. LaSalle Chicago, Illinois					
Bigwin Fertilizer Steamed Bone Meal -----	2.50	24.00	-----	-----	-----
Bigwin High Grade 16 per cent Superphosphate -----	-----	-----	16.00	1.00	-----
Bigwin High Grade 18 per cent Superphosphate -----	-----	-----	18.00	1.00	-----
Bigwin High Grade 20 per cent Superphosphate -----	-----	-----	20.00	1.00	-----
Bigwin High Grade Fertilizer 2-12-2 -----	2.00	-----	12.00	-----	2.00
Bigwin High Grade Fertilizer 2-16-2 -----	2.00	-----	16.00	-----	2.00
Bigwin High Grade Fertilizer 2-12-6 -----	2.00	-----	12.00	-----	6.00
Bigwin High Grade Fertilizer 4-8-6 -----	4.00	-----	8.00	-----	6.00
Nitrate of Soda -----	15.00	-----	-----	-----	-----
Bigwin Fertilizer, Half and Half 1-13-0 -----	1.00	-----	13.00	7.00†	-----
Muriate of Potash -----	-----	-----	-----	-----	58.00
Sulphate of Ammonia -----	21.00	-----	-----	-----	-----
Bigwin High Grade Fertilizer 4-16-4 -----	4.00	-----	16.00	-----	4.00
Bigwin High Grade Fertilizer 4-12-4 -----	4.00	-----	12.00	-----	4.00
Bigwin High Grade Fertilizer 0-14-6 -----	-----	-----	14.00	-----	6.00
Bigwin High Grade Fertilizer 2-12-4 -----	2.00	-----	12.00	-----	4.00
Bigwin High Grade 45 per cent Superphosphate -----	-----	-----	45.00	2.00	-----
<b>Darling and Company</b> 4201 South Ashland Avenue Chicago, Illinois					
Darling's Sixteen Six 0-16-6 -----	-----	-----	16.00	-----	6.00
Darling's All Crop 4-16-4 -----	4.00	-----	16.00	-----	4.00
Darling's Potato Special 4-8-7 -----	4.00	-----	8.00	-----	7.00
Darling's Field Marshal 4-12-4 -----	4.00	-----	12.00	-----	4.00
Darling's Farmers Favorite 3-8-6 -----	3.00	-----	8.00	-----	6.00
Darling's Crop King 2-12-6 -----	2.00	-----	12.00	-----	6.00
Darling's Tomato Grower 2-12-6 -----	2.00	-----	12.00	-----	6.00
Darling's Bumper Crop 2-16-2 -----	2.00	-----	16.00	-----	2.00

†From Bone.



TABLE 4.—BRANDS AND GUARANTEED ANALYSES OF FERTILIZERS REGISTERED AND OFFERED FOR SALE IN MISSOURI; 1938 (Continued)

Fertilizer	Nitrogen	Phosphoric Acid (P <sub>2</sub> O <sub>5</sub> )			Potash (K <sub>2</sub> O)
		Total in Bone	Avail-able	Insol-uble	
	Per cent	Per cent	Per cent	Per cent	Per cent
Darling's General Crop 2-14-4	2.00	---	14.00	---	4.00
Darling's Special Lawn and Garden Fertilizer	4.00	---	8.00	---	7.00
Darling's Big Harvest 2-12-2	2.00	---	12.00	---	2.00
Darling's Two Twelve Four 2-12-4	2.00	---	12.00	---	4.00
Darling's Fourteen Four 0-14-4	---	---	14.00	---	4.00
Darling's Ten Ten 0-10-10	---	---	10.00	---	10.00
Darling's Pure Ground Bone	1.85	28.00	---	---	---
Darling's Bone and Superphosphate Half and Half	1.00	---	14.00	6.00*	---
Darling's Nitrate of Soda	16.00	---	---	---	---
Darling's Sulphate of Ammonia	20.56	---	---	---	---
Darling's Muriate of Potash	---	---	---	---	50.00
Darling's Twelve Twelve 0-12-12	---	---	12.00	---	12.00
Darling's 20 per cent Superphosphate	---	---	20.00	---	---
Darling's 16 per cent Superphosphate	---	---	16.00	---	---
Darling's 45 per cent Superphosphate	---	---	45.00	---	---
Darling's Potato Brand 4-8-6	4.00	---	8.00	---	6.00
M. F. A. 0-16-6	---	---	16.00	---	6.00
M. F. A. 4-16-4	4.00	---	16.00	---	4.00
M. F. A. 4-8-7	4.00	---	8.00	---	7.00
M. F. A. 4-12-4	4.00	---	12.00	---	4.00
M. F. A. 3-8-6	3.00	---	8.00	---	6.00
M. F. A. 2-12-6	2.00	---	12.00	---	6.00
M. F. A. 2-16-2	2.00	---	16.00	---	2.00
M. F. A. 2-14-4	2.00	---	14.00	---	4.00
M. F. A. 2-12-2	2.00	---	12.00	---	2.00
M. F. A. 2-12-4	2.00	---	12.00	---	4.00
M. F. A. 0-14-4	---	---	14.00	---	4.00
M. F. A. 0-10-10	---	---	10.00	---	10.00
M. F. A. Pure Ground Bone	1.85	28.00	---	---	---
M. F. A. Bone and Superphosphate Half and Half	1.00	---	14.00	6.00*	---
M. F. A. Nitrate of Soda	16.00	---	---	---	---
M. F. A. Sulphate of Ammonia	20.56	---	---	---	---
M. F. A. Muriate of Potash	---	---	---	---	50.00
M. F. A. 0-12-12	---	---	12.00	---	12.00
M. F. A. 20 per cent Superphosphate	---	---	20.00	---	---
M. F. A. 16 per cent Superphosphate	---	---	16.00	---	---
M. F. A. 45 per cent Superphosphate	---	---	45.00	---	---
M. F. A. Potato Brand 4-8-6	4.00	---	8.00	---	6.00
<b>Davison Chemical Corporation</b>					
Nashville, Tennessee					
Grain Special	1.00	---	12.00	---	4.00
Premium Grain Grower	2.00	---	12.00	---	2.00
Red Diamond 2-12-4	2.00	---	12.00	---	4.00
Red Diamond 2-12-6	2.00	---	12.00	---	6.00
Red Diamond 2-16-2	2.00	---	16.00	---	2.00
Red Diamond 3-8-6	3.00	---	8.00	---	6.00
Red Diamond 3-14-6	3.00	---	14.00	---	6.00
Red Diamond 4-8-4	4.00	---	8.00	---	4.00
Red Diamond 4-12-4	4.00	---	12.00	---	4.00
Red Diamond 4-16-4	4.00	---	16.00	---	4.00
Red Diamond 5-15-5	5.00	---	15.00	---	5.00
Red Diamond 6-8-4	6.00	---	8.00	---	4.00
Red Diamond 0-12-2	---	---	12.00	---	2.00
Red Diamond 0-14-4	---	---	14.00	---	4.00
Red Diamond 0-14-2	---	---	14.00	---	2.00
Red Diamond 0-14-6	---	---	14.00	---	6.00
Red Diamond 0-14-7	---	---	14.00	---	7.00
Red Diamond 16 per cent Superphosphate	---	---	16.00	---	---
Red Diamond 20 per cent Superphosphate	---	---	20.00	---	---
Raw Bone Meal	3.70	20.00	---	---	---
Steam Bone	2.00	27.00	---	---	---
Half and Half	1.00	---	12.00	8.00	---
Nitrate of Soda	16.00	---	---	---	---
Sulphate of Ammonia	20.50	---	---	---	---
Muriate Potash	---	---	---	---	50.00
Davco Homogeneous Granulated 2-12-2	2.00	---	12.00	---	2.00
Davco Homogeneous Granulated 2-12-4	2.00	---	12.00	---	4.00
Davco Homogeneous Granulated 2-12-6	2.00	---	12.00	---	6.00
Davco Homogeneous Granulated 3-8-6	3.00	---	8.00	---	6.00
Davco Granulated 20 per cent Superphosphate	---	---	20.00	---	---

\*Insoluble P<sub>2</sub>O<sub>5</sub> is from Bone.

TABLE 4.—BRANDS AND GUARANTEED ANALYSES OF FERTILIZERS REGISTERED AND OFFERED FOR SALE IN MISSOURI; 1938 (Continued)

Fertilizer	Nitrogen	Phosphoric Acid (P <sub>2</sub> O <sub>5</sub> )			Potash (K <sub>2</sub> O)
		Total in Bone	Available	Insoluble	
	Per cent	Per cent	Per cent	Per cent	Per cent
<b>Federal Chemical Company, Inc.</b>					
East St. Louis, Illinois					
<b>Daybreak Brands</b>					
Daybreak Formula 1-12-3	1.00	-----	12.00	-----	3.00
Loam Land Fertilizer	2.00	-----	12.00	-----	2.00
Daybreak 2-12-6	2.00	-----	12.00	-----	6.00
Official Formula 2-14-4	2.00	-----	14.00	-----	4.00
3-8-6 Fertilizer	3.00	-----	8.00	-----	6.00
Double Duty	4.00	-----	12.00	-----	4.00
Phosphate and Potash	-----	-----	12.00	-----	6.00
0-12-6 Fertilizer	-----	-----	12.00	-----	4.00
Daybreak 4-16-4	4.00	-----	16.00	-----	4.00
Daybreak 2-12-4	2.00	-----	12.00	-----	4.00
Trucker's Special 4-8-6	4.00	-----	8.00	-----	6.00
16 per cent Superphosphate	-----	-----	16.00	-----	-----
20 per cent Superphosphate	-----	-----	20.00	-----	-----
32 per cent Superphosphate	-----	-----	32.00	-----	-----
Bone and Phosphate Mixture	1.00	-----	12.00	8.00	-----
Blue Ribbon Meal Mixture	2.00	-----	10.00	10.00	-----
Raw Bone	3.30	20.00	-----	-----	-----
Steam Bone	2.00	27.00	-----	-----	-----
Nitrate of Soda	16.00	-----	-----	-----	-----
Sulphate of Ammonia	20.00	-----	-----	-----	-----
Muriate of Potash	-----	-----	-----	-----	50.00
<b>Globe Brands</b>					
Globa Formula 1-12-3	1.00	-----	12.00	-----	3.00
Loam Land Fertilizer	2.00	-----	12.00	-----	2.00
Globe 2-12-6	2.00	-----	12.00	-----	6.00
Official Formula 2-14-4	2.00	-----	14.00	-----	4.00
Double Duty	4.00	-----	12.00	-----	4.00
Phosphate and Potash	-----	-----	12.00	-----	4.00
0-12-6	-----	-----	12.00	-----	6.00
3-8-6	3.00	-----	8.00	-----	6.00
Trucker's Special 4-8-6	4.00	-----	8.00	-----	6.00
Globe 2-12-4	2.00	-----	12.00	-----	4.00
Globe 4-16-4	4.00	-----	16.00	-----	4.00
Blue Ribbon Meal Mixture	2.00	-----	10.00	10.00	-----
Bone and Phosphate Mixture	1.00	-----	12.00	8.00	-----
16 per cent Superphosphate	-----	-----	16.00	-----	-----
20 per cent Superphosphate	-----	-----	20.00	-----	-----
32 per cent Superphosphate	-----	-----	32.00	-----	-----
Raw Bone	3.30	20.00	-----	-----	-----
Steam Bone	2.00	27.00	-----	-----	-----
<b>Floyd Money-Maker Brands</b>					
Floyd Money Maker 2-12-2	2.00	-----	12.00	-----	2.00
Floyd Money Maker 2-12-4	2.00	-----	12.00	-----	4.00
Floyd Money Maker 2-14-4	2.00	-----	14.00	-----	4.00
Floyd Money Maker 2-12-6	2.00	-----	12.00	-----	6.00
Floyd Money Maker 3-8-6	3.00	-----	8.00	-----	6.00
Floyd Money Maker 4-6-2	4.00	-----	6.00	-----	2.00
Floyd Money Maker 4-12-4	4.00	-----	12.00	-----	4.00
Floyd Money Maker 4-16-4	4.00	-----	16.00	-----	4.00
Floyd Money Maker 4-8-6	4.00	-----	8.00	-----	6.00
Floyd Money Maker 0-12-4	-----	-----	12.00	-----	4.00
Floyd Money Maker 0-12-6	-----	-----	12.00	-----	6.00
Floyd Money Maker 16 per cent Superphosphate	-----	-----	16.00	-----	-----
Floyd Money Maker 20 per cent Superphosphate	-----	-----	20.00	-----	-----
Floyd Money Maker 32 per cent Superphosphate	-----	-----	32.00	-----	-----
Garden Grow (A plant food for Gardens, Lawns and Flowers)	5.00	-----	10.00	5.00	5.00
Bone and Phosphate Mixture	1.00	-----	12.00	8.00	-----
Raw Bone	3.30	20.00	-----	-----	-----
Steam Bone	2.00	27.00	-----	-----	-----
<b>Flower City Plant Food Co., Inc.</b>					
Pittsford, New York					
Walker's Excelsior Plant Food	5.00	-----	7.00	-----	3.00
Japanese Fern and Palm Food	5.00	-----	6.00	-----	1.00
Wondergro Plant Food	10.00	-----	12.00	-----	11.00

TABLE 4.—BRANDS AND GUARANTEED ANALYSES OF FERTILIZERS REGISTERED AND OFFERED FOR SALE IN MISSOURI; 1938 (Continued)

Fertilizer	Nitrogen Per cent	Phosphoric Acid (P <sub>2</sub> O <sub>5</sub> )			Potash (K <sub>2</sub> O) Per cent
		Total in Bone Per cent	Avail- able Per cent	Insol- uble Per cent	
Ford Motor Company Dearborn, Michigan					
Ford Ammonium Sulphate	20.80	-----	-----	-----	-----
Goulard and Olena, Inc. 140 Liberty Street New York City, New York					
G and O Plant Food	11.00	-----	15.00	-----	20.00
Christian Haelele 825 West Tesson Street St. Louis, Missouri					
Star Brand Ground Steamed Bone	2.00	20.00	-----	-----	-----
Star Brand Bone Fertilizer	4.00	15.00	-----	-----	-----
A. H. Hoffman, Inc. Landisville, Pennsylvania					
Hoffman's Bone Meal	3.70	20.00	-----	-----	-----
Hoffman's Cow Manure (Dehydrated)	2.00	-----	2.00	-----	2.00
Hoffman's Sheep Manure (Kiln-Dried)	1.85	-----	1.00	-----	2.00
Hoffman's Plant Food	5.00	-----	8.00	-----	6.00
The Milwaukee Sewerage Commission Milwaukee, Wisconsin					
Milorganite	6.00	-----	2.00	0.75	-----
Missouri Dahlia Farms Co. 8601 St. Charles Road St. Louis, Missouri					
Nature's Plant Food Cattle Manure	1.00	-----	1.00	-----	2.00
Nature's Plant Food Sheep Manure	2.00	-----	1.00	-----	2.00
Newhouse Chemical and Supply Co. Little Rock, Arkansas					
Triangle 10-6-4	10.00	-----	6.00	-----	4.00
Triangle Up-Ahead Fertilizer	6.00	-----	8.00	-----	12.00
Triangle Master Farmer	6.00	-----	12.00	-----	6.00
Triangle 4-16-4	4.00	-----	16.00	-----	4.00
Triangle Complete Fertilizer	4.00	-----	12.00	-----	4.00
Triangle 4-10-6	4.00	-----	10.00	-----	6.00
Triangle All Crop Fertilizer	4.00	-----	10.00	-----	4.00
Triangle Potato and Truck	4.00	-----	8.00	-----	6.00
Triangle Four State Cotton	4.00	-----	8.00	-----	4.00
Triangle Sandyland Fertilizer	3.00	-----	10.00	-----	3.00
Triangle 3-8-6	3.00	-----	8.00	-----	6.00
Triangle 2-16-2	2.00	-----	16.00	-----	2.00
Triangle 2-16-0	2.00	-----	14.00	-----	4.00
Triangle 2-14-4	2.00	-----	12.00	-----	6.00
Triangle Tomato Fertilizer	2.00	-----	12.00	-----	2.00
Triangle Old Timer Fertilizer	2.00	-----	10.00	-----	2.00
Triangle Early Day Fertilizer	2.00	-----	15.00	-----	6.00
Triangle 0-15-6	-----	-----	14.00	-----	7.00
Triangle 0-14-7	-----	-----	14.00	-----	4.00
Triangle 0-14-4	-----	-----	12.00	-----	12.00
Triangle 0-12-12	-----	-----	12.00	-----	4.00
Triangle 0-12-4	-----	-----	16.00	0.50	-----
Triangle 16 per cent Superphosphate	-----	-----	18.00	0.50	-----
Triangle 18 per cent Superphosphate	-----	-----	20.00	0.50	-----
Triangle 20 per cent Superphosphate	-----	-----	27.00	-----	-----
Triangle Steamed Raw Bone Meal	1.65	27.00	-----	-----	-----
Triangle Pure Raw Bone Meal	3.70	23.00	-----	-----	-----
Triangle Muriate of Potash	-----	-----	-----	-----	50.00
Triangle Sulphate of Ammonia	20.00	-----	-----	-----	-----
Triangle Nitrate of Soda	16.00	-----	-----	-----	20.00
Triangle Kainit	-----	-----	-----	-----	-----
N. V. Potash Export, Inc. 19 West 44th Street New York, New York					
Muriate of Potash	-----	-----	-----	-----	50.00
20 per cent Kainit	-----	-----	-----	-----	20.00
30 per cent Manure Salts	-----	-----	-----	-----	30.00

TABLE 4.—BRANDS AND GUARANTEED ANALYSES OF FERTILIZERS REGISTERED AND OFFERED FOR SALE IN MISSOURI; 1938 (Continued)

Fertilizer	Nitrogen	Phosphoric Acid (P <sub>2</sub> O <sub>5</sub> )			Potash (K <sub>2</sub> O)
		Total in Bone	Avail-able	Insol-uble	
	Per cent	Per cent	Per cent	Per cent	Per cent
<b>Pearson-Ferguson Company</b>					
1000 Hickory					
Kansas City, Missouri					
P-F Brand 10-20-10	10.00	-----	20.00	-----	10.00
P-F Brand 9-27-9	9.00	-----	27.00	-----	9.00
P-F Brand 9-18-18	9.00	-----	18.00	-----	18.00
P-F Brand 8-24-8	8.00	-----	24.00	-----	8.00
P-F Brand 8-16-16	8.00	-----	16.00	-----	16.00
P-F Brand 8-12-20	8.00	-----	12.00	-----	20.00
P-F Brand 6-12-4	6.00	-----	12.00	-----	4.00
P-F Brand 5-15-5	5.00	-----	15.00	-----	5.00
P-F Brand 4-16-4	4.00	-----	16.00	-----	4.00
P-F Brand 4-12-4	4.00	-----	12.00	-----	4.00
P-F Brand 4-8-6	4.00	-----	8.00	-----	6.00
P-F Brand, Plant Vigor Liquid Fert.	3.42	-----	3.22	-----	4.10
P-F Brand, Plant Vigor Liquid Fert.	1.71	-----	1.61	-----	2.58
P-F Brand 2-12-2	2.00	-----	12.00	-----	2.00
P-F Brand 0-20-20	-----	-----	20.00	-----	20.00
P-F Brand 0-20-0	-----	-----	20.00	-----	-----
P-F Brand Superphosphate 20 per cent	-----	-----	20.00	-----	-----
<b>Plantabbs Corporation</b>					
Baltimore, Maryland					
Fulton's Plantabbs	11.00	-----	15.00	-----	20.00
<b>The Pulverized Manure Company</b>					
Chicago, Illinois					
Wizard Brand Pulverized Sheep Manure	2.00	-----	1.00	-----	2.00
Wizard Brand Cow Manure	2.00	-----	1.00	-----	1.00
Garden Mulch (Pure Cow Manure) Unprocessed	2.00	-----	1.00	-----	1.00
<b>E. Rauh and Sons Fertilizer Co.</b>					
Indianapolis, Indiana					
Rauh's Red Star 16 per cent Superphosphate	-----	-----	16.00	-----	-----
Rauh's Red Star 20 per cent Superphosphate	-----	-----	20.00	-----	-----
Rauh's Red Star 0-12-6	-----	-----	12.00	-----	6.00
Rauh's Red Star 0-12-12	-----	-----	12.00	-----	12.00
Rauh's Red Star 0-14-6	-----	-----	14.00	-----	6.00
Rauh's Red Star 0-20-20	-----	-----	20.00	-----	20.00
Rauh's Red Star 1-11-5	1.00	-----	11.00	-----	5.00
Rauh's Red Star Half and Half	1.00	-----	10.00	10.00	-----
Rauh's Red Star 2-12-2	2.00	-----	12.00	-----	2.00
Rauh's Red Star 2-12-6	2.00	-----	12.00	-----	6.00
Rauh's Red Star 3-9-18	3.00	-----	9.00	-----	18.00
Rauh's Red Star 4-8-6	4.00	-----	8.00	-----	6.00
Rauh's Red Star 4-16-4	4.00	-----	16.00	-----	4.00
Rauh's Steamed Bone Meal	1.60	27.00	-----	-----	-----
<b>M. C. Reed</b>					
302 South McGregor Street					
Carthage, Missouri					
Kalosecta 4-12-4	4.00	-----	12.00	1.00	4.00
<b>Ruhm Phosphate and Chemical Co.</b>					
Mt. Pleasant, Tennessee					
Ruhm's Phosphate Rock (washed and ground)	-----	-----	-----	34.30	-----
<b>F. Rynveld and Sons, Inc.</b>					
149 West 24th Street					
New York, New York					
Rynveld's Bone Meal Fertilizer	2.47	22.00	-----	-----	-----
Moo Cow Natural Fertilizer	1.42	-----	0.96	-----	0.44
<b>O. M. Scott and Sons Co.</b>					
Marysville, Ohio					
Scotts Turf Builder	10.00	-----	6.00	-----	4.00
<b>Smith Agricultural Chemical Co.</b>					
Columbus, Ohio					
Sacco Plant Food	4.00	-----	12.00	-----	4.00
Wedo	8.00	-----	5.00	-----	3.00
<b>Soil Builders, Inc.</b>					
Orlando, Florida					
Mineral Colloids	-----	-----	-----	18.00	-----
<b>Stockdale Fertilizer Co.</b>					
Morris, Illinois					
Ovone (sheep manure)	2.60	-----	1.00	-----	2.00

TABLE 4.—BRANDS AND GUARANTEED ANALYSES OF FERTILIZERS REGISTERED AND OFFERED FOR SALE IN MISSOURI; 1938 (Continued)

Fertilizer	Nitrogen	Phosphoric Acid (P <sub>2</sub> O <sub>5</sub> )			Potash (K <sub>2</sub> O)
		Total in Bone	Available	Insoluble	
	Per cent	Per cent	Per cent	Per cent	Per cent
<b>Swift and Company Fertilizer Works</b>					
<b>National Stock Yards, Illinois</b>					
<b>Swift's</b>					
Red Steer 12-6-4	12.00	---	6.00	---	4.00
Red Steer 10-20-10	10.00	---	20.00	---	10.00
Red Steer 10-6-4	10.00	---	6.00	---	4.00
Red Steer 9-27-9	9.00	---	27.00	---	9.00
Red Steer 9-18-18	9.00	---	18.00	---	18.00
Red Steer 8-24-8	8.00	---	24.00	---	8.00
Red Steer 8-16-16	8.00	---	16.00	---	16.00
Red Steer 6-12-6	6.00	---	12.00	---	6.00
Red Steer 6-12-4	6.00	---	12.00	---	4.00
Red Steer 5-15-5	5.00	---	15.00	---	5.00
Red Steer 5-10-5	5.00	---	10.00	---	5.00
Red Steer 4-16-4	4.00	---	16.00	---	4.00
Red Steer 4-12-4	4.00	---	12.00	---	4.00
Red Steer 4-10-6	4.00	---	10.00	---	6.00
Red Steer 4-8-8	4.00	---	8.00	---	8.00
Red Steer 4-8-7	4.00	---	8.00	---	7.00
Red Steer 4-8-6	4.00	---	8.00	---	6.00
Red Steer 3-18-3	3.00	---	18.00	---	3.00
Red Steer 3-12-4	3.00	---	12.00	---	4.00
Red Steer 3-8-6	3.00	---	8.00	---	6.00
Red Steer 2-16-2	2.00	---	16.00	---	2.00
Red Steer 2-14-4	2.00	---	14.00	---	4.00
Red Steer 2-12-6	2.00	---	12.00	---	6.00
Red Steer 2-12-4	2.00	---	12.00	---	4.00
Red Steer 2-12-2	2.00	---	12.00	---	2.00
Red Steer 2-10-2	2.00	---	10.00	---	2.00
Red Steer 1-12-4	1.00	---	12.00	---	4.00
Red Steer 0-14-7	---	---	14.00	---	7.00
Red Steer 0-14-4	---	---	14.00	---	4.00
Red Steer 0-12-12	---	---	12.00	---	12.00
Red Steer 0-12-6	---	---	12.00	---	6.00
Red Steer 0-12-4	---	---	12.00	---	4.00
Red Steer 45 per cent Superphosphate	---	---	45.00	---	---
Red Steer 20 per cent Superphosphate	---	---	20.00	---	---
Red Steer 16 per cent Superphosphate	---	---	16.00	---	---
Special Golf Fertilizer 12-6-4	12.00	---	6.00	---	4.00
Steam Bone Fertilizer 2-26-0	2.00	26.00	---	---	---
Raw Bone Fertilizer 3.7-23-0	3.70	23.00	---	---	---
Red Steer Half and Half Fertilizer	1.00	---	12.00	8.00	---
Nitrate of Soda	15.00	---	---	---	---
Sulphate of Ammonia	20.50	---	---	---	---
Muriate of Potash	---	---	---	---	50.00
Sulphate of Potash	---	---	---	---	48.00
Blood and Bone Tankage Fertilizer	4.00	18.00	---	---	---
Vigoro	4.00	---	12.00	---	4.00
Kainit	---	---	---	---	20.00
Cyanamid	21.00	---	---	---	---
Pulverized Manure	1.85	---	1.00	---	1.75
<b>Synthetic Nitrogen Products Corporation</b>					
<b>285 Madison Avenue</b>					
<b>New York, New York</b>					
Nitrophoska 15-30-15	15.00	---	30.00	---	15.00
Urea	46.00	---	---	---	---
<b>Tennessee Corporation</b>					
<b>Lockland, Ohio</b>					
Loma	5.00	---	10.00	0.65	4.00
Soil-Prep	4.00	---	2.00	---	2.00
<b>United States Gypsum Company</b>					
<b>Chicago, Illinois</b>					
USG Red Top Agricultural Hydrate	---	---	---	---	---
USG Ben Franklin Agricultural Gypsum	---	---	---	---	---
<b>Virginia Carolina Chem. Corp.</b>					
<b>E. St. Louis, Illinois</b>					
V-C Fertilizer 9-18-18	9.00	---	18.00	---	18.00
V-C Fertilizer 3-18-9	3.00	---	18.00	---	9.00
V-C Fertilizer 8-16-16	8.00	---	16.00	---	16.00
V-C Fertilizer 4-16-4	4.00	---	16.00	---	4.00

TABLE 4.—BRANDS AND GUARANTEED ANALYSES OF FERTILIZERS REGISTERED AND OFFERED FOR SALE IN MISSOURI; 1938 (Continued)

Fertilizer	Nitrogen	Phosphoric Acid (P <sub>2</sub> O <sub>5</sub> )			Potash (K <sub>2</sub> O)
		Total in Bone	Avail-able	Insol-uble	
	Per cent	Per cent	Per cent	Per cent	Per cent
V-C Fertilizer 4-16-2	4.00	---	16.00	---	2.00
V-C Fertilizer 2-16-2	2.00	---	16.00	---	2.00
V-C Fertilizer 3-14-6	3.00	---	14.00	---	6.00
V-C Fertilizer 2-14-4	2.00	---	14.00	---	4.00
V-C Fertilizer 4-12-4	4.00	---	12.00	---	4.00
V-C Fertilizer 3-12-12	3.00	---	12.00	---	12.00
V-C Fertilizer 3-12-4	3.00	---	12.00	---	4.00
V-C Fertilizer 2-12-6	2.00	---	12.00	---	6.00
V-C Fertilizer 2-12-4	2.00	---	12.00	---	4.00
V-C Fertilizer 2-12-2	2.00	---	12.00	---	2.00
V-C Fertilizer 1-12-4	1.00	---	12.00	---	4.00
V-C Fertilizer 3-9-18	3.00	---	9.00	---	18.00
V-C Fertilizer 4-8-12	4.00	---	8.00	---	12.00
V-C Fertilizer 4-8-8	4.00	---	8.00	---	8.00
V-C Fertilizer 4-8-7	4.00	---	8.00	---	7.00
V-C Fertilizer 4-8-6	4.00	---	8.00	---	6.00
V-C Fertilizer 3-8-6	3.00	---	8.00	---	6.00
V-C Fertilizer 10-6-4	10.00	---	6.00	---	4.00
V-C Fertilizer 0-20-2	---	---	20.00	---	2.00
V-C Fertilizer 0-16-6	---	---	16.00	---	6.00
V-C Fertilizer 0-16-4	---	---	16.00	---	4.00
V-C Fertilizer 0-14-6	---	---	14.00	---	6.00
V-C Fertilizer 0-14-4	---	---	14.00	---	4.00
V-C Fertilizer 0-14-2	---	---	14.00	---	2.00
V-C Fertilizer 0-12-6	---	---	12.00	---	6.00
V-C Fertilizer 0-12-4	---	---	12.00	---	4.00
V-C Fertilizer 0-12-2	---	---	12.00	---	2.00
V-C Fertilizer 0-10-10	---	---	10.00	---	10.00
V-C Fertilizer 0-8-24	---	---	8.00	---	24.00
V-C 45 per cent Superphosphate	---	---	45.00	---	---
V-C 32 per cent Superphosphate	---	---	32.00	---	---
V-C 20 per cent Superphosphate	---	---	20.00	---	---
V-C 16 per cent Superphosphate	---	---	16.00	---	---
20 per cent Kainit	---	---	---	---	20.00
Half and Half	1.00	---	12.00	8.00	---
Muriate of Potash	---	---	---	---	50.00
Nitrate of Soda	16.00	---	---	---	---
Sulphate of Ammonia	20.00	---	---	---	---
Steamed Bone Meal	2.00	27.00	---	---	---
Raw Bone Meal	3.70	23.00	---	---	---
Cyanamid	22.00	---	---	---	---
Ground Tobacco Stems	2.00	---	---	---	4.00
<b>Westover Nursery Company</b>					
8100 Olive Blvd.					
St. Louis, Missouri					
Westover Rosegro—Special Rose Plant Food—A Blood	---	---	---	---	---
and Bone Mixture	3.80	25.00	---	---	---
Wesgro Cattle Manure	1.00	---	1.00	---	2.00

## MISSOURI FERTILIZER SALES, 1937

Statistics on the sale of fertilizer in the state for 1937 by kind, grade, location, and season are set forth in Tables 5, 6 and 7. This data is assembled from the reports sent in by the various fertilizer companies, and are complete in the same ratio that the various companies have completely reported their shipments. As it is quite possible that some items have been omitted, these tables are marked—Approximate—.

Table 5 lists the tonnage of fertilizer, classified into the different kinds, which was sold in each county in the state during each shipping season.

Table 6 shows the tonnage of plant food which was contained in the fertilizer sold during the year.

Table 7 lists the tonnage of each brand of mixed fertilizer and each grade of superphosphate which was sold in the state during 1937, for all brands whose sales were at least 10 tons approximately.

The classification terms employed in these tables are defined as follows:

**Bone.**—Includes the fertilizers designated as Raw Bone, Steamed Bone, Blood and Bone. It is understood that this material contains matter only of an animal nature, and has not been treated chemically to change any of its plant food to more water soluble forms.

**Superphosphate:**—All grades of Acid Phosphate carrying guarantees of Available Phosphoric Acid only, from 16 per cent to 45 per cent.

**Mixed Fertilizer, High Grade.**—All brands having guaranteed percentages of either two or three of the fertilizer constituents, the sum of whose percentages totals 20 or more units. The bone and superphosphate mixture often called Half and Half is listed in this classification.

**Mixed Fertilizer, Medium Grade.**—Includes those brands containing two or three constituents whose guaranteed percentages, total not less than 14, but less than 20 units.

**Mixed Fertilizer, Low Grade.**—Brands having guaranteed percentages which total less than 14 units.

**Miscellaneous.**—Unmixed fertilizer materials, including potash salts, sulphate of ammonia, dried manure, nitrate of soda, cyanamid, etc., but not including bone and superphosphate.

TABLE 5.—APPROXIMATE TONNAGE OF FERTILIZER SOLD IN THE STATE OF MISSOURI, BY COUNTIES, BASED UPON REPORT OF SHIPMENTS BY THE FERTILIZER COMPANIES

County	Sales in 1937			Fertilizer Sales Classified in 1937						
	Spring	Fall	Total	Season	Bone	Super-phosphate	High grade	Medium grade	Low grade	Misc.
Adair	62	72	134	Spring	0	32	8	20	0	2
				Fall	0	45	1	25	0	1
Andrew	0	0	0	Spring	0	0	0	0	0	0
				Fall	0	0	0	0	0	0
Atchison	0	34	34	Spring	0	0	0	0	0	0
				Fall	0	25	6	3	0	0
Audrain	63	557	620	Spring	1	19	11	31	0	1
				Fall	14	126	119	295	0	3
Barry	479	1242	1721	Spring	0	60	112	307	0	0
				Fall	38	180	303	721	0	0
Barton	321	2498	2819	Spring	8	103	37	172	0	1
				Fall	17	755	508	1218	0	0
Bates	30	1303	1333	Spring	0	20	3	7	0	0
				Fall	13	645	121	524	0	0
Benton	72	465	537	Spring	0	19	4	49	0	0
				Fall	17	97	30	321	0	0
Bollinger	242	617	859	Spring	0	116	20	106	0	0
				Fall	5	284	16	312	0	0
Boone	51	333	384	Spring	1	18	18	9	0	5
				Fall	1	137	70	124	0	1
Buchanan	110	163	273	Spring	0	30	39	10	0	31
				Fall	0	84	13	11	0	55
Butler	89	45	134	Spring	0	5	24	58	0	2
				Fall	0	3	40	2	0	0
Caldwell	25	62	87	Spring	0	20	5	0	0	0
				Fall	0	48	2	12	0	0
Callaway	27	377	404	Spring	0	10	10	7	0	0
				Fall	19	163	62	123	0	0
Camden	18	82	100	Spring	1	2	1	14	0	0
				Fall	3	29	4	46	0	0
Cape Girardeau	117	424	541	Spring	0	20	26	67	0	4
				Fall	0	151	65	163	0	45
Carroll	21	195	216	Spring	0	16	0	5	0	0
				Fall	2	115	53	20	0	0
Carter	37	17	54	Spring	0	5	6	26	0	0
				Fall	0	2	0	15	0	0
Cass	54	984	1038	Spring	5	16	3	29	0	1
				Fall	2	357	71	552	0	2
Cedar	106	527	633	Spring	0	82	5	19	0	0
				Fall	0	275	36	216	0	0
Chariton	23	201	224	Spring	0	16	6	1	0	0
				Fall	0	111	20	70	0	0
Christian	399	672	1071	Spring	7	154	86	152	0	0
				Fall	1	225	70	376	0	0
Clark	65	49	114	Spring	0	25	13	27	0	0
				Fall	0	28	5	16	0	0
Clay	20	17	37	Spring	0	14	4	2	0	0
				Fall	0	17	0	0	0	0
Clinton	4	43	47	Spring	0	3	1	0	0	0
				Fall	0	21	5	17	0	0
Cole	55	807	862	Spring	1	11	23	15	0	5
				Fall	1	287	53	453	0	3
Cooper	6	143	149	Spring	0	4	0	2	0	0
				Fall	3	56	3	81	0	0
Crawford	42	234	276	Spring	0	29	7	6	0	0
				Fall	10	112	17	95	0	0
Dade	167	1159	1326	Spring	0	40	23	104	0	0
				Fall	18	258	363	519	0	1
Dallas	18	69	87	Spring	0	13	0	5	0	0
				Fall	1	46	0	22	0	0
Daviess	18	27	45	Spring	1	12	0	5	0	0
				Fall	0	9	2	16	0	0
DeKalb	7	31	38	Spring	0	5	2	0	0	0
				Fall	0	30	1	0	0	0
Dent	164	238	402	Spring	0	15	6	135	0	8
				Fall	2	82	18	136	0	0
Douglas	39	53	92	Spring	0	9	1	29	0	0
				Fall	0	9	1	43	0	0
Dunklin	967	26	993	Spring	45	1	161	42	0	718
				Fall	0	0	18	8	0	0
Franklin	94	1019	1113	Spring	1	47	15	27	0	4
				Fall	8	418	147	446	0	0



TABLE 5.—APPROXIMATE TONNAGE OF FERTILIZER SOLD IN THE STATE OF MISSOURI, BY COUNTIES, BASED UPON REPORT OF SHIPMENTS BY THE FERTILIZER COMPANIES  
(Continued)

County	Sales in 1937			Fertilizer Sales Classified in 1937						
	Spring	Fall	Total	Season	Bone	Super-phosphate	(High grade	Medium grade	Low grade	Misc.
Gasconade -----	26	461	487	Spring -	0	13	1	12	0	0
				Fall ---	2	216	15	224	3	1
Gentry -----	0	15	15	Spring -	0	0	0	0	0	0
				Fall ---	0	7	3	5	0	0
Greene -----	940	1888	2828	Spring -	5	260	118	520	0	37
				Fall ---	9	577	197	1084	0	21
Grundy -----	96	251	347	Spring -	0	60	11	25	0	0
				Fall ---	15	165	42	29	0	0
Harrison -----	38	12	50	Spring -	0	34	2	2	0	0
				Fall ---	0	11	1	0	0	0
Henry -----	28	872	900	Spring -	0	17	3	6	0	2
				Fall ---	0	465	36	370	0	1
Hickory -----	60	230	290	Spring -	0	37	1	22	0	0
				Fall ---	0	87	10	133	0	0
Holt -----	0	0	0	Spring -	0	0	0	0	0	0
				Fall ---	0	0	0	0	0	0
Howard -----	15	105	120	Spring -	0	11	2	2	0	0
				Fall ---	0	24	3	18	0	60
Howell -----	246	275	521	Spring -	0	70	31	143	0	2
				Fall ---	4	136	34	101	0	0
Iron -----	38	152	190	Spring -	0	8	7	23	0	0
				Fall ---	1	35	21	95	0	0
Jackson -----	612	653	1265	Spring -	16	110	161	24	0	301
				Fall ---	22	317	42	48	0	224
Jasper -----	469	3448	3917	Spring -	2	188	80	195	1	3
				Fall ---	42	1024	637	1741	0	4
Jefferson -----	30	134	164	Spring -	0	15	4	9	0	2
				Fall ---	1	50	15	67	0	1
Johnson -----	48	631	679	Spring -	0	25	6	17	0	0
				Fall ---	0	389	42	200	0	0
Knox -----	47	101	148	Spring -	0	27	9	11	0	0
				Fall ---	1	67	17	16	0	0
Laclede -----	103	468	571	Spring -	0	44	9	49	0	1
				Fall ---	0	247	5	216	0	0
Lafayette -----	18	85	103	Spring -	0	9	7	2	0	0
				Fall ---	0	58	16	11	0	0
Lawrence -----	652	2102	2754	Spring -	5	240	112	278	0	17
				Fall ---	19	547	571	964	0	1
Lewis -----	29	500	529	Spring -	1	21	5	2	0	0
				Fall ---	37	170	52	241	0	0
Lincoln -----	110	1448	1558	Spring -	0	18	12	79	0	1
				Fall ---	5	220	158	1064	1	0
Linn -----	62	74	136	Spring -	0	40	7	15	0	0
				Fall ---	2	48	11	13	0	0
Livingston -----	0	48	48	Spring -	0	0	0	0	0	0
				Fall ---	0	28	8	12	0	0
McDonald -----	47	125	172	Spring -	0	14	17	16	0	0
				Fall ---	0	85	0	40	0	0
Macon -----	52	291	343	Spring -	0	23	14	10	0	0
				Fall ---	1	64	15	211	0	0
Madison -----	99	228	327	Spring -	1	25	3	70	0	0
				Fall ---	2	25	37	164	0	0
Maries -----	10	229	239	Spring -	0	3	4	3	0	0
				Fall ---	4	85	4	136	0	0
Marion -----	66	698	764	Spring -	1	25	16	16	0	8
				Fall ---	9	263	50	374	0	2
Mercer -----	1	15	16	Spring -	1	0	0	0	0	0
				Fall ---	0	3	0	12	0	0
Miller -----	16	597	613	Spring -	0	2	1	13	0	0
				Fall ---	0	231	33	333	0	0
Mississippi -----	123	3	131	Spring -	0	0	99	27	0	2
				Fall ---	0	0	2	1	0	0
Moniteau -----	30	639	669	Spring -	0	16	3	11	0	0
				Fall ---	8	204	42	385	0	0
Monroe -----	57	717	774	Spring -	2	17	10	28	0	0
				Fall ---	32	169	90	426	0	0
Montgomery -----	75	815	890	Spring -	2	27	13	33	0	0
				Fall ---	29	264	96	426	0	0
Morgan -----	57	665	722	Spring -	1	18	2	29	0	7
				Fall ---	4	182	47	482	0	0
New Madrid -----	6	59	65	Spring -	0	0	4	1	0	1
				Fall ---	0	0	20	1	0	38

## MISSOURI AGRICULTURAL EXPERIMENT STATION

TABLE 5.—APPROXIMATE TONNAGE OF FERTILIZER SOLD IN THE STATE OF MISSOURI, BY COUNTIES, BASED UPON REPORT OF SHIPMENTS BY THE FERTILIZER COMPANIES  
(Continued)

County	Sales in 1937			Fertilizer Sales Classified in 1937						
	Spring	Fall	Total	Season	Bone	Super-phosphate	High grade	Medium grade	Low grade	Misc.
Newton -----	339	1675	2014	Spring --	0	107	69	121	0	42
Nodaway -----	3	30	33	Fall ---	26	790	261	597	0	1
				Spring --	0	2	0	1	0	0
Oregon -----	33	83	116	Fall ---	0	16	1	13	0	0
				Spring --	0	4	9	20	0	0
Osage -----	14	254	268	Fall ---	0	31	38	14	0	0
				Spring --	0	2	2	10	0	0
Ozark -----	0	0	0	Fall ---	0	89	10	155	0	0
				Spring --	0	0	0	0	0	0
Pemiscot -----	1	0	1	Fall ---	0	0	0	0	0	0
				Spring --	0	0	1	0	0	0
Perry -----	58	172	230	Fall ---	0	0	0	0	0	0
				Spring --	0	36	7	15	0	0
Pettis -----	60	750	810	Fall ---	1	104	9	58	0	0
				Spring --	1	24	21	14	0	0
Phelps -----	118	310	428	Fall ---	7	261	70	411	0	1
				Spring --	1	63	4	50	0	0
Pike -----	161	795	956	Fall ---	4	121	10	175	0	0
				Spring --	0	54	21	85	0	1
Platte' -----	52	17	69	Fall ---	8	171	79	512	0	25
				Spring --	0	0	49	3	0	0
Polk -----	303	917	1220	Fall ---	0	9	0	8	0	0
				Spring --	4	153	23	123	0	0
Pulaski -----	18	234	252	Fall ---	3	446	39	429	0	0
				Spring --	0	3	4	11	0	0
Putnam -----	3	3	6	Fall ---	3	94	19	118	0	0
				Spring --	0	1	1	1	0	0
Ralls -----	14	374	388	Fall ---	0	3	0	0	0	0
				Spring --	0	9	2	3	0	0
Randolph -----	51	157	208	Fall ---	20	124	48	182	0	0
				Spring --	0	26	6	19	0	0
Ray -----	161	72	233	Fall ---	0	43	19	95	0	0
				Spring --	0	5	8	148	0	0
Reynolds -----	15	7	22	Fall ---	0	42	15	15	0	0
				Spring --	0	7	0	8	0	0
Ripley -----	142	71	213	Fall ---	0	2	2	3	0	0
				Spring --	0	33	19	90	0	0
St. Charles -----	56	873	929	Fall ---	2	31	6	32	0	0
				Spring --	1	12	24	19	0	0
St. Clair -----	55	564	619	Fall ---	4	283	94	492	0	0
				Spring --	0	13	0	42	0	0
St. Francois -----	297	624	921	Fall ---	0	169	50	345	0	0
				Spring --	2	105	68	120	0	2
Ste. Genevieve -----	26	115	141	Fall ---	8	172	85	359	0	0
				Spring --	0	13	2	11	0	0
St. Louis -----	1094	1032	2126	Fall ---	0	62	3	50	0	0
				Spring --	67	69	309	206	2	441
Saline -----	23	33	56	Fall ---	39	106	166	97	0	563
				Spring --	0	3	14	6	0	0
Schuyler -----	28	48	76	Fall ---	0	9	21	2	0	1
				Spring --	0	26	0	2	0	0
Scotland -----	28	34	62	Fall ---	3	21	7	17	0	0
				Spring --	0	12	13	3	0	0
Scott -----	120	32	152	Fall ---	0	13	5	16	0	0
				Spring --	0	1	88	30	0	1
Shannon -----	52	14	66	Fall ---	0	11	3	18	0	0
				Spring --	0	20	14	18	0	0
Shelby -----	28	332	360	Fall ---	0	6	3	5	0	0
				Spring --	2	9	14	3	0	0
Stoddard -----	20	69	89	Fall ---	17	116	40	159	0	0
				Spring --	0	0	8	10	0	2
Stone -----	219	134	353	Fall ---	0	26	23	20	0	0
				Spring --	0	13	110	96	0	0
Sullivan -----	22	28	50	Fall ---	0	21	27	86	0	0
				Spring --	0	12	5	5	0	0
Taney -----	1	9	10	Fall ---	0	26	0	0	0	2
				Spring --	0	0	0	0	0	1
Texas -----	324	646	970	Fall ---	0	1	0	8	0	0
				Spring --	1	133	13	177	0	0
				Fall ---	13	302	26	305	0	0

TABLE 5.—APPROXIMATE TONNAGE OF FERTILIZER SOLD IN THE STATE OF MISSOURI, BY COUNTIES, BASED UPON REPORT OF SHIPMENTS BY THE FERTILIZER COMPANIES (Continued)

County	Sales in 1937			Fertilizer Sales Classified in 1937						
	Spring	Fall	Total	Season	Bone	Super-phosphate	High grade	Medium grade	Low grade	Misc.
Vernon -----	307	2059	2366	Spring --	13	153	25	116	0	0
				Fall ---	23	964	311	761	0	0
Warren -----	19	429	448	Spring --	0	12	1	6	0	0
				Fall ---	2	75	44	308	0	0
Washington ----	54	260	314	Spring --	1	29	6	17	0	0
				Fall ---	1	127	17	115	0	0
Wayne -----	29	78	107	Spring --	0	9	3	17	0	0
				Fall ---	1	36	18	23	0	0
Webster -----	395	438	833	Spring --	2	110	74	187	0	22
				Fall ---	13	84	54	287	0	0
Worth -----	0	0	0	Spring --	0	0	0	0	0	0
				Fall ---	0	0	0	0	0	0
Wright -----	369	255	624	Spring --	0	118	18	233	0	0
				Fall ---	1	109	13	132	0	0
Total for Spring	13,435				203	3814	2509	5228	3	1678
Total for Fall --		47,846			623	16814	6261	23021	4	1123
Total for 1937 --			61,281		826	20628	8770	28249	7	2801

TABLE 6.—TONNAGE OF PLANT FOOD CONSTITUENTS SOLD IN MISSOURI IN 1937 (APPROXIMATE)

Kind of Fertilizer	Fertilizer tonnage	Plant Food Tonnage				Potash
		Nitrogen	Phosphoric acid from bone	Available phosphoric acid	Insoluble phosphoric acid	
Bone Fertilizer -----	820.90	17.09	213.90	-----	-----	-----
Half and Half -----	534.62	5.35	64.73	48.77	-----	-----
Superphosphate -----	20,647.25	-----	-----	4,033.65	-----	-----
High Grade Mixed -----	8,287.00	231.34	-----	1,092.70	-----	421.67
Medium Grade Mixed -----	28,254.77	560.38	-----	3,370.71	-----	740.96
Low Grade Mixed -----	7.17	0.20	-----	0.50	-----	0.14
Nitrate of Soda -----	90.09	14.41	-----	-----	-----	-----
Sulphate of Ammonia -----	298.55	61.20	-----	-----	-----	-----
Dried Manure and Garden Mulch -----	283.93	5.68	-----	2.83	-----	4.61
Cyanamid -----	316.30	66.42	-----	-----	-----	-----
Sewerage Residues, Tobacco Waste -----	877.30	52.64	-----	17.55	-----	0.01
Mineral Phosphates -----	188.05	-----	-----	-----	63.93	-----
Potash Salts -----	751.19	-----	-----	-----	-----	171.00
Totals -----	61,357.12	1,014.71	278.63	8,566.71	63.93	1,338.39

TABLE 7.—TONNAGE OF SUPERPHOSPHATE AND THE LEADING FERTILIZER MIXTURES (BRANDS) SOLD IN MISSOURI IN 1937 (APPROXIMATE)

Brand	Tonnage	Brand	Tonnage
2-12-2 -----	20,890.63	0-14-7 -----	158.84
0-20-0 -----	13,586.66	4-8-8 -----	130.36
0-16-0 -----	6,249.61	4-10-6 -----	124.45
2-12-4 -----	5,690.86	0-43-0 -----	122.49
2-12-6 -----	3,108.74	0-12-6 -----	120.14
4-12-4 -----	1,435.06	3-12-4 -----	97.33
4-16-4 -----	1,074.40	10-6-4 -----	82.80
2-14-4 -----	756.09	0-14-2 -----	79.00
0-14-4 -----	688.36	0-12-4 -----	57.88
Half and Half -----	534.62	4-8-12 -----	43.19
2-16-2 -----	493.32	3-18-3 -----	39.13
4-8-6 -----	423.62	10-8-6 -----	33.90
0-32-0 -----	353.63	8-16-16 -----	31.05
0-45-0 -----	334.36	9-18-18 -----	27.50
0-16-6 -----	255.25	2-10-2 -----	24.50
3-8-6 -----	251.84	1-12-3 -----	23.50
1-12-4 -----	202.20	16-20-0 -----	22.00
3-14-6 -----	195.92	11-48-0 -----	18.55
0-14-6 -----	195.66	5-10-4 -----	15.96
4-8-7 -----	169.27	9-7-2 -----	9.60

### THE BASICITY OF FERTILIZER RESIDUES

When mixed fertilizers are used which carry certain common ingredients, there is a tendency to leave a residue within the soil which has an acid reaction. If applications are continued year after year this acid residue may be harmful, because it tends to unduly increase the soil acidity. Especially would this be true where large applications of such fertilizers are made. Some crops thrive best in an acid soil, so that an acid forming fertilizer may be the best to use in such cases. As a consequence, an acid-forming condition of a fertilizer constitutes no ground for the condemnation of the fertilizer.

Tests have been made on the nature of the residues of the fertilizer sold in Missouri in 1937, to determine if these be non-acid or acid-forming. The results indicate that the largely used brands for grain crops, are either non-acid or only slightly acid, while certain others are acid-forming. In general the fertilizer companies have shown a commendable willingness to adjust the basicity of their mixtures, wherever crop growing conditions would seem to indicate that such was desirable.

### HIGH GRADE FERTILIZER MIXTURES ARE PREFERABLE

For many years the Missouri Agricultural Experiment Station has recognized the advantage to be gained by the use of high grade fertilizer materials and have been recommending the use of superphosphates and mixtures which carry the larger amounts of plant food. Because of different soil conditions and different crop needs, the ratio or proportion of the different plant foods varies somewhat. Phosphoric acid is always the high constituent for this state, because of the major shortage of this constituent in Missouri soils.

Following are the ratios and the analyses recommended for Missouri conditions. These will be sufficient to meet the various needs of growing crops, due to soil variation and plant requirements.

#### Recommended Analyses

Ratios	Minimum Analyses
....	0-20-0
1-3-1	4-12-4
1-7-2	2-14-4
1-6-3	2-12-6
1-4-1	4-16-4
2-5-3	4-10-6
0-2-1	0-14-7

In addition to the above brands, 16 per cent Superphosphate, 2-12-2 and 2-12-4 fertilizer command a large sale in the state. While these brands are not specifically recommended they may be used as substitutes when other recommended brands are not available.

Regarding the use of these high analysis brands we cannot do better than repeat what has already been said in a previous publication<sup>1</sup>. The higher the analysis of the fertilizer, the less the cost of overhead for each pound of plant food applied. For example, when two fertilizers are compared, one having double the per cent of plant food as the other, the overhead costs for mixing, bagging, and shipping are the same for each. The farmer would therefore have to apply only half as much of the concentrated fertilizer as the less concentrated one, and he would make a material saving in the cost per acre. Naturally, when the very concentrated fertilizers are used, that is, those containing 50 or 60 per cent of plant food, the application per acre is so reduced that sometimes it cannot be spread evenly with the ordinary drill, unless it is mixed with sand or some other material to give it more bulk. So long as the total amount of plant food does not exceed 30 to 35 per cent, however, there is little difficulty in drilling it evenly.

These recommended brands show a tendency toward an increase in sales in the state, but there is still a large amount of fertilizer sold in the state which is below 20 per cent of plant food. Because of the economical advantage to the user, the Missouri Experiment Station urges the use of the recommended brands and of other analyses exceeding 20 units in plant food where this is practical. The trend of fertilizer use will undoubtedly continue toward the use of materials and mixtures of higher plant food concentrations.

<sup>1</sup>Bulletin 361, Missouri Agricultural Experiment Station.

**FINANCIAL STATEMENT**

## Fertilizer Control Fund

of the

Missouri Agricultural Experiment Station

For the year ending December 31, 1937.

**RECEIPTS**

Balance January 1, 1937 .....	\$23,230.35	
Receipts from the sale of Tags 1937 .....	31,452.70	\$54,683.05

**DISBURSEMENTS**

Salaries .....	\$11,377.23	
Labor .....	7,945.58	
Stationery & Office Supplies .....	317.05	
Scientific Supplies .....	1,328.20	
Sundry Supplies .....	1,558.33	
Feeding Stuffs .....	1,021.21	
Fertilizers .....	248.47	
Communication Service .....	579.78	
Travel Expense .....	1,076.85	
Transportation of Things .....	565.42	
Publications .....	3,233.77	
Heat, Light, Water & Power .....	376.64	
Contingent Expenses .....	178.10	
Repairs to Equipment .....	681.20	
Furniture and Fixtures .....	149.87	
Library .....	153.66	
Scientific Equipment .....	199.30	
Tools and Machinery .....	772.59	
Buildings and Structures .....	1,039.63	\$32,802.88
Balance, Cash on Hand December 31, 1937..		\$21,880.17