

# TESTING FERTILIZERS— SPRING 1926

## Report of the Chemist

L. D. HAIGH

The Missouri Agricultural Experiment Station has in the past issued an annual report of the work of inspection and tests on the samples of fertilizer found offered for sale in the state. It has been thought desirable to report the work of the spring inspection for 1926 in a separate publication rather than await the completion of the fall inspection work. We are presenting therefore, the results of the analysis of 102 samples of fertilizer obtained in the spring inspection arranged alphabetically by companies. These results are placed side by side with the values guaranteed for each constituent for ready comparison. Black faced type indicates a value below the guarantee. The units of value used in calculating the values per ton for the last two columns are the same as used last (1925) year, as follows:

Total Nitrogen.....	\$4.25
Total Phosphoric Acid (in bone).....	1.00
Insoluble Phosphoric Acid from bone (when so guaranteed in registration).....	0.80
Available Phosphoric Acid (all sources).....	1.35
Potash (water soluble).....	1.10

The quality of nitrogen in the fertilizers which contain this plant food has been tested by determining the amount of water soluble nitrogen present and the amount of the active portion of the water insoluble nitrogen as shown by the neutral permanganate method. The basis for judging this quality is expressed in the following rules adopted by the Association of Official Agricultural Chemists.

(a) The nitrogen shall be passed as satisfactory in mixed fertilizers if more than two-thirds of the total nitrogen guaranteed is water soluble.

(b) The water insoluble nitrogen in mixed fertilizers showing activity below eighty per cent by the neutral permanganate method shall be classed as inferior; water soluble nitrogen activity eighty per cent or above by the neutral permanganate method shall be passed without adverse criticism.

Judged by the above tests the following samples show inferior quality of nitrogen. 6-18, 6-53, 6-64, 6-66.

The above statements on the quality of nitrogen apply to the concentrated chemical nitrogen fertilizers and the fertilizers whose nitrogen source is bone. For manure which is not a concentrated fertilizer and which must be applied by tons instead of pounds per acre, the above statements do not apply.

#### FOOTNOTES

The superscript numerals following the names of certain brands of fertilizer in the table of analyses on pages 3 to 8 indicate violations of the Fertilizer Law, respectively as follows:

1. Without registration tags.
2. Wrong registration tags.
3. Not registered.
4. Without labels.
5. Not properly labeled.

TABLE 1.—FERTILIZER ANALYSES AND GUARANTEES: SPRING 1926

(Page 3)

Lab. No.	Manufacturer and Brands	Dealer	Nitrogen			Phosphoric Acid P <sub>2</sub> O <sub>5</sub>						Water Soluble Potash K <sub>2</sub> O		Value per Ton		
			Total G'td	Total F'nd	Water Solu-ble to Total	Total		Insoluble		Available		G'td	F'nd	G'td	F'nd	
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent					Per Cent
	<b>American Agricultural Chemical Co., St. Louis, Mo. A. A. Brands</b>															
6-1	16% Acid Phosphate	Noah Watts, Rogersville					19.93	0.50	2.22	16.00	17.71				21.60	23.91
6-2	16% Acid Phosphate	Marshfield Supply Co., Marshfield					18.63	0.50	2.16	16.00	16.47				21.60	22.23
6-3	20% Acid Phosphate <sup>1</sup>	L. F. Dreibelbis, Sarcoxie					23.04	0.50	2.01	20.00	21.03				27.00	28.39
6-4	20% Acid Phosphate	Karl Lupberger, Dillon					21.67	0.50	1.40	20.00	20.27				27.00	27.36
6-5	Farmer's Favorite Fertilizer	Karl Lupberger, Dillon	0.82	0.96	78.13		13.83	0.50	1.55	12.00	12.28	1.00	1.09	20.79	21.86	
6-6	Gilt Edge Fertilizer	Allen Ferguson, Bakersfield	1.65	1.81	85.64		17.48	0.50	1.70	16.00	15.78	2.00	2.02	30.81	31.21	
6-7	Paramount Fertilizer <sup>1</sup>	L. F. Dreibelbis, Sarcoxie	2.47	2.38	89.92		9.48	0.50	1.04	8.00	8.44	6.00	6.38	27.90	28.53	
6-8	Paramount Fertilizer	Farmer's Exchange, Mountain View	2.47	2.41	89.63		9.44	0.50	1.05	8.00	8.39	6.00	6.02	27.90	28.19	
6-9	Pure Raw Bone	Karl Lupberger, Dillon	3.29	3.05	11.15	20.00	22.07								33.98	35.03
6-10	Red Dog Fertilizer	Ben Koester, Florissant	1.65	1.76	84.09		9.53	0.50	1.05	8.00	8.48	5.00	5.25	23.31	24.71	
6-11	Red Dragon Fertilizer	Ben Koester, Florissant	1.65	1.70	87.06		13.51	0.50	1.34	12.00	12.17	2.00	1.86	25.41	25.71	
6-13	Red Dragon Fertilizer	Karl Lupberger, Dillon	1.65	1.78	84.83		13.75	0.50	1.46	12.00	12.29	2.00	1.85	25.41	26.20	
6-15	Steam Bone Meal <sup>1</sup>	L. F. Dreibelbis, Sarcoxie	1.02	1.16	25.00	29.00	30.05								33.34	34.98
6-17	Steam Bone Meal	Karl Lupberger, Dillon	1.02	1.07	18.69	29.00	31.95								33.34	36.50
6-18	Tobacco Fertilizer	Marshfield Supply Co., Marshfield	1.65	1.70	52.35		14.35	0.50	1.23	12.00	13.12	6.00	6.12	29.81	31.67	
6-19	Two-in-one Fertilizer	Noah Watts, Rogersville	3.29	3.25	94.15		17.42	0.50	1.37	16.00	16.05	4.00	3.65	39.98	39.50	
	<b>Empire Brands</b>															
6-20	16% Acid Phosphate <sup>2</sup>	Guy Gastineau, Fruit City					17.40	0.50	1.15	16.00	16.25				21.60	21.94
6-22	16% Acid Phosphate	Farmer's Elevator Co., Argyle					17.30	0.50	0.80	16.00	16.50				21.60	22.28
6-23	16% Acid Phosphate	Producer's Exchange, Vienna					17.48	0.50	1.03	16.00	16.45				21.60	22.21
6-24	20% Acid Phosphate	Producer's Exchange, Freeburg					21.72	0.50	1.30	20.00	20.42				27.00	27.57
6-25	20% Acid Phosphate	Farmer's Elevator Co., Argyle					21.89	0.50	1.25	20.00	20.64				27.00	27.86

TABLE 1 (CONTINUED).—FERTILIZER ANALYSES AND GUARANTEES: SPRING 1926

(Page 4)

Lab. No.	Manufacturer and Brands	Dealer	Nitrogen			Phosphoric Acid P <sub>2</sub> O <sub>5</sub>						Water Soluble Potash K <sub>2</sub> O		Value per Ton	
			Total G'td	Total F'nd	Water Solu-ble to Total	Total		Insoluble		Available		G'td	F'nd	G'td	F'nd
						G'td	F'nd	G'td	F'nd	G'td	F'nd				
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
6-26	Big Boll Fertilizer .....	M. J. Morse Lumber Co., Thayer ..	1.65	1.68	70.83	14.82	0.50	1.66	12.00	13.16	2.00	2.09	25.41	27.21	
6-27	Half & Half Bone and Phosphate ..	Karl Lupberger, Dillon .....	0.82	1.17	79.49	23.07	8.00	12.29	12.00	10.78			26.09	25.92	
6-29	"Agrico" Fertilizer for Grain .....	L. F. Dreibelbis, Sarcoxie .....	1.65	1.81	72.93	14.65	0.50	1.02	12.00	13.63	4.00	3.82	27.61	30.29	
6-30	Sulphate of Ammonia .....	L. F. Dreibelbis, Sarcoxie .....	20.16	20.80									85.68	88.40	
	<b>Armour Fertilizer Works, Chicago, Ill. Big Crop Brands</b>														
6-32	2-12-2 Fertilizer .....	Noel Hardware Co., Noel .....	1.65	1.64	88.41	13.27	0.50	0.88	12.00	12.39	2.00	2.22	25.41	26.14	
6-33	2-12-6 Fertilizer .....	Otto Rathburn Produce Co., Sparta .....	1.65	1.70	86.47	14.85	0.50	3.20	12.00	11.65	6.00	6.00	29.81	29.56	
6-34	2-12-6 Fertilizer .....	S. G. Chamberlain, Anderson .....	1.65	1.62	89.50	13.04	0.50	1.04	12.00	12.00	6.00	7.61	29.81	31.46	
6-35	2-16-2 Fertilizer .....	T. M. Renfrow, West Plains .....	1.65	1.53	87.57	18.11	0.50	1.90	16.00	16.21	2.00	2.04	30.81	30.62	
6-36	3-8-6 Fertilizer .....	T. M. Renfrow, West Plains .....	2.47	2.38	47.06	11.43	0.50	2.44	8.00	8.99	6.00	5.91	27.90	28.76	
6-37	3-8-6 Fertilizer .....	Allen Ferguson, Bakersfield .....	2.47	2.45	91.84	16.86	0.50	8.41	8.00	8.45	6.00	6.19	27.90	28.63	
6-38	Bone Meal <sup>2</sup> .....	Henry Schulz Feed Co., Webster Groves .....	2.47	2.45	22.14	24.00	24.84						34.50	35.25	
	<b>Tuscarora Brands</b>														
6-39	2-12-6 Fertilizer .....	Robertson Lumber Co., Marsh- field .....	1.65	1.61	88.20	12.89	0.50	0.89	12.00	12.00	6.00	6.32	29.81	29.99	
6-40	3-8-6 Fertilizer .....	Robertson Lumber Co., Marsh- field .....	2.47	2.41	89.21	9.36	0.50	1.04	8.00	8.32	6.00	6.50	27.90	28.62	
	<b>Crocker Bros., Joplin, Mo. Interstate Brands</b>														
6-52	16% Acid Phosphate .....	S. L. Shipman, Pierce City .....				18.88		0.66	16.00	18.22			21.60	24.60	
6-53	2-12-2 Fertilizer <sup>2</sup> .....	Roy Nelson Canning Co., Crane ..	1.65	1.35	60.00	15.75		3.46	12.00	12.29	2.00	2.07	25.41	24.61	
6-54	3-12-4 Fertilizer <sup>2</sup> .....	Roy Nelson Canning Co., Crane ..	2.47	2.01	71.14	16.15		3.24	12.00	12.91	4.00	5.24	31.10	31.73	



TABLE 1 (CONTINUED).—FERTILIZER ANALYSES AND GUARANTEES: SPRING 1926

(Page 6)

Lab. No.	Manufacturer and Brands	Dealer	Nitrogen			Phosphoric Acid P <sub>2</sub> O <sub>5</sub>						Water Soluble Potash K <sub>2</sub> O		Value per Ton	
			Total G'td	Total F'nd	Water Soluble to Total	Total		Insoluble		Available		G'td	F'nd	G'td	F'nd
						G'td	F'nd	G'td	F'nd	G'td	F'nd				
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
6-60	18% Acid Phosphate.....	Farmer's Exchange, West Plains.....	-----	-----	-----	-----	-----	0.25	1.88	18.00	18.81	-----	-----	24.30	25.39
6-61	20% Acid Phosphate.....	Farmer's Exchange, Rolla.....	-----	-----	-----	-----	0.10	1.03	20.00	20.05	-----	-----	27.00	27.07	
6-62	Bone and Phosphate Mixture <sup>s</sup> .....	Farmer's Exchange, Ava.....	1.25	1.72	58.14	-----	20.58	6.00	8.51	12.00	12.07	-----	-----	26.31	28.40
6-63	2-8-2.....	Producer's Exchange No. 138, Marshfield.....	1.67	1.68	77.97	-----	11.05	0.15	0.94	8.00	10.11	2.00	2.17	20.10	23.18
6-64	2-12-2.....	Farmer's Elevator Co., St. James.....	1.67	1.74	55.17	-----	12.75	0.25	0.29	12.00	12.46	2.00	2.40	25.50	26.86
6-65	2-12-2.....	Farmer's Exchange, Cabool.....	1.67	1.72	79.65	-----	13.52	0.25	0.52	12.00	13.00	2.00	2.10	25.50	27.17
6-66	2-12-6.....	Farmer's Exchange, Ava.....	1.67	1.67	64.67	-----	13.41	0.25	0.22	12.00	13.19	6.00	5.24	29.90	30.67
6-67	2-16-2.....	Farmer's Exchange, Branson.....	1.67	1.95	79.49	-----	15.26	0.25	0.33	16.00	14.93	2.00	2.08	30.90	30.74
6-68	3-8-6.....	Farmer's Coop. Exchange No. 1, Willow Springs.....	2.51	2.36	74.58	-----	9.80	0.15	0.25	8.00	9.55	6.00	5.75	28.07	29.25
6-69	3-8-6.....	Farmer's Elevator Co., St. James.....	2.51	2.36	68.64	-----	7.81	0.15	0.17	8.00	7.64	6.00	6.75	28.07	27.77
6-70	3-10-4.....	Farmer's Exchange, Branson.....	2.51	2.31	69.26	-----	12.36	0.25	0.35	10.00	12.01	4.00	2.08	28.57	28.92
6-71	0-10-10.....	Farmer's Exchange, Branson.....	-----	-----	-----	-----	11.57	0.25	0.24	10.00	11.33	10.00	8.35	24.50	24.49
6-55	<b>Kuttroff Pickhardt and Co., Inc., New York</b> Floranid (Urea BASF).....	Missouri Dahlia Farms, St. Louis.....	46.00	46.18	99.96	-----	-----	-----	-----	-----	-----	-----	-----	195.50	196.27
6-72	<b>The Phosphated Manure Co., Kansas City, Mo., and E. St. Louis, Illinois</b> Wizard Brand Phosphated Manure.....	Marshfield Supply Co., Marshfield.....	0.82	1.08	6.48	-----	9.05	-----	0.22	9.00	8.83	1.00	1.05	16.74	17.67
6-73	<b>The Pulverized Manure Co., Chicago, Ill., E. St. Louis, Ill., Kansas City, Mo.</b> Wizard Brands Sheep Manure <sup>4</sup> .....	Weber Hdwe. Co., Clayton.....	2.00	2.18	19.26	-----	1.89	-----	0.20	1.25	1.69	2.00	2.19	12.39	13.96

6-74	Sheep Manure <sup>1</sup> -----	Henry Schultz Feed Co., Webster Groves-----	2.00	1.89	15.87	-----	1.69	-----	0.23	1.25	1.46	2.00	2.24	12.39	12.46
6-76	Sheep Manure-----	Schisler-Corneli Seed Co., St. Louis-----	2.00	2.11	16.58	-----	1.77	-----	0.21	1.25	1.56	2.00	2.85	12.39	14.22
6-77	Sheep Manure-----	J ul. Peterson Seed Co., St. Louis-----	2.00	1.97	13.19	-----	1.43	-----	0.25	1.25	1.18	2.00	2.17	12.39	12.35
6-78	Cattle Manure-----	S t. Louis Seed Co., St. Louis-----	1.80	1.85	9.73	-----	1.60	-----	0.28	1.00	1.32	1.00	2.12	10.10	11.97
<b>Read Phosphate Co., Nashville, Tenn.</b>															
6-79	Red Diamond Acid Phosphate-----	Roberts Bros., Hdwe. Co., Cabool-----				-----	20.81	2.00	2.98	16.00	17.83	-----	-----	21.60	24.07
6-80	Red Diamond 2-16-2-----	T. M. Renfrow, West Plains-----	1.65	2.03	78.82	-----	17.61	2.00	2.17	16.00	15.44	2.00	3.27	30.81	33.07
<b>Smith Agricultural Chemical Co., Columbus, Ohio</b>															
6-81	Smith's SACCO Plant Food-----	Mid West Seed Co., Kansas City--	3.29	3.70	94.59	-----	11.08	-----	0.94	10.00	10.14	4.00	4.25	31.88	34.10
<b>Swift and Co., St. Louis, Mo. Swift Brands</b>															
6-84	Red Steer 16% Acid Phosphate Fertilizer-----	Modern Merc. Co., Ellington-----				-----	17.11	-----	0.26	16.00	16.85	-----	-----	21.60	22.75
6-85	Red Steer 16% Acid Phosphate Fertilizer-----	Farmer's Exchange, Birch Tree-----				-----	16.96	-----	0.42	16.00	16.54	-----	-----	21.60	22.34
6-87	Red Steer 20% Acid Phosphate Fertilizer-----	D. C. Castleman, Yukon-----				-----	20.03	-----	0.35	20.00	19.68	-----	-----	27.00	26.57
6-88	Red Steer 0-12-4-----	Farmer's Exchange, Birch Tree-----				-----	15.11	-----	0.28	12.00	14.83	4.00	4.37	20.60	24.83
6-90	Red Steer 1-12-1-----	Jacobs Hdwe. Co., Stoutland-----	0.82	1.26	71.43	-----	12.61	0.50	0.48	12.00	12.13	1.00	1.57	20.79	23.47
6-91	Red Steer 1-12-1-----	West Plains Wholesale Groc. Co., West Plains-----	0.82	0.97	69.07	-----	12.79	0.50	0.46	12.00	12.33	1.00	1.18	20.79	22.07
6-93	Red Steer 2-12-2-----	Roy Nelson Canning Co., Ava-----	1.65	1.65	67.87	-----	13.14	1.00	0.55	12.00	12.59	2.00	1.97	25.41	26.18
6-95	Red Steer 2-12-2-----	Farmer's Exchange, Rolla-----	1.65	1.76	67.05	-----	12.72	1.00	0.60	12.00	12.12	2.00	2.04	25.41	26.08
6-96	Red Steer 2-12-2-----	Graves & Pettigrew, Cabool-----	1.65	2.21	77.38	-----	12.85	1.00	0.44	12.00	12.41	2.00	2.98	25.41	29.42
6-97	Red Steer 2-12-2-----	O. O. Taylor, Licking-----	1.65	1.97	81.98	-----	13.17	1.00	0.71	12.00	12.46	2.00	2.13	25.41	27.53
6-98	Red Steer 2-12-2-----	D. C. Castleman, Yukon-----	1.65	1.72	66.86	-----	12.99	1.00	0.63	12.00	12.36	2.00	2.07	25.41	26.28
6-101	Red Steer 2-12-6-----	Marshfield Supply Co., Marshfield-----	1.65	1.70	72.35	-----	13.27	1.00	0.54	12.00	12.73	6.00	6.81	29.81	31.91
6-102	Red Steer 2-16-2-----	Nixa Hardware Co., Nixa-----	1.65	1.72	93.61	-----	16.82	1.00	0.75	16.00	16.07	2.00	1.46	30.81	30.61

TABLE 1 (CONTINUED).—FERTILIZER ANALYSES AND GUARANTEES: SPRING 1926

(Page 8)

Lab. No.	Manufacturer and Brands	Dealer	Nitrogen			Phosphoric Acid P <sub>2</sub> O <sub>5</sub>						Water Soluble Potash K <sub>2</sub> O <sub>5</sub>		Value per Ton	
			Total G'td	Total F'nd	Water Soluble to Total	Total		Insoluble		Available		G'td	F'nd	G'td	F'nd
						G'td	F'nd	G'td	F'nd	G'td	F'nd				
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
6-103	Red Steer 2-16-2	Porter Gray, Moody	1.65	1.76	93.75	16.98	1.00	0.95	16.00	16.03	2.00	2.07	30.81	31.40	
6-104	Red Steer 3-8-6	Modern Merc. Co., Ellington	2.47	2.43	79.42	8.74	1.00	0.43	8.00	8.31	6.00	6.82	27.90	29.05	
6-105	Red Steer 3-8-6	R. C. Hall, Ava	2.47	2.66	81.58	8.45	1.00	0.39	8.00	8.06	6.00	6.38	27.90	29.21	
6-106	Red Steer 3-8-6	Jacobs Hardware Co., Stoutland	2.47	2.48	79.44	8.96	1.00	0.35	8.00	8.61	6.00	6.36	27.90	29.16	
6-107	Red Steer 3-8-6	Graves & Pettigrew, Cabool	2.47	2.51	80.88	8.36	1.00	0.45	8.00	7.91	6.00	6.35	27.90	28.34	
6-108	Red Steer 3-8-6	— Miller, Van Buren	2.47	2.37	79.32	8.86	1.00	0.34	8.00	8.52	6.00	6.83	27.90	29.08	
6-109	Red Steer 3-8-6	Florissant Valley Elev. Association Anglum	2.47	2.42	80.58	8.60	1.00	0.37	8.00	8.23	6.00	6.41	27.90	28.45	
6-111	Bone Meal Fertilizer 1 ¼-29	Graves and Pettigrew, Cabool	1.03	1.65	21.82	29.00	31.97						33.38	38.98	
6-112	Bone Meal & Phosphate Fertilizer	Jacobs Hardware Co., Stoutland	0.82	0.89	37.08		21.69	5.00	2.81	15.00	18.88		27.74	29.27	
6-113	Raw Bone Meal Fertilizer 4 ½-23	Farmer's Exchange, Rolla	3.70	4.31	13.69	23.00	23.77						38.73	42.09	
6-114	VIGORO	West Plains Wholesale Gro. Co., West Plains	3.29	3.40	87.94		13.04		0.48	12.00	12.56	4.00	4.27	34.58	36.11
6-115	VIGORO	St. Louis Seed Co., St. Louis	3.29	3.36	88.39		12.97		0.43	12.00	12.54	4.00	4.24	34.58	35.87
	<b>Virginia Carolina Chemical Co., Memphis, Tenn.</b>														
6-116	V-C Star Brand Fertilizer	L. F. Dreibelbis, Sarcoxie	1.65	2.01	87.06		13.25		1.19	12.00	12.06	6.00	6.09	29.81	31.52
6-117	V-C Special Vegetable Grower <sup>s</sup>	T. M. Renfrow, West Plains	2.47	2.48	87.90		13.96		0.91	12.00	13.05	4.00	4.23	31.10	32.81
6-118	V-C Truck Fertilizer	L. F. Dreibelbis, Sarcoxie	2.47	2.74	87.59		9.48		1.13	8.00	8.35	6.00	7.10	27.90	30.73
6-119	V-C Truck Fertilizer	T. M. Renfrow, West Plains	2.47	2.52	87.69		9.64		1.13	8.00	8.51	6.00	6.68	27.90	29.55
	<b>Wilson and Co., New Albany, Ind. Red "W" Brand</b>														
6-120	Acid Phosphate 16%	Arch Sims, Stotts City					19.11	1.00	3.09	16.00	16.02			21.60	21.63