UNIVERSITY OF MISSOURI COLLEGE OF AGRICULTURE
AGRICULTURAL EXPERIMENT STATION
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Inspection and Analysis of Commercial Fertilizers; Spring, 1932

F. B. MUMFORD, Director

L. D. HAIGH, Chemist

COLUMBIA, MISSOURI
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The usual inspection of the stocks in the hands of dealers and consumers was conducted by the Experiment Station, following the regular distribution of commercial fertilizer in the spring of 1932. The agricultural depression has sharply curtailed sales of fertilizer as was to be expected. A distinct tendency to purchase low priced brands was apparent, and in most cases only small shipments were made to any one dealer.

Under the regulations adopted by most states the quality of fertilizers is now as dependable as any other commodity. The Missouri Fertilizer Law requires that each brand be registered and each package, labelled and tagged. The labels must show the chemical analysis as guaranteed by the manufacturers, which statement is a true index of the fertilizer value of the material. The purpose of this report is to indicate the correctness of these guarantees which of course cannot be determined by an examination of the appearance of the goods. The dealer can readily determine whether the other requirements have been met by an examination of the shipment.

The samples of fertilizer collected and analyzed in the spring of 1932 are reported upon in this bulletin. The samples of each manufacturer are grouped together, with the names of the dealers from whose stock the samples were taken. Results which are printed in black-faced type indicate a deficiency, although this may be very small or insignificant in a few cases.

Under "Nitrogen" the percentages of total nitrogen, guaranteed and found, are given in the left-hand column. In the right-hand column, the percentage of the total nitrogen which is soluble in water is given. Water soluble nitrogen is considered readily available and if this is more than two-thirds of the total amount present, the total nitrogen is considered satisfactory. If less than two-thirds is water soluble the insoluble nitrogen is tested by the permanganate methods for its activity. The following samples must be classified to contain inferior nitrogen as a result of these tests; 5-9, 5-27, 5-61, 5-62, 5-63, 5-64, 5-100, 5-101.

FERTILIZER ANALYSES AND GUARANTEES; SPRING 1932

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P_2O_5			Water Soluble Potash K_2O
			Total	Water Soluble to Total	Total	Insoluble	Available	
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
	American Agricultural Chemical Company, St. Louis, Missouri A. A. Brands							
5-1	16 per cent Superphosphate	Homer Smith Milling Co., Mt. Vernon	------	------	17.62	0.65	16.97	------
5-2	16 per cent Superphosphate	L. F. Dreibelbis, Sarcoxie	------	------	17.45	0.60	16.85	------
		Average Analysis	------	------	------	0.63	16.91	------
		Guaranteed Analysis	------	------	------	0.50	16.00	------
5-3	20 per cent Superphosphate	Homer Smith Milling Co., Mt. Vernon	------	------	21.80	0.59	21.21	------
5-4	20 per cent Superphosphate	Producers Grain Co., Eldorado Springs	------	------	22.10	0.50	21.60	------
5-5	20 per cent Superphosphate	Boone County Milling and Elevator Co., Columbia	------	------	22.35	0.62	21.73	------
		Average Analysis	------	------	------	0.57	21.51	------
		Guaranteed Analysis	------	------	------	0.50	20.00	------
5-6	Agrico for Tomatoes	L. F. Dreibelbis, Sarcoxie	2.14	*92.06*	13.41	0.62	12.79	6.76
		Guaranteed Analysis	2.00	------	------	0.50	12.00	6.00
5-7	Agrico for Truck	Boone County Milling and Elevator Co., Columbia	5.12	*86.13*	11.19	0.39	10.80	5.37
		Guaranteed Analysis	5.00	------	------	0.50	10.00	5.00
5-8	Hi Test Fertilizer 6-15-9	E. B. Evans Feed & Seed Co., Springfield	5.97	*88.61*	16.95	0.52	16.43	9.36
		Guaranteed Analysis	6.00	------	------	0.50	15.00	9.00
5-9	Pulverized Sheep Manure[1]	E. B. Evans Feed & Seed Co., Springfield	1.84	*16.30*	0.85	0.17	0.68	2.13
		Guaranteed Analysis	1.44	------	------	------	0.75	2.00
5-10	Pure Raw Bone	Boone County Milling and Elevator Co., Columbia	3.33	*29.73*	21.05	------	------	------
		Guaranteed Analysis	3.29	------	20.00	------	------	------
5-11	Red Dragon Fertilizer	L. F. Dreibelbis, Sarcoxie	2.02	*97.03*	13.14	0.36	12.78	2.22
5-12	Red Dragon Fertilizer	Boone County Milling and Elevator Co., Columbia	2.08	*97.60*	13.08	0.25	12.83	2.05
		Average Analysis	2.05	------	------	0.31	12.81	2.14
		Guaranteed Analysis	2.00	------	------	0.50	12.00	2.00
5-13	Two in One Fertilizer	E. B. Evans Feed and Seed Co., Springfield	4.03	*98.26*	18.78	0.35	18.43	4.59
		Guaranteed Analysis	4.00	------	------	0.50	16.00	4.00
	Armour Fertilizer Works, Chicago, Illinois Big Crop Brands							
5-14	16 per cent Superphosphate	F. M. Shoffner, Bolivar	------	------	17.38	0.12	17.26	------
		Guaranteed Analysis	------	------	------	------	16.00	------
5-16	2-12-2 Fertilizer	Whitlock-Lines, Monett	2.05	*96.59*	13.20	0.25	12.95	2.24
5-17	2-12-2 Fertilizer	F. M. Shoffner, Bolivar	2.02	*95.54*	13.32	0.14	13.18	2.19
		Average Analysis	2.04	------	------	------	13.06	2.22
		Guaranteed Analysis	2.00	------	------	------	12.00	2.00
5-18	2-12-6 Fertilizer	E. B. Evans Feed and Seed Co., Springfield	2.06	*95.06*	13.44	0.60	12.84	6.28
		Guaranteed Analysis	2.00	------	------	------	12.00	6.00
5-19	Bone Meal 2-24t	Whitlock-Lines, Monett	2.04	*19.60*	28.30	------	------	------
5-20	Bone Meal 2-24t	F. M. Shoffner, Bolivar	2.14	*15.42*	26.90	------	------	------
		Average Analysis	2.09	------	27.60	------	------	------
		Guaranteed Analysis	2.00	------	24.00	------	------	------
5-21	Vert	F. M. Shoffner, Bolivar	5.08	*99.21*	12.76	0.35	12.41	6.19
		Guaranteed Analysis	5.00	------	------	------	8.00	6.00

[1]Not registered.

FERTILIZER ANALYSES AND GUARANTEES; SPRING 1932 (CONTINUED)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P_2O_5			Water Soluble Potash K_2O
			Total	Water Soluble to Total	Total	Insoluble	Available	
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
	Barada and Page, Inc., Kansas City, Missouri							
5-22	B-P Lawn & Garden Fertilizer	Factory, Kansas City	2.41	*58.92*	0.69	0.00	**0.69**	8.38
		Guaranteed Analysis	1.90				1.20	5.50
5-23	Sulphate of Ammonia	Factory, Kansas City	20.58	*100.00*[4]				
		Guaranteed Analysis	20.50					
	The Barrett Co., 40 Rector Street, New York, New York							
5-24	Arcadian Sulphate of Ammonia	Omer Webb, Jasper	20.64	*100.00*[4]				
		Guaranteed Analysis	20.56					
	Chilean Nitrate Sales Corp., 120 Broadway, New York, New York							
5-25	Champion Brand Nitrate of Soda	Pearson-Ferguson Co., Kansas City	**15.73**	*100.00*[4]				
5-26	Champion Brand Nitrate of Soda	Boone County Milling and Elevator Co., Columbia	**15.68**	*100.00*[4]				
		Average Analysis	**15.71**					
		Guaranteed Analysis	16.00					
	Crocker Packing Co., Joplin, Missouri Interstate Brands							
5-28	Superphosphate, 16 per cent	Factory, Joplin			19.90	0.12	19.78	
		Guaranteed Analysis					16.00	
5-29	Superphosphate, 20 per cent	Factory, Joplin			24.20	0.97	23.23	
		Guaranteed Analysis					20.00	
5-30	2-8-10 Potato Special	Factory, Joplin	2.21	*32.58*	11.48	1.78	9.70	10.74
		Guaranteed Analysis	2.00				8.00	10.00
5-31	2-12-2	Factory, Joplin	2.26	*35.84*	13.22	1.40	**11.82**	2.41
5-32	2-12-2	Farmers Exchange, Lamar	2.05	*27.31*	13.50	1.50	12.00	2.57
		Average Analysis	2.16				**11.91**	2.49
		Guaranteed Analysis	2.00				12.00	2.00
5-33	2-12-6	Factory, Joplin	**1.94**	*28.26*	13.98	1.45	12.53	6.10
		Guaranteed Analysis	2.00				12.00	6.00
5-34	Lawn, Vegetable & Flower Grower[1]	Factory, Joplin	**2.97**	*28.95*	10.76	1.75	9.01	7.59
		Guaranteed Analysis	4.00				8.00	6.00
5-35	Steam Bone	Factory, Joplin	**2.96**	*7.09*	24.15			
		Guaranteed Analysis	3.00		24.00			
	Cudahy Packing Co., Kansas City, Kansas Bigwin Brands							
5-36	High Grade 20 per cent Superphosphate	Pearson-Ferguson Co., Kansas City			22.15	2.64	**19.51**	
		Guaranteed Analysis				1.00	20.00	
5-37	High Grade Fertilizer 2-12-2[2]	Farmers Elevator & Supply Co., Clinton	2.65	*69.05*	18.58	3.58	15.00	3.46
		Guaranteed Analysis	2.00				12.00	2.00
5-38	High Grade Fertilizer 4-8-6	Farmers Elevator & Supply Co., Clinton	4.29	*79.49*	11.98	3.62	8.36	**5.80**
		Guaranteed Analysis	4.00				8.00	6.00

[1]Not registered [2]Registration tags not attached. [4]Not actually determined.

FERTILIZER ANALYSES AND GUARANTEES; SPRING 1932 (CONTINUED)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P_2O_5			Water Soluble Potash K_2O
			Total	Water Soluble to Total	Total	Insoluble	Available	
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
5-39	Steamed Bone Meal[2]	Farmers Elevator & Supply Co., Clinton	3.06	*21.24*	24.90			
		Guaranteed Analysis	2.47		24.00			
	Darling and Co., Chicago, Illinois							
	Darling's Brands							
5-41	16 per cent Superphosphate[3]	Springfield Sales Co., Springfield			17.30	0.13	17.17	
		Guaranteed Analysis					16.00	
5-42	20 per cent Superphosphate	Farmers Coop. Elevator Assn., Harrisonville			21.50	0.73	20.77	
		Guaranteed Analysis					20.00	
5-43	Big Harvest	Springfield Sales Co., Springfield	2.10	*96.19*	13.28	0.15	13.13	2.64
5-44	Big Harvest	Farmers Coop. Elevator Assn., Harrisonville	2.09	*96.17*	13.44	0.30	13.14	2.96
		Average Analysis	2.10				13.14	2.80
		Guaranteed Analysis	2.00				12.00	2.00
5-45	Pure Ground Bone	Bolivar Farmers Exchange, Bolivar	2.21	*33.48*	29.15			
		Guaranteed Analysis	1.85		28.00			
	M. F. A. Brands							
5-40	16 per cent Superphosphate	Greene County Farmers Assn., Springfield			17.50	0.18	17.32	
5-46	16 per cent Superphosphate[3]	Farmers Exchange, Jasper			17.68	0.12	17.56	
5-47	16 per cent Superphosphate[3]	Bolivar Farmers Exchange, Bolivar			17.45	0.13	17.32	
		Average Analysis					17.40	
		Guaranteed Analysis					16.00	
5-48	20 per cent Superphosphate	Farmers Exchange, Jasper			21.20	0.51	20.69	
		Guaranteed Analysis					20.00	
5-49	2-12-2	Greene County Farmers Sales Assn., Springfield	**1.87**	*96.26*	14.03	0.37	13.66	2.46
5-50	2-12-2	Farmers Exchange, Jasper	2.01	*97.04*	13.86	0.15	13.71	2.26
		Average Analysis	1.94				13.69	2.36
		Guaranteed Analysis	2.00				12.00	2.00
5-51	2-12-6[3]	Farmers Exchange, Aurora	2.20	*97.72*	13.60	0.25	13.35	6.63
		Guaranteed Analysis	2.00				12.00	6.00
5-52	3-8-6	Greene County Farmers Sales Assn., Springfield	**2.96**	*98.31*	9.30	0.03	9.27	6.36
		Guaranteed Analysis	3.00				8.00	6.00
5-53	4-8-7[3]	Farmers Exchange, Aurora	4.04	*98.51*	9.02	0.08	8.94	7.56
5-54	4-8-7	Farmers Coop. Assn. No. 82, Brunswick	**3.79**	*96.30*	10.22	0.07	10.15	7.00
		Average Analysis	**3.92**				9.55	7.28
		Guaranteed Analysis	4.00				8.00	7.00
	Dixie Mills Co., E. St. Louis, Illinois							
5-100	Dixie Plant Ration	H. R. Mueller, Florist, Columbia	6.25	*67.20*	7.48	0.95	6.53	3.08
5-101	Dixie Plant Ration	Columbia Country Club, Columbia	6.42	*68.06*	7.44	0.87	6.57	3.09
		Average Analysis	6.34				6.55	3.09
		Guaranteed Analysis	6.00				6.00	2.00

[2]Registration tags not attached. [3]Wrong registration tags.

FERTILIZER ANALYSES AND GUARANTEES; SPRING 1932 (CONTINUED)

Lab No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P_2O_5			Water Soluble Potash K_2O
			Total	Water Soluble to Total	Total	Insoluble	Available	
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
	Federal Chemical Co., Louisville, Kentucky							
5-55	Daybreak Special Fertilizer 3-8-6[1]	J. M. Sims, Fulton	**2.73**	*73.62*	8.61	0.53	8.08	6.35
		Guaranteed Analysis	3.00				8.00	6.00
	Floyd Plant Food Co., St. Louis, Missouri Money Maker Brands							
5-56	2-12-2	Greene County Farmers Sales Assn., Springfield	2.17	*76.96*	13.80	1.42	12.38	2.29
		Guaranteed Analysis	2.00				12.00	2.00
5-57	4-12-4	Farmers Exchange, Columbia	**3.78**	*79.36*	13.54	1.06	12.48	5.20
		Guaranteed Analysis	4.00				12.00	4.00
	Ford Motor Co., Dearborn, Michigan							
5-58	Ford Ammonium Sulphate	Factory, Kansas City	20.82	*100.00*[4]				
		Guaranteed Analysis	20.80					
	Fort Smith Cotton Oil Co., Fort Smith, Arkansas							
5-59	Gro-Mor Brand 2-12-2[1]	Farmers Exchange, Monett	2.31	*24.67*	12.67	0.07	12.60	3.24
		Guaranteed Analysis	2.00				12.00	2.00
	Koppers Products Co., Pittsburgh, Pennsylvania							
5-60	Koppers Velvet Lawn (Sulphate of Ammonia) Fertilizer[2]	Pearson-Ferguson Co., Kansas City	20.66	*100.00*[4]				
		Guaranteed Analysis	20.56					
	Pulverized Manure Co., Chicago, Illinois Wizard Brands							
5-62	Pulverized Sheep Manure	Springfield Seed Co., Springfield	**1.85**	*27.57*	1.65	0.09	1.56	4.09
5-63	Pulverized Sheep Manure	T. Lee Adams, Kansas City	**1.89**	*26.45*	1.70	0.06	1.64	4.13
5-64	Pulverized Sheep Manure[2]	Boone County Milling and Elevator Co., Columbia	**1.89**	*25.39*	1.66	0.10	1.56	4.05
		Average Analysis	**1.88**				1.59	4.09
		Guaranteed Analysis	2.00				1.00	2.00
	Read Phosphate Co., Nashville, Tennessee Red Diamond Brands							
5-65	16 per cent Superphosphate	Producers Grain Co., Eldorado Springs			19.90	1.43	18.47	
		Guaranteed Analysis				2.00	16.00	
5-66	20 per cent Superphosphate	Likins Bros., Ash Grove			22.60	0.10	22.50	
		Guaranteed Analysis					20.00	
5-67	2-12-2 Premium Grain Grower	Likins Bros., Ash Grove	**1.97**	*77.15*	16.30	2.70	13.60	2.28
		Guaranteed Analysis	2.00			3.00	12.00	2.00
5-68	3-8-6	Likins Bros., Ash Grove	**2.68**	*84.32*	12.60	2.68	9.92	**5.56**
		Guaranteed Analysis	3.00			5.00	8.00	6.00
	M. C. Reed, Carthage, Missouri							
5-69	Kalosecta 4-12-4[3]	M. C. Reed, Carthage	4.23	*94.56*	6.62	0.58	**6.04**	5.20
		Guaranteed Analysis	4.00			1.00	12.00	4.00

[1]Not registered.
[2]Registration tags not attached.
[3]Wrong registration tags.
[4]Not actually determined.

FERTILIZER ANALYSES AND GUARANTEES; SPRING 1932 (CONTINUED)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P_2O_5			Water Soluble Potash K_2O
			Total	Water Soluble to Total	Total	Insoluble	Available	
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
	Swift & Co., Fertilizer Works National Stock Yards, Illinois							
	Red Steer Brands							
5-70	16 per cent Superphosphate	Mt. Vernon Mill & Elevator Co., Mt. Vernon	------	--------	16.88	0.14	16.74	--------
5-71	16 per cent Superphosphate	Bolivar Farmers Exchange, Bolivar	------	--------	17.78	0.09	17.69	--------
		Average Analysis	------	--------	------	------	17.22	--------
		Guaranteed Analysis	------	--------	------	------	16.00	--------
5-72	20 per cent Superphosphate	Greene County Farmers Sales Assn., Springfield	------	--------	21.80	0.16	21.64	--------
5-73	20 per cent Superphosphate	Tucker Seed House, Carthage	------	--------	22.00	0.17	21.83	--------
5-74	20 per cent Superphosphate	Omer Webb, Jasper	------	--------	22.20	0.11	22.09	--------
5-75	20 per cent Superphosphate	Producers Exchange, Eldorado Springs	------	--------	22.30	0.16	22.14	--------
5-76	20 per cent Superphosphate	Mt. Vernon Mill & Elevator Co., Mt. Vernon	------	--------	22.25	0.14	22.11	--------
		Average Analysis	------	--------	------	------	21.96	--------
		Guaranteed Analysis	------	--------	------	------	20.00	--------
5-77	0-14-6	Edw. F. Buckner, Pierce City	------	--------	15.88	0.14	15.74	7.30
		Guaranteed Analysis	------	--------	------	------	14.00	6.00
5-78	1-12-4[1]	Omer Webb, Jasper	1.14	*90.00*	13.13	0.12	13.01	4.63
		Guaranteed Analysis	1.00	--------	------	------	12.00	4.00
5-79	2-12-2	Mt. Vernon Mill & Elevator Co., Mt. Vernon	2.07	*91.30*	13.04	0.13	12.91	2.38
5-80	2-12-2	Edw. F. Buckner, Pierce City	2.00	*92.50*	12.88	0.02	12.86	2.32
5-81	2-12-2	Tucker Seed House, Carthage	2.07	*90.82*	12.90	0.16	12.74	2.46
		Average Analysis	2.05	--------	------	------	12.84	2.39
		Guaranteed Analysis	2.00	--------	------	------	12.00	2.00
5-82	2-12-6	Greene County Farmers Sales Assn., Springfield	2.02	*95.05*	13.10	0.04	13.06	6.26
		Guaranteed Analysis	2.00	--------	------	------	12.00	6.00
5-83	2-16-2	Greene County Farmers Sales Assn., Springfield	2.10	*92.38*	17.73	0.17	17.56	2.73
5-84	2-16-2	Edw. F. Buckner, Pierce City	2.20	*93.19*	17.10	0.15	16.95	2.63
		Average Analysis	2.15	--------	------	------	17.26	2.68
		Guaranteed Analysis	2.00	--------	------	------	16.00	2.00
5-85	Raw Bone Fertilizer	Greene County Farmers Sales Assn., Springfield	3.80	*10.53*	25.30	------	------	--------
		Guaranteed Analysis	3.70	--------	23.00	------	------	--------
5-86	Steam Bone Fertilizer	Greene County Farmers Sales Assn., Springfield	1.92	*17.18*	**28.20**	------	------	--------
5-87	Steam Bone Fertilizer	Tucker Seed House, Carthage	1.99	*18.59*	**28.90**	------	------	--------
		Average Analysis	1.96	--------	**28.55**	------	------	--------
		Guaranteed Analysis	1.00	--------	29.00	------	------	--------
5-88	Vigoro	Tucker Seed House, Carthage	4.08	*93.87*	13.10	0.08	13.02	4.70
5-89	Vigoro	Springfield Seed Co., Springfield	4.19	*92.12*	13.52	0.11	13.41	4.71
5-90	Vigoro	Hays Hdwe. Co., Columbia	4.05	*93.09*	13.10	0.07	13.03	4.67
		Average Analysis	4.11	--------	------	------	13.15	4.69
		Guaranteed Analysis	4.00	--------	------	------	12.00	4.00

[1]Not registered.

FERTILIZER ANALYSES AND GUARANTEES; SPRING 1932 (CONTINUED)

Lab. No.	Manufacturer and Brands	Dealer or Purchaser	Nitrogen		Phosphoric Acid, P_2O_5			Water Soluble Potash K_2O
			Total	Water Soluble to Total	Total	Insoluble	Available	
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
	Synthetic Nitrogen Products Co., New York, New York							
5-91	Floranid (Urea)	Oronogo Flower Gardens, Carterville	46.12					
		Guaranteed Analysis	46.00					
5-92	Nitrophoska No. 1 (15-30-15)	Oronogo Flower Gardens, Carterville	15.26		33.50	0.00	33.50	16.77
		Guaranteed Analysis	15.00				30.00	15.00
	Virginia-Carolina Chemical Corp., Memphis, Tennessee							
5-93	V-C Superphosphate 20 per cent	Johannes & Sons Implement Co., Lamar			23.05	1.04	22.01	
		Guaranteed Analysis					20.00	
5-94	V-C Farmer's Relief 1-12-4	Johannes & Sons Implement Co., Lamar	1.07	*82.24*	13.92	0.09	13.83	4.62
		Guaranteed Analysis	1.00				12.00	4.00
	C. L. Weekley, Galena, Missouri							
5-95	Bat Guano or Manure	Factory, Camp Ramona, Galena	**1.82**	*18.13*	4.23	0.98	**3.25**	**0.26**
		Guaranteed Analysis	2.00				5.00	0.65