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Analyses of commercial fertilizers, on sale in the state

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MISSISSIPPI

Agricultural and Mechanical
College

EXPERIMENT STATION.

Special Bulletin No. 49.

Analyses of Commercial Fer=
tilizers

ON SALE IN THE STATE.

SEASON 1897-'98.

Agricultural College, Miss., June 25, 1898.

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Mississippi Fertilizer Control.

INSPECTION AND ANALYSES OF FERTILIZERS

BY THE CHEMICAL DEPARTMENT OF THE
MISSISSIPPI AGRICULTURAL AND MECHANICAL
COLLEGE.

B. W. KILGORE, State Chemist.

W. F. HAND, Assistant Chemist.

E. W. MAGRUDER, Ass't. Chemist.

J. S. CARROLL, Ass't. Chemist.

The analyses presented in this bulletin are of samples of fertilizers collected by the fertilizer inspector of this department. The analyses of samples sent to the department by manufacturers are not published because they do not always represent the true character of the goods actually put on sale. The samples, the analyses of which are presented in this bulletin, were taken from December to June from goods in the hands of fertilizer dealers, and therefore represent the composition of the fertilizers the farmers actually bought and used.

This is the fifth fertilizer bulletin for this season, 1897 '98, four editions having been previously issued. These were gotten out January 7th, February 15th, March 25th, and May 1st. By these frequent and early

NOTE.—The analysis and inspection of commercial fertilizers is by law done by the Professor of Chemistry at the College, who is State Chemist. The results being considered of agricultural value are sent out by the Experiment Station. All communications in regard to these Bulletins or analyses should be addressed to State Chemist.

publications during the growing season farmers were enabled in many cases to know the composition and character of their fertilizers before they bought and used them. This edition of the bulletin is the last one for this season, and includes the analyses of all samples made during the season, both those published in previous bulletins and those made since the last bulletin was issued.

The fertilizer season just passed has been a successful and satisfactory one. The goods offered for sale and sold have been, as a rule, good, as will be seen by a comparison of the analyses in the bulletin with the guarantees made by manufacturers.

TERMS USED IN ANALYSES.

Nitrogen, Phosphoric Acid, and Potash are the three constituents in a fertilizer which give to it its value. They do not make up all of a fertilizer—in fact in most fertilizers other constituents are present in larger quantities than are these—but they are the only ones to which values need be assigned. The amounts of these constituents found in the fertilizers analyzed are expressed in the table as percentages or pounds in one hundred pounds of the fertilizer.

Four columns are given to phosphoric acid. In the first is found the water-soluble phosphoric acid, or the portion dissolved by cold water; in the second one is found the citrate-soluble, or the portion soluble in ammonium citrate solution; in the third the portion not soluble in either water or citrate solution, but soluble in strong acid; in the fourth column is given the total phosphoric acid, or the sum of the preceding forms. The water-soluble and citrate-soluble represent the phosphoric acid immediately available for plant growth.

Two sets of percentages are given in the table, “found” and “guaranteed.” The percentages found represent the results actually obtained in the analysis of the fertilizers, while the guaranteed percentages are what the manufacturers claim them to contain.

VALUATIONS.

In order to have a basis of comparison for the different fertilizers, valuations are assigned to the three valuable ingredients—nitrogen, phosphoric acid, and potash. These valuations are not intended to represent *crop producing power or agricultural value*, but are *estimates of the commercial value* of nitrogen, phosphoric acid, and potash in the materials supplying them. While the valuations are only approximate, it is believed that they fairly represent the cost of making and putting the fertilizers on the market. They are based upon a careful examination of the trade conditions, wholesale and retail, and upon quotations from manufacturers.

The figures used in calculating the "relative value per ton" in this bulletin are practically the same as those used last season, and are as follows:

	per pound.
For Nitrogen.....	12.5 cents
For potash.....	5 cents
For water-soluble phosphoric acid in mixed fertilizers.....	5 cents
For water-soluble phosphoric acid in unmixed acid phosphates.....	4.5 cents
For citrate-soluble phosphoric acid in mixed fertilizers.....	4.5 cents
For citrate-soluble phosphoric acid in unmixed acid phosphates.....	4 cents
For phosphoric acid in fine ground bone.....	3 cents
For phosphoric acid in medium and coarse bone.....	2.5 cents

All relative values during this season will be calculated by the use of these figures.

HOW RELATIVE VALUES ARE CALCULATED.

It may not be clear to all how values per ton are calculated. To make this plain an example is given. It is to be remembered that the figures in the table represent

pounds and parts of a pound of nitrogen, phosphoric acid, and potash in one hundred pounds of the fertilizer, and that there are twenty hundred pounds in one ton (2,000 pounds.)

The calculation is made as follows:

Percentage or lbs. in 100.	Val. per 100 lbs.	Val. per ton (2,000 lbs.)
6 lbs. Water-sol. phos. acid at 5c per lb.	\$0.30 x 20 =	\$ 6 00
2 lbs. Citrate-sol. phos. acid at 4¼c. per lb	0.09 x 20 =	1 80
2 lbs. Nitrogen at 12½ cents per pound. . .	0.25 x 20 =	5 00
2 lbs. Potash at 5 cents per pound.	0.10 x 20 =	2 00
Total value.	\$0.74 x 20 =	\$ 14.80

DATA IN THE TABLES.

The data in the table will be readily understood. In it will be found the analyses of samples collected this season. Several analyses are given of most of the brands, together with the dealers selling them, and under the analyses will be found the average of all analyses made, and the guarantees made by the manufacturer. A comparison of the analyses and average analysis with guarantee will show how well the goods sold agree with the claims made for them.

FERTILIZER LAW.

The fertilizer law is published here for the information of those who may not be familiar with it and is taken from Chapter 48, Annotated Code 1892, with amendments, 1896:

FERTILIZERS.

Definition of Term as Used: The term fertilizer, as used herein, includes all substances, chemicals and compounds, commonly known as commercial fertilizers, and all manures, except animal excrement, cotton seed and unmixed cotton-seed products and castor pomace, whether natural or artificial products.

To be Analyzed by State Chemist---His Certificate: The Professor of Chemistry, at the Agricultural and Mechanical College, is State Chemist; and all fertilizers shall be analyzed by him, and his certificate of analysis, stating the percentage therein of nitrogen, in an available form, of potash soluble in water, and of phosphoric acid in an available form, soluble or reverted, and of insoluble phosphoric acid, shall be posted and kept posted, in a conspicuous manner, at every place where the same are sold.

Certificate by Manufacturer: There shall also be so posted the certificate of the manufacturer or producer of every brand of fertilizer, giving the component parts thereof, and the valuable elements, as prescribed for the State Chemist's certificate, and guaranteeing that it does not contain leather in any form, and giving the place of manufacture or production, the name and address of the manufacturer or producer, and the name of the trade-mark of the brand, and such certificate, and the prescribed tag, shall be pasted on, or attached to, every package of fertilizer sold.

Chemist to Analyze Samples and to Furnish Certificates and Tags: Before offering any fertilizer for sale, the manufacturer, producer, or seller, shall furnish to the State Chemist, a certificate of the manufacturer or producer, showing the component parts thereof, and a fair sample of it, not less than one pound, sealed up in a glass jar and the Chemist shall analyze it and give his certificate thereof, and shall furnish the necessary number of tags; he shall also, from time to time, secure samples from packages offered for sale, or sold; analyze the same and record the analyses.

Chemist to Analyze Samples sent by Farmers or other Purchasers: The State Chemist shall also analyze all fair samples of fertilizers properly certified and prepared which may be furnished to him by farmers and other purchasers for use free of charge, and shall give a certificate thereof.

Certificate of Chemist as Evidence: The certificate of analysis of the State Chemist shall be evidence of the

percentage of the valuable elements in any fertilizer analyzed by him.

Tags, How Supplied: Forgery to Counterfeit or Use a Second Time: The State Chemist shall have prepared a sufficient number of tags of suitable material and form, with proper fastenings for attaching to packages, and having printed thereon the word "Guaranteed," with the year of sale, number of the tag, and a *fac simile* of his signature. Any person who shall counterfeit a fertilizer tag, or who shall use one not sold to him by the State Chemist, or who shall use one a second time, shall be guilty of forgery.

Fees for Analysis and for Tag: The State Chemist shall charge and collect for the analysis of each brand of fertilizer the sum of fifteen dollars, and for enough tags for one ton of fertilizer, thirty cents.

Fees, how Used and Accounted for: The fees received by the State Chemist shall be deposited with the Treasurer of the Agricultural and Mechanical College, and shall be expended, under the directions of the Board of Trustees, in defraying the expenses of analyzing fertilizers, the preparation of tags, and otherwise, as the board shall allow or direct.

Certificate good for one Season only: The certificate of the State Chemist shall be good for one year, if no fraud or deception be practiced in obtaining it, and an analysis must be made every year or season, of each brand of fertilizer.

Record of Analysis, and of Tags Issued, to be kept: The State Chemist shall record, in a suitable book, the result of every analysis of fertilizer made by him, specifically showing the percentage of valuable elements, the date of the analysis, the name and residence of the manufacturer or producer, the name of the brand and place of manufacture or production, and the number of tags issued for each brand.

Kind of Package Fertilizer Sold in: Every fertilizer shall be sold and delivered in a barrel, box, sack or other

package, convenient for handling, and suitable for having attached thereto the certificate and tag,

Manufacturer, Owner and Agent Liable for Damages: Every manufacturer, owner or agent; selling any spurious or adulterated fertilizer, or any fertilizer which shall lack materially in a valuable element represented to be therein, shall be liable to the person injured for quadruple the price received, or agreed upon for the article sold.

Adulterated Fertilizer Forfeited and Contracts Avoided: If any fertilizer shall be sold, offered or kept for sale, which is spurious or adulterated or which has not been analyzed by the State Chemist and tagged, or which shall lack materially any of the valuable elements specified in the certificate of analysis, the whole of that shipment of fertilizer shall be forfeited to the county wherein the same may be, and that, whether the fraud be perpetrated by the manufacturer or owner, or by an agent or servant or other person having control of it; and all contracts made for the sale of it, shall be void, *ab initio*, wherever stipulated to be performed.

Whenever the State Chemist or any other citizen shall make affidavit before any competent officer, that untagged or other fraudulent fertilizer is being sold, in violation of the provisions of this act, the officer shall issue a writ of attachment, in the name of the State of Mississippi, returnable to the court having jurisdiction of the amount in controversy; and by virtue of said writ the sheriff or other competent officer shall seize the fertilizer mentioned and hold the same subject to the action of the court. The defendants shall be summoned to answer said attachment as defendants are required to be summoned under the general attachment laws of this State. And upon the order of the court the fraudulent, or untagged, or adulterated fertilizer becomes the property of the county wherein the same may be.

Laboratory No,	Name of Brand and Manufacturer.	Where and From Whom Collected.
	Armour Packing Company, Kansas City, Mo.	
827	B. B. AND POTASH.....	M. E. Gilbert, Meridian..... Guarantee
820	COTTON GROWER.....	M. E. Gilbert, Meridian..... Guarantee
815	FERTILIZER NO. 271....	W. L. Wellman, Wesson.....
693	" "	W. L. Wellman, Wesson..... Average
		Guarantee
760	FERTILIZER NO. 272....	Lann & Carter Hdw. Co., Aber'n
819	" "	M. E. Gilbert, Meridian..... Average
		Guarantee
694	FERTILIZER NO. 386....	Lotterhos & Huber, Cryst'l Spr's Guarantee
	Birmingham Fertilizer Company, Birmingham, Ala.	
745	BIRMINGHAM HIGH GR'D B. B. AND POTASH....	Gilmore & May, Amory..... Guarantee
775	BOSS GUANO.....	Threefoot Bros. & Co., Meridian. Guarantee
	Bradley Fertilizer Company, Charleston, S. C.	
881	BRADLEY'S PALMETTO ACID PHOSPHATE.....	Henry Key, Lauderdale.....
882	" "	C. W. Cochran, Lizelia..... Average
		Guarantee
	Capital Fertilizer Company, Jackson, Miss.	
639	ACID PHOSPHATE	I. M. Eagan, Crystal Springs..
676	" "	Walton, Gillaspv & Russell, Hicky
793	" "	Ford Bros Co., Centreville.....

Laboratory Number	Moisture—Per Cent.	Phosphoric Acid—Per Cent.				Nitrogen—Per Cent.	Potash—Per Cent.	Relative Value per Ton.
		Water Soluble.	Citrate Soluble.	Insoluble.	Total.			
827	5.37	4.77	5.36	1.37	11.50	4.83	6.36	28.03
.....	.....	6.00	3.00	2.00	11.00	4.50	7.00	26.95
820	3.31	5.36	2.88	.45	8.69	1.52	.....	11.75
.....	.....	5.50	2.50	1.50	9.50	1.50	.....	11.50
815	3.14	4.39	2.53	.58	7.50	1.29	1.20	11.09
693	2.89	4.44	2.84	.70	7.98	1.42	1.11	11.66
....	3.01	4.42	2.68	.64	7.74	1.36	1.16	11.39
....	.....	5.00	2.00	1.50	8.50	1.50	1.00	11.55
760	4.98	5.04	2.51	.51	8.06	1.71	2.27	13.84
819	3.52	4.75	2.43	.78	7.96	1.47	2.39	13.00
....	4.25	4.89	2.74	.64	8.01	1.59	2.32	13.42
....	.....	5.00	2.00	1.50	8.50	1.50	2.00	12.55
694	4.45	5.16	3.08	1.47	9.71	2.41	6.34	20.29
....	.....	5.00	3.00	2.00	10.00	2.50	6.00	19.95
745	14.87	8.81	2.25	1.77	12.83	1.73	2.17	17.33
....	.....	7.00	2.00	2.00	11.00	1.64	2.00	14.90
775	11.69	9.56	1.30	.77	11.63	1.99	2.71	18.42
....	.....	7.00	2.00	2.00	11.00	1.64	2.00	14.90
881	12.12	9.66	3.37	1.19	14.22	.....	.....	11.39
882	12.01	9.66	3.29	1.25	14.20	.....	.....	11.33
....	12.06	9.66	3.33	1.22	14.21	.....	.....	11.36
....	.....	9.00	3.00	2.00	14.00	.....	.....	10.50
639	12.11	12.51	3.83	.88	17.22	.....	.....	14.33
676	11.65	10.12	4.92	1.06	16.10	.....	.....	13.05
793	11.23	11.73	3.36	1.10	16.19	.....	.....	13.25

Laboratory No.	Name of Brand and Manufacturer.	Where and From Whom Collected.
839	ACID PHOSPHATE (con'd)	M. J. L. Hoye's Son, Newton
840	" "	Carr & Carr, McCool
871	" "	A. E. Kelly, Kosciusko
		Average
		Guarantee
716	KAINIT	Ford Bros. Co., Centreville
717	"	W. H. Barron & Co., Cryst'l Sp'gs
		Average
		Guarantee
715	MISSISSIPPI STATE	I. M. Eagan, Crystal Springs . .
817	GRANGE	Moore Bros., Morton
863	" "	J. T. Lilly, Summit
		Average
		Guarantee
615	NONPAREIL	Factory
	"	Becker, Lyell & McGrath Co.,
618	"	Wesson
619	"	Lampton Merc. Co., Magnolia.
620	"	M. J. L. Hoye's Sons, Newton . .
	"	Walton, Gillaspay & Russell,
621	"	Hickory
743	"	W. H. Barron & Co., Crystal Spr's
788	"	W. S. Howards & Co., Hazlehurst
765	"	J. L. Moyses & Bro., Summit . . .
		Average
		Guarantee
714	PRODUCER	T. C. Vivaret & Bro., Newton . .
870	"	J. H. Eddleman, Wier's
		Average
		Guarantee
638	PURE BONE MEAL	Factory
637	" " "	Lampton Mer. Co., Magnolia . .
766	" " "	Hymon Mer. Co., Summit
		Average
		Guarantee
705	RED STAR	John Parker, Terry
711	" "	Wm. Atkinson & McDonald, Wes'n

Laboratory Number.	Moisture—Per Cent.	Phosphoric Acid—Per Cent.				Nitrogen—Per Cent.	Potash—Per Cent.	Relative Val. Per Ton.
		Water Soluble.	Citrate Soluble.	Insoluble.	Total.			
839	11.89	11.59	3.65	.43	15.67	.....	.....	13.35
840	11.69	11.03	3.42	.81	15.26	.....	.....	12.66
871	7.93	13.07	1.10	.88	15.05	.....	.....	12.64
....	11.08	11.67	3.38	.86	15.92	.....	.....	13.21
....	.....	10.00	2.00	.....	.....	.....	.....	10.60
716	4.79	.....	.....	.....	.....	.....	12.18	12.18
717	6.93	.....	.....	.....	.....	.....	12.08	12.08
....	5.86	.....	.....	.....	.....	.....	12.13	12.13
....	.....	.....	.....	.....	.....	.....	12.00	12.00
715	12.62	7.15	2.95	.81	10.91	1.91	2.07	16.65
817	12.00	7.07	3.77	1.46	12.30	1.64	2.10	16.66
869	12.97	6.73	2.14	.90	9.77	1.57	2.82	15.40
....	12.53	6.98	2.95	1.06	10.99	1.71	2.33	16.24
....	.....	6.00	1.00	.50	7.50	1.50	1.75	12.40
615	11.46	8.41	2.26	.72	11.39	1.73	2.20	16.97
618	11.87	7.79	2.31	.62	10.72	1.56	2.03	15.80
619	11.50	8.27	1.94	.74	10.95	1.88	2.10	16.82
620	11.21	5.06	4.98	.50	10.54	1.47	2.30	15.52
621	12.35	8.31	2.05	.71	11.07	1.64	2.08	16.34
743	11.35	8.19	2.44	.59	11.22	1.59	2.60	16.96
788	12.22	6.56	2.97	.78	10.31	1.76	1.98	15.61
765	11.86	7.48	3.04	1.20	11.72	1.70	2.73	17.21
....	11.73	7.51	2.75	.73	10.99	1.67	2.25	16.41
....	.....	6.00	1.00	.50	7.50	1.50	1.75	12.40
714	11.66	7.36	1.55	.90	9.81	1.68	2.44	15.40
870	10.68	6.43	2.32	.90	9.60	1.58	2.29	14.76
....	11.17	6.89	1.93	.90	9.71	1.63	2.37	15.08
....	.....	6.00	2.00	.50	8.50	1.50	1.75	13.30
638	4.46	.....	.....	.....	27.70	2.28	.....	22.32
637	5.60	.....	.....	.....	27.26	2.27	.....	22.08
766	4.94	.....	.....	.....	24.85	3.80	.....	24.41
....	5.00	.....	.....	.....	26.60	2.78	.....	22.93
....	.....	.....	.....	.....	25.00	2.25	.....	20.63
705	10.42	6.83	3.23	.64	10.70	1.67	2.26	16.18
711	11.02	8.00	1.78	1.29	11.07	1.69	1.97	15.80

Laboratory No.	Name of Brand and Manufacturer.	Where and From Whom Collected.
806	RED STAR (continued)...	Carr & Carr, McCool.....
868	“ “	J. H. Eddleman, Wier's..... Average
		Guarantee.....
712	VEGETABLE GROWER...	W. S. Howards & Co., Hazleh'st
713	“ “ ...	Kemp & Abrams, Hazlehurst.. Average.....
	Goulding Fertilizer Company, Pensacola, Fla.	Guarantee.....
830	GOULDING'S ACID PHOS- PHATE.....	Hawkins & Co., Hattiesburg... Guarantee
	Jackson Fertilizer Company, Jackson, Miss.	
677	ACID PHOSPHATE.....	W. H. Chambliss, Newton.....
867	“ “	N. G. Gilliland & Co., Kosciusko Average
		Guarantee
630	COMPLETE VEGETABLE AND FRUIT.....	Lotterhos&Huber, Crystal Spr's
631	“ “	Gallman Mer. Co., Gallman....
809	“ “	Robinson Mer. Co., Centerville. Average.....
		Guarantee
708	GULF STAAES GUANO..	T. C. Simmons & Co., Magnolia.
783	“ “ “ ...	Mayes & Berry, Hazlehurst... Average.....
		Guarantee.....
852	KAINIT.....	Lotterhos & Huber, Crystal Sp Guarantee
768	LOTTERHOS & HUBER'S TOMATO GROWER.....	Lotterhos & Huber, Crystal Sps Guarantee
625	ROYAL C.....	Lotterhos&Huber, Crystal Spr's
626	“	C. Atkinson, Summit.....
627	“	Gallman Mer. Co., Gallman....
628	“	Earns, Long & Co., Wesson....

Laboratory Number.	Moisture—Per Cent.	Phosphoric Acid—Per Cent.				Nitrogen—Per Cent.	Potash—Per Cent.	Relative Value Per Ton.
		Water Soluble	Citrate Soluble.	Insoluble.	Total.			
806	10.86	7.77	2.63	1.27	11.67	1.60	2.57	16.71
868	12.07	7.06	2.54	.93	10.53	1.55	2.02	15.24
....	11.09	7.42	2.55	1.03	10.99	1.63	2.20	15.98
.....	.....	6.00	1.00	.50	7.50	1.50	1.75	12.40
712	9.59	5.85	2.35	.78	8.98	2.54	5.93	20.27
713	9.12	5.78	2.33	.63	8.74	2.85	5.86	20.86
....	9.31	5.82	2.34	.70	8.86	2.70	5.89	20.57
.....	.....	5.00	2.00	.50	7.50	2.50	3.00	16.05
830	7.75	12.88	3.87	4.31	21.06	.....	.....	14.69
.....	.....	13.00	2.00	1.00	16.00	.....	.....	13.30
677	13.05	13.32	3.65	1.11	18.08	.....	.....	14.91
867	10.50	10.98	4.65	.78	16.41	.....	.....	13.60
....	11.72	12.15	4.15	.94	17.24	.....	.....	14.25
.....	.....	12.50	2.00	1.00	15.50	.....	.....	12.35
630	7.61	5.10	1.58	1.20	7.88	3.31	5.76	20.56
631	7.45	5.01	2.55	.50	8.06	3.69	4.61	21.14
809	18.58	4.03	2.87	.40	7.30	3.12	3.95	18.41
....	11.21	4.71	2.34	.70	7.75	3.38	4.77	20.04
.....	.....	3.00	3.00	1.00	7.00	3.00	4.00	17.20
708	19.86	7.52	2.11	.90	10.53	1.80	1.82	15.74
783	18.98	7.94	1.98	.65	10.57	1.91	2.02	16.53
....	19.42	7.73	2.04	.77	10.55	1.86	1.92	16.14
.....	.....	6.00	1.60	1.00	8.60	1.55	1.80	13.12
852	4.42	.....	.....	.....	.....	.....	12.17	12.17
.....	.....	.....	.....	.....	.....	.....	10.00	10.00
768	12.21	8.05	2.78	.42	11.25	2.15	2.57	18.50
.....	.....	6.00	4.00	1.00	11.00	2.40	1.00	16.60
625	19.82	7.71	2.05	.93	10.69	1.82	1.70	15.27
626	17.66	8.05	2.02	.61	10.68	1.89	1.92	16.53
627	17.20	7.52	2.10	.81	10.43	1.99	1.90	16.29
628	19.99	7.51	2.09	.79	10.39	1.73	1.81	15.53

Laboratory No.	Name of Brand and Manufacturer.	Where and From Whom Collected.
629	ROYAC C. (continued)...	J. M. Stephenson, Morton.....
744	“	J. P. Myer, Ellisville.....
784	“	M. D. Graham & Co., Forest...
789	“	Barney Johns & Co., Gloster...
834	“	J. Q. Martin, Hazlehurst.....
	Sold by	Average
	Marbach & Eagan,	Guarantee.....
	Crystal Springs, Miss.	
718	BAT GUANO.....	Robinson Mer. Co., Centreville.
719	“ “	W. J. Davis, Terry
811	“ “	J. P. Wise, Hazlehurst.....
883	“ “	I. M. Eagan, Crystal Springs..
	P. B. Mathiason Manufacturing Co.,	Average
	St. Louis, Mo.	Guarantee
777	VEGETABLE FERTILIZER	J. B. Yellowey, Ridgeland.....
		Guarantee
	Meridian Fertilizer Factory,	
	Meridian, Miss.	
696	BLOOD BONE AND B....	Ford Bros. Co., Centreville....
802	“ “ “	Seward & Gaston, Aukerman..
803	“ “ “	C. P. McGee, Gloster.....
843	“ “ “	Bonner Bros., Sandersville....
844	“ “ “	Weems & Floyd, Shubuta.....
		Average
		Guarantee
698	FARMERS' FRIEND.....	J. P. Meyer, Ellisville.....
699	“ “	Bonner Bros., Sandersville....
		Average
		Guarantee
851	KAINIT.....	Hawkins & Co., Hattiesburg...
		Guarantee
	SOUTHERN ACID PHOS-	
673	PHATE	W. M. McGough, Morton.....
674	“ “ “	W. B. Richardson, Newton....

Laboratory Number.	Moisture—Per Cent.	Phosphoric Acid—Per Cent.				Nitrogen—Per Cent.	Potash—Per Cent.	Relative Value Per Ton.
		Water Soluble	Citrate Soluble.	Insoluble.	Total.			
629	15.31	8.02	2.05	.84	10.91	1.81	1.95	16.35
744	17.96	7.87	2.13	1.05	11.05	1.95	1.79	16.45
784	20.20	7.82	1.84	.72	10.38	1.89	1.96	16.17
789	20.69	7.75	1.96	.73	10.44	1.84	1.75	15.86
834	20.05	7.70	2.07	.67	10.44	1.79	1.85	15.89
....	18.76	7.77	2.03	.79	10.60	1.85	1.85	16.05
....	.....	6.00	1.60	1.00	8.60	1.55	1.80	13.12
718	18.80	.....	.....	.....	11.49	4.52	.69	18.88
719	20.08	.....	.....	.....	9.93	4.81	.63	18.62
811	19.34	.....	.....	.....	11.80	4.26	.75	18.48
883	16.41	.....	.....	.....	7.78	4.39	.64	16.28
....	18.65	.....	.....	.....	10.25	4.50	.68	18.07
....	.....	.....	.....	.....	5.00	4.50	.75	15.00
777	8.97	2.12	4.19	3.13	9.44	4.21	1.79	18.21
....	.....	3.50	4.50	1.50	9.50	3.75	2.00	18.93
696	12.21	7.33	1.72	4.81	13.86	1.98	1.87	15.70
802	14.34	6.86	2.69	4.54	14.09	1.75	1.58	15.24
803	13.51	6.84	2.15	4.18	13.17	2.19	2.59	16.82
843	13.80	6.75	2.30	4.04	13.09	2.10	2.45	16.52
844	16.49	8.26	2.31	2.32	12.91	1.76	2.25	16.99
....	14.07	7.21	2.23	3.98	13.42	1.96	2.15	16.26
....	.....	7.75	2.00	1.00	10.75	1.75	1.85	15.78
698	15.90	9.61	1.97	.77	12.39	1.47	1.58	16.64
699	14.65	10.25	1.99	1.10	13.34	1.38	1.50	16.99
....	15.27	9.93	1.98	.93	12.86	1.43	1.54	16.83
....	.....	8.00	2.50	1.00	11.50	1.25	1.50	14.88
851	6.50	.....	.....	.....	.....	.....	12.64	12.64
....	.....	.....	.....	.....	.....	.....	12.00	12.00
673	15.42	12.74	2.31	1.18	16.23	.....	.....	13.32
674	16.29	14.17	1.04	1.05	16.26	.....	.....	13.58

Laboratory No.	Name of Brand and Manufacturer.	Where and From Whom Collected.
SOUTHERN ACID PHOS-		
675	PHATE (continued)	G. W. Walton, Hickory
795	" " " . . .	D. O. Mathews, Iuka
858	" " " . . .	W. H. Barron & Co., Crystal Spr
859	" " " . . .	Donald Bros., Quitman
		Average
		Guarantee
701	SOUTHERN SOLUBLE	Lampton Mer. Co., Magnolia . .
804	" " " . . .	T. B. Gaddis, Morton
855	" " " . . .	Wm. Atkinson & McDonald, W's'n
		Average
		Guarantee
STANDARD HOME MIX-		
616	TURE	J. McGrath & Sons, Brookhaven
617	" " " . . .	Earns, Long & Co., Wesson . . .
622	" " " . . .	T. C. Vivaret & Bro., Newton . .
623	" " " . . .	T. F. Abney & Son, Newton . . .
624	" " " . . .	W. B. Richardson, Newton
786	" " " . . .	S. J. Johnson, Ellisville
790	" " " . . .	J. F. Story, Forest
828	" " " . . .	G. K. Evans & Co., Pachuta . . .
848	" " " . . .	Weems & Floyd, Shubuta
		Average
		Guarantee
Mobile Phosphate and Chemical Co. Mobile, Ala.		
726	ECLIPSE SOLUBLE GU'NO	M. J. L. Hoye's Sons, Newton . .
812	" " " . . .	J. W. McKay, Waynesboro
838	" " " . . .	J. M. Stevenson, Morton
		Average
		Guarantee
724	I. X. L. ACID PHOSPHATE	Wm. Atkinson & McDonald, Wesn
725	" " " . . .	T. C. Simmons & Co., Magnolia
800	" " " . . .	Lann & Carter Hdw. Co., Aber.
801	" " " . . .	W. B. Potts Co., Kosciusko
874	" " " . . .	Miss. & Ala. Co-operative Merc.
		Co., State Line
		Average
		Guarantee

Laboratory Number.	Moisture—Per Cent.	Phosphoric Acid—Per Cent.				Nitrogen—Per Cent.	Potash—Per Cent.	Relative Val. Per Ton.
		Water Soluble.	Citrate Soluble.	Insoluble.	Total.			
675	16.34	13.92	1.50	.44	15.86	.....	.....	13.73
795	13.96	12.74	3.74	.45	16.93	.....	.....	14.46
858	13.20	11.19	5.13	1.78	18.10	.....	.....	14.17
859	12.74	11.91	5.15	1.22	18.28	.....	.....	14.84
....	14.66	12.78	3.14	1.02	16.94	.....	.....	14.02
....	.....	12.50	2.00	.50	15.00	.....	.....	12.85
701	13.09	7.93	2.01	1.18	11.12	2.12	1.73	16.77
804	14.02	7.64	1.77	2.07	11.48	2.01	1.79	16.05
855	13.57	7.52	2.04	2.44	12.00	2.06	2.09	16.60
....	13.56	7.70	1.94	1.89	11.53	2.06	1.87	16.47
....	.....	7.75	2.00	1.00	10.75	1.75	1.85	15.78
616	13.35	7.97	1.86	.85	10.68	2.04	1.84	16.58
617	13.39	8.00	2.13	.68	10.81	1.97	1.87	16.72
622	13.01	7.85	2.20	.77	10.82	1.90	1.99	16.57
623	15.79	7.89	2.10	.88	10.87	1.94	1.89	16.52
624	13.71	8.02	1.86	.80	10.68	1.92	1.92	16.41
786	13.97	7.51	1.98	2.66	12.15	2.15	2.28	16.95
790	13.06	6.79	2.18	2.53	11.50	2.24	1.94	16.29
828	13.01	7.97	2.49	1.89	12.35	2.28	1.83	17.74
848	13.91	8.49	1.53	1.22	11.24	1.76	2.35	16.61
....	13.69	7.83	2.04	1.36	11.23	2.02	1.91	16.71
....	.....	7.75	2.00	1.00	10.75	1.75	1.85	15.78
726	13.21	8.19	2.02	1.16	11.36	2.01	2.33	17.36
812	12.44	8.78	1.41	1.94	12.13	2.09	2.49	17.77
838	12.38	6.54	2.65	1.61	10.80	2.21	2.78	17.23
....	12.67	7.83	2.03	1.57	11.43	2.10	2.53	17.45
....	.....	8.00	1.25	1.50	10.75	1.45	1.50	14.25
724	12.76	10.91	2.80	1.73	15.44	.....	.....	12.06
725	12.75	10.55	3.37	2.57	16.49	.....	.....	12.20
800	13.92	10.98	2.98	2.60	16.56	.....	.....	12.27
801	14.17	9.85	3.23	3.40	16.48	.....	.....	11.45
874	17.47	8.60	4.14	2.64	15.38	.....	.....	11.05
....	14.21	10.18	3.30	2.59	10.07	.....	.....	11.81
....	.....	10.00	2.00	1.50	13.50	.....	.....	10.60

Laboratory No.	Name of Brand and Manufacturer.	Where and From Whom Collected.
853	KAINIT.....	Wetherbee & Huggins, Waynesboro Guarantee
690	K. K. K. AMMONIA'D BONE	Hawkins & Co., Hattiesburg.....
691	" " "	J. L. Moyse & Bro., Summit.....
761	" " "	J. L. Moyse & Bro., Summit.....
873	" " "	W. V. Thompson, Quitman..... Average
		Guarantee.....
692	MOBILE STANDARD.....	W. M. Hyde, Vossburg.....
723	" "	W. H. Chambliss, Newton.....
635	" "	Winner & Meyer, Meridian.....
748	" "	S. M. Barnett, Booneville.....
781	" "	W. H. Chambliss, Newton.....
829	" "	J. E. Buckley, Enterprise.....
872	" "	B. F. Harris, State Line..... Average
		Guarantee
	New Orleans Acid and Fertilizer Co., New Orleans, La.	
	BLACK DIAMOND ACID	
792	PHOSPHATE.....	W. B. Potts Co., Kosciusko.....
847	" "	Hattiesburg Comp. Co., Hattiesburg.....
877	" "	Seward & Gaston, Ackerman..... Average
		Guarantee
	CRESCENT CITY ACID	
794	PHOSPHATE.....	N. Doolittle, Newton.....
808	" "	J. P. & W. C. Wetherbee, Waynesboro..... Average
		Guarantee
	GOLD DUST FOR COTTON	
778	AND CORN.....	Robinson Merc. Co., Centreville.....
818	" " " "	J. K. Kirkland, Quitman.....
836	" " " "	Wm. Atkinson-Bacot Co., Osyka.....
837	" " " "	Hattiesburg Comp. Co., Hattiesburg..... Average
		Guarantee

Laboratory Number	Moisture—Per Cent.	Phosphoric Acid—Per Cent.				Nitrogen—Per Cent.	Potash—Per Cent.	Relative Value per Ton.
		Water Soluble.	Citrate Soluble.	Insoluble.	Total.			
853	5.28	.....	.....	.....	.....	.....	12.34	\$12.34
....	.....	.....	.....	.....	.....	.....	12.00	12.00
690	12.94	8.15	1.72	.95	12.82	1.39	1.54	14.72
691	12.85	7.57	2.24	1.05	10.86	1.39	1.60	14.67
761	13.54	6.95	4.10	2.43	13.48	1.38	1.38	15.47
873	12.03	9.21	3.28	3.71	16.20	1.07	1.04	15.88
....	12.84	7.97	2.83	2.03	12.84	1.31	1.39	15.18
....	.....	8.75	1.25	1.50	11.50	.85	1.00	13.01
692	10.97	7.07	2.52	1.40	10.99	2.08	2.34	16.87
723	10.31	6.06	2.56	1.54	10.16	2.11	2.21	15.86
635	12.86	7.80	1.30	.98	10.08	2.03	2.39	16.44
748	10.24	7.66	1.95	1.38	10.99	2.29	2.53	17.67
781	11.74	6.43	2.78	2.39	11.60	1.81	2.41	15.87
829	12.71	7.47	2.13	1.60	11.20	1.82	2.49	16.43
872	15.98	7.71	3.16	1.20	12.07	1.59	1.93	16.46
....	12.11	7.17	2.34	1.49	11.01	1.96	2.33	16.51
....	.....	6.00	2.00	1.50	9.50	1.65	2.00	13.93
792	11.81	9.49	4.56	1.00	15.05	.....	.....	12.19
847	12.68	8.58	4.35	1.39	14.32	.....	.....	11.23
877	11.33	8.07	5.40	1.11	14.58	.....	.....	11.58
....	11.94	8.71	4.77	1.16	14.65	.....	.....	11.66
....	.....	10.00	2.00	2.00	14.00	.....	.....	10.60
794	12.16	8.37	5.64	.96	14.97	.....	.....	12.05
808	11.28	7.60	6.14	1.22	14.96	.....	.....	11.75
....	11.72	7.98	5.89	1.09	14.97	.....	.....	11.90
....	.....	10.00	2.00	2.00	14.00	.....	.....	10.70
778	10.36	8.52	2.48	1.93	12.93	1.59	1.34	16.07
818	12.03	8.37	2.99	2.09	13.45	1.72	1.42	16.77
836	11.38	7.60	4.21	.92	12.73	2.03	1.52	17.98
837	12.97	7.60	3.58	1.42	12.60	1.67	1.70	16.70
....	11.68	8.02	3.31	1.59	12.93	1.75	1.49	16.88
....	.....	7.25	2.10	1.50	10.85	1.92	1.00	14.94

Laboratory No.	Name of Brand and Manufacturer.	Where and From Whom Collected.
	GOLDSMITH'S IMPROVED	
787	MIXTURE.....	L. Cohn & Bro., Brookhaven..
772	“ “ “	A. B. Wolf, Forest.....
773	“ “ “	N. Doolittle, Newton.....
774	“ “ “	G. W. Walton, Hickory.....
875	“ “ “	Hawkins & Co., Hattiesburg...
876	“ “ “	Earns, Long & Co., Wesson....
		Average
		Guarantee
	Pacific Guano Co., Charleston, S. C..	
746	SOL. PACIFIC GUANO...	Gilmore & May, Amory.....
		Guarantee
	Planters' Fertilizer Company, New Orleans, La.	
720	COTTON AND CORN FER.	Boyd & Lee, Wesson.....
810	“ “ “ ..	Boyd & Lee, Wesson.....
		Average
		Guarantee
	Southern Fertilizer Co., Atlanta, Ga.	
749	SCOTT'S ACID PHOS.....	D. D. Richardson, Columbus...
		Guarantee
	SCOTT'S ACID AND MEAL	
756	FORMULA.....	D. D. Richardson, Columbus...
		Guarantee
	SCOTT'S GOSSYPIUM	
878	PHOSPHO.....	W. G. Rutledge, Ripley.....
879	“ “ “ ..	A. Roberts & Co., Lauderdale..
		Average
		Guarantee
	Standard Guano & Chemical Co., New Orleans, La.	
727	ACID PHOSPHATE	Lampton Mer. Co., Magnolia..
728	“ “	J. P. Wise, Hazlehurst.....

Laboratory Number.	Moisture—Per Cent.	Phosphoric Acid—Per Cent.				Nitrogen—Per Cent.	Potash—Per Cent.	Relative Value Per Ton.
		Water Soluble	Citrate Soluble.	Insoluble.	Total.			
787	12.12	7.94	3.71	1.32	12.97	1.84	1.52	\$17.40
772	12.82	8.57	2.14	2.07	12.78	1.60	1.43	15.93
773	11.37	8.11	2.83	1.47	12.41	1.94	1.53	17.04
774	12.87	8.42	2.08	2.00	12.50	1.71	1.57	16.14
875	12.86	8.31	3.14	1.87	13.32	1.68	1.31	16.65
876	12.47	7.75	3.28	1.45	12.48	1.88	1.54	16.94
....	12.42	8.18	2.86	1.69	12.74	1.77	1.48	16.68
....	.....	7.25	2.10	1.50	10.85	1.92	1.00	14.94
746	16.62	7.77	.96	2.07	10.80	1.94	1.21	14.69
....	.....	6.50	2.00	2.00	10.50	1.75	1.00	13.68
720	11.82	6.67	1.51	.06	8.24	2.22	1.65	15.23
810	11.66	6.75	1.56	.06	8.37	2.04	2.21	15.46
....	11.74	6.71	1.54	.06	8.31	2.13	1.93	15.35
....	.....	7.00	1.50	.15	8.65	2.00	2.00	15.35
749	11.01	9.98	5.10	3.72	18.80	.....	.....	13.06
....	.....	11.00	3.00	1.00	15.00	.....	.....	12.30
756	11.06	8.21	3.77	3.44	15.42	1.32	1.22	16.12
....	.....	7.00	3.00	1.00	11.00	.83	1.00	12.78
878	12.05	7.93	2.20	2.19	12.32	2.83	1.81	18.79
879	11.61	6.97	3.58	2.05	12.60	2.34	2.09	18.13
....	11.83	7.45	2.89	2.12	12.46	2.58	1.95	18.46
....	.....	6.00	3.00	1.00	10.00	2.05	2.00	15.83
727	12.43	11.71	5.01	.92	17.64	.....	.....	14.55
728	13.81	10.85	5.51	1.87	18.23	.....	.....	14.17

Laboratory No.,	Name of Brand and Manufacturer.	Where and From Whom Collected.
791	ACID PHOSPHATE (con'd)	Seward & Fancher, McCool....
866	“ “	T. M. Heidelberg, Heidelberg.. Average
		Guarantee
700	BLOOD, BONE, AND MEAT GUANO	Hymon Mer. Co., Summit.....
813	“ “ “	Hymon Mer. Co., Summit.....
832	“ “ “	J. L. Strahan, Poplarville..... Average
		Guarantee
706	CHAMPION FARMER'S CHOICE	S. Wolf, Osyka.....
707	“ “	Pfeifer & Dreyfus, Brookhaven
845	“ “	Sandersville Mer. Co., Sanders'le
846	“ “	T. M. Heidelberg, Heidelberg..
863	“ “	B. E. Jacobs, Gloster..... Average.....
		Guarantee
709	GROUND BONE.....	Lotterhos&Huber, Cryst'l Spr's
710	“ “	S. Wolf, Osyka.....
767	“ “	Hymon Mer. Co., Summit.....
864	“ “	I. N. Varnado, Osyka..... Average.....
		Guarantee
854	KAINIT.....	C. Atkinson, Summit..... Guarantee
747	MISSISSIPPI HOME GUANO.....	Dalrymple, Jonson & Co., Amory
831	“ “	B. F. Fridge, Ellisville..... Average.....
		Guarantee
814	Pelican Raw Bone Guano.	Wm. Atkinson-Bacot Co., Osyka Guarantee
785	STANDARD AMMONIATED SOLUBLE GUANO.....	M. J. L. Hoyer's Sons, Newton.. Guarantee

Laboratory No.	Moisture—Per Cent.	Phosphoric Acid—Per Cent.				Nitrogen—Per Cent.	Potash—Per Cent.	Relative Val. Per Ton.
		Water Soluble.	Citrate Soluble,	Insoluble.	Total.			
791	11.85	10.40	6.29	1.80	18.49	.....	.....	14.39
866	12.27	12.29	3.47	2.09	17.85	.....	.....	13.84
....	12.59	11.31	5.07	1.67	18.05	.....	.....	14.23
....	.....	10.00	2.00	1.00	13.00	.....	.....	10.60
700	11.58	8.25	2.05	1.38	11.68	1.90	2.89	17.74
813	11.27	8.35	2.54	1.89	12.78	2.24	2.46	18.70
832	11.00	6.54	3.41	1.83	11.78	2.48	2.70	18.51
....	11.28	7.71	2.66	1.70	12.08	2.21	2.68	18.32
....	.....	4.00	4.25	.....	.....	1.70	2.00	14.07
706	10.78	6.84	2.28	1.46	10.58	2.16	1.81	16.10
707	11.65	6.56	2.63	.86	10.05	2.31	2.00	16.70
845	11.27	7.24	1.86	2.16	11.26	1.97	1.55	15.39
846	11.57	7.38	1.95	2.00	11.33	1.71	1.66	15.08
863	11.47	6.63	2.77	1.46	10.86	2.02	1.68	15.85
....	11.35	6.93	2.30	1.59	10.82	2.03	1.74	15.82
....	.....	4.00	4.00	1.00	9.00	1.65	1.50	13.22
709	4.02	.....	.....	.....	22.16	3.77	.....	20.50
710	4.52	.....	.....	.....	19.01	2.83	.....	16.58
767	4.70	.....	.....	.....	16.51	2.90	.....	15.51
864	4.03	.....	.....	.....	19.02	3.16	.....	17.41
....	4.32	.....	.....	.....	19.17	3.16	.....	17.50
....	.....	.....	.....	.....	18.50	2.50	.....	15.50
854	4.02	.....	.....	.....	.....	.....	12.24	12.24
....	.....	.....	.....	.....	.....	.....	12.00	12.00
747	10.53	8.23	2.81	1.41	12.46	2.27	2.54	18.99
831	12.21	8.57	2.73	2.61	13.91	2.12	2.59	18.92
....	11.37	8.40	2.77	2.01	13.18	2.20	2.57	18.95
....	.....	4.00	5.00	1.00	10.00	1.65	2.00	14.62
814	12.28	6.01	3.49	2.06	11.56	1.99	1.20	15.33
....	.....	4.00	4.00	1.00	9.00	1.65	1.50	13.22
785	12.32	6.00	2.64	2.96	11.60	1.96	1.46	14.74
....	.....	4.00	4.00	1.00	9.00	1.65	1.50	13.22

Laboratory No.	Name of Brand and Manufacturer.	Where and From Whom Collected.
	STERN'S AMMONIATED R.	
816	B. SUPERPHOSPHATE.	Daniel & Willoughly, Brookh'vn
632	" " "	C. Atkinson, Summit.....
633	" " "	Hymon Mer. Co., Summit.....
634	" " "	Earns, Long & Co., Wesson...
782	" " "	Wm. Atkinson-Bacot Co..Osyka.
860	" " "	S. Wolf, Osyka.....
861	" " "	Dalrymple, Johnson&Co. Amory
862	" " "	Seward & Fancher, McCool....
865	" " "	F. H. Hartman, Brookhaven...
	Tennessee Chemical Company, Nashville, Tenn.	Average
		Guarantee
757	OX BRAND BONE WITH	Myers & Egger, Columbus.....
880	AMMONIA AND POTASH	R. M. Bourdeaux, Lauderdale..
	" " "	Average.....
		Guarantee
776	OX BRAND COTTON GU-	T. J. Bostic & Sons, Meridian..
759	ANO.....	Myers & Egger, Columbus.....
	" " "	Average.....
		Guarantee.....
807	OX BRAND HIGH GRADE	T. J. Bostic & Son, Meridian...
758	DIS. BONE.....	Myers & Egger, Columbus.....
	" " " "	Average
		Guarantee.....
	Threefoot Bros. & Co., Meridian, Miss.	
721	HIGH GRADE ENGLISH	J. L. Wells, Hickory.....
841	ACID PHOSPHATE.....	Threefoot Bros.&Co., Meridian.
857	" " " ..	E. P.&B. R. Brown, Lockhart...
		Average.....
		Guarantee.....
722	THREEFOOT'S IMPROVED	J. L. Wells, Hickory.....
805	MIXTURE.....	Threefoot Bros. & Co., Meridian
856	" " ..	E. P. & B. R. Brown, Lockhart..
		Average
		Guarantee

Laboratory Number	Moisture—Per Cent.	Phosphoric Acid—Per Cent.				Nitrogen—Per Cent.	Potash—Per Cent.	Relative Value per Ton.
		Water Soluble.	Citrate Soluble.	Insoluble.	Total.			
816	12.48	6.73	3.12	1.88	11.73	2.17	1.34	\$16.30
632	12.74	7.42	1.94	1.80	11.16	1.73	1.64	15.13
633	13.78	7.46	2.29	1.15	10.90	1.76	1.45	15.37
634	13.25	7.27	3.07	.62	10.96	1.73	1.31	15.67
782	13.09	6.36	3.05	2.09	11.50	2.30	1.41	16.27
860	12.73	5.80	2.80	2.12	10.72	1.98	1.73	15.00
861	12.99	7.25	1.51	1.45	10.21	1.57	1.48	14.01
862	12.16	6.37	3.23	2.55	12.15	2.14	1.37	16.00
865	12.71	5.92	2.60	2.23	10.75	1.78	1.17	13.88
....	12.88	6.73	2.62	1.76	11.12	1.91	1.43	15.29
....	.....	4.00	4.00	1.00	9.00	1.65	1.50	13.22
757	10.28	8.46	3.54	1.60	13.60	1.13	1.34	15.81
880	9.36	7.54	4.66	2.55	14.75	.91	.98	14.99
....	9.82	8.00	4.10	2.07	14.17	1.02	1.16	15.40
....	.....	8.00	2.00	1.00	11.00	.82	1.00	12.82
776	9.53	7.84	3.28	1.55	12.67	1.64	1.19	16.02
759	9.36	8.06	5.57	.37	14.00	1.57	1.13	18.13
....	9.44	7.95	4.42	.96	13.33	1.61	1.16	17.08
....	.....	8.00	2.00	1.00	11.00	1.65	1.00	14.93
807	12.12	13.65	2.65	.77	17.07	.....	.....	14.1
758	11.12	11.07	3.14	1.13	15.34	.....	.....	12.45
....	11.62	12.36	2.89	.95	16.20	.....	.....	13.45
....	.....	11.00	3.00	1.00	15.00	.....	.....	12.30
721	15.04	11.51	4.08	.73	16.32	.....	.....	13.62
841	14.98	12.09	4.54	1.01	17.64	.....	.....	14.51
857	16.74	13.93	2.51	1.24	17.68	.....	.....	14.54
....	15.58	12.51	3.71	.99	17.21	.....	.....	14.22
....	.....	12.50	2.50	.....	.....	.....	.....	13.25
722	10.82	8.19	2.73	.74	11.66	2.03	2.16	17.88
805	13.52	7.11	2.00	2.25	11.36	2.31	2.77	17.45
856	13.92	6.82	1.90	2.39	11.11	1.93	2.03	15.38
....	12.75	7.37	2.21	1.79	11.37	2.09	2.32	16.90
....	8.00	2.00	1.77	1.90	16.13

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