

THE
Connecticut Agricultural Experiment Station.

NEW HAVEN, CONN.

BULLETIN No. 95.

JUNE, 1888.

During the last two months Messrs. E. C. Ellwood and C. L. Gold, Agents of this Station, have collected samples of Commercial Fertilizers in all parts of Connecticut. 144 towns and villages have been visited, distributed as follows:

Hartford Co.	18
Tolland Co.	11
Windham Co.	14
New London Co.	26
Middlesex Co.	20
New Haven Co.	22
Fairfield Co.	20
Litchfield Co.	13
	<hr/>
	144

887 samples have been carefully drawn by a method which ensures accurate sampling. This method has already been described on page 91 of the Report of this Station for 1884.

These samples are now being analyzed as required by the Fertilizer Law of Conn., and the results so far as ready for publication are given in this Bulletin.

HOME-MIXED FERTILIZERS.

The formulas by which the mixtures were made are first given, followed by the table of analyses and certain conclusions drawn from it.

2262. A mixture made by a number of members of Advance Grange, Simsbury, from chemicals bought of L. Sanderson, New Haven. Sample drawn by J. C. Eddy, Secretary of the Grange.

100	pounds of Nitrate of Soda @ \$50. per ton cost.....	\$2.50
100	“ Sulphate of Ammonia @ \$70. per ton cost..	3.50
640	“ Tankage (N. Y.) @ \$35. per ton cost - ----	11.20
700	“ Dissolved Bone Black @ \$26. per ton cost..	9.10
360	“ Double Sulphate of Potash and Magnesia @ \$30. per ton cost.....	5.40
100	“ Muriate of Potash @ \$41.50 per ton cost...	2.07
<u>2000</u>	“ Mixture cost	<u>\$33.77</u>
	Add freight to Simsbury.....	1.80
		<u>\$35.57</u>

2245. Mixture for Potatoes, made by W. F. Andross, East Hartford.

400	pounds of Sulphate of Potash.
400	“ Acid Phosphate.
400	“ Dissolved Bone Black.
600	“ Baker's Castor Pomace.
200	“ Dry Ground Fish.

This mixture has been used by Mr. Andross for four years and has proved very satisfactory.

2241. Mixture for Corn. Made by Dennis Fenn, Milford, from chemicals bought of C. Meyer, Jr., Maspeth, L. I. Sample drawn by Mr. Fenn.

300	pounds Sulphate of Ammonia, @ \$71.60 per ton cost	\$10.74
1000	“ Bone, @ 29.60 “ “	14.80
250	“ Tankage, @ 29.60 “ “	3.70
250	“ Dissolved Bone Black, @ 27.60 “ “	3.45
400	“ Muriate of Potash, @ 41.60 “ “	8.32
<u>2200</u>	“ of the mixture, cost	<u>\$41.01</u>
	Or \$37.38 per ton unmixed at Milford.	

2231. Mixture for Potatoes. Made by Dennis Fenn from chemicals bought of C. Meyer, Jr. Sample drawn by Mr. Fenn.

200	pounds Sulphate of Ammonia, @ \$71.60 per ton cost	\$7.16
1000	“ Bone, @ 29.60 “ “	14.80
250	“ Tankage, @ 29.60 “ “	3.70
250	“ Dissolved Bone Black, @ 27.60 “ “	3.45
275	“ Muriate of Potash, @ 41.60 “ “	5.72
275	“ High grade Sulphate of Potash, @ 61.60 “ “	8.47
<u>2250</u>	“ of the mixture, cost,	<u>\$43.30</u>
	Or \$38.49 per ton unmixed at Milford.	

2239. Mixture made by G. F. Platt, Milford, from chemicals bought of C. Meyer, Jr. Sample drawn by Station Agent.

1000 pounds Sulphate of Ammonia,	@ \$71.60 per ton cost	\$35.80
5000 " Tankage,	@ 29.60 " "	74.00
5000 " Dissolved Bone Black,	@ 27.60 " "	69.00
1500 " Muriate of Potash,	@ 41.60 " "	31.20
1100 " High Grade Sulphate of Potash,	@ 61.60 " "	33.88
4800 " Bone,	@ 29.60 " "	71.04
<hr/> 18,400 " of the mixture,	cost,	<hr/> \$314.92
	Or \$34.22 per ton unmixed at Milford.	

2215. Home Mixture No. 1, made by C. T. Merwin & Son, Milford. From chemicals purchased of C. Meyer, Jr. Sample drawn by Mr. Merwin.

833 pounds Dissolved Bone Black.
667 pounds Tankage.
334 pounds Muriate of Potash.
166 pounds Sulphate of Ammonia.

2000 pounds of the mixture cost \$33.41 unmixed.

2216. Home Mixture No. 2, like the above except that 170 pounds of bone were used, replacing the same weight of Tankage. Sample drawn by Mr. Merwin.

2219. Home Mixture No. 3, like No. 1 except that the tankage was from another manufacturer. Sample drawn by Mr. Merwin.

2218. Home Mixture No. 4. Made by Mr. Merwin.

260 pounds Tankage.
710 pounds Dissolved Bone Black.
330 pounds Muriate of Potash.
100 pounds Sulphate of Ammonia.
600 pounds Bone.

2000 pounds of the mixture cost \$32.51.

The chemicals used in the mixtures made in Simsbury and Milford were analyzed and the results printed in Bulletin No. 94. From the composition of the chemicals and the quantity used is calculated what the analysis would have been in each case if the weighings had been exact, the materials and mixture uniform and no loss or gain of moisture had happened in handling. This is entered in the table in the column headed "Calculated." In general the agreement of the calculated and actual composition of the mixtures is fair though there are some wide variations.

The prices given are regular retail quotations. In some cases the actual cost of the mixture was considerably less on account of special rates obtained from the dealers.

Examination of the samples and of the table of analyses shows:

1st. That these home mixtures compare favorably in composition with the best commercial fertilizers. In all cases but one the valuation is higher than the average valuation of factory-made superphosphates or specials analyzed last year.

2d. While the home-mixtures are not as finely ground as the best factory-made fertilizers, they are yet satisfactory in this respect.

3d. In only one case does cost of materials exceed valuation. If we add \$3.00 per ton for cost of mixing the valuation and the cost will still be about the same. The cost of factory-made fertilizers usually exceeds valuation by 20-25 per cent. These analyses justify the statement made in our last report that while it is often cheaper for the purchaser to buy the best commercial mixtures, ammoniated superphosphates and special manures, than to buy the chemicals and mix them, yet the experience of a yearly increasing number of farmers shows that often money may be saved by the seasonable purchase of raw materials and their use in home-mixtures. On page 52 of the last report of the Station will be found a discussion of this subject.

HOME-MIXED FERTILIZERS, ANALYSES AND VALUATIONS.

Station No.	Name.	Nitrogen.				Phosphoric Acid.					Potash.		Chlorine.	Valuation per Ton.	Cost of Chemicals [unmixed].
		As Nitrates.	Ammonia.	Organic.	Found.	Total.	Calculated.	Soluble.	Reverted.	Insoluble.	Found.	Calculated.			
2262	Advance Grange Mixture.....	.71	1.04	1.73	3.48	3.7	6.15	3.85	2.24	12.24	11.4	7.6	2.36	\$36.20	\$35.57
2245	W. F. Andross, Potato Mixture.....	---	---	2.85	2.7	5.54	1.47	1.21	8.22	7.4	4.5	4.5	.26	26.53	28.00
2241	Dennis Fenn, Corn Mixture.....	---	2.41	3.08	5.49	5.5	1.82	6.12	5.32	13.26	12.0	8.06	---	40.73	37.38
2231	Dennis Fenn, Potato Mixture.....	---	1.76	2.42	4.18	4.5	1.73	6.09	4.13	11.95	11.3	13.40	6.18	41.22	38.49
2239	G. F. Platt, Mixture.....	---	1.33	3.45	4.78	4.4	3.44	4.10	2.92	10.46	11.3	8.49	7.3	37.12	34.22
2215	C. T. Merwin & Son, Mixture No. 1.....	---	1.72	3.06	4.78	4.3	5.96	2.14	.88	8.98	9.0	9.00	8.24	37.04	33.41
2216	" " " 2.....	---	17.6	2.47	4.23	4.2	5.96	3.03	1.75	10.74	10.6	8.71	9.2	36.84	33.41
2219	" " " 3.....	---	1.76	2.94	4.70	4.6	6.39	1.51	.45	8.35	9.1	8.93	8.39	36.21	33.41
2218	" " " 3.....	---	1.03	2.51	3.54	3.5	5.58	5.33	2.44	13.35	13.6	8.58	7.93	37.55	32.51

COTTON SEED MEAL, CASTOR POMACE AND TOBACCO STEMS.

2236. Castor Pomace. Made by St. Louis Lead and Oil Co. Stock of Olds & Whipple, Hartford.

2235. Prime Cotton Seed Meal. Sold by Olds & Whipple, Hartford.

2244. Cotton Seed Meal. Sold by F. S. Harmon, Suffield.

2253. Dark Cotton Seed Meal. Bought of J. E. Soper & Co., Boston, Mass. Sampled and sent by M. S. Frye, Poquonock.

2232. St. Louis Tobacco Stems. Stock bought by Comstock, Ferre & Co., Wethersfield.

2237. Tobacco Dust. Stock bought by Comstock, Ferre & Co., of A. D. Cowan & Co., New York.

ANALYSES.

	2236	2235	2244	2253	2232	2237
Nitrogen.....	5.78	7.23	7.42	7.20	1.92	2.35
Phosphoric acid.....	1.87	2.85	3.69	---	.81	.61
Potash.....	1.22	1.73	2.08	---	8.71	2.59
Cost per ton.....	\$20.00	25.00	25.00	27.00	11.00	30.00
Nitrogen costs per pound*	13.9 cts.	13.2 cts.	11.9 cts.			

* Reckoning phosphoric acid and potash at 7 cents and 5½ cents per pound respectively.

The sample of Tobacco Stems is of average quality. The Tobacco Dust contains 25.7 per cent. of sand and is of less value as a fertilizer than Tobacco Stems, while the price is almost three times as great. It is used by the purchaser rather as an insecticide than as a fertilizer.

The above analyses confirm the statement made in our last Bulletin that at present Cotton Seed Meal is one of the cheapest sources of organic nitrogen, and the same is true of Castor Pomace. While Nitrogen in Blood, Tankage and Fish costs from 16 to 17 cents per pound, in Castor Pomace and Cotton Seed Meal, it costs only 12 to 14 cents. There is no reason to believe that the nitrogen of these vegetable products is less available than that of animal matter. Those particularly who buy raw materials and chemicals in preference to ready-mixed goods may find Cotton Seed Meal and Castor Pomace well worth their attention as sources of organic nitrogen. Occasionally car

lots of Cotton Seed Meal are offered at lower rates because damaged and "off color." If the dark meal is not mouldy or damp its value as a fertilizer is probably not less than that of the prime quality meal.

GROUND BONE AND BONE AND POTASH.

2240. Cooper's Pure Bone Dust. Made by Peter Cooper's Glue Factory 17 Burling Slip, N. Y. Stock of Charles Jennings & Son, Southport.

2238. Lister's Ground Bone. Made by Lister Agricultural Chemical Works, Newark, N. J. Stock of A. N. Clark, Milford.

2234. Swift-Sure Bone Meal. Made by M. L. Shoemaker & Co., Phila. Stock of F. Ellsworth, Hartford.

2189. Fairchild's Formula Bone and Potash. Made by Rogers & Hubbard Co., Middletown.

MECHANICAL ANALYSES.

	2240	2238	2234	2189*
Fine, smaller than $\frac{1}{10}$ inch.....	36	22	58	37
Fine, medium smaller than $\frac{1}{20}$ inch	13	17	26	18
Medium, smaller than $\frac{1}{2}$ inch	26	29	15	29
Coarser.....	25	32	1	16
	100	100	100	100

CHEMICAL ANALYSES AND VALUATIONS.

	2240	2238	2234	2189
Nitrogen.....	1.68	3.44	6.23	2.90
Phosphoric Acid	29.96	14.28	20.23	17.74
Potash				14.72†
Cost per ton.....	\$26.00	28.00	40.00	40.00
Valuation per ton	\$37.75	23.15	44.12	40.41

*After removing potash salts.

†As Muriate.

2240 is bone from which nitrogenous matter [glue] has been removed. **2238** contains salt-cake added to the wet bone as a drier and preservative. **2234** is bone from which all grease has been removed by a patent process.

NITROGENOUS SUPERPHOSPHATES.

Certain explanations may make the following tables of analyses more readily understood. The fourth column of the table describing the samples has the heading "No. of samples taken." The figures in this column show the number of samples drawn by our agents from which a mixture was prepared for analysis. For example, of No. 2302 Lion Brand Fish and Potash, the first superphosphate named in the table, three samples were drawn; one in Gilead, one in Monroe and one in Essex. By mixing equal portions of each of these a sample was prepared for analysis and is believed to more fairly represent the average quality of the brand than would an analysis of any single one of the three samples. The dealers' cash prices show the fluctuations due to presence or absence of competition and differences of freight rates. The manufacturers' statements of fair cash price where given represent about what the average price of the fertilizer should be throughout the State. A circular was sent early in the season to all manufacturers whose fertilizers are sold in Conn. asking for a statement of this kind but replies have been received from only a few firms.

"Valuation" expresses the cash cost at retail in our large markets of the fertilizing material contained in a mixed fertilizer if bought in raw materials and chemicals of good quality.

It does not indicate the fair retail price of the mixed fertilizer which must usually be considerably higher than its valuation.

NITROGENOUS SUPERPHOSPHATES.

Station No.	Name or Brand.	Manufacturer.	No. of Samples Taken.	Dealer's Cash Price per ton.	Manufacturer's statement of average cash price per ton.
2302	Lion Brand Fish and Potash.	W. P. Adams, 248 Front St., New York.	3	\$33.00-38.00	-----
2303	High Grade Ammoniated Bone Superphosphate.	W. P. Adams, 248 Front St., New York.	4	35.00-38.00	-----
2295	Baker's Complete Potato Manure.	H. J. Baker & Bro., 215 Pearl St., New York.	4	39.00-42.50	-----
2296	A. A. Ammoniated Superphosphate.	H. J. Baker & Bro., 215 Pearl St., New York.	4	34.00-37.50	-----
2305	Corn Fertilizer.	H. J. Baker & Bro., 215 Pearl St., New York.	1	42.50	-----
2306	Stockbridge Forage Crop Manure.	Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.	2	41.00-43.00	-----
2258	Stockbridge Grain Manure.	Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.	8	40.00-45.00	-----
2247	Stockbridge Vegetable Manure.	Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.	7	40.00-44.00	-----
2266	Ammoniated Dissolved Bone.	Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.	6	29.00-35.00	-----
2259	Bowker's Hill and Drill Phosphate.	Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.	9	35.00-40.00	-----
2265	Bowker's Fish and Potash.	Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.	7	30.00-35.00	-----
2310	Original Coe's Superphosphate.	Bradley Fertilizer Co., 27 Kilby St., Boston, Mass.	2	32.00-36.00	-----
2313	Fish and Potash, Anchor Brand.	Bradley Fertilizer Co., 27 Kilby St., Boston, Mass.	2	31.00-32.00	-----
2246	Bradley's Superphosphate.	Bradley Fertilizer Co., 27 Kilby St., Boston, Mass.	12	35.00-38.00	\$35.00
2207	Bradley's Superphosphate.	Bradley Fertilizer Co., 27 Kilby St., Boston, Mass.	1	37.00	35.00

NITROGENOUS SUPERPHOSPHATES—Continued.

Station No.	Name or Brand.	Manufacturer.	No. of Samples Taken.	Dealer's Cash Price Per Ton.	Manufacturer's statement of average cash price per ton.
2257	Farmers' New Method Fertilizer.	Bradley Fertilizer Co., 27 Kilby St., Boston, Mass.	10	32.00—35.00	32.00
2250	Bradley's Potato Manure.	Bradley Fertilizer Co., 27 Kilby St., Boston, Mass.	10	35.00—38.00	36.00
2205	Bradley's Complete Manure for Potatoes and Vegetables.	Bradley Fertilizer Co., 27 Kilby St., Boston, Mass.	1	42.00	40.00
2268	Bradley's Complete Manure for Potatoes and Vegetables.	Bradley Fertilizer Co., 27 Kilby St., Boston, Mass.	6	40.00—44.00	40.00
2208	Bradley's Complete Manure for Top Dressing, Grass and Grain.	Bradley Fertilizer Co., 27 Kilby St., Boston, Mass.	1	35.00	-----
2278	Bay State Fertilizer.	Clark's Cove Guano Co., New Bedford, Mass.	3	34.00—37.00	-----
2271	High Grade Ammoniated Bone Superphosphate.	Coe, E. Frank, 16 Burling Slip, New York.	5	34.00—36.00	36.00—37.00
2279	Ammoniated Bone Superphosphate.	Coe, Russell, Tremley, N. J.	3	30.00—32.00	-----
2269	Ammoniated Bone Phosphate.	Crocker Fertilizer & Chemical Co., Buffalo, N. Y.	6	35.00—37.00	37.00—38.00
2274	Potato, Hop and Tobacco Superphosphate.	Crocker Fertilizer & Chemical Co., Buffalo, N. Y.	7	35.00—37.00	37.00—38.00
2294	Cumberland Superphosphate.	Cumberland Bone Co, Portland, Me.	3	35.00—38.00	36.00—38.00
2293	Darling's Extra Bone Phosphate	Darling, L. B., Fertilizer Co., Pawtucket, R. I.	3	35.00—37.00	-----
2272	Darling's Animal Fertilizer.	Darling, L. B., Fertilizer Co., Pawtucket, R. I.	7	34.00—37.00	36.00
2276	Fish and Potash.	Kelsey, F. R., Branford, Conn.	3	20.00—25.00	20.00
2264	Mapes' Potato Manure.	Mapes' Formula & Peruvian Guano Co., 158 Front St., New York.	7	43.00—46.00	43.00
2270	Complete Manure, A. Brand.	Mapes' Formula & Peruvian Guano Co., 158 Front St., New York.	8	36.00—38.00	36.00

NITROGENOUS SUPERPHOSPHATES—Continued.

Station No.	Name or Brand.	Manufacturer.	No. of Samples Taken.	Dealer's Cash Price per ton.	Manufacturer's statement of average cash price per ton.
2275	Mapes' Grass and Grain Spring Top Dressing.	Mapes Formula & Peruvian Guano Co., 158 Front St., New York.	4	41.00-43.00	41.00
2280	Mapes' Corn Manure.	Mapes Formula & Peruvian Guano Co., 158 Front St., New York.	4	41.00-43.60	41.00
2290	Cecrops Fertilizer.	Newton & Ludlam, 182 Front St., New York.	2	43.00	-----
2291	Cereal Fertilizer.	Newton & Ludlam, 182 Front St., New York.	3	33.00-36.00	-----
2292	Chittenden's Fish and Potash.	National Fertilizer Co., Bridgeport, Conn.	4	30.00-35.00	-----
2248	Chittenden's Complete Fertilizer.	National Fertilizer Co., Bridgeport, Conn.	6	40.00-45.00	-----
2261	Chittenden's Ammoniated Bone Superphosphate.	National Fertilizer Co., Bridgeport, Conn.	9	28.00-35.00	-----
2281	Bosworth Bone Superphosphate.	Chas. Prentice, Putnam, Ct.	1	34.00	-----
2273	Fish and Potash, Crossed Fishes Brand.	Quinnipiac Co., New London, Conn.	6	35.00-38.00	32.00-34.00
2187	Fairchild's Corn Formula.	Rogers & Hubbard Co., Middletown, Conn.	1	44.00	44.00
2186	Rogers & Hubbard Co's., Complete Potato and Tobacco Manure.	Rogers & Hubbard Co., Middletown, Conn.	1	46.00	46.00
2277	Fish and Potash.	Soluble Pacific Guano Co., Boston, Mass.	3	32.00-33.00	-----
2260	Soluble Pacific Guano.	Soluble Pacific Guano Co., Boston, Mass.	4	33.00-38.00	-----
2233	Swift Sure Superphosphate.	M. L. Shoemaker & Co., Philadelphia, Pa.	1	38.00	-----
2289	Standard Superphosphate.	Standard Fertilizer Co., 36 Kilby St., Boston, Mass.	1	38.00	35.00
2282	Americus Brand Potato Fertilizer.	Williams & Clark Co., Hanover Square, New York.	3	38.00-42.00	36.00
2256	Americus Brand Ammoniated Bone Superphosphate.	Williams & Clark Co., Hanover Square, New York.	8	32.00-36.00	35.00
2283	Potato Phosphate.	Williams & Clark Co., Hanover Square, New York.	9	34.00-40.00	-----

ANALYSES OF NITROGENOUS SUPERPHOSPHATES AND GUANOS SAMPLED BY THE STATION.

Station No.	Name or Brand.	Nitrogen.				Phosphoric Acid.						Potash.		Chlorine.	Cost per Ton.	Valuation per Ton.	
		Nitrogen as Nitrates.	Nitrogen as Ammonia.	Nitrogen Organic.	Total Nitro-Gen Found.	Total Guaranteed.	Insoluble.	Total Found.	Total Guaranteed.	Available.	Found.	Guaranteed.					
2302	Adams' Lion Brand Fish and Potash	---	---	2.38	2.38	2.5	4.06	3.58	.96	8.60	6.0	7.64	3.0	4.57	4.3	35.00	\$24.18
2303	Adams' High Grade Ammoniated Bone Superphosphate	---	---	1.84	2.17	2.5	4.77	4.72	1.54	11.03	---	9.49	10.0	4.18	3.8	36.50	26.99
2295	Baker's Complete Potato Manure	---	---	.87	3.88	3.7	6.79	.14	.04	6.97	9.	6.93	5.8	10.17	10.0	41.50	33.27
2296	Baker's A. A. Ammoniated Superphosphate	---	---	1.05	3.27	2.5	11.35	.27	.02	11.64	---	11.62	10.0	2.95	2.0	36.50	32.21
2205	Baker's Corn Fertilizer	---	---	.90	4.50	5.0	6.36	.18	trace	6.54	---	6.54	6.0	7.94	7.0	42.50	32.76
2306	Stockbridge Forage Crop Manure	3.49	---	2.32	5.81	5.5	6.84	1.18	2.00	9.66	6.0	8.02	---	2.98	2.5	42.00	34.70
2258	Stockbridge Grain Manure	---	---	.62	3.56	3.3	7.82	3.58	1.94	13.34	7.0	11.40	6.0	3.42	4.0	42.00	33.78
2247	Stockbridge Vegetable Manure	.69	.44	2.35	3.48	3.3	7.82	2.44	2.90	13.16	9.0	10.26	7.0	3.69	5.0	42.00	32.56
2266	Bowker's Ammoniated Dissolved Bone	---	---	1.98	2.07	2.0	8.66	2.26	2.64	13.56	11.0	10.92	10.0	1.13	2.0	31.00	26.64
2259	Bowker's Hill and Drill Phosphate	.36	---	2.01	2.66	2.5	8.47	2.64	2.53	13.64	12.0	11.11	10.0	1.99	2.0	36.00	29.53
2265	Bowker's Fish and Potash	---	---	1.95	2.04	2.3	3.56	3.21	6.79	13.56	8.0	6.77	---	3.54	4.0	32.00	24.35
2310	Bradley's Original Coe's Superphosphate	---	---	2.16	3.16	2.0	8.71	2.03	1.18	11.92	10.0	10.74	8.0	2.52	1.0	34.00	26.97
2313	Bradley's Fish and Potash, A Brand	---	---	2.89	3.31	2.0	3.02	2.65	2.26	7.93	6.0	5.67	---	3.90	4.0	31.50	24.50
2246	Bradley's Superphosphate	.31	---	2.47	2.78	2.3	8.32	1.92	1.70	11.94	---	10.24	9.0	2.11	1.5	35.00	28.14
2207	Bradley's Superphosphate	.33	.17	2.24	2.74	2.3	8.19	2.16	1.73	12.08	---	10.35	9.0	2.06	1.5	2.05	28.16
2257	Farmers' New Method Fertilizer	---	---	2.08	2.20	1.7	8.47	1.58	1.29	11.34	10.0	10.05	8.0	2.77	3.0	32.00	26.32
2250	Bradley's Potato Manure	.24	.09	2.46	2.79	2.5	7.11	1.68	1.58	10.37	8.0	8.79	6.0	5.45	6.0	36.00	28.69
2205	Bradley's Complete Manure for Potatoes and Vegetables	.70	1.05	2.54	4.29	3.7	6.31	3.71	1.47	11.49	9.0	10.02	8.0	10.02	6.0	---	35.67

ANALYSES OF NITROGENOUS SUPERPHOSPHATES AND GUANOS SAMPLED BY THE STATION—Continued.

Station No.	Name or Brand.	Nitrogen.				Phosphoric Acid.						Potash.		Chlorine	Cost per Ton.	Valuation per Ton.		
		Nitrogen as Nitrates.	Nitrogen as Ammonia.	Nitrogen Organic.	Total Nitrogen Found.	Guaranteed.	Soluble.	Reverted.	Insoluble.	Total Found.	Total Guaranteed.	Found.	Guaranteed.				Found.	Guaranteed.
2268	Bradley's Complete Manure for Potatoes and Vegetables	.76	.84	2.46	4.06	3.7	7.25	3.41	1.15	11.81	9.0	10.66	8.0	6.00	6.0	4.60	\$40.00	\$36.00
2308	Bradley's Complete Manure for Top Dressing Grass and Grain	3.87	---	.34	4.21	4.1	7.21	1.80	1.08	10.09	7.0	9.01	6.0	5.81	5.0	5.52	35.00	33.33
2278	Bay State Fertilizer	---	1.10	1.64	2.74	2.1	8.58	1.72	1.96	12.26	9.5	10.30	8.0	3.00	2.0	1.32	35.00	29.61
2271	E. F. Coe's High Grade Ammoniated Bone Superphosphate	---	.60	1.77	2.37	2.0	8.49	1.68	1.88	12.05	11.0	10.17	9.0	2.54	3.0	.31	35.00	27.86
2279	Russell Coe's Ammoniated Bone Superphosphate	---	1.32	1.19	2.51	2.0	6.36	2.25	1.24	9.85	10.0	8.61	---	2.80	1.0	5.02	31.00	25.22
2269	Crocker's Ammoniated Bone Superphosphate	---	---	3.16	3.16	2.9	7.76	2.08	1.16	11.00	---	9.84	8.0	1.62	1.0	1.26	36.00	28.04
2274	Crocker's Potato, Hop and Tobacco Phosphate	---	---	2.41	2.41	2.0	7.91	1.39	1.19	10.49	---	9.30	8.0	4.24	2.5	3.92	36.00	27.01
2294	Cumberland Superphosphate	.42	.44	1.66	2.52	2.0	7.03	3.97	3.40	14.40	12.0	11.00	---	2.69	2.0	.96	37.00	30.25
2293	Darling's Extra Bone Phosphate	.20	.48	2.39	3.07	2.5	3.92	3.45	3.50	10.87	10.0	7.37	---	5.03	3.0	4.50	36.00	28.01
2276	Darling's Animal Fertilizer	---	.48	2.96	3.44	3.3	2.35	4.04	4.49	10.88	10.0	6.39	---	5.54	4.0	5.54	36.00	28.41
2272	Kelsey's Fish and Potash	---	.60	3.73	4.33	2.5	.89	1.83	.36	3.08	3.0	2.72	---	3.29	3.0	3.24	20.00	21.60
2264	Mapes' Potato Manure	.78	1.51	1.71	4.00	3.7	4.82	4.09	3.91	12.82	8.0	8.91	---	6.78	6.0	.70	43.00	36.85
2270	Mapes' Complete Manure, A Brand	.34	.77	1.74	2.85	2.5	5.16	4.78	3.92	13.86	---	9.94	10.0	3.20	2.5	4.40	36.00	30.03
2275	Mapes' Grass and Grain Spring Top Dressing	.68	2.11	1.88	4.67	4.3	5.44	3.57	3.23	12.23	7.0	9.01	---	5.93	5.0	5.14	41.00	36.80
2280	Mapes' Corn Manure	.74	1.61	1.52	3.87	3.7	5.88	3.58	3.46	12.92	10.0	9.46	---	6.08	6.0	5.56	41.00	35.06
2290	Cecrops Fertilizer	.58	.22	2.42	3.22	3.2	7.02	3.17	3.18	13.37	---	10.19	7.0	5.48	7.0	5.37	43.00	33.18

ANALYSES OF NITROGENOUS SUPERPHOSPHATES AND GUANOS SAMPLED BY THE STATION—Continued.

Station No.	Name or Brand.	Nitrogen.				Phosphoric Acid.				Potash.		Chlorine.	Cost per Ton.	Valuation per Ton.		
		Nitrogen as Nitrates.	Nitrogen as Ammonia.	Nitrogen Organic.	Total Nitro-Gen Found.	Guaranteed.	Soluble.	Inverted.	Insoluble.	Total Found.	Total Guar-anteed.				Found.	Guaranteed.
2291	Cereal Fertilizer	---	---	1.28	1.28	1.3	8.41	2.37	4.60	15.38	11.0	10.78	1.02	2.1	1.43	\$24.88
2292	Chittenden's Fish and Potash	---	---	3.52	3.52	3.2	.98	4.64	5.72	11.34	6.0	5.62	5.43	5.0	5.49	33.00
2248	Chittenden's Complete Fertilizer.	---	---	3.03	3.61	3.7	3.41	6.68	4.13	14.22	8.0	10.09	6.0	5.65	6.0	43.00
2261	Chittenden's Ammoniated Bone Superphosphate	---	.12	2.14	2.26	1.6	5.04	5.63	3.57	14.24	9.0	10.07	7.0	2.59	2.0	33.00
2281	Bosworth's Bone Superphosphate	---	1.34	1.01	2.35	2.0	3.57	3.65	7.41	14.63	---	7.22	3.72	2.0	3.58	34.00
2273	Quinniac Fish and Potash, Crossed	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2187	Fishes Brand Fairchild's Formula for Corn and General Crops.	4.17	---	1.32	5.49	5.5	---	7.31	4.50	11.81	12.0	7.31	14.95	12.0	9.82	44.00
2186	Rogers & Hubbard Co's Potato and Tobacco Manure	2.76	---	3.09	5.85	5.0	---	8.47	5.24	13.71	14.5	8.47	11.47	10.0	---	46.00
2277	Soluble Pacific Guano Co's Fish and Potash.	---	---	2.43	2.43	2.5	4.87	1.66	2.63	9.16	6.0	6.53	4.0	4.78	4.0	32.50
2260	Soluble Pacific Guano	---	.30	2.29	2.59	2.2	6.76	2.81	2.67	12.24	10.5	9.57	---	2.72	2.0	35.00
2233	Swift Sure Superphosphate	.90	---	2.67	3.57	2.5	7.56	3.83	2.72	14.11	---	11.39	9.0	4.65	4.0	38.00
2289	Standard Superphosphate	---	.48	2.29	2.77	2.5	7.38	2.52	2.29	12.19	11.0	9.90	9.0	2.18	2.0	38.00
2282	Americus Brand Potato Fertilizer	---	---	1.76	1.80	3.56	3.0	5.69	1.22	.60	7.51	7.0	6.91	8.32	8.0	28.04
2256	Americus Brand Ammoniated Bone Superphosphate	---	.98	1.83	2.81	2.0	9.79	.96	.32	11.07	11.0	10.75	---	3.07	2.0	35.00
2283	Williams & Clark Co's Potato Phosphate	---	1.10	1.61	2.71	2.0	7.00	.86	.36	8.22	8.0	7.86	---	6.47	6.0	36.00
																28.93

OBSERVANCE OF THE FERTILIZER LAW.

MANUFACTURERS who have paid Analysis Fees as required by the Fertilizer Law, and Fertilizers for which the fees have been thus paid for the year ending May, 1889.

<i>Firm.</i>	<i>Brand of Fertilizer.</i>
Adams, Wm. P., 248 Front St., N. Y.	High Grade Ammoniated Bone Superphosphate.
	Lion Brand Fish and Potash.
	Pure Raw Bone.
Apothecaries Hall Co., Waterbury, Conn.	Victor Phosphate.
H. J. Baker & Co., 215 Pearl St., N. Y.	A. A. Ammoniated Superphosphate.
	Potato Fertilizer.
	Corn Fertilizer.
	Strictly Pure Ground Bone.
	Castor Pomace.
Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.	Stockbridge Grain Manure.
	" Forage Crop Manure.
	" Vegetable Manure.
	Bowker's Hill and Drill Phosphate.
	" Ammoniated Dissolved Bone.
	" Fish and Potash.
	" Pure Dry Fish.
Bradley Fertilizer Co., 27 Kilby St., Boston, Mass.	Bradley's Complete Manure for Potatoes and Vegetables.
	Bradley's Complete Manure for Corn and Grain.
	Bradley's Complete Manure for Top Dressing Grass and Grain.
	Bradley's Superphosphate.
	B. D. Sea Fowl Guano.
	Original Coe's Superphosphate.
	Circle Brand Ground Bone and Potash.
	Bradley's Potato Manure.
	Farmer's New Method Fertilizer.
	Pure Fine Ground Bone.
	Fish and Potash, Anchor Brand.
	" " " Triangle A Brand.
Clark's Cove Guano Co., New Bedford, Mass.	Bay State Fertilizer.
	Unicorn Ammoniated Superphosphate.
	King Philip Alkaline Guano.
	Great Planet A Fertilizer.
	" " " B "
Coe, E. Frank, 16 Burling Slip, N. Y.	Potato Fertilizer.
	Excelsior Red Brand Fertilizer.
	Alkaline Bone.
	High Grade Ammoniated Bone Superphosphate.
	Ground Bone.
	Fish and Potash.
	Ammoniated Superphosphate.
	Peter Cooper's Bone Dust.
Coe, Russell, Tremley, N. J.	
Cooper's, Peter, Glue Factory, 17 Burling Slip, N. Y.	
Crocker Fertilizer & Chemical Co., Buffalo, N. Y.	Ammoniated Bone Superphosphate.
	Potato, Hop and Tobacco Phosphate.
	Queen City Phosphate.

<i>Firm.</i>	<i>Brand of Fertilizer.</i>
Rogers & Hubbard Co., Middletown, Conn.	Fairchild's Formula for Corn. " " Bone and Potash.
Sanderson, L., 119 Long Wharf, New Haven, Conn.	Rogers & Hubbard Co's Complete Potato and Tobacco Manure. Sanderson's Mixed Formula. Blood, Bone and Meat. Fine Ground Bone.
Sanderson, L., 119 Long Wharf, New Haven, Conn.	Dissolved Bone Black. Sulphate of Potash. Muriate of Potash. Sulphate of Ammonia. Nitrate of Soda.
Shoemaker, M. L., & Co., Philadelphia, Pa., by F. Ellsworth, Hartford, Conn.	Swift Sure Superphosphate. " " Bone Meal.
Soluble Pacific Guano Co., Glidden & Curtis, agents, Boston, Mass.	Soluble Pacific Guano. Fish and Potash.
Spencer, Chas. L., Suffield, Conn.	Cotton Hull Ashes.
Sperry & Barnes, New Haven, Conn.	Dried Blood and Meat.
Standard Fertilizer Co., 118½ Milk St., Boston, Mass.	Standard Superphosphate.
St. Louis Lead & Oil Co., St. Louis, Mo., by Olds & Whipple, Hartford, Conn.	St. Louis Lead & Oil Co's Castor Pomace.
Thompson & Edwards Fertilizer Co., Union Stock Yards, Chicago, Ill.	Pure Fine Ground Bone.
Wilkinson & Co., 52 and 54 William St., N. Y.	Economical Bone Fertilizer.
Williams & Clark Co., Cotton Exchange Building, Hanover Square, N. Y.	Americus Pure Bone Meal. Royal Bone Phosphate. Americus Brand Tobacco and Onion Fertilizer. Americus Brand Potato Fertilizer. Americus Ammoniated Bone Superphosphate. Williams & Clark Co's Potato Phosphate.