

The Connecticut Agricultural Experiment Station.

NEW HAVEN, CONN.

BULLETIN No. 91.

APRIL, 1887.

NOTICE.

The Station from time to time receives from farmers in the State samples of grasses with a request to name them. Often the specimens sent are only parts or fragments of plants and for that reason are difficult or impossible to identify.

The Station will receive and add to those already growing in its Experiment Garden samples of sod which may be sent by persons in the State who wish to have the grasses named. Such sods when growing together will furnish an interesting and useful comparison of species or varieties from different sections of the State. The sods should be about the size of a quart strawberry basket, say six or eight inches square and three to five inches deep and should be packed closely in a box or tied up in a cloth or oil paper so that they will not dry up or be shaken apart on the way, and should have some distinguishing mark to identify them on their arrival here. A common salt box will hold several specimens. Persons sending them should give the Station full particulars in regard to the meadows or pastures from which they came and anything of interest about the growth or value of the grass.

If sent *at once* such samples will make a good growth this year and furnish valuable material for the study of our native and cultivated grasses.

Till further notice the Station will receive such samples of sod and pay the express charges to New Haven.

FERTILIZER ANALYSES.

EXPLANATION.—In the Station Report for 1886, the cost per ton of Peck Brothers' Pure Ground Bone, No. 1739 was given as \$35 per ton. This was the price quoted to us by the seller, Apothecaries Hall Co., Waterbury. The manufacturer's price at mill is \$33, as stated in the July Bulletin. This statement through an oversight failed to appear in the Report.

ANALYSIS OF TOBACCO STALKS, No. 1895.

On the 17th of February, Mr. Byron Loomis brought to this Station a sample of Tobacco Stalks, in regard to which he stated as follows:—The stalks are from Havana Seed Tobacco raised in Suffield, planted in rows $3\frac{1}{2}$ feet apart, the plants 18–20 inches apart in the row. The sample represents 50 average stalks after they have been cured, and weighs 20 pounds. From Mr. Loomis's statement it appears that there were between 7100 and 7900 stalks to the acre or 7500 on the average and accordingly their weight at the date would be about 3000 pounds or $1\frac{1}{2}$ tons to the acre. The analysis follows, and for comparison is also given an analysis of stalks of Connecticut Leaf, Havana Seed Tobacco which were supplied to the Station by Mr. H. H. Austin, of Suffield. The analysis, with a different water content is found on page 105 of the Report for 1884. Mr. Austin's sample was much drier than Mr. Loomis's sample, containing only 45.90 per cent. of water. The analysis is here reckoned to 67.00 per cent. of water for comparison. Mr. Austin also estimates the weight of the [drier] stalks at 4000 pounds per acre. These differences in estimated total yield and in the water-content of the stalks account largely for the difference in the yield of plant food per acre as calculated from the analysis.

	Mr. Loomis' Sample.	Mr. Austin's Sample.
Water	66.99	67.00
Organic and Volatile Matter.	29.96	30.06
Containing Nitrogen	[.69]	[.13]
Ash or Mineral Matter	3.05	2.94
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	100.00	100.00

The mineral matter contains :

Potash	1.37	1.60
Soda02	.01
Lime29	.30
Magnesia .....	.15	.19
Oxide of Iron .....	.04	—
Phosphoric acid18	.22
Sulphuric acid16	.23
Chlorine34	.33
Sand and Silica58	.13
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	3.13	3.01
Deduct oxygen equivalent to chlorine	.08	.07
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	3.05	2.94

From the data given by Mr. Loomis the amount of plant food per acre contained in the stalks furnished by him is calculated as follows:

Nitrogen	20.6 pounds.
Phosphoric acid	5.4 "
Potash	41.0 "
Soda .....	.5 "
Lime	7.8 "
Magnesia	4.4 "
Sulphuric acid	4.7 "
Chlorine	10.3 "

The stalks therefore contain about as much nitrogen and potash as would be furnished by an application of 70 pounds of muriate of potash and 300 pounds of cotton seed meal per acre. The latter would however contain nearly twice as much phosphoric acid.

NITROGENOUS FERTILIZERS.

1914. Dried Blood from stock of L. Sanderson, New Haven.

1940. Sulphate of Ammonia from lot bought of C. Meyer, Jr., Maspeth, L. I., by G. F. Platt, Milford.

1911. Sulphate of Ammonia from stock of L. Sanderson, New Haven.

	1914	1840	1911
Nitrogen	12.65	20.37	20.37
Equivalent Ammonia ...	15.36	24.74	24.74
Cost per ton	\$43.00	74.48*	70.00
Nitrogen costs per lb. ...	17 cents	18.3 cents	17.1

* In Milford.

1956. Nitrate of Soda from stock purchased by Mattabesett Grange, Middletown, of National Fertilizer Co., Bridgeport.

1915. Nitrate of Soda from stock of L. Sanderson, New Haven.

ANALYSES.

	1956	1915
Water	2.20	1.45
Sodium chloride, salt .....	.84	.39
Sodium sulphate, (Glauber's Salts) ..	.30	.27
Nitrate of Soda	96.66	97.89
	100.00	100.00
Nitrogen of nitrate of soda	15.92	16.12
Cost per ton	-----	\$55.00
Nitrogen costs per pound	-----	17 cents.

POTASH SALTS.

Muriates.

1928. Muriate of Potash, H. J. Baker & Bro., N. Y. Stock of R. B. Bradley & Co., New Haven.

1943. Muriate of Potash, H. J. Baker & Bro. Stock of Dennis Fenn, Milford.

1944. Muriate of Potash, C. Meyer, Jr., Maspeth, L. I. From lot bought by G. F. Platt, Milford.

1953. Muriate of Potash, National Fertilizer Co., Bridgeport. From lot bought by Mattabesett Grange, Middletown.

Sulphates.

1945. Sulphate of Potash, C. Meyer, Jr., Maspeth, L. I. From lot bought by G. F. Platt, Milford.

1952. Sulphate of Potash. National Fertilizer Co., Bridgeport. From lot bought by Meriden Grange.

1951. Sulphate of Potash. National Fertilizer Co., Bridgeport. From stock bought by Mattabesett Grange, Middletown.

Kainit.

1929. Kainit. H. J. Baker & Bro., N. Y. Stock of C. O. Jeliff & Co., Southport.

1955. Kainit. National Fertilizer Co., Bridgeport. From lot bought by Meriden Grange.

1913. Kainit. Stock of L. Sanderson, New Haven.

ANALYSES.

	1928	1943	1944	1953	1945	1952	1951	1929	1955	1913
Potash.....	51.17	50.40	51.77	52.95	25.03	26.82	26.34	12.41	12.42	12.26
Equiv. Muriate..	81.0	79.7	82.0	83.90						
Equiv. Sulphate -					46.3	49.60	48.7			
Cost per ton ----	\$45.00	43.50*			37.00*			13.00		11.50
Potash costs per-	cts.	cts.			cts.			cts.		cts.
pound.....	4.4	4.2			7.3			5.2		4.7

* In Milford.

PLAIN SUPERPHOSPHATES.

1941. Pure Dissolved Bone, H. J. Baker & Bro., N. Y. Stock of Dennis Fenn, Milford.

1942. Dissolved Bone Black, C. Meyer, Jr., Maspeth, L. I. From stock bought by G. F. Platt, Milford.

ANALYSES.

	1941	1942
Soluble Phosphoric Acid.....	17.35	13.62
Reverted Phosphoric Acid .....	.17	2.55
Insoluble Phosphoric Acid .....	.11	.25
Cost per ton	\$26.00	31.00*
Soluble Phosphoric Acid costs per lb.†-	7.3 cts.	9.9 cts.

* In Milford.

† Allowing $7\frac{1}{2}$ cents per pound for reverted, and 2 cents for insoluble phosphoric acid.

COTTON HULL ASHES.

1963. American Oil Co., N. Y. Stock purchased by H. B. Wakeman, Green's Farms.

1924. Stock of W. W. Cooper, Suffield.

1926. A mixture of equal parts of three samples from stock of J. Fröhlinger, E. A. Russell and F. E. Granger, who bought the ashes of F. C. Harmon, all of Suffield.

1950. Stock of Olds & Whipple, Hartford. Sampled by C. H. Cables, Thomaston.

1923. Stock of R. E. Pinney, Suffield. Sampled by C. D. Woodworth, Thompsonville.

1925. A mixture of two samples drawn by Station Agent from R. E. Pinney's stock and from stock sold by him to E. A. Russell, Suffield.

The ashes sold by the American Oil Co., and by R. E. Pinney are in good condition mechanically and free from large hard lumps common in Cotton Hull Ashes.

ANALYSES AND VALUATIONS.

	1963	1924	1926	1950	1923	1925
Soluble Phosphoric acid.....	1.44	1.72	.51	1.65	.75	2.08
"Reverted" Phosphoric acid..	6.33	6.44	5.15	7.06	5.67	6.90
Insoluble Phosphoric acid.....	.59	.74	.96	2.40	1.51	1.86
Potash soluble in water.....	26.73	12.54	28.58	21.54	20.91	21.36
Cost per ton	\$30.00	35.00	33.00	35.00	35.00	35.00
Valuation per ton.....	\$41.44	26.50	40.36	37.88	33.30	37.92

BLOOD AND TANKAGE AND BONE MANURES.

The terms "Bone Dust," "Ground Bone," "Bone Meal" and "Bone" applied to fertilizers, may in some cases, signify material made from dry, clean and pure bones such as shank bones used in making knife handles; in other cases these terms refer to the result of crushing fresh or moist bones which have been thrown out either raw or after cooking, with more or less meat, tendon and grease—and if taken from garbage or ash heaps, with ashes or soil adhering; again they denote mixtures of bone, blood, meat and other slaughter house refuse which have been cooked in steam-tanks in order to recover grease, and are then dried and sold as "tankage"; or, finally, they apply to bone from which a large share of the ossein has been extracted in the glue manufacture. The nitrogen of all these varieties of bone when they are in the same state of mechanical subdivision has essentially the same fertilizing value.

The following are pure raw bone :

1903 and **1905.** H. J. Baker's Strictly Pure Bone.

1917. Rogers & Hubbard Co.'s Raw Bone A.

The following are tolerably clean cooked bone :

1961. Bradley's Bone.

1933. Meyer's Bone.

1958. Chittenden's Bone.

1904. Quinnipiac Bone.

1907. Darling's Bone.

Swift Sure Bone, **1908**, and Americus Bone, **1927**, are mixtures of bone and tankage. Lister's Bone, **1934**, and Coe's Bone, **1906**, are mixtures of bone, tankage and salts.

BLOOD AND TANKAGE AND BONE MANURES.

Station No.	Name or Brand.	Manufacturer.	Dealer.	Cost per ton.	Sampled and sent by
1960	Tankage No. 1	National Fertilizer Co., Bridgeport.	Meriden Grange.*		Station Agent.
1959	Tankage No. 2.	National Fertilizer Co., Bridgeport.	Meriden Grange.*	\$26.00	"
1948	Blood and Tankage.	Sperry & Barnes, New Haven.	H. E. Bassett, City.*	25.00	"
1946	Blood, Bone and Meat.	H. J. Baker & Bro., 215 Pearl St., New York.	Geo. F. Platt, Milford.*		"
1903	Strictly Pure Ground Bone.	H. J. Baker & Bro., 215 Pearl St., New York.	R. B. Bradley, New Haven.	35.00	"
1905	"A" Strictly Pure Bone.	H. J. Baker & Bro., 215 Pearl St., New York.	C. O. Jeliff & Co., Southport.	35.00	"
1961	Bradley's Fine Bone.	Bradley Fertilizer Co., 27 Kilby St., Boston, Mass.	Chas. Jennings & Sons, Southport.	35.00	"
1906	E. F. Coe's Ground Bone.	E. F. Coe, 16 Burling Slip, New York.	Simon Banks, Southport.	28.00	"
1907	Darling's Fine Ground Bone.	L. B. Darling Fertilizer Co., Pawtucket, R. I.	R. B. Bradley & Co., New Haven.		"
1934	Lister's Celebrated Ground Bone.	Lister's Agricultural Chemical Works, Newark, N. J.	A. N. Clark, Milford.	28.00	"
1933	Pure Ground Bone.	C. Meyer, Jr., Maspeth, L. I.	G. F. Platt, Milford.*	33.00†	"
1938	Chittenden's Ground Bone or Fine Animal Bone.	National Fertilizer Co., Bridgeport.	Mattabesett Grange, Middletown.*		"
1904	Quinnipiac Bone Meal.	Quinnipiac Co., New London, Ct.	E. A. Godfrey, Southport.	36.00	"
1917	Pure Ground Raw Knuckle Bone, Grade A, Extra Fine.	Rogers & Hubbard Co., Middletown.	R. B. Bradley, New Haven.	37.00†	"
1908	Swift Sure Bone Meal.	M. L. Shoemaker & Co., Philadelphia.	R. B. Bradley, New Haven.		"
1927	Americus Brand Pure Bone Meal.	Williams, Clark & Co., New York.	F. Ellsworth, Hartford.	40.00	"
			R. B. Bradley & Co., New Haven.	36.00†	"

* Bought from manufacturers for home use.

† At Milford.

‡ Manufacturer's price.

ANALYSES OF BLOOD AND TANKAGE AND BONE MANURES.

Station No.	Name or Brand.	Ntkro-gen.	Phos. Acid.	Potaash.	Finer than				Coarser than $\frac{1}{8}$ inch.	Cost per ton.	Value of the per ton.
					$\frac{1}{16}$ inch.	$\frac{1}{32}$ inch.	$\frac{1}{64}$ inch.	$\frac{1}{128}$ inch.			
1960	Tankage No. 1	7.51	9.02	--	46	29	20	5	0	\$32.62	
1959	Tankage No. 2	6.52	15.60	--	54	23	17	6	0	38.40	
1948	Blood and Tankage	8.99	4.16	--	54	21	13	6	6	\$26.00	31.39
1946	Blood, Bone and Meat	8.20	5.98	--	46	19	14	10	11	25.00	29.18
1903	Strictly Pure Ground Bone	3.80	22.78	--	81	19	0	0	0	35.00	42.90
1905	"A" Strictly Pure Bone	3.44	18.81	--	67	32	1	0	0	35.00	35.59
1961	Bradley's Fine Bone	3.38	23.88	--	67	19	14	0	0	35.00	41.37
1906	E. F. Coe's Ground Bone	2.73	14.85	2.46	54	19	15	8	4	28.00	27.98
1907	Darling's Fine Ground Bone	3.00	24.51	--	79	19	2	0	0	28.00	42.51
1934	Lister's Celebrated Ground Bone	2.90	12.82	--	38	20	20	22	0	28.00	22.54
1933	Meyer's Pure Ground Bone	3.49	19.47	--	60	40	0	0	0	*35.00	36.31
1958	Chittenden's Ground Bone or Fine Animal Bone	3.55	23.72	--	43	24	21	12	0		38.28
1904	Quinnipiac Bone Meal	2.59	25.54	--	65	19	16	0	0	36.00	40.91
1917	Pure Ground Raw Knuckle Bone, Grade A, Extra Fine	4.03	24.67	--	37	21	26	16	0	37.00	39.52
1908	Swift Sure Bone Meal	6.57	19.44	--	65	25	10	0	0	40.00	45.31
1927	Americus Brand Pure Bone Meal	4.44	18.24	--	58	22	16	4	0	36.00	36.17

* At Milford

NITROGENOUS SUPERPHOSPHATES AND SPECIAL MANURES.

Station No.	Name or Brand.	Manufacturer.	Dealer.	Cost per ton.	Sampled and sent by
1912	Fish Scrap.	-----	L. Sanderson, New Haven.	\$35.00	Station Agent.
1957	Fish and Potash.	F. R. Kelsey, Braunford, Conn.	N. S. Baldwin, Meriden, Ct.	22.00	"
1949	Chittenden's Ammoniated Bone Phosphate.	National Fertilizer Co., Bridgeport.	Manufacturer.	35.00	C. H. Cables, Thomaston.
1918	Swift Sure Superphosphate.	M. L. Shoemaker & Co., Philadelphia.	F. Ellsworth, Hartford.	38.00	Station Agent.
1930	Mapes' Potato Manure.	Mapes' Formula and Peruvian Guano Co., 158 Front St., New York.	W. W. Cooper, Suffield. Mapes' Branch, Hartford.	43.00 45.00	" " "
1936	Quinnipiac Potato Manure.	Quinnipiac Co., New London.	E. A. Godfrey, Southport.	38.00	"

NITROGENOUS SUPERPHOSPHATES AND SPECIAL MANURES.

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.	Nitrogen Guaranteed.	Soluble.	Reverted.	Insoluble.	Total Found.	Total Guaranteed.	Found.	Available.				Found.	Guaranteed.
1912	Fish Scrap	---	---	---	7.96	6.60	.98	3.95	1.35	6.28	6.00	4.93	---	---	---	\$35.00	\$36.16
1957	Kelsey's Fish and Potash	---	---	---	3.78	2.47	1.17	1.77	.24	3.18	---	2.94	---	3.32	3.00	22.00	20.72
1949	Chittenden's Ammoniated Bone Phosphate	.67	.18	2.92	3.77	1.65	4.41	4.99	4.76	14.16	---	9.40	7.00	4.32	2.00	35.00	34.37
1918	Swift Sure Superphosphate	.74	---	2.45	3.19	2.47	9.06	3.45	2.27	14.78	---	12.51	9.00	4.79	*4.00	38.00	37.25
1930	Mapes' Potato Manure	1.61	1.55	.69	3.85	3.70	4.89	4.50	3.68	13.07	8.00	9.39	---	7.50	*6.00	43.45	37.80
1936	Quinnipiac Potato Manure	.52	.69	2.91	4.12	3.29	3.42	4.08	2.20	9.70	---	7.50	5.00	6.36	6.00	38.00	33.87

* As sulphate.

UNLEACHED CANADA ASHES.

1910. Sampled by John Richardson, from a car-load stock of T. R. Dawley, Griswold. Bought of Charles Stevens, Napanee, Canada. Cost \$12.00 per ton.

ANALYSIS.

	Found.	Guaranteed.
Potash	7.67	6.00
Phosphoric Acid.....	1.61	2.50
Moisture.....	11.99	
Sand, coal, etc.	9.05	

Unleached Canada Ashes of average quality contain 5.7 per cent. of potash and 1.2 per cent. of phosphoric acid.

CAYUGA LAND PLASTER.

1947. Ground by Cayuga Plaster Co., Union Springs, N. Y. Sampled by H. J. Mattoon, Watertown, from lot of 35 tons.

ANALYSIS.

Pure hydrated sulphate of lime.....	66.50
Sand and insoluble matters.....	6.27
Undetermined matters chiefly carbonate of lime...	27.23
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	100.00

S. W. JOHNSON,
Director.