

3277-1

CONNECTICUT  
AGRICULTURAL  
EXPERIMENT STATION.



BULLETIN No. 68.

MARCH 8, 1882.

# CONNECTICUT AGRICULTURAL EXPERIMENT STATION.

## BULLETIN No. 68.

MARCH 8, 1882.

### TRADE VALUES FOR 1882.

For 1882 the following revised *Trade Values* will be employed in Massachusetts, New Jersey and Connecticut, for comparing Fertilizers. These values are deduced from the ruling market prices. The values used during 1881 are given for comparison.

	1881.	1882.
	Cents per lb.	
Nitrogen in nitrates, .....	26	26
in ammonia salts, .....	22½	29
in Peruvian Guano, fine steamed bone, dried and fine ground blood, meat and fish, superphosphates and special manures, .....	20	24
in coarse or moist blood, meat or tankage, in cotton seed, linseed and Castor Pomace, .....	16	18
in fine ground bone, horn and wool dust, .....	15	17
in fine medium bone, .....	14	15
in medium bone, .....	13	14
in coarse medium bone, .....	12	13
in coarse bone, horn shavings, hair and fish scrap, .....	11	11
Phosphoric acid soluble in water, .....	12½	12½
"    "    "reverted" and in Peruvian Guano, .....	9	9
"    "    "insoluble, in fine bone, fish guano and superphosphates, "    "    "    in fine medium bone, .....	6	6
"    "    "    in medium bone, .....	5½	5½
"    "    "    in coarse medium bone, .....	5	5
"    "    "    in coarse bone, bone ash and bone black, ..	4½	4½
"    "    "    in coarse bone, bone ash and bone black, ..	4	4
"    "    "    in fine ground rock phosphate, .....	3½	3
Potash in high grade sulphate, .....	7½	7
"    in low grade sulphate and kainite, .....	5½	5
"    in muriate or potassium chloride, .....	4½	5

## FERTILIZER ANALYSES.

- 670.** BONE MEAL, made by Rafferty & Williams, New York City. Sold by S. A. Weldon & Son, Bristol. Sampled and sent October 6, 1881, by S. R. Gridley, President of the Bristol Farmers' Club.
- 677.** GROUND BONE, made by Peck Brothers, Northfield. Sold by G. P. Burnett, Bristol, and sent November 9, 1881, by S. R. Gridley.
- 701.** REFUSE FROM TRIPE FACTORY, composted with earth. Sent by Newton Brothers, 341 Asylum St., Hartford.
- 708.** PHOSPHATE ROCK, sold by Horatio Lothrop, Suffield, Ct., sent by H. H. Austin, Suffield.
- 705.** DAMAGED TEA, sold by H. J. Baker & Bro., New York, sent by Edwin Hoyt, New Canaan, Conn.

## MECHANICAL ANALYSES.

	670	677	708
Fine, smaller than $\frac{1}{10}$ inch, per cent, .....	52	7	100
Fine-medium, smaller than $\frac{1}{8}$ inch, per cent, .....	20	14	
Medium, smaller than $\frac{1}{4}$ inch, per cent, .....	14	17	
Coarse-medium, smaller than $\frac{1}{2}$ inch, per cent, .....	14	33	
Coarse, larger than $\frac{1}{2}$ inch, per cent, .....		29	
	100	100	100

## CHEMICAL ANALYSES.

	670	677	701	708	705
Nitrogen, .....	1.68	4.32	2.20		2.04
Phosphoric acid, .....	14.36	21.89	2.91	37.84	
Sand and soil, .....			3.49		
Estimated value, 1881, .....	\$20.67	\$31.24			
Estimated value, 1882, .....	21.19	31.95	\$9.51		
Cost per ton, .....	32.00	32.00	?	\$19.00	?
Cost of phosphoric acid per pound, .....				.02 $\frac{1}{2}$	

The analyses of **670** and **677**, as also of **671**, **672** and **673** have been published in the Station Report for 1881, with valuations reckoned from the trade values adopted for last year. The advance in cost of nitrogenous raw-materials has necessitated considerable changes in the Station scale of trade values, and to the analyses of these fertilizers are here affixed, also, valuations by the revised trade-values, printed above, which, after consultation with Professor Goessmann, State Inspector of Fertilizers for

Massachusetts, and Professor Cook, Director, and Mr. Neale, Chemist of the New Jersey Agricultural Experiment Station, it has been decided to employ for those States and for Connecticut during 1882.

The Tripe refuse, **701**, contained about 60 per cent. of moisture, and on burning left 9 per cent. of ash, of which 5.5 per cent. was soluble in dilute acid and consisted chiefly of bone-ash (phosphate of lime). The sample was accordingly nearly free from "earth." Its nitrogen is valued at 15, its phosphoric acid at 5 cents. Its mechanical condition was coarse.

The phosphoric acid in **708** is "insoluble" but the material is so finely pulverized that no doubt this "Ground Phosphate Rock" might be often used to advantage where phosphates are deficient, especially on soils with abundant humus or decaying vegetable matter, as in case of reclaimed swamps, and where green-crops are plowed in, or on moist grass lands. It would also make a cheap and excellent superphosphate by treatment with oil of vitriol. To 100 pounds of the phosphate add about a gallon of water and about 30 pounds of strongest (or 66°) oil of vitriol and mix thoroughly with a hoe. The mixed materials *at first* should be just fluid enough to blend thoroughly and easily and the proportion of water may be varied to hit that point. On standing the mixture should become dry; if it does not, use a little less oil of vitriol. A good product for most purposes can probably be made by the use of 25 or even 20 pounds of oil of vitriol, but then it should stand in the heap some weeks before use. With the larger proportion of oil of vitriol most of the phosphoric acid would be made soluble in water; with the smaller quantity a share of the phosphoric acid would be "soluble" and another "reverted."

- 671.** BOWKER HILL AND DRILL PHOSPHATE, made by the Bowker Fertilizer Co., New York and Boston, sold by E. B. Clark, Orange. Sampled June 9.
- 672.** AMMONIATED BONE SUPERPHOSPHATE, made and sold by the Geo. W. Miles Co., Milford. Sampled May 24.
- 673.** SPECIAL PHOSPHATE, made and sold by the Geo. W. Miles Co. Sampled May 24.

The above were sampled by J. W. Nettleton, of Milford, and were received at the station October 1, 1881.

## ANALYSES.

	671	672	673
Nitrogen of ammonia-salts, .....		.39	.40
Nitrogen of organic matters, .....	2.40	1.81	2.06
Phosphoric acid, soluble, .....	5.40	6.55	5.98
Phosphoric acid, reverted, .....	2.16	1.01	.97
Phosphoric acid, insoluble, .....	4.60	2.14	2.00
Potash, .....	2.49	3.46	7.17
Chlorine, .....	2.02	3.70	6.36
Estimated value, 1881, .....	\$34.75	\$32.68	\$35.39
Estimated value, 1882, .....	36.91	35.18	38.48
Cost, .....	40.00	40.00	40.00

684. FOWL MANURE, sold by Horatio Lothrop, Suffield, sent by H. H. Austin, Suffield.

685. MARINE MUD, sent by Wm. T. Foote, Guilford, Ct.

709. LIMESTONE, quarried about forty years ago.

710. LIMESTONE, from top of layer.

Nos. 709 and 710 were sent by L. Elliot, Durham, Ct.

## ANALYSES.

	684	685	709	710
Nitrogen, .....	3.25			
Water, .....		45.68		
Organic and volatile, .....		4.54*		
Insoluble in acid (sand and soil), .....	38.20	40.97	1.84	3.71
Oxide of iron and alumina, .....		6.14		
Lime, .....		.90	53.91	52.91
Magnesia, .....		.05	.63	.52
Potash, .....	1.12	.36		
Soda, .....		.56		
Sulphuric acid, .....		.79		
Phosphoric acid, .....	2.83	trace	.08	.12
Carbonic acid, etc., by difference, .....			43.54	42.74
		100.00	100.00	100.00
Estimated value per ton, .....	\$19.43			
Cost, .....	27.00			

\* Containing nitrogen 0.18.

The Fowl Manure, 684, was quite dry. It contained a considerable quantity of feathers. In it nitrogen is valued at 20 cents, phosphoric acid at 9 cents and potash at 6 cents.

The Marine Mud, **685**, compared with stable manure is as rich or richer in lime, magnesia, potash, soda and sulphuric acid. It contains but one-third as much nitrogen and is quite deficient in phosphoric acid. It would serve admirably to complement fish manures, which supply little besides nitrogen and phosphates.

The composition of the limestones, **709** and **710**, may also be stated as follows:—

	<b>709</b>	<b>710</b>
Carbonate of lime, .....	96.14	94.30
Carbonate of Magnesia, .....	1.32	1.09
Phosphate of lime, .....	.15	.22
Silica, etc., insoluble in dilute nitric acid, .....	1.84	3.71
Undetermined matters (carbonate of iron?) and loss, .....	.55	.68
	100.00	100.00

These limestones are comparatively pure carbonate of lime.

#### FODDERS.

CI. SUGAR FEED, private analysis.

CXXX. SUGAR FEED, sold by D. B. Crittenden & Co., New Haven, sent by J. J. Webb, Hamden.

CCXXXVII. RICE FEED, sold by Holmes & Keeler, Norwalk, Conn., sent by D. H. Van Hoosear, Wilton.

CXXIX. COTTON SEED MEAL, sold by W. F. Fuller, Suffield, sent by H. H. Austin, Suffield, Conn.

“Sugar Feed” is a kiln-dried residue or waste from the manufacture of Glucose (or corn sugar) which is obtained by the action of acids on the starch of maize. It is in fact corn concentrated by removal of starch so that the protein is raised from 10 to 13 per cent., fiber from 2 to 9 per cent., while nitrogen-free extract (carbohydrates) is diminished about 10 per cent. CXXX contains but little more fat than average maize. In CI twice as much is present. Judged by these analyses alone, Sugar Feed must be regarded as a valuable feeding stuff. It is rumored that dairymen find it objectionable for milk cows, and experience must be appealed to for positive information as to its merits.

The high percentage of fat in the “Rice Feed” indicates that it consists largely of the chits or embryos of rice-grain, and is the bye-product from the preparation of rice for market. Ordinary

(hulled) rice is a very digestible food, but no experiments appear to have been made on the feeding quality of this material, which perhaps contains too much of fat to be wholesome to use in large quantity. The albuminoids correspond in amount to what is found in the best and dryest Indian corn. The "calculated value" cannot be given because of the absence of data as to the digestibility. The sample has a rancid taste.

## ANALYSES.

	CL.	CXXX.	CXXXVII.	CXXIX.
Water, .....	6.57	10.40	10.33	9.06
Ash, .....	3.22	.78	9.62	7.50
Albuminoids, or protein, .....	13.50	13.13	11.43	42.50
Crude Fibre, .....	10.65	8.44	9.93	4.24
Nitrogen-free extract, .....	54.85	61.38	47.20	22.12
Fat, .....	11.21	5.87	11.49	14.58
	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>
Estimated value per cwt., .....		\$1.17		
Cost per cwt., .....	?	1.20	\$1.25	\$1.50

S. W. JOHNSON,  
*Director.*

New Haven, Conn.