

THE
Connecticut Agricultural Experiment Station.

BULLETIN No. 99.

JUNE, 1889.

FERTILIZER ANALYSES.

WOOL WASTE.

2590. Received from P. M. Augur, Middlefield. It appeared to be made up mostly of "tag-locks," unwashed wool containing considerable sheep dung.

ANALYSIS.

| | |
|----------------------|------|
| Nitrogen | 2.87 |
| Phosphoric acid..... | .81 |
| Potash..... | 5.38 |

With nitrogen reckoned worth 8 cents, phosphoric acid 7 cents and potash 4½ cents per pound, the total valuation will be \$10.57 per ton. This slowly decomposing fertilizer is especially suitable for fruit trees and grape vines or grass, where an enduring rather than quick effect is desirable.

DAMAGED CORN MEAL.

2496. Sample of a car-load, 56,000 pounds, which was offered to parties in Suffield for \$50.00. It contained 1.32 per cent. of nitrogen, about .60 per cent. of phosphoric acid and .40 per cent. of potash. In ONE TON of the meal, costing \$1.80, there are therefore :

| | |
|--|--------|
| 26.4 pounds of nitrogen at 15 cents, worth..... | \$3.96 |
| 12.0 " phosphoric acid at 7 cents, worth..... | .84 |
| 8.0 " potash at 4½ cents, worth | .36 |
| Ton-valuation | \$5.16 |

The margin of \$3.36 (valuation less cost) is not large enough to warrant transportation to any great distance.

This meal has about twice as much nitrogen as good stable or yard manure, and this nitrogen is doubtless at least twice as available or effective as that of stable manure; it also contains nearly the same proportions of phosphoric acid and potash as **stable manure**. Heavy applications would for a time greatly improve the texture and water-holding capacity of light sandy soils.

COTTON SEED MEAL AND CASTOR POMACE.

2492. Cotton Seed Meal. Sold by C. L. Spencer, Suffield. Sampled and sent by Allen Wilson, Suffield.

2494. Cotton Seed Meal. Sold by Allen Wilson, Suffield.

2596. Cotton Seed Meal. Made by Little Rock Mills, Ark. Sold by Olds & Whipple, Hartford.

2584. Castor Pomace. Made by H. J. Baker & Bro., Pearl St., N. Y. Sampled by Station agent from stock of W. F. Andrews, East Hartford, and W. W. Clark, Simsbury.

2595. Castor Pomace. Made by Red Seal Castor Oil Co., St. Louis, Mo. Sold by Olds & Whipple, Hartford.

ANALYSES AND VALUATIONS.

| | 2492 | 2494 | 2596 | 2584 | 2595 |
|------------------------------|-----------|-----------|-----------|-----------|-----------|
| Nitrogen..... | 6.87 | 6.65 | 7.50 | 5.60 | 5.54 |
| Phosphoric acid..... | 3.22 | 3.48 | 3.49 | 1.88 | 2.12 |
| Potash | 2.03 | 1.94 | 2.06 | 1.04 | 1.04 |
| Cost per ton..... | \$27.00 | 27.00 | 26.00 | 25.00 | 25.00 |
| Nitrogen costs per pound.... | 14.6 cts. | 14.9 cts. | 12.4 cts. | 18.9 cts. | 18.7 cts. |

Reckoning phosphoric acid and potash at 7 and 6 cents per pound, respectively,—the rates used in the valuation of mixed fertilizers,—nitrogen in cotton seed meal costs from 12.4 cents to 14.9 cents per pound, and in castor pomace about 19 cents. The price of castor pomace has advanced \$5.00 a ton since last year, and in consequence it has become one of the most expensive sources of nitrogen, while last year it was one of the cheapest. Cotton seed meal has also advanced in price but still remains the cheapest source of available nitrogen.

BONE MANURES.

The following table contains all the analyses of bone that have been made on samples collected by Station agents since Bulletin No. 97 was issued.

Since the establishment of this Station, twelve years ago, there has been a great improvement in the mechanical condition of the bone manures sold in Connecticut, as is seen from the following table which gives the average fineness of all those which have been analyzed here during that period :

MECHANICAL ANALYSIS.

| Year. | Number of samples. | Smaller than $\frac{1}{16}$ inch. | Between $\frac{1}{16}$ and $\frac{1}{8}$ inch. | Larger than $\frac{1}{8}$ inch. |
|-------|--------------------|-----------------------------------|--|---------------------------------|
| 1877. | 5 | 53 | 20 | 27 |
| 1878. | 23 | 55 | 34 | 11 |
| 1879. | 11 | 59 | 35 | 6 |
| 1880. | 13 | 66 | 27 | 7 |
| 1881. | 18 | 56 | 31 | 13 |
| 1882. | 19 | 62 | 33 | 5 |
| 1883. | 23 | 56 | 35 | 9 |
| 1884. | 29 | 57 | 33 | 10 |
| 1885. | 30 | 58 | 36 | 6 |
| 1886. | 16 | 65 | 32 | 3 |
| 1887. | 20 | 84 | 16 | 0 |
| 1888. | 26 | 74 | 23 | 3 |
| 1889. | 16 | 71 | 29 | 0 |

Within the last four years few samples have contained fragments which would not pass holes $\frac{1}{8}$ of an inch in diameter and a larger proportion than formerly has been of the two finest grades.

The fertilizing value of fine bone is much greater than that of coarse bone. The latter may lie in the ground for years while very fine bone is readily decomposed and taken up by plants. The improved condition and increased value of our bone-manures is to some extent a result of the action of this Station which in the year 1879 first carried into effect the method of valuation based on the mechanical as well as the chemical analysis. Nitrogen in the finest bone is now worth $16\frac{1}{2}$ cents per pound, while that in the coarsest bone is valued only at $8\frac{1}{2}$ cents, and phosphoric acid is valued at 7 and 4 cents in the two grades respectively. Very finely ground bone is, at present, one of the cheapest sources of quickly available nitrogen and phosphoric acid.

BONE MANURES.—SAMPLED BY THE STATION.

| Station No. | Name or Brand. | Manufacturer. | Dealer. | Cost Per Ton. |
|-------------|--------------------------------------|---|---|---|
| 2581 | Bradley's Pure Ground Bone. | Bradley Fertilizer Co., 27 Kilby St., Boston, Mass. | R. A. Parker, Warehouse Point. G. A. Dickinson, Haddam. E. C. Dennis, Stafford Springs. Waterbury & June, Greenwich. | \$35.00 36.00 33.00 35.00 |
| 2574 | E. F. Coe's Ground Bone with Potash. | E. Frank Coe, 16 Burling Slip, New York. | Hillhouse & Taylor, Willimantic. Simon Banks, Southport. | 36.00 28.00 |
| 2575 | Crocker's Ground Bone. | Crocker Fertilizer Co., Buffalo, N. Y. | Chandler & Morse, Putnam. J. L. Bragg, Canaan. | 34.00 37.00 |
| 2576 | Darling's Ground Bone. | L. B. Darling Fertilizer Co., Pawtucket, R. I. | Comstock, Ferre & Co., Wethersfield. J. P. Barstow & Co., Norwich. | 35.00 |
| 2577 | Downs & Griffin's Pure Ground Bone. | Downs & Griffin, Derby, Conn. | Atwood & Wilson, Watertown. | 35.00 |
| 2601 | Chittenden's Ground Bone. | National Fertilizer Co., Bridgeport, Conn. | L. W. Currier, Bridgeport. F. P. Burr & Co., Middletown. | 35.00 35.00 |
| 2578 | Peck Bros' Pure Ground Bone. | Peck Bros., Northfield, Conn. | J. French, Cheshire. | 34.00 |
| 2579 | Chas. Prentice's Fine Bone. | Chas. Prentice, Putnam, Conn. | R. S. Williams, Hampton. | 34.00 |
| 2597 | Quinnipiac Pure Bone. | Quinnipiac Co., New London, Conn. | Chandler & Morse, Putnam. J. P. Little, Columbia. E. N. Pierce & Co., Plainville. R. W. Burchard, Darien. E. A. Godfrey, Southport. | 34.00 34.00 37.00 35.00 31.00 |
| 2580 | Swift-Sure Bone Meal. | M. L. Shoemaker & Co., Philadelphia, Pa. | F. Ellsworth, Hartford. J. P. Barstow & Co., Norwich. | 40.00 38.00 |

ANALYSES OF BONE MANURES.—SAMPLED BY THE STATION.

| Station No. | Name or Brand. | Chemical Analysis. | | Mechanical Analysis. | | | | | Valuation per ton. |
|-------------|---|--------------------|------------------|----------------------|---------------------|---------------------|---------------------|----------------------------------|--------------------|
| | | Nitrogen. | Phosphoric acid. | Finer than | | | | Coarser than $\frac{1}{8}$ inch. | |
| | | | | $\frac{3}{16}$ inch. | $\frac{1}{4}$ inch. | $\frac{3}{8}$ inch. | $\frac{1}{2}$ inch. | | |
| 2581 | Bradley's Pure Fine Ground Bone | 4.06 | 29.07 | 35 | 45 | 20 | -- | -- | 37.06 |
| 2574 | E. F. Coe's Ground Bone with Potash | 1.62 | 17.88* | 35 | 30 | 22 | 13 | -- | 26.57 |
| 2575 | Crocker's Ground Bone | 4.37 | 23.98 | 23 | 25 | 25 | 27 | -- | 36.54 |
| 2576 | Darling's Ground Bone..... | 2.40 | 24.69 | 65 | 24 | 11 | -- | -- | 39.48 |
| 2577 | Downs & Griffin's Pure Ground Bone | 4.09 | 22.60 | 18 | 17 | 31 | 34 | -- | 32.72 |
| 2601 | Chittenden's Ground Bone..... | 2.58 | 23.63 | 44 | 26 | 15 | 15 | -- | 35.27 |
| 2578 | Peck Bros.' Pure Ground Bone..... | 4.03 | 20.09 | 6 | 28 | 26 | 40 | -- | 28.76 |
| 2579 | Chas. Prentice's Fine Bone | 4.24 | 22.72 | 34 | 23 | 19 | 24 | -- | 36.47 |
| 2597 | Quinnipiac Pure Bone..... | 3.00 | 23.77 | 54 | 26 | 17 | 3 | -- | 38.59 |
| 2580 | Swift-Sure Bone Meal | 5.15 | 23.32 | 53 | 30 | 17 | -- | -- | 44.51 |

* Also contains 1.49 per cent. of potash.