

CONNECTICUT AGRICULTURAL EXPERIMENT STATION.

Bulletin No. 51, Jan. 27, 1881.

FERTILIZER ANALYSES.

Analysis of Refuse Lime from Franklin Beet Sugar Works. Sample No 516, rec'd Dec. 24, 1880, from Edgar Stoughton, Esq., South Windsor, Conn.

	Exp'r 100	Exp'r 100	Trade value p'r 2	Est. value p'r 100
Moisture.....	42.19			
Carbonic acid combined water and organic mat- ter.....	23.99			
Lime (calcium oxide).....	19.85	397.0	4-10c	\$1.59
Potash (pota- sium oxide)....	.32	6.4	6c	.38
Phosphoric acid,	3.19	62.9	9c	2.88
Nitrogen.....	.44	8.8	30c	1.76
Total estimated value per ton.				\$9.31

Lime is here valued at its cost shipped in casks at New Haven, i. e.: \$4.40 (\$6.40 less value of casks) per ton of slacked oyster shell lime with 60 per cent. of pure lime.—1200 lbs. The cost is 37 cents per 100, or 4-10 cent per lb. The same lime is to be had at the kilns in bulk for 1-4 cent per lb. These are perhaps not present prices.

SORGHUM SEED.

XC Seed of Minnesota Early Amber Cane, from E. M. Dunn, Grafton, Mass.

XCH Sorghum Seed, from E. D. Pratt, West Cornwall.

Composition.

	Air-dry.		Water-free.	
	XC.	XCH.	XC.	XCH.
Water.....	15.04	16.76		
Ash.....	1.73	2.17	2.04	2.60
Albuminoids..	8.13	7.67	9.57	9.23
Crude fiber...	1.94	3.21	2.28	3.85
Nitrogen-free extract.....	59.65	66.81	81.98	80.30
Fat.....	3.51	3.26	4.13	4.02
	100.00	100.00	100.00	100.00

Probable amount of digestible nutrients in air-dry substances.*

	XC.	XCH.
Albuminoids.....	6.59	6.23
Carbohydrates.....	62.47	60.26
Fat.....	2.80	2.40
Nutritive ratio.....	1:10.4	1:10.6
Est. value per 100 lbs. ...	\$0.96	\$0.92

*No determinations of the digestibility of sorghum seed have been reported. Its composition is quite similar to that of the ordinary cereal grains, and it is to be anticipated that it will prove equally digestible. In computing the above table, the averages of the digestion coefficients for all the cereals yet experimented on were used.

KILN-DRIED BREWERS' GRAINS.

Brewers' Grains, i. e., the residue of barley after it has been

malted and used for making beer-wort, has long enjoyed a high repute as cattle food, especially for milk cows; and notwithstanding the fresh grains contain an average of 78 per cent. of water, they are much sought after by farmers living within a few miles of the breweries. During the warmer season, however, large quantities sour and spoil before they can be fed. The only plan of saving them hitherto has been by putting them into pits after the manner of ensilage. Recently it has been attempted to make them capable of indefinite preservation and of easy handling by removal of most of the water which not only constitutes three-fourths of their weight when fresh, but renders them so susceptible to damage. The sample whose analysis is here-with given has been thus prepared. This sample was brought to the Station by A. J. Ramsdell, Esq. of New Haven.

Kiln-dried Brewers' grains. (Oats.)

	XCH.	Average
Water.....	2.37	18.7
Ash.....	3.97	2.7
Albuminoids.....	20.98	12.0
Crude fiber.....	11.79	9.0
Nitrogen-free extract.....	54.89	56.6
Fat.....	6.40	6.0
	100.00	100.00

The amount of water above found is perhaps smaller than can well be practically realized on a large scale. On exposure to air, the grains containing but 2-1-2 per cent. of water will no doubt gradually absorb several per cent. of moisture. With even 10 per cent. of water the dried brewers' grains will be, so far as chemical analysis can indicate, equal or superior to any grain or seed commonly used among us as food for animals. They correspond most nearly to oats in their composition, containing the same proportion of fat, a little more fiber and ash and some 8 per cent. more of the most costly and valuable food element, viz., albuminoids. Peas, beans and flax seed are the only seeds raised at the North which contain so much albuminoids. If experience shall show that the drying of brewers' grains can be carried on economically, the process

will save a large amount of valuable cattle food from waste.

I understand it is claimed by some that the drying of brewers' grains seriously injures them for feeding purposes. This notion is in agreement with the idea put forward by the partisans of ensilage, some of whom assert that dried corn-fodder is greatly inferior to a corresponding quantity of the same put down as ensilage. In total absence of any exact comparative trials these claims must be regarded as entirely questionable. Without doubt dry brewers' grains may be considered equally nutritious with dry grains of any sort, that correspond to them in chemical composition.

PARIS GREEN ON CORN-STALKS.

Under date of Sept. 17, Mr. D. C. Spencer of Old Saybrook, wrote the Station as follows: "Last Spring I applied Paris Green, mixed with water, to my corn when it was about three to five inches high, to stay the ravages of the army worm. I desire to know whether you have analyzed any corn thus treated, or can inform me if it will now be safe to feed the corn-stalks and husks? If not, will the Station analyze a sample for me?"

Mr. Spencer was requested to forward to the Station a dozen to fifteen stalks taken from different parts of the field. The sample came in good order, well tied up in papers and secured with sacking. The stalks were run through a straw cutter, and all the dust, together with a good portion of the well-mixed cutting, were examined by Dr. Jenkins for arsenic. No trace of this poison could be found by the processes which serve to detect 1-50000th of a grain of white arsenic. It thus appears that the Paris Green applied to the young plants had been completely removed by the rain. It has been well established by Dr. McMurtre that vegetation takes up into its interior no arsenic from the soil with which Paris Green has been mingled in the quantities which are used for destroying insects, a result which is fully confirmed by this examination.

S. W. JOHNSON, Director.