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NEW HAMPSHIRE

Agricultural Experiment Station

THE

Inspection of Feeding-Stuffs

IN 1907

IN COÖPERATION WITH THE STATE BOARD
OF AGRICULTURE

By FRED W. MORSE, Chemist

NEW HAMPSHIRE COLLEGE
OF
AGRICULTURE AND THE MECHANIC ARTS
DURHAM

ABSTRACT OF FEEDING-STUFF STATUTE.

The state Legislature of 1901 passed an act to regulate the sale of concentrated commercial feeding-stuffs.

The points of the law of most interest to the consumer are concisely stated below.

Kinds of Feed coming within the Law. The law applies to all feeding-stuffs except hays and straws, whole seeds and meals of wheat, rye, barley, oats, Indian corn, buckwheat and broom corn, brans and middlings. The principal feeds coming under the provisions of the law are linseed meals, cotton-seed meals, pea meals, cocoanut meals, gluten meals, gluten feeds, maize feeds, starch feeds, sugar feeds, dried brewers' grains, malt sprouts, hominy feeds, cerealine feeds, rice meals, oat feeds, corn and oat chops, ground beef or fish scraps, mixed feeds and all other materials of similar nature.

The Brand. Each package of feeding-stuff included within the law shall have affixed, conspicuously printed, the following statements:

The number of net pounds contained in the package.

The name or trademark under which it is sold.

The name of the manufacturer or shipper.

The place of manufacture.

The place of business of manufacturer or shipper.

The percentage of crude protein.

The percentage of crude fat.

These statements may be printed directly on the bag or on a tag attached to the package.

Analysis. The secretary of the Board of Agriculture is required to collect and analyze each year at least one sample of each of the brands of feeding-stuffs coming within the provisions of the act, and publish the results, together with related matter, from time to time.

AN INSPECTION OF FEEDING-STUFFS.

By Fred W. Morse

CATTLE FOODS.

With the exception of cotton-seed meal the different classes of cattle foods which were analyzed during the past season gave results which agreed in nearly every case with the guarantees of the manufacturers. One sample of linseed meal bore a guarantee of 40 per cent. protein while there was found 36.4 per cent. A compilation of published analyses* of linseed meal does not show a single result as high as 40 per cent., while the average is about 33 per cent. Therefore it would seem that the linseed meal in question was overrated.

Gluten feeds have usually been a class with numerous deficient samples, but this year only one out of six showed a deficit.

Cotton seed meal as a class did not make a good showing. Seven out of twelve brands guaranteed 41 per cent. of protein, while but one of the seven yielded it on analysis.

A recent bulletin from Mississippi† gives the legal standards for cotton seed meal established by statute in that state. High grade meal must have not less than 38.6 per cent. of protein. A glance at the table of our results will show that a majority of the brands compare closely with the Mississippi "High Grade," while but two samples yielded the proportion of protein so commonly claimed by the jobbers.

Two samples need especial mention because they represent a class of goods which has not been observed before in this state. The goods were properly tagged and bore plainly printed guarantees of protein and fat as the law requires. The samples were marked respectively Glenwood Brand Cotton Seed Feed, Protein 22 per cent., Fat 5 per cent.; and Sea Island Cotton Seed Meal, Protein 25 per cent., Fat 6 per cent. The chemical analysis showed them

* (Analyses of American Feeding Stuffs, Jenkins and Winton.)
† Bull. 104, Miss. Agr. Expt. Sta.

to be practically equal to their claims in each constituent. Therefore no fault could be found with them on that score.

The price of these goods was, however, of decided interest, when compared with that of standard cotton seed meal. Eight samples of standard meal contained from 38 per cent. to 42 per cent. protein and from 8.7 per cent. to 10.5 per cent. of fat. The retail prices were \$1.60 and \$1.65 per 100 pounds. The Glenwood and Sea Island brands retailed for \$1.50 per 100 pounds.

Crude fiber was determined in the Glenwood sample, and was found to be 21 per cent. Standard cotton seed meal varies between 5 and 7 per cent. for fiber. It is plain, therefore, that the two brands in question, besides possessing but three-fifths as much protein and fat, contain about three times as much indigestible matter as standard meal, while they are retailed at nine-tenths the price of the best. Or to put it in another way, when standard meal containing 39 per cent. protein and 9 per cent. fat sold for \$1.60 per 100 pounds, one pound of those nutrients cost three and one-third cents, while in the Glenwood brand, containing 22 per cent. protein and 5 per cent. fat, at \$1.50 per 100 pounds, a pound of those nutrients cost five and one-half cents. *These low grade materials cost too much to be economical.*

Another sample of cotton seed meal, among those collected in the inspection, requires notice because it was a positive fraud. It bore the tag and guarantee of a standard article and was retailed at the usual price of \$1.60 per 100 pounds. The meal was even poorer than the Glenwood and Sea Island. The analysis revealed 19 per cent. protein, 5.5 per cent. fat and 22 per cent. fiber. Since cotton seed hulls contain over 40 per cent. fiber, this meal must have had about two-fifths of its weight made up of hulls, instead of being a pure meal. They were finely ground and not very noticeable, but imparted a brown color to the meal, and when a portion of it was placed on the surface of a glass of water there was an immediate separation of the heavier hulls by settling. The same brand with similar results has been reported also from Maine and Vermont.*

* Bull. 142, Me. Agr. Expt. Sta. Bull. 131, Vt. Agr. Expt. Sta.

These are the first instances for several years of such marked departures from the old standards of cotton seed meal. Since standard meal will probably be even higher this fall and coming winter than last year, there will be an effort to push the low grades because of the lower price. Buyers of grain should scrutinize both tags and quality keenly before completing a purchase, as it is natural to charge all that the market will bear for an inferior article, even if there is no fraudulent substitution of tags or dishonest claims.

Molasses is rapidly gaining in favor as a food for livestock and this year we have had five different brands of goods containing mixtures of grain, coarse fodder and molasses. They have yielded the analytical results claimed for them and their guarantees can thus be depended on.

The Maryland experiment station* has found that molasses improves the digestibility of both grain mixtures and coarse fodders, therefore if the materials are of good quality, molasses feeds should form a welcome addition to our list of commercial feeding-stuffs. The Vermont experiment station† has recently pointed out that the molasses feeds collected in that state yielded an abundance of weed seeds, which indicates that inferior material is used in their makeup.

While not as convenient, it may prove more economical to buy the molasses and use with home grown fodder, since in that way one may guard against the introduction of foul weeds.

As a rule the so-called "mixed feeds" are pure wheat products: but there are a few brands which contain finely ground corn cobs mixed with wheat bran. One such brand is in our list, the "Blue Grass" mixed feed. It bore a tag correctly describing it and it was nearly equal to its guarantee, but it was sold at the same retail price as a high grade mixed feed.

* Bull. 11, Md. Agr. Expt. Sta.

† Bull. 131.

COMPOSITION OF COMMERCIAL FEEDING-STUFFS, 1907.

CATTLE FOODS.

Brand.	Manufactured by	Protein.		Fat.		100 Cost per pounds.
		Guar.	Found.	Guar.	Found.	
COTTON SEED MEAL.						
Cotton Seed Meal.....	Buckeye Cotton Oil Co.....	39.	42.5	7.85	9.65	\$1.65
Cotton Seed Meal.....	Consumer's Cotton Oil Co.....	.....	39.60	.....	9.78	1.65
Dixie Brand Cotton Seed Meal.....	Humphrey, Goodwin Co.....	41.	41.07	9.	10.51	1.65
Eagle Brand Cotton Seed Meal.....	Roberts-Ruffin Co.....	41	38.9	9.	9.28	1.60
Old Gold Brand Cotton Seed Meal.....	T. H. Bunch.....	41.	36.90	9.	10.08	1.60
Owl Brand Pure Cotton Seed Meal.....	F. W. Brode & Co.....	41	38.62	7	9.24	1.60
Phoenix Brand Cotton Seed Meal.....	D. L. Marshall & Co.....	41	38.00	.....	9.80	1.65
Prime Cotton Seed Meal.....	Hunter Bros. Milling Co.....	38.50	38.44	8.	8.68	1.60
Star Brand Cotton Seed Meal.....	J. Lindsey Wells Co.....	41	39.60	9	8.78	1.65
Prime Cotton Seed Meal.....	Kaiser & Brown.....	41	18.07	9	5.55	1.60
Glenwood Brand Cotton Seed Feed	D. L. Marshall Co.....	22	21.32	5	5.12	1.50
Sea Island Cotton Seed Meal.....	Florida Cotton Oil Co.....	25.30	24.13	6.	8.13	1.50
LINSEED MEAL.						
Cleveland Flax Meal.....	American Linseed Co.....	36	34.40	1	3.75	1.70
Linseed Oil Meal.....	American Linseed Co.....	40	36.24	3.	3.50	1.65
DISTILLER'S AND BREWER'S GRAINS.						
Ajax Flakes.....	Chapin & Co.....	33	32.56	12	12.71	
Biles' XXXX Fourx Grains.....	J. W. Biles & Co.....	33	31.75	11	11.01	1.50
Biles' Ready Ration.....	J. W. Biles & Co.....	24	23.69	7	7.38	1.50
Distiller's Dried Grains.....	Husted Milling Co.....	15	15.37	4.	5.30	1.25
GLUTEN FEEDS.						
Bay State Gluten Feed.....	J. E. Soper & Co.....	24	22.93	3.	2.62	1.50
Globe Gluten Feed.....	Glucose Sugar Refining Co.	26	27.25	2.50	3.90	1.50
Jenks' Gluten Feed.....	Huron Milling Co.....	27	28.25	7.5	9.93	1.50
New England Gluten Feed.....	J. E. Soper & Co.....	25	20.63	3	2.60	1.50
Queen Gluten.....	Corn Products Ref. Co.....	20	27.20	2	3.35	1.50
Warner Gluten Feed.....	Corn Products Ref. Co.....	24	27.08	2.50	3.63	1.50
HOMINY FEED.						
Blue Ribbon Hominy Chop.....	J. E. Soper & Co.....	11	11.56	8	7.65	1.30
Evans' Hominy Feed.....	Evans Milling Co.....	10	11.25	7.5	10.42	1.25
Husted Hominy Feed.....	Husted Milling Co.....	9	9.21	7	4.32	1.25
Niagara White Meal.....	Chapin & Co.....	10	10.87	7.	8.50	1.30
White Hominy Meal.....	R. J. Hardy & Sons.....	10.	11.06	9.	7.52	1.30
WHEAT FEED						
Blue Grass Mixed Feed.....	A. Waller & Co.....	11.50	10.53	3.19	2.79	1.35
Monarch Ground Wheat.....	F. W. Stock & Son.....	.....	18.25	.....	6.18	1.35
MOLASSES FEED.						
Green Diamond Sugar Feed.....	Chapin & Co.....	10.5	17.81	3.5	4.26	1.25
Molac Dairy Feed.....	Quaker Oats Co.....	16	14.94	3	4.65	1.25
Molac Horse Feed.....	Quaker Oats Co.....	11	14.37	3.	3.68	1.25
Sucrose Dairy Feed.....	American Milling Co.....	16.50	18.42	3.50	5.84	1.25
Sucrose Horse Feed.....	American Milling Co.....	10.50	15.40	3.50	5.27	1.40
MISCELLANEOUS FEEDS.						
De-II Corn and Oat Feed.....	H.-O. Co.....	8.30	9.07	3.	3.82	1.25
Extragood Stock Feed.....	Griswold & Mickinnon.....	7.63	7.81	2.07	3.22	1.45
H. O. Algrane Milk Feed.....	H.-O. Co.....	14	14.25	4	3.95	1.10
Horse Feed.....	Buffalo Cereal Co.....	12	11.94	4.50	4.68	1.35
Husted's Stock Feed.....	Husted Milling Co.....	8.	8.82	4.	5.00	1.35
Pearl Horse and Cow Feed.....	Flint Milling Co.....	10	10.30	6	5.04	1.45
Protina Dairy Feed.....	Ralston Purina Co.....	20.	19.85	3.5	4.11	1.35
Quaker Dairy Feed.....	Ralston Purina Co.....	12.	17.75	3.	3.98	1.30
Schumacker's Stock Feed.....	American Cereal Co.....	12.	10.32	5.	3.44	1.35
Victor Corn and Oat Feed.....	American Cereal Co.....	7.50	7.43	3.	2.79	1.25
Wirthmore Stock Feed.....	Charles M. Cox & Co.....	10	10.36	4.	7.32	1.35
Blatchford's Calf Meal.....	J. W. Barwell.....	25.	26.75	5.	4.72	2.50
Blatchford's Sugar and Flaxseed..	J. W. Barwell.....	27.	23.78	10.	12.30	4.00

POULTRY FOODS.

The number of poultry foods on the market has increased considerably since our last bulletin, especially the grain mixtures. The analyses of the cereal foods compare well with the guarantees in almost every case. The animal products, as a class, vary considerably from their stated composition, some being much in excess of the guarantees, while others are deficient.

Five brands of animal meal and beef scraps were 5 per cent. or more low in protein, although in some of these instances there was a large excess of fat to offset the deficit.

It would be well for the practical poultry man to compare the prices of the cereal poultry foods with the prices of standard grains and by-products. Nearly every poultry food is higher in price than linseed meal, which is always at the top of the list of standard cattle foods, while if the analyses are compared, some of the poultry foods will be found to belong in the same class with the medium-priced dairy mixtures.

COMPOSITION OF COMMERCIAL FEEDING-STUFFS, 1907.

POULTRY FOODS.

Brand.	Manufactured by	Protein.		Fat.		Cost per 100 pounds.
		Guar.	Found.	Guar.	Found.	
GRAIN MIXTURES.						
American Poultry Feed.....	Quaker Oat Co.....	12	14.40	3.50	3.97	\$1.75
Blatchford's Fill Basket.....	J. W. Barwell.....	33	31.00	10	9.68	3.00
Cypher's Chick Food.....	Model Milling Co.....	10.54	10.69	3.4	3.62	2.50
Every Morning Mash Feed.....	Ross Bros. Co.....	12	12.64	3.50	3.92	1.50
Greene's Chicken Feed.....			10.81		8.19	2.50
H.-O. Co.'s Chick Feed.....	The H.-O. Co.....	12	11.06	3.	3.19	2.50
H.-O. Co.'s Chick Feed.....	The H.-O. Co.....	12	11.50	3.	3.31	2.50
H.-O. Co.'s Poultry Feed.....	The H.-O. Co.....	17	17.19	5.50	6.75	1.75
H.-O. Co.'s Poultry Feed.....	The H.-O. Co.....	17	17.19	5.50	6.16	1.85
Husted's Chick Feed.....	Husted Mfg. & Elev. Co.....	12	12.12	4.	4.19	2.00
Husted's Laying Mash.....	Husted Milling Co.....	15	15.69	3.	5.71	1.70
*Page's Perfected Poultry Food....	Carroll S. Page.....	24.	23.69	8.	6.37	2.90
Pan-American Chick Feed.....	Whiting-Eckstein Co.....	9.	16.94	3.	4.84	2.50
Poultry Feed.....	Buffalo Cereal Co.....	17.	17.20	5.	5.65	1.75
Wirthmore Chick Feed.....	St. Albans Grain Co.....	11.	10.81	3.	2.65	2.00
Wirthmore Mash Feed.....	St. Albans Grain Co.....	20	17.72	3.	5.79	1.80
Wonder Poultry Feed.....	Flint Mill Co.....	22	17.11	4.	6.29	1.75
Wyandotte Brand Chick Feed.....	Ross Bros. Co.....	8.25	8.94	2.25	3.62	2.25
ANIMAL MEAL.						
Beach's Meat and Bone Meal.....	Beach Soap Co.....	26	34.40	10.	11.70	2.75
Bowker's Animal Meal.....	The Bowker Co.....	30.	35.62	5.	11.62	2.00
Bradley's Superior Meat Meal.....	Am Agr. Chem. Co.....	30.	54.93	8.	13.22	2.25
Bone and Meat Meal.....	Hinckley Rendering Co.....	35.	43.17	8.	13.39	3.00
Meat Meal.....	Farmenter & Polsey Fert. Co.....		39.40		13.04	2.00
Swift's Lowell Bone and Meat Meal	Swift's Lowell Fert. Co.....	40.	35.53	8.	17.53	2.00
BEEF SCRAPS.						
Armour's Beef Scraps.....	Armour Co.....	55	49.11	12	29.4	3.00
Beef Scraps.....	Am. Agr. Chem. Co.....	40	46.42	15	15.38	2.25
Breck's Ground Beef Scraps.....		50	40.56	15	17.5	2.50
Ground Beef Scraps.....	Beach Soap Co.....	49	38.69	20	16.50	2.40
Beef Scraps.....	Hinckley Rendering Co.....	40	33.08	10	12.11	2.50
Beef Scraps.....	Hinckley Rendering Co.....	40	31.32	10	13.20	2.45
Swift's Lowell Beef Scraps.....	Swift's Lowell Fert. Co.....	40	41.59	15.	14.94	2.75
Pure Beef Scraps.....	Whitman & Pratt Rend. Co.	35	40.98	10.	13.40	2.50
BONE MEAL.						
Beach's Cracked Bone.....	Beach Soap Co.....	25	23.25	5.	3.44	2.00
Marsh's Pure Bone Meal.....	George E. Marsh & Co.....		14.13		10.37	2.00

*Sunflower seeds and cracked bone.

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