

Analysis of Animal Feed Products Sold in Connecticut 2018 and 2019

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Animal Feed Regulatory Program Standards (AFRPS) For Label Guarantees

INTRODUCTION

In the State of Connecticut The Agricultural Commodities Division of The Department of Agriculture is responsible for the regulation and inspection of animal feeding products and pet foods. These products are delivered to The Department of Analytical Chemistry at The Connecticut Agricultural Experiment Station for analysis to ensure label compliance (1).

METHODS

In calendar year 2018-19, The Department of Analytical Chemistry at The Connecticut Agricultural Experiment Station analyzed 19 animal feeding products for label guarantees that were for sale in Connecticut. These products were collected by The Department of Agriculture and delivered to the Department of Analytical Chemistry by Agricultural Commodities Inspectors. The products were collected at manufacturing facilities and wholesale dealers from bulk storage/delivery, as well as from retail stores in bags, boxes, and cans. These 19 animal feeding products, along with their manufacturer/dealer, can be found in Table 1.

After delivery to The Connecticut Agricultural Experiment Station, the animal feeding products were sub sampled and prepared for analysis. The samples were analyzed for protein, fat and fiber,

based on modified methods described in Official Methods of Analysis (2).

RESULTS AND DISCUSSION

Animal feed products are reported to be unsatisfactory if the amount of a guaranteed substance is found to differ from the label guarantee according to the percent analytical variation guidelines as established by the Association of American Feed Control Officials (AAFCO) (3).

The number of samples deemed unsatisfactory in one or more macronutrients was 1 (5.3%) out of 19 samples processed. This 1 deficiency, 5.3% of the 19 samples analyzed, occurred for % crude fat.

Table 1 shows the results for the analysis of macronutrients, where the label guaranteed nutrient value is denoted as (G) and the laboratory determined nutrient value is denoted as (R). Deficiencies and excesses of a guaranteed nutrient are expressed in red.

When the laboratory determined value of a nutrient is found to be unsatisfactory, that sample is always reanalyzed. All protein and fiber samples are analyzed as reps A and B. There are no reps for Fat. Table 1 contains the results for each sample. The results for Protein and Fiber reflect the average of reps A and B. The number of reanalyzes of an unsatisfactory sample can vary.

Table 1. A comparison between label guarantees (G) and analytical results (R) for animal feeds received from the Connecticut Department of Agriculture for the calendar year 2019. Values in red indicate results that did not meet specific adjusted label guarantees.

Sample ID	Brand	Description	Protein %		Crude Fat %		Crude Fiber %	
			G	R	G	R	G	R
WSN20-01	Nutrena	Nature wise Layer 16% Pellets	16.0	16.3	2.5	4.0	6.0	3.9
WSN20-02	Nutrena	Nature wise Premium Rabbit 15%	15.0	18.1	3.0	3.0	18.0	15.1
WSN20-03	Blue Seal	Hutch Extra 17 Rabbit Pellet	17.0	18.5	2.5	4.4	15.0	14.9
WSN20-04	Nutrena	Country Feeds Llama + Alpaca	14.0	18.1	3.5	3.9	16.0	12.7
WSN20-05	Nutrena	Country Feeds Goat Texture 17	17.0	16.0	3.0	3.0	12.0	4.7
WSN20-06	Nutrena	Country Feeds Game bird Grower	21.0	21.5	3.0	3.1	5.0	4.7
WSN20-07	Green Mountain Feeds	Organic Broiler Grower Crumbles	18.0	18.2	5.0	5.0	5.5	3.7
WSN20-08	Poulin Grain	Layer Pellet	16.5	17.3	3.0	2.7	4.0	3.3
WSN20-10	Poulin Grain	Sheep Complete Pellet	16.0	16.6	3.0	4.0	10.0	8.2
KAN20-11	Dumor	Organic 16% Egg Layer Pellet	16.0	16.8	4.0	4.3	5.5	3.4
KAN20-12	Dumor	Non-GMO Egg Layer Mini Pellet	16.0	15.6	5.0	5.2	5.5	3.7
KAN20-13	Dumor	Poultry 5-Grain Scratch	8.0	10.1	2.5	4.2	6.0	3.1
KAN20-14	Purina	Layena Pellet	16.0	15.5	2.5	3.5	6.5	3.8
KAN20-15	Purina	Four Square Stock grower 14	14.0	14.6	2.0	3.7	11.0	7.2
KAN20-16	Producers Pride	Hog Grower	15.0	15.6	3.0	3.9	5.0	4.1
KAN20-17	Hills Science Diet	Large Breed Light Adult 1-5	20.0	23.7	5.5	5.8	14.0	10.9
KAN20-18	Sport Mix Wholes Ones	Chicken Meal & Rice Formula for dogs	26.0	30.1	16.0	10.4	4.0	2.1
KAN20-19	Taste of The Wild	High Prairie Care Recipe, Bison & Venison	32.0	32.5	18.0	16.6	4.0	3.6
KAN20-20	Producers Pride	Hay Stretcher	12.0	13.3	1.5	3.1	32	23.7

Animal Feed Regulatory Program Standards (AFRPS) for Aflatoxins

In cooperation with the CT Department of Agriculture and the US Food and Drug Administration (FDA), the CAES began to analyze select animal feeding products for aflatoxins as part of the Animal Feeds Regulatory Program Standards (AFRPS) on April 2017.

Aflatoxins are carcinogens that can form on grains such as corn or peanuts and have been found in pet food (4). These chemicals are secondary metabolites produced by the fungus *Aspergillus flavus* (aflatoxin derives from *A. flavus* + toxin). There are four main Aflatoxins B1, B2, G1 and G2. The Aflatoxin B1 is considered the most toxic and predominant. If ingested, B1 and B2 can be transformed into aflatoxin metabolites M1 and M2 respectively, which can be transferred into milk. The toxins can also enter the human food chain both by direct consumption of the product, or through livestock that have eaten the contaminated product.

The US Food and Drug Administration (FDA) suggests a 20 µg/kg limit for aflatoxins in corn for dairy animal feed. At CAES we test contaminants in food, including the detection and quantification of aflatoxins in animal feeding products by liquid chromatography with high resolution mass spectroscopy (LC-HRMS). The products tested for aflatoxins in 2018-19 are listed in Table 2. For all products, the sum of all aflatoxins was below the guidance level. Note the LC-HRMS detection limit for the individual compounds is 1 µg/kg and the guidance is for the sum of all compounds.

Table 2. List of animal feeds tested for aflatoxins B1, B2, G1 and G2 in the year 2018-19.

Sample	Description	Brand/Regist
KAC18-09	Original Recipe Cat Foods	Sport Mix
KAC18-10	Original Recipe	Meow Mix
KAC18-11	Coarse Cracked Corn	Blue Seal
KAC18-12	Select Whole corn	Grainland
KAC18-13	Scratch Grains	Purina
KAC18-14	Scratch Feed	Poulin Grain
KAC18-15	Caprine Challenger	Blue Seal
KAC18-16	All Stock CRS Sweet	Crossroad
WSN18-24	Turkey-Game-Bird Grower	Wauregan Feeds
WSN18-25	Pace-Setter Horse Feeds Classic Senior	Wauregan Feeds
WSN18-26	Country Feeds Grower Finisher Pig Feed 16%	Nutrena
WSN18-27	Country Pig Feed Pig + Sow 17%	Nutrena
KAC19-01	17% Layer Pellet (Non GMO)	Pleasant View Farms Inc.
KAC19-02	17% All Natural Layer Pellets	Kalmbach
KAC19-03	16% All Natural Sow & Pig Grower Pellet	Kalmbach
KAC19-04	13% New England Integrity Horse Pellet	Kalmbach Feeds
KAC19-05	1/5 Blend for Growing Beef Cattle	Formula of Champions
KAC19-06	Whole Corn Non - GMO	Pleasant View Farms Inc.
KAC19-07	Goat Breeder Plus Pellet	Game Plan
KAC19-08	17% All Natural Layer Crumbles	Kalmbach
KAC19-09	All Natural Scratch Grain	Kalmbach
KAC19-10	20% All Natural Broiler Start to Finish Crumbles	Kalmbach
KAC19-11	Goat Sweet Feed	Dumor
KAC19-12	Sheep	Dumor
KAC19-13	Swine Grower/Finisher Complete	Purina Natures Match GF
KAC19-14	Mature Horses	Dumor Maintenance
KAC19-15	Life time Equine Formula	Sentinel
KAC19-16	Rolled Oats	Producers Pride

Cont. Table 2. List of animal feeds tested for aflatoxins B1, B2, G1 and G2 in the year 2018-19.

Sample	Description	Brand/Regist
KAC19-17	Cracked Corn	Producers Pride
KAC19-18	Layer 16% Crumbles	Nutrena Nature Wise
KAC19-19	Adult Dog Complete Nutrition	Pedigree
KAC19-20	Mini Chunk total health Dogfood	Retriever
KAC19-21	Organic Soy – Free Layer Pellets	Green Mountain Feeds
KAC19-22	Layer Crumbles	Poulin Grain
KAC19-23	Decade Complete Diet 13%	Poulin Grain
KAC19-24	Layer 16%	Country Acres
KAC19-25	Golden Select Whole Oats	Poulin Grain
KAC19-26	Golden Deer Nuggets	Sportsman's Choice record Rack
KAC19-27	Special care (AL)	Nutrena SafeChoice
KAC19-28	Layer 16% Pellets	Nutrena NatureWise
KAC19-29	Meatbird 22% Crumble (AL)	Nutrena NatureWise
KAC19-30	Scratch Grain	Producers Pride
WSN20-01	Nature wise Layer 16% Pellets	Nutrena
WSN20-02	Nature wise Premium Rabbit 15 %	Nutrena
WSN20-03	Hutch Extra 17 Rabbit Pellet	Blue seal
WSN20-04	Country Feeds Llama + Alpaca	Nutrena
WSN20-05	Country Feeds Goat Texture 17	Nutrena
WSN20-06	Country Feeds Game bird Grower	Nutrena
WSN20-07	Organic Broiler Grower Crumbles	Green Mountain Feeds
WSN20-08	Layer Pellet	Poulin Grain
WSN20-09	Organic Scratch Feed	Green Mountain Feeds
WSN20-10	Sheep Complete Pellet	Poulin Grain
KAN20-11	Organic 16% Egg layer Pellet	Dumor
KAN20-12	Non-GMO Egg layer Mini Pellet	Dumor
KAN20-13	Poultry 5 – Grain Scratch	Dumor
KAN20-14	Layena Pellet	Purina
KAN20-15	4 Square Stock grower 14	Purina
KAN20-16	Hog Grower	Producers Pride
KAN20-17	Large Breed Light Adult 1-5	Hills Science Diet
KAN20-18	Chicken Meal & Rice Formula for Dogs	Sport Mix Wholes Ones
KAN20-19	High Prairie Cain Recipe, Bison & Venison	Taste of the Wild
KAN20-20	Hay Stretcher	Producers Pride

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3. 2014 Official Publication Association of American Feed Control Officials; 2014, <http://www.aafco.org>.
4. US Food and Drug Administration, <https://www.fda.gov/ICECI/ComplianceManuals/CompliancePolicyGuidanceManual/ucm074703.htm>.

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