

Regulatory Services News

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Feed - Fertilizer - Milk - Seed - Seed Testing - Soil

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Director's Digest

As the new Director of Regulatory Services, let me start by thanking Dr. Bill Thom for his six years of dedicated service in leading this division and many additional years of service to Kentucky Agriculture through other roles in the College of Agriculture. Bill left some big shoes to fill but I look forward to this opportunity.

I am acquainted with many of you in the Kentucky agriculture business world from my 23 years of experience in the feed industry and look forward to meeting those I do not know. UK Regulatory Services has a good reputation and my goal is for all of our service and regulatory divisions to be the best in the country. We derive much of our funding from regulatory fees and I realize we need to be fair, timely, and responsive in return. Regulation is not the most enjoyable part of your business, but is necessary for you to have a level playing field and for the ultimate protection of the consumer. As a farmer myself, I want to know that I am receiving what I pay for when I buy my feed, seed and fertilizer. I also know that my former dairy customers need accurate weights and tests on the raw milk they are selling.

Many regulatory issues are a result of an honest mistake and not intentional deception. We want Regulatory Services to provide the educational opportunities you need to help you be compliant and welcome any input on programs needed.

All of you in the agriculture business world and us in Regulatory Services want what is best for Kentucky agriculture and the end consumers of our products. Please feel free to call or email me at any time with thoughts, suggestions or complaints. I look forward to working with you and moving Kentucky agriculture forward together.

Darrell D. Johnson
Director of Regulatory Services

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Fertilizer Official Sample Record

July 1, 2011 thru June 30, 2012

The analysis of fertilizers for the fiscal year 2011 thru 2012 is now complete. The sample record of registrants and licensees was sent out a few weeks ago. These results will be published in our annual regulatory bulletin in the next few months. Please review these records and report any discrepancies to our office as soon as possible.

Highlights of this past year are below:

Overall deficiency rate of all Official Samples	9.75%
Overall deficiency rate of all NPK Official Samples	7.66%
Bagged samples deficiency rate	21.91%
Bulk sample deficiency rate	4.94%
Total tons sampled	52,710

Form	Type	Number of Samples	Samples % of Total	Tons Sampled	Tons Sampled % of Total	Sample Deficiency Rate %
Bag	Blended Grade	333	13	1,052	2	23
Bag	Manufactured	57	2	487	1	14
Bag	Material	7	0	49	0	29
Bulk	Blended Grade	1	0	25	0	0
Bulk	Manufactured	3	0	133	0	0
Bulk	Material	766	31	43,162	82	1
Bulk	Custom Mix	1272	51	5,573	11	7
Liquid	Blended Grade	18	1	964	2	11
Liquid	Manufactured	27	1	641	1	7
Liquid	Material	10	0	619	1	0
Liquid	Custom Mix	1	0	5	0	0

Stephen McMurry
Fertilizer Coordinator

Electronic Delivery Regulatory Services News!!!!

To reduce printing, paper and postage costs, Regulatory Services News is going to electronic. We'll now deliver right to your email address.

To receive the quarterly newsletter in electronic format, please visit the Division's website at www.rs.uky.edu, navigate to the Newsletter page and submit your contact information.

Newsletter editions dating to 2001 are available online.

FARMERS EXEMPTION TO SAVE SEED. DOES IT APPLY?

With the expectation that the patent on generation 1 of Roundup Ready soybeans will expire at the end of the 2014 planting season many questions are coming up. A common question coming up in the seed area at this time is: Can I save some of my seed under the farmer's exemption (wheat or soybeans) for planting? The answer is that it depends on whether or not the seed has a protected status that would prohibit you from saving the seed.

There are different kinds of protection for seed varieties, regardless of what the crop is. Some of these limit or prohibit saving seed for planting and some varieties have no protected status that would prohibit saving the seed for personal use or sale. Seed that is available for public use can be divided into two categories, certified seed and uncertified seed. Neither category is automatically protected or not protected. Protection is provided by the Plant Variety Protection Act (PVPA) or a United States Patent. Some seed varieties have both. Both forms of protection have to be filed with the appropriate agency. Seed varieties that are protected by a US Patent cannot be saved for planting. The US Patent applied to these varieties grants sole ownership of seed production to the owner of the Patent. **The majority of soybean varieties are covered by patent** particularly if they include bio tech events. The "Farmers right to save seed" is not applicable for seed that is protected by a US patent.

Seed varieties protected by the Plant Variety Protection Act are allowed to be saved for planting, but only enough can be saved for the growers own planting. The PVPA does recognize the "Farmers right to save seed" but it does not allow the grower to save the seed and sell it.

Protected status under the provisions of the PVPA is in two forms. One form requires the variety to be certified and one does not require certification. Protection granted under Title V of the Plant Variety Protection Act requires that the variety be sold only as a class of certified seed. Protected status that does not require certification is also granted under other provisions of the Plant Variety Protection Act. Title V varieties are required to have this statement or one similar to it. "Unauthorized propagation prohibited. US protected variety. To be sold only as a class of certified seed." These varieties will also have certified tags attached to each container. Those varieties that are protected but do not require certification are required to have this statement or one similar, "US protected variety. Unauthorized propagation prohibited." These varieties are usually uncertified, but there are some that will be certified. There are also a growing number of wheat varieties that do not have either PVPA or US patent protection. Some of these varieties come from University releases and some come from private sources. These varieties can be saved for planting and also can be sold. If a public offer to sell is made, they do have to be tagged! Some of these varieties have produced excellent yields.

The seed analysis tag will tell you if a wheat variety has any form of protection. The statements that have provided in this article will identify the level of protection. Please make an informed decision about saving seed for planting. It is best to purchase processed, labeled seed from a reliable source.

There is no exact date available exactly when the patent will expire on the generation 1 Roundup ready soybeans. There may be the potential that this may not happen at all. Stay informed to avoid potential violations of the patent.

Terry Prather
Interim Coordinator of the Regulatory Seed Program.

Analytical Variations

Regulatory officials use analytical variations (AVs) as a guide for issuing any type of violation of the label guarantee. The total variation surrounding an analytical analysis of a feed product and comparing it to a label consists of (1) variation associated with the formulation and mixing in producing a feed, (2) variation of particle sizes in feed ingredients, (3) potential ingredient settling during transport, (4) variation associated with sampling, (5) variation associated with mixing and grinding samples, and (6) variation during analysis in the laboratory.

Most variations associated with sampling, mixing, grinding, and analysis in the laboratory are known as a result of many years of study to arrive at Official Methods. The AVs listed below allow for the inherent variability in sources that follow the Official Methods, with more weight given to the areas of analytical variation.

Crude Protein	-3%	50%	Decoquinat	-20%	20%
NPN Equiv.	-50%	20%	Dichlorvos	-20%	30%
Protein					
Lysine	-20%	200%	Hygromycin B	-25%	20%
Crude Fat	-20%	+5 units	Lasalocid	-25%	25%
Crude Fiber	-60%	15%	Lincomycin	-25%	35%
Ash		5%	Melengestrol Aceate	-30%	35%
Calcium	-15%	+2 units	Methoprene	-30%	30%
Phosphorus	-15%	+2 units	Monensin	-30%	30%
Salt	-40%	40%	Oxytetracycline	-30%	30%
Cobalt	-40%	200%	Penicillin	-35%	35%
Copper	-40%	200%	Pyrantel Tartrate	-25%	25%
Iodine	-40%	200%	Rabon	-25%	30%
Iron	-40%	200%	Roxarsone	-25%	25%
Magnesium	-40%	200%	Sulfamethazine	-20%	20%
Manganese	-40%	200%	Sulfaquinoxaline	-25%	25%
Potassium	-30%	200%	Sulfathiazole	-20%	20%
Selenium	-40%	140%	Thiabendazole	-30%	30%
Sodium	-30%	130%	Tylosin	-30%	30%
Zinc	-40%	200%	Virginiamycin	-40%	40%
Amprolium	-40%	20%	Zoalene	-25%	25%
Arsanilic Acid	-20%	20%	Moisture		12%
Bacitracin	-40%	40%	Sodium Bicarbonate	-30%	30%
Carbadox	-20%	20%	Invert Sugar		-10%
Chlortetracycline	-30%	30%	Vitamin A	-30%	200%
Coumaphos	-20%	20%	Net wt. (small pkg.)	-5%	

Information on Aflatoxin

The Division of Regulatory Services is testing many samples of grains, ingredients and feeds for aflatoxin as part of a concern for feed safety and animal health. Animal species and ages of animals differ in their reaction to aflatoxin. The Division is currently using the Neogen Verotox kits to determine levels of aflatoxin. The kits have a minimum detection level of 5 parts per billion (ppb). Also, the kits are more accurate for detecting aflatoxin in grains and several single feed ingredients than in mixed feeds.

Currently, we are developing a method with HPLC equipment that will detect aflatoxin in more feeds. The action levels, listed below, established by FDA according to specie and animal age are used for addressing aflatoxin levels. Any feed, grain or ingredient moving in interstate commerce with aflatoxin levels above those listed below is subject to restrictive action by the FDA depending on animal type as outlined below.

Action Levels for total aflatoxins in grains, ingredients and livestock feeds.

<u>Class of Animal</u>	<u>Feed or Ingredient</u>	<u>Maximum aflatoxin level</u>
Immature animals	Animal feeds and ingredients	20 ppb
Dairy animals (lactating)	Animal feeds and ingredients	20 ppb
Finishing beef cattle	Corn and peanut products	300 ppb
Other beef cattle, swine & poultry	Cottonseed meal	300 ppb
Finishing swine over 100 lb	Corn and peanut products	200 ppb
Breeding cattle, breeding swine & mature poultry	Corn and peanut products	100 ppb
All other animals not listed	Animal feeds and ingredients	20 ppb

Note – Feeds, grains or ingredients that test 10 ppb or less will have “Passed” listed on the report. Those feeds that have values above 10 ppb will have the analytical result on the sample report, and will usually be accompanied by a letter of information, caution or warning. The letter will call attention to the action levels and potential restrictions in using the grain, feed or ingredient. Further action may be taken when aflatoxin values exceed the highest levels in the table above.

We hope this information is of interest and helpful as more concern has arisen with mycotoxins in the past few years. For additional information, consult Kentucky Extension publication ID-59, “Aflatoxins in Corn” which is available through the UK Extension publication website.

New Action Levels for Fumonisin Animal Feed

The Division of Regulatory Services has a active feed program that routinely tests animal feeds and feed ingredients for nutrient concentrations and mycotoxins. As for mycotoxins, testing is performed for the three most common mycotoxins (aflatoxin, fumonisin, and vomitoxin) that present problems in animal agriculture. The problems with fumonisin have been attributed to ingestion of moldy corn and corn products, especially corn screenings. The presence of fumonisin can be detected through various tests, some can be used on-site by feed mills, while others require samples to diagnostic laboratories.

Fumonisin are a product of fungi and found primarily in corn or corn by-products. One such mold is fusarium, which produces the mycotoxin fumonisin. Weather and insect damage can contribute to fumonisin production and improper storage is often a cause of increasing fumonisin levels that are toxic to animals. Studies have demonstrated that horses are the most sensitive to the effects of fumonisin concentrations, and "safe" levels are difficult to recommend. A study conducted by USDA found that grain/concentrates fed on 5.3 percent of horse operations in the U.S. had fumonisin levels above that considered safe for horses.

Fumonisin ingestion in all species leads to number of clinical signs most related to neural dysfunction noted in abnormal behavior, liver damage, loss of control in movement, loss of appetite weakness, depression, blindness, and brain damage. Consumption of fumonisin contaminated feed by horses can cause what veterinarians call Equine leukoencephatomalacia (ELEM). ELEM is associated with a high mortality rate, especially in horses.

Good management practices, such as providing high quality feed concentrates, are critical in preventing ELEM. Feeding high quality corn and corn-based concentrates are cost effective when using corn as the primary energy source. Feed containing fungi may not appear moldy, even when closely examined, and even if the fungi themselves are no longer present, the feed may still contain dangerous levels of toxins. Currently, there are no approved measures by federal regulatory agencies to decontaminate feed sources; therefore, no feed additive or "miracle" feed ingredient (i.e., mycotoxin binder) can be represented or labeled to bind mycotoxins.

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The prevalence of fumonisin infected corn increases if corn products are harvested too wet, stored too long or improperly. Those using corn as a feedstuff should consider the following measures to assist in protection from fumonisin toxicity problems. The following list provides some useful information that can be used to assist feed manufacturers and producers in reducing problems with fumonisin.

1. Do not add corn products, especially corn screenings, to rations on farm. Most problems have been attributed to those feeding corn screenings to horse rations.
2. Inquire from your feed dealer or mill if a testing program is in place for horse feeds containing corn. Feed mills should have a testing program in place. While this doesn't absolutely guarantee that all feeds will be safe, you can have more confidence in suppliers with testing programs.
3. Consider mixes, which use other feedstuffs, or use grain mixes with small amounts of corn. Although "safe" levels are recommended they are not well defined. Reducing the amount of corn in the diet will lessen the potential of fumonisin contamination.
4. Do not store feed products for more than two weeks.
5. Store grain mixes in proper storage facilities that protect the grains from moisture routine cleaning of storage facilities will decrease incidence of mold growth or contamination of stored cereal grains. Proper timing of aeration and cooling can reduce both, temperature and moisture the two elements that are associated with mold growth in farm stored grain.

The Food and Drug Administration (FDA) released proposed draft guidance levels for corn, corn by-products and the total ration in various animal species in June 2000 for public comment (Table 1). Comparing the proposed guidance with the old guidance levels, the most striking change was the action level for horse diets was lowered from 2.5 ppm (5 ppm in non-roughage portion of the diet based on a 50:50 blend of concentrate and forage/pasture) to 1 ppm in the total diet. The other most notable change was the action level for fumonisin in dairy rations. Previously, lactating ruminant rations were not addressed. The proposed action levels in these rations would limit the fumonisin level at 30 ppm in corn and corn by-products, with the maximum level of com in the diet being is restricted to 50% of the total ration dry matter. In other words, the maximum level in a complete ration is 15 ppm, assuming that the dairy ration is 50% concentrate and 50% forage.

Table 1. Summary of Recommended Levels for Total Fumonisin in Corn, Corn By-products, and the Total Ration in Various Animal Species.

Animal or Class	Recommended Maximum Level Total Fumonisin in Corn and Corn By-Products (ppm ¹)	Feed Factor ²	Recommended Maximum of Level of Total Fumonisin in the Total Ration (ppm ¹)
Horse ³	5	.2	1
Rabbit	5	.2	1
Catfish	20	.5	10
Swine	20	.5	10
Ruminants ⁴	60	.5	30
Mink	60	.5	30
Poultry ⁶	100	.5	50
Ruminant, Poultry & Mink Breeding Stock	30	.5	15
All Others	10	.5	5

¹Total fumonisins = FB I + FE2 + FB3.

²Fraction of corn or corn by-product mixed into the total ration.

³Includes asses, zebras and onagers.

⁴Cattle, sheep, goats and other ruminants that are > 3 months old and fed for slaughter.

⁵Fed for pelt production.

⁶Turkeys, chickens, ducklings and other poultry fed for slaughter.

⁷Includes laying hens, roosters, lactating dairy cows and bulls.

⁸Includes dogs and cats.

Continued on next page

Researchers at North Carolina State University reported that milk production could decrease up to 1 lb. of milk production for every 5 ppm of fumonisin in the ration. These researchers noted that the decrease in milk production was most likely associated with a decrease in ration dry matter intake. At the maximum allowed level of mycotoxin of 15 ppm in the total ration, one could reasonably expect to experience a 3-lb./day decrease in milk production. Therefore, their suggestion is to offer "clean" feed instead of feed that have been found to contain mycotoxins.

It is also important to note that there are interactions of mycotoxins; thus, it is reasonable to expect that state regulatory officials could lower the upper action levels, if testing finds that other mycotoxins are present in a sample or if a firm has a past history of mycotoxin problems. In conclusion, several companies have traveled the state selling feed additives that have been represented as mycotoxin binders. If the information provided by any company claims that a feed additive has been approved as a mycotoxin binder, then they are making a false claim. In that instance, I would consider the label to be false and/or misleading and I would deem the product to be misbranded and subject to regulatory action.

Note: For additional information, publication ID-121 entitled "Fumonisin, Vomitoxin & other Mycotoxins in Corn Produced by Fusarium Fungi" is available from the Cooperative Extension Service.

(This is a revised version of document produced by Steve Traylor in 2003)

Interpretation of Vomitoxin Test Results

The Division of Regulatory Services is routinely testing feeds and ingredients for mycotoxins. Testing is performed for aflatoxin, fumonisin and vomitoxin, which are three common toxins. Animals differ in their reaction to these toxins. FDA has established guidelines according to livestock species for these toxins. The following guidelines are the current best thinking as to the maximum toxin level that can be safely fed.

Guidance levels for total vomitoxin in livestock feed

Class of Animal	Feed	Maximum Vomitoxin Level in Grains & Grain By-products and (Finished Feed)
Ruminating beef and feedlot cattle older than 4 months of age	Grain & grain by-products not to exceed 50% of the diet	10 ppm (5 ppm)
Chickens	Grain & grain by-products not to exceed 50% of the diet	10 ppm (5 ppm)
Swine	Grain & grain by-products not to exceed 20% of the diet	5 ppm (1 ppm)
All other animals	Grain & grain by-products not to exceed 40% of the diet	5 ppm (2 ppm)

The Division of Regulatory Services will report vomitoxin results as follows:

Vomitoxin - Feeds that pass an initial screening test with a sensitivity of 5 ppm will be reported as "passed." If the feed tested positive, then more extensive testing will be conducted and the vomitoxin level reported. Feeds containing less than 5 ppm and those below the FDA guideline will be indicated as "passed." Feeds exceeding the FDA guideline will be indicated as "failed." Any report above 5 ppm should be evaluated to determine if a common ingredient may have an effect on feeds manufactured for a more sensitive specie.

Note: For additional information, publication ID-121 entitled "Fumonisin, Vomitoxin & other Mycotoxins in Corn Produced by Fusarium Fungi" is available from the Cooperative Extension Service.

We hope this information is helpful. If we can be of further assistance, please contact us at 859-257-6528 or by email at dwmason@uky.edu.

Dave Mason
Interim Feed Coordinator

Inspector News by Jim True

Dewey Coffey Retires: On May 29th Dewey Coffey retired from the Division of Regulatory Services after a career with the University of Kentucky of 40 years and 2 days. Dewey started at UK in May 1972 after graduating from college. His first position was working in the seed lab. In 1974 he moved from working in the lab and accepted the position of Agricultural Regulatory Specialist. Dewey was the field inspector for Southeastern Kentucky for 38 years. He was well respected by his co-workers and by industry for his knowledge and fairness while enforcing the seed, feed, fertilizer and milk laws and regulations of Kentucky.

Dewey has stated that he has been blessed with his time at the University of Kentucky and that the relationships he has developed with the agriculture businesses in Kentucky has made his going to work more enjoyable. Dewey and his wife Katie live in Casey county where he farms corn, soybeans, and raises beef cattle. He is active in his local church and is looking forward to the next phase of his life.

We want to thank Dewey Coffey for the 40 years of dedicated service and wish him much success and happiness during his retirement.



Nathan Keith New Regulatory Inspector: The Division of Regulatory Services welcomes Nathan Keith as the new Agricultural Regulatory Specialist for Southeastern Kentucky. Nathan started on July 2nd and will be the field inspector for the following counties: Adair, Bell, Casey, Clay, Clinton, Cumberland, Harlan, Knott, Knox, Laurel, Leslie, Letcher, McCreary, Perry, Pulaski, Rockcastle, Russell, Taylor, Wayne and Whitley.

Nathan is a native of Pulaski county and attended Murray State University with a degree in Agriculture in 2002. He has worked for Agri-Chem Inc. in Hopkinsville, Tri-County Farm Mart in Somerset, and most recently was the store manager for the Warner Fertilizer Company at the Nancy, Kentucky location.

Nathan's experience and background in agriculture will serve him well as he starts his career with the Division of Regulatory Services. Nathan resides in Nancy, KY and he and his wife Jennifer have one son Cole. Nathan has a small farm where he raises beef cattle and has quarter horses that he enjoys working and riding. He also enjoys the outdoors where he likes to fish and hunt.

Summer Inspector Conference:

The staff and inspectors from the Division of Regulatory Services held the annual Summer Inspector Conference in July at Lake Cumberland State park. The 3 day training was focused on planning the work for the next year and was highlighted by the FDA meeting on Wednesday. Diane McDaniel, Paul Teitell, and Roy Stephens from FDA gave updates on current changes with FDA inspections. The inspectors used part of the FDA session for additional training for the BSE feed mill inspections. During the meeting the inspectors heard updates from each of the program coordinators on seed, feed, fertilizer and milk. Time was spent reviewing the past year with training and discussion to improve the inspectors ability to perform their inspections. The inspectors are the backbone of the Division of Regulatory Services and the work they perform in the field is essential for regulating the feed, seed, fertilizer and milk industries of Kentucky.

INSPECTORS PAST AND PRESENT



Left to Right: Dave Mason, David Troutman, Bart Young, Fred Herald, Dewey Coffey, John Flood, David Buckingham, Terry Prather, Claude Hensley, Brad Johnston, Nathan Keith, Bob Hickerson, Warren Pinkston, Stephen McMurry, Front row: Sam Whitehead, Jim True, Mark Barrow

Drought and Soil Testing

We have had unusually dry weather this past summer. During dry falls, there are special precautions to be aware of when taking soil samples to be tested. Dry soil conditions cause soil pH and potassium results to be lower than normal.

Soil pH is usually determined by mixing one part soil with one part water. With this type of measurement, soil pH is lower than normal because of salt in the soil that has not washed out from rainfall. Soil pH can be about a half pH unit lower than normal. At the University of Kentucky, a new method was developed and is currently used to measure pH in a solution with a high salt content rather than water. This method avoids the lower pH measurements that occur with sampling soil during dry falls. Other labs still use water to measure soil pH so abnormally low pH can occur from these labs with fall sampling.

Soil test potassium levels can also be lower when soil is dry. The reason for lower potassium is not exactly known. It may be due to potassium being tightly held inside soil clays that is released upon soil becoming wet. Or, potassium in crop residues may wash out and be released into soil after rain. Soil potassium levels can be 100 pounds per acre lower than normal when sampling dry soil. A method has not yet been developed to solve the lower than normal potassium levels during dry falls.

When taking soil samples in the fall, it is best to wait until after a good rainfall. If soil is sampled when dry and sent to a University of Kentucky County Extension Office for testing, soil pH will be okay but potassium can still be lower than normal. Your local county extension agent can help you with questions on this and other issues in soil testing.

Frank Sikora
Soil Test Coordinator
Division of Regulatory Services
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In an order to conserve resources, the newsletter, starting with the winter edition, is going to an electronic version. While we at The Division of Regulatory Services do not wish to exclude anyone that wants to receive the newsletter by mail, we ask that you fill out the following form and return to us and we will be happy to send a printed copy by mail.

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