

Regulatory Services News

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

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Director's Digest

What are you or your business doing to improve the general public's view of agricultural practices? Several articles that I have read recently reinforce to me the importance of us in agriculture being responsible for promoting our own industry. Animal Frontiers Journal recently published an article addressing the politicization of food security. They point out that we have been using genetically modified crops for twenty years now and although the data gathered supports their benefits and safety, a social battle regarding GM crops has not abated and, in fact, seems to be becoming even more vociferous. There has been a campaign of misinformation perpetrated by what they refer to as Environmental Non-Government Organizations (eNGOs). The eNGOs have essentially boxed themselves into a corner as they find themselves unable to acknowledge the science-based evidence of benefits and remain firmly committed to their opposition. Improved food security as we approach the year 2050 will be jeopardized if these environmental movements continue to reject proven science and want us all to resort to largely organic, small-scale farming practices.

The use of genetically modified seeds has been predominant in four main crops: canola, corn, cotton, and soybeans. According to Animal Frontiers, two traits dominate: herbicide-tolerant crops

account for 65% and insect-resistant crops account for 35% of global plantings. Genetically modified seeds account for 88% of the global soybean acreage, with 57% for corn and 32% for canola. Canola is the main GM crop in Canada and while research shows huge economic benefits to farmers and consumers, the other huge beneficiary is the environment. Due to the use of GM canola, there are major reductions in pesticide use (down 35%), soil tillage, soil erosion, fossil energy usage, and greenhouse gases.

Environmental benefits from GM crops come from reduced chemical applications. In India, cotton farmers lose 50 to 60% of yield due to insect infestations. Those growing GM cotton have reduced pesticide usage by 41%. Cotton farmers in China used to spray fields as often as 30 times per season for insect control. That usage is down by about 90% with GM crops. Human health has also benefitted where in many developing countries people are used to hand spray pesticides. A study of chemical use with GM cotton farmers in India found that cases of pesticide poisoning dropped by 2.4 to 9 million cases per year. Similar results were observed in Burkina Faso where it is estimated that GM cotton results in 30,000 fewer cases of pesticide poisoning annually. A study on

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GM corn usage in South Africa found that farmers spend 10 to 12 fewer days a season hoeing and hand-weeding under the hot sun.

Health Canada released a study in 2016 which reported that 78% of Canadians would prefer to have products labeled for GM ingredients, yet 45% said they rarely or never pay attention to food product labels. If nearly half never read labels then why would 78% indicate they want GM labeling? One answer may be that the eNGOs are doing a better job of spreading their anti-technology message than agricultural interests are doing in promoting the benefits of production practices that provide more food security and are environmentally friendly. The Animal Frontier article estimates that those opposed to biotechnology are outspending technology developers by a ratio of 6.7 to 1 (\$10 billion versus \$1.5 billion in 2015). This is further complicated by a lack of communication between the academic community and the general public. Academics tend to communicate among themselves through the publication of peer-reviewed journal articles and academic books and chapters. They have not managed to master the use of social media the way that the eNGOs have. Nearly 90% of scientists that belong to the American Association for the Advancement of Science (AAAS) think GM crops are safe, but fewer than 40% of American people agree. This suggests we are not doing a good job of selling our message.

The Center for Food Integrity (CFI) recently released the results of their 2016 Consumer Trust Research Report. They asked the question: "Do U.S. farmers take good care of the environment?" While 42 percent strongly agree, 51 percent were ambivalent. They are just not sure farmers are doing enough to take care of the environment. In their latest research, 51 percent strongly believe that large farms are likely to put their interests ahead of consumer interests, compared to 36 percent for small farms. CFI believes there is a perception that profit is the overriding motive and that the use of pesticides and GM seeds, for example, simply make farmers more money at the expense of the earth. CFI proposes that the public has little to no idea what farmers are doing to protect our natural resources, so it is difficult for them

to form a strong opinion one way or another. A majority of respondents (56%) said they know a little about farming and there is a very strong desire (80%) to learn more about how food is produced and where it comes from. All of this points out our need to engage more with the public on farming practices and what will be needed to provide food security into the future. We need to demonstrate to consumers that we are continually trying to find ways to do things better to produce safe food in a way that sustains the environment.

Those of us in academia but certainly those of you involved in production agriculture must do more. CFI research shows we have made gains in public trust since they started their surveys in 2007 but the detractors are not going to stop so we can't either. CFI offers the following options to engage:

- Take advantage of local speaking opportunities.
- Pitch stories to the media about seasonal milestones on the farm (planting, harvest, etc.)- and incorporating environmental sustainability messages.
- Post pictures with great captions and short videos that can simply be shot on your phone to social media. The simpler the video, the more authentic.
- Take advantage of the new Facebook Live to give "on the spot" reports about what's happening on your farm. I would add this could be done for your agribusiness as well.
- Engage in those critical day-to-day conversations to better understand what's important to your neighbors and community, and having meaningful dialogue.
- Share good values-based content from others on your social channels.

I support the right of any consumer to buy the food products they think are best for their family. If they want to buy organic and only from small farms, then they should do that. However, if we want to provide food security into the future, I firmly believe we must take advantage of improved

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practices which have also been shown to be environmentally friendly and safer for those producing them. Make the effort to engage with consumers to promote our industry. Our county farm bureau, along with many others, have a farm-city breakfast each summer where we provide breakfast to local civic leaders and have a speaker to discuss the importance of agriculture. Feedback has been very positive and many have expressed their appreciation for learning what actually happens on the local farms they drive by each day. Please email me (darrell.johnson@uky.edu) with examples of successful engagement that you or your company have done so that I can share those with others.

Dr. Darrell Johnson,
Executive Director

Seed Laboratory Update

State seed laboratories (and private seed labs) are encouraged to follow the Association of Official Seed Analyst (AOSA) Rules for Testing Seed. In fact, to be considered an accredited testing lab, you must be a member of AOSA and follow those rules for seed testing.

The Kentucky State Seed Lab has always been a member and analysts are certified through a process of AOSA. The Association meets on an annual basis and discusses seed testing issues and vote on passage of new rules; which brings me to a couple of updates I want to bring to the attention of the customers of the seed lab.

The Kentucky seed lab has always followed the rules to the best of its ability, allowing for personnel and facilities. Nothing has changed in the way samples are tested, but reporting results to customers has changed, due to AOSA rule changes. Also, the lab has been working with a recently installed computer program, which has made reporting more accurate, with more information on the report.

You will notice minor changes to your seed report which will provide additional information about your seed sample. According to the "Rules for Testing Seed", there is a protocol that

must be followed for sample reporting. The report will show the weights for purity and noxious tests. Also, when there are any deviations from the rules, then that deviation must be noted, followed by a citation of the AOSA rule and a description/ explanation of the deviation. A deviation will not be a common situation; it usually pertains to samples with many components (mixes) for germination only testing.

Another change that a customer may see on their report has to do with Palmer amaranth, *Amaranthus palmeri*. This weed has recently been found as an incidental seed in revegetation and rangeland seed kinds in Iowa and Minnesota. This is an annual plant native to the southern United States. It is undesirable and considered a noxious weed in Ohio and Minnesota. It poses a significant problem due to its similar appearance to other *Amaranthus* species and its resistance to multiple herbicides.

The seed is visually indistinguishable from many other *Amaranthus* species, which causes concern for identification. Seed analysts must take into consideration, if possible, the location of production, any available field inspection information, state where the seed was produced, and the type of crop when making species determination for *Amaranthus* contaminants. If the laboratory has no access to this type of information, and it is impossible for the analyst to definitively determine if the *Amaranthus* in question is or is not *Amaranthus palmeri*, it will be listed as *Amaranthus spp.* on the lab report, and classified as a noxious weed when reporting an All States Noxious Weed Test. Along with this, will be a disclaimer stating that the species cannot be determined and may be *Amaranthus palmeri*.

Eurofins BioDiagnostics, located in California, has developed a genetic test for testing Palmer amaranth. Individual seeds obtained in a noxious exam may be submitted for testing. The most economical way is to ask the seed laboratory to submit seeds obtained in a noxious exam from multiple seed lots at the same time. Seeds from each seed lot can be submitted in coin envelopes or Ziploc baggies with sample information and seed number listed on each bag. Labs testing native seeds are likely to have larger quantities of seed and Eurofins can pass on efficiencies in test-

Seed Laboratory, continued

ing batches of 24-48 seeds, 49-94 seeds or greater than 94 seeds to the seed companies by processing samples at the same time. All samples must arrive at the same time to be entered as a batch. The test is expensive, but does provide correct identification for *Amaranthus palmeri*. Please contact the lab for pricing of *Amaranthus palmeri*, to be sent to Eurofins for testing.

If you have any questions, concerning your samples or your reports, feel free to contact the Seed Administrative Office at 859-281-2468 or email: University of Kentucky Seed Program Seed.Program@uky.edu

*Tina Tillery,
Seed Lab Supervisor*

Animal Feed and Pet Food Sampling Update

Our 2016 feed report, “2016 Commercial Feeds in Kentucky”, was mailed in late April and is available on our website. This annual report reviews all activities of our feed program including feed mill inspections, feed tonnage reported, and industry updates. The listing of feed samples analyzed by our lab by company makes up the majority of this annual report.

Our Regulatory Services inspectors, under the authority of our Kentucky Feed Law (KRS 250.581), collect samples each year of commercial products offered for sale as feed or for mixing in feed. To be included in the feed report summary, the samples must be considered official (collected using recognized sampling methods and properly documented) and have label guarantees. In 2016, the report included 3191 samples from 505 different manufacturers or guarantors.

For each guarantor, the report includes the total samples collected, % samples passed, total guaranteed tests, % test passed, and the number of violations per test. In 2016, 71% of samples analyzed passed all guarantees tested and 94% of all tests passed. Kentucky law and regulation require that label guarantees represent to the purchaser what is in the product and compliance testing is how our division enforces the law. This not only protects the consumer but also creates a level

playing field for firms distributing feed in KY. Our goal is to sample products that represent what is available in the market in proportion to the distribution of these products. When products sampled do not meet all their guarantees, the manufacturer or guarantor is asked to investigate and report back to the Feed Director. The division will issue a withdrawal from distribution if the health of animals or humans could be impacted by the violation.

Proportion of livestock and pet food samples for 2016 was similar to the previous year. In the last 2 years, we have increased the number of pet treat samples as the variety and distribution of these products expands. Treats made up nearly a 1/3 of all pet food samples collected in 2016.

Our lab has the capability to analyze for 9 different medications used in animal feed. In 2016, we analyzed over 300 samples containing amprolium, bacitracin, carbadox, chlortetracycline, decoquinolate, oxytetracycline, tylosin, monensin, or lasalocid. This past year, we also analyzed 86 equine or all stock feeds for trace levels of monensin and lasalocid. By monitoring these feeds for ionophore contamination, we hope to serve as an early warning system. We did not find any issues with ionophore contamination in any of the feeds tested in the past year.

Each fall, we conduct a survey of the corn crop in the state and analyzing these samples for crude protein, moisture, and mycotoxins. Last year, we analyzed over 70 corn samples for one or more mycotoxins. Our current lab capabilities with mycotoxin analyses are limited primarily to corn. By the fall, we should have new lab equipment that will expand our mycotoxin testing to mixed feeds.

In 2016, our lab analyzed over 230 samples that are not included in the feed report. These included lab proficiency samples, research samples from the University of Kentucky, samples provided by producers or county extension agents, and other samples without a guaranteed analysis. Over 40 of these samples would fall into the service category where a feed analysis was performed to help answer a question or complaint. We are also available to assist any Kentucky manufacturer in dealing with processing challenges that can be addressed with sample analyses.

*Dr. Al Harrison,
Director of Feed and Milk Programs*

Saving and selling seed off of the farm

Each year we get several phone calls on whether a grower can save wheat seed for their own planting with the goal of saving on their input costs. The most common answer is “maybe”. Some seed can be saved legally while others cannot. Some varieties are protected with a Plant Variety Protection (PVP) certificate or a US patent. If a variety is protected by a US patent the seed cannot be saved. A PVP variety can be saved, but only the amount that the grower can utilize on their own planted acres. The US patent and PVP protected varieties cannot be sold by the grower as seed. When seed is initially purchased, the label will usually specify if it is PVP or patented.

Some varieties are not protected and these can be saved, planted or sold and not be in violation of any federal or state laws. Requirements of state seed laws must be adhered to when seed is offered for sale. This includes advertisements in local papers, internet or signs on the side of the road indicating that seed is for sale. In Kentucky a permit to label agricultural seed is needed if you tag the seed yourself, or official seed tags can be purchased from our Division for labeling of seed intended for sale. The permit to label allows the permit holder to create their own seed labels and submit a Semi-Annual report of seed sales based on the number and weight of the packages sold.

Seed which is saved for planting purposes should be properly cleaned and tested to make sure the quality you desire is present in the lot. Seed intended to be sold requires a laboratory test to determine the seed purity, germination and noxious weed content of the lot being sold. Some lots may contain noxious weeds or a low germination which may not meet the standards to be sold. All containers and seed sold in bulk must be labeled according to this test. The seed analysis tag is a guarantee to the purchaser of the content of the seed lot so please be aware of the liabilities of selling seed. If you need more information, please contact Stephen McMurry at smcmurry@uky.edu.

*Stephen McMurry,
Director of Fertilizer and Seed Programs*

Annual Fertilizer and Seed Inspection Reports of Official Samples

Regulatory Bulletin No. 331, Seed Inspection Report 2016, is now available at the following link: <http://www.rs.uky.edu/seed/AnnualReport/index.php>
If you would like a hard copy please call us at 859-218-2468 and ask for Marilyn Smith or Steve McMurry and we can assist you. Archived editions are also available at the link above.

Regulatory Bulletin No. 330, Annual Report, Analysis of Official Fertilizer Samples July 2015 – June 2016 is now available at the following link: http://www.rs.uky.edu/regulatory/fertilizer/annual_bulletins/

If you would like a hard copy please call us at 859-257-2668 and ask for June Crawford or Steve McMurry and we can assist you. Archived editions are also available at the link above.

*Stephen McMurry,
Director of Fertilizer and Seed Programs*

Presidedress Nitrate Test for Corn

Nitrogen is an element in fertilizer that is most needed by plants. It is also an element that has the most complex reactions in soil. Due to this complexity, a routine soil test for nitrogen availability to plants has yet to be developed. Nitrogen reactions in soil are complex because most of the element is made available to plants through the action of microorganisms that use the organic matter as food and release nitrogen as ammonium or nitrate. It is difficult to simulate this action of microorganisms in an efficient laboratory test to assess nitrogen availability.

Although there is not a routine soil test for nitrogen for soil collected any time of the year, there is a test that can be used on soil collected during a specific time of the year for corn. This test is called the presidedress nitrate test, or PSNT for short. This test was designed to evaluate the nutrient concentration in soil when corn is at knee high height or smaller when nitrogen can be potentially sidedressed. At this time, any nitrogen in soil or

Presidedress nitrate test, continued

organic matter has had time to be released as nitrate from the action of microorganisms. Any preplant fertilizer would also be present as nitrate and can be evaluated from the test. It turns out that the concentration of nitrate in soil at this time is a fairly good indicator of the availability of nitrogen throughout the growing season. If the concentration is too low, sidedress nitrogen fertilizer application is recommended.

Soil collected for PSNT needs to be sampled deeper than soil collected for a routine soil test. The soil depth to be sampled is 0 to 12 inches rather than 0 to 4 or 0 to 6 inch depth for a routine soil test. The deeper depth is required because nitrate is more mobile than phosphorus and potassium and moves down to deeper depths in the soil profile.

The University of Kentucky soil test laboratory at the Research and Education Center in Princeton offers the PSNT test for \$8 per sample. The sample is submitted to county extension offices just like routine soil samples. Information on how to take a sample can be found on the sample submission form at <http://soils.rs.uky.edu/forms/sample/psnt.PDF>.

Dr. Frank Sikora,
Director of Soils Program and Laboratories

Soil Testing Laboratory 2016 Summary

Soil testing provides farmers, homeowners, greenhouse operators, and others with scientific information about the fertility status of their soils or greenhouse media. In partnership with the Cooperative Extension Service, it also provides them with lime and fertilizer recommendations based on laboratory results. We also offer analyses of animal wastes, nutrient solutions, and special research solutions. A new activity occurred in fall 2016 with sampling and testing agricultural limestone for the Kentucky Agricultural Limetone Law under a cooperative agreement with Kentucky Department of Agriculture.

The soil test web site is at soils.rs.uky.edu. The number of samples analyzed in 2016 with the percent change from 2015 is shown in the following table:

Type	Number	% change
Agriculture	32,806	6
Home lawn and garden	9,247	11
Commercial horticulture	871	5
Greenhouse media	53	-43
Research	6,266	4
Atrazine residue in soil	19	217
Animal waste	392	45
Nutrient solution	85	18
Soil nitrate	225	127
Ag Lime	77	
TOTAL	50,041	8

Dr. Frank Sikora,
Director of Soils Program and Laboratories

Upcoming Meetings

Milk Handlers Advisory Board, E.S. Good Barn, University of Kentucky—May 22.

Association of Official Seed Analysts (AOSA) Annual Meeting, Denver, Colorado—June 14-24.
<http://www.analyzeseeds.com/2017am/>

Association of American Plant Food Control Officials (AAPFCO) Annual Meeting, Bellevue, Washington—August 6-9. <http://www.aapfco.org/meetings.html>

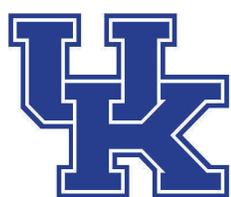
Association of American Feed Control Officials (AAFCO) Annual Meeting, Bellevue, Washington—August 10-12. <http://www.aafco.org/Meetings/Annual/2017>

AAFCO Pet Food Labeling Workshop, Bellvue Washington, 1:00 pm August 12 to 5:00 pm August 13. http://www.aafco.org/Portals/0/SiteContent/Meetings/Annual/2017/Pet_Food_Labeling_Workshop_Promo_Flyer.pdf

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