Regulatory Services News

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Director's Digest

Regulations to be revised

There is a lot about laws and regulations that I have learned since taking this job six years ago and I am sure there is still much I don't know. With our mandated programs (feed, fertilizer, seed and milk) there are laws and then there are regulations. Basically, the laws define what we do and the regulations lay out how we do it. In 2017, the Kentucky legislature passed a new statute (13A.3102) providing for expiration of administrative regulations. Any regulations written on or after July 1, 2012 shall expire seven years after their last effective date and any regulations written before July 1, 2012 shall expire on July 1, 2019 unless they are amended or you seek certification that they are fine as written.

Our seed law regulations were amended in January 2017. Feed regulations were last revised in 1999, fertilizer regulations in 2000, and milk regulations in 2001. My hope is that we will review and revise all regulations except seed before July 1, 2019.

We have been working on revising the feed regulations for a little over a year. The pet food regulations (12 KAR Chapter 3) were filed in June and the livestock feed regulations (12 KAR Chapter 2) were filed in July. If everything goes well, these amended regulations will become effective this coming fall. As always, we will print booklets of the amended regulations to hand out and they will also be available on our website. If you want to view the proposed amendments for these or other regulations, you may view these at the Kentucky Administrative Register http://www.lrc.ky.gov/kar/contents/registers/registers.htm. You may also sign up to receive notices of changes in regulations by subscribing to Kentucky Reg Watch at https://secure.kentucky.gov/regwatch/.

Requiring us to review our regulations at least every seven years helps ensure we are staying on top of current market conditions. We welcome any input you might have on needed amendments.

Agriculture Without Animals

I recently attended the national meeting of the American Society of Animal Science and listened to several interesting presentations during the contemporary issues sessions. Dr. Robin White from VPI presented results of her research on "Nutritional and greenhouse gas impacts of removing animals

Continued on page 3

What's Inside

University of Kentucky
Regulatory Services
College of Agriculture, Food and Environment

Division Contact Information
Phone: (859) 257-2785
Fax: (859) 323-9931

Executive Director
Dr. Darrell D. Johnson
darrell.johnson@uky.edu

Auditor
Robert Counts, Jr.
robert.counts@uky.edu

Feed & Milk Programs
Dr. Alan Harrison-Director
alan.harrison@uky.edu

Kristen Green, Registration Specialist
kristen.mary.green@uky.edu

Bob Hickerson, Milk Inspector
rhickers@uky.edu

David Tompkins, Feed/Fertilizer Lab Supervisor
dtompkin@uky.edu

Kristin Brock, Milk Laboratory Supervisor
kristin.brock@uky.edu

Michelle Young, Staff Assistant Feed
michelleyoung@uky.edu

Dusty Stewart, Staff Assistant Milk
Dusty.Stewart@uky.edu

Fertilizer & Seed Programs
Stephen McMurry-Director
smcmurry@uky.edu

Tina Tillery, Seed Laboratory Supervisor
ttillery@uky.edu

June Crawford, Staff Assistant Fertilizer
june.crawford@uky.edu
Fax: (859) 257-9478

Marilyn Smith, Staff Assistant Seed
mm.smith@uky.edu
Fax: (859) 257-7351

Inspector Coordinator
Jim True
jim.true@uky.edu

Inspectors
Mark Barrow
mcbarr2@uky.edu

Nathan Keith
nathan.keith@uky.edu

John Flood
jflood@uky.edu

Brad Johnston
bjohnsto@uky.edu

David Mason
dwmason@uky.edu

Warren Pinkston
wwpink00@uky.edu

Terry Prather
tprather@uky.edu

Bart Young
bart.young@uky.edu

Laboratories & Soils Program
Dr. Frank Sikora-Director
fsikora@uky.edu

Dr. Solomon Kariuki-Lab Manager
skka222@uky.edu

Diane Hunter, Soils Lab Supervisor
diane.hunter@uky.edu

Quality Control Director
Dr. Sharon Webb
sfwebb2@uky.edu

from US Agriculture". It's no secret that animal agriculture has been under fire for its contribution to greenhouse gases and that meat is an unhealthy source of nutrition. The 2015 Dietary Guidelines Advisory Committee claimed that plant-based diets would promote health and improve long-term sustainability of the US food supply. This and other reports imply that modification or elimination of animal agriculture would offer benefits to society with minimal and acceptable deleterious effects.

Dr. White and Dr. Mary Beth Hall did a comprehensive study to evaluate what would really happen if we eliminated animal agriculture in the US. Many assumptions have to be made in this type of work and in this case they assumed that land used for animals would be converted to production of grains, legumes, fruits and vegetables.

It's hard to reduce an eight page report into a few paragraphs but there were some key points that I found important. Removing animal agriculture from the US would reduce greenhouse gas emissions but only by 2.6%. There are inefficiencies in converting feed to meat, milk and eggs so going to all plant food would increase total food production by 23% but there are key nutrients provided in animal proteins that would have to be supplemented in an all plant food diet. Formulating diets for humans from all plant foods would provide a greater excess of dietary energy and would be lacking in several essential nutrients. Without animal-derived foods, domestic supplies of calcium, several essential fatty acids, vitamins A and B_{12} were insufficient to meet the requirements of the US population. For the deficient fatty acids and vitamin B_{12}, animal products are the only nonsupplemental sources commonly found in human diets.

Some other often overlooked benefits of animal agriculture include:

- Animal agriculture employs more than 1.6 million Americans.
- Annual US exports of animal products has a value of 31.8 billion dollars, equivalent to 22% of the income from all agricultural exports.
- Ruminants utilize feed and land that other animals can't use which is why they are often referred to as nature's recycler. Many byproducts used by ruminants would have to be disposed of in a plant only system.
- Comparing ecological footprints/pound of product is not a fair comparison as a pound of meat has different nutritional properties than a pound of broccoli.
- Ruminants allow harvesting of 25% more land area since much of the acreage harvested by ruminants is not suitable for crops.
- Bioavailability of many nutrients is higher in animal products versus plant products.
- Animals provide more than food. A multitude of animal-derived products are used in adhesives, ceramics, cosmetics, fertilizer, germicides, candies, refining sugar, textiles, upholstery, photographic films, ointments, paper, heart valves, and other products.

Also cited in many reports is that humans would be healthier without meat in their diet. One example is people who self-report over consuming meat have a 20% higher risk of coronary heart disease due to saturated fats. Overconsumption of many things can result in increased risk of death. As I heard a wise man once say: "Quantity and frequency is a key to avoiding many problems." A dietary interpretation of this is: "If you eat or drink too much of something too often, it will cause problems." A well balanced diet is critical to good health and a long life. You can be healthy on an all plant food diet, with proper supplementation, but animal-source foods can be a valuable part of a healthy diet. As illustrated in the next section, animal source foods provide high quality protein and are a source of the most deficient micronutrients in the human diet.

Animal production is often criticized but many of the critiques do not consider all facets of what animal production contributes. Kudos to Drs. White and Hall for a fair analysis of life without animal agriculture. If you want to read the complete article it is available at http://www.pnas.org/content/114/48/E10301.

Continued on page 4

Directors Digest, continued

Importance of animal-source foods for meeting global nutritional, educational and economic needs

This was the title of another presentation I attended and in addition to pointing out the benefits of animal source foods, it helped me realize how often we take for granted the availability and choices of foods that we have in this country. Stunting, or chronic undernutrition, is responsible for about 45% of deaths in children under the age of five and affects approximately 160 million children. Stunting can begin in utero due to undernutrition of the mother and is also a big problem between six and twenty-three months of age when children begin consuming solid food. Much of this stunting occurs in the developing areas of Africa and Southeast Asia where both quantity and quality of food are an issue. Many diets in these regions rely on starchy foods and very little animal source foods (meat, milk, eggs). In addition to death, stunting has been shown to impair cognitive skills, reduce IQ by 11 points, and reduce income potential by 22%. A World Health assessment has set a goal of reducing stunting 40% by the year 2030.

Animal source foods are the best source of high quality, nutrient rich food for children between the ages of six to twenty-three months of age. Animal source protein contains all the essential amino acids in a highly bioavailable form. Some of the most deficient micronutrients globally - zinc, iron, iodine, vitamin A and folic acid are readily available in animal source foods. In addition, animal source foods are the only natural source of vitamin B_{12}, which is deficient in pregnant women in several developing countries.

The Lulun egg project in Ecuador is a strong example of the benefit of animal source foods. In this study they took children between the ages of six and twenty-three months of age and provided them with one egg per day for six months. Children receiving eggs versus those who didn't had stunting reduced by 47% and wasting (defined as low weight/age) reduced by 74%. Other studies have shown a 45% increase in test scores for children receiving meat and a 28% improvement in test scores for those receiving milk.

Be thankful for the quantity and quality of food most of us have available and please look for opportunities to help those less fortunate both domestically and abroad. The Kentucky Hunger Initiative through our own Kentucky Department of Agriculture is a source to help the hungry in Kentucky. Heifer International is one organization trying to make a difference globally.

Dr. Darrell Johnson
Executive Director

Potential Fertilizer Regulation Changes

As mentioned in an earlier article, new regulations have been established by the Kentucky General Assembly which requires administrative regulations to be reviewed at least every seven years. Most of the Divisions regulations have been reviewed and changed within the past few years or are currently in the process. However, the regulations pertaining to the Kentucky Fertilizer Law have not been amended since 2000. Our current regulations can be found at the following link:

http://www.rs.uky.edu/regulatory/fertilizer/laws_regulations/

Some of the regulations which need to be reviewed and potentially changed are the following:

12 KAR 4:110. Terms and Definitions – The Association of American Plant Food Control Officials (AAPFCO) has many new terms and definitions which will need to be added to this section, or the sections could change to indicate the terms and definitions of the most recent AAPFCO Official Publication.

12 KAR 4:170 Maximum Chlorine Guarantees for Tobacco Fertilizer – This potentially could be deleted. With no price support for Tobacco, it may be better for the tobacco industry to enforce the policies they require in their contracts.

We will be in contact with the fertilizer industry in the very near future to get more input, any comments on the Fertilizer Regulations can be directed to Stephen McMurry at smcmurry@uky.edu or call 859-257-2785.

Steve McMurry
Director of Fertilizer and Seed Programs

Seed Germination Averages

Our Division's Seed Laboratory conducts many seed germination tests for both regulatory and service seed testing. Below are average germination percentages of seed kinds, which combine both regulatory and service germination results. Most seed kinds are well above an average of 80%, this is great news for agricultural producers and home owners.

Agricultural Kinds

Common Name	Scientific Name	Germination Average (%)
Alfalfa	Medicago sativa	80.46
Barley	Hordeum vulgare subsp. vulgare	82.75
Buckwheat	Fagopyrum esculentum	87.83
Canarygrass, reed	Phalaris arundinacea	75.75
Canola	Brassica napus	96.33
Clover, alsike	Trifolium hybridum	93.33
Clover, arrowleaf	Trifolium vesiculosum	89
Clover, berseem	Trifolium alexandrinum	93
Clover, big-flower	Trifolium michelianum	87.38
Clover, crimson	Trifolium incarnatum	85.27
Clover, Dutch white	Trifolium repens	84.25
Clover, ladino	Trifolium repens	80.34
Clover, mammoth red	Trifolium pratense	93
Clover, medium red	Trifolium pratense	88.16
Clover, red	Trifolium pratense	89.25
Clover, white	Trifolium repens	78.34
Corn, field	Zea mays	96.81
Crownvetch	Securigera varia	52.25
Festulolium	Festulolium spp.	87
Hemp	Cannabis sativa	65.6
Lespedeza, Korean	Kummerowia stipulaceae	80.2
Lespedeza, striate	Kummerowia striata	61.38
Millet, foxtail	Setaria italica	74.33
Millet, German	Setaria italica	93.33
Millet, German or foxtail	Setaria italica subsp. italica	89.25
Millet, pearl	Pennisetum glaucum	80.03
Millet, white proso	Panicum miliaceum	90.88
Oat	Avena sativa	92.3
Oat, spring	Avena sativa	93.33
Pea, Austrian winter	Pisum sativum subsp. arvense	89.67
Radish, Daikon	Raphanus sativus var. longipinnatus	95.13
Rape	Brassica spp.	91.25
Rye	Secale cereale	85.65
Sorghum	Sorghum bicolor	78.83

Continued on page 6

Agricultural Kinds, continued

Sorghum, grain	Sorghum vulgare	83.42
Sorghum-sudangrass	Sorghum x drummondii	87.09
Soybean	Glycine max	89.21
Sunflower	Helianthus annuus	76.89
Sweetclover, yellow	Melilotus officinalis	82.67
Teff	Eragrostis tef	90.83
Tobacco, burley	Nicotiana tabacum	92.71
Tobacco, dark	Nicotiana tabacum	95.2
Tobacco, flue-cured	Nicotiana tabacum	95.19
Trefoil, birdsfoot	Lotus corniculatus	68.92
Triticale	x Triticosecale	90.88
Vetch, hairy	Vicia villosa subsp. villosa	22.25
Wheat	Triticum aestivum	89.39

Grass Kinds

Common Name	**Scientific Name**	**Germination Average (%)**
Bentgrass	Agrostis spp.	45.25
Bermudagrass	Cynodon dactylon var. dactylon	71
Bluegrass, Kentucky	Poa pratensis	78.78
Bluegrass, rough	Poa trivialis	86.5
Fescue, chewings	Festuca ruba subsp. commutata	73.75
Fescue, creeping red	Festuca rubra	80.5
Fescue, fine	Festuca spp.	75.61
Fescue, hard	Festuca brevipila	92
Fescue, red	Festuca rubra subsp. rubra	60.38
Fescue, tall	Festuca arundinacea	86.4
Orchardgrass	Dactylis glomerata	88.25
Redtop	Agrostis gigantea	87.63
Ryegrass	Lolium spp.	90.43
Ryegrass, annual	Lolium multiflorum	96.55
Ryegrass, intermediate	Lolium x hybridum	91.5
Ryegrass, perennial	Lolium perenne	93.51
Timothy	Phleum pratense	91.79

Vegetable Kinds

Common Name	Scientific Name	Germination Average (%)
Bean	Phaseolus vulgaris	85.89
Bean, bush	Phaseolus vulgaris	87.95
Bean, garden	Phaseolus vulgaris	89.92
Bean, lima	Phaseolus lunatus	84.38
Bean, lima bush	Phaseolus lunatus	97
Bean, lima pole	Phaseolus lunatus	99
Beet	Beta vulgaris subsp. vulgaris	91.75
Beet, sugar	Beta vulgaris subsp. vulgaris	86
Brassica spp.	Brassica spp.	13.25
Cantaloupe	Cucumis melo	92
Carrot	Daucus carota subsp. sativus	82.8
Chives	Allium schoenoprasum	98
Corn, sweet	Zea mays	86.27
Cowpea	Vigna unguiculata subsp. unguiculata	63.92
Cowpea, blackeye	Vigna unguiculata subsp. unguiculata	80
Cowpea, purplehull	Vigna unguiculata subsp. unguiculata	85.13
Cucumber	Cucumis sativus	89
Dill	Anethum graveolens	78
Kale	Brassica oleracea	89.05
Lettuce	Lactuca sativa	94.11
Okra	Abelmoschus esculentus	88.67
Pea	Pisum sativum	91
Pea, garden	Pisum sativum subsp.sativum var. sativum	91.89
Pepper	Capsicum spp.	87
Popcorn	Zea mays everta	96.25
Radish	Raphanus sativus	92.54
Spinach	Spinacia oleracea	83
Squash	Cucurbita spp.	83
Strawberry, alpine	Frageria vesca	44
Tomato	Solanum lycopersicum var. lycopersicum	75
Turnip	Brassica rapa subsp. rapa	78.82

Steve McMurry
Director of Fertilizer and Seed Programs

Want to know how your pet's food stacks up?

Did you know that the University of Kentucky Division of Regulatory Services samples hundreds of dog, cat and other pet foods every year? Our inspectors visit Kentucky pet stores, grocery stores, pet food and pet food ingredient manufacturers, as well as other business that store or manufacture pet food to take the samples. In fact, in 2017 our inspectors sampled over 1,300 pet foods and sent them to our laboratory for analysis.

Our laboratory typically analyzes these foods and treats for a number of nutrients. In general, complete and balanced wet and dry dog and cat foods are tested to make sure that they meet the standard nutrient content required to be called complete and balanced. This standard is set by the Association of American Feed Control Officials (AAFCO – more information can be found here: https://talkspetfood.aafco.org/). Our laboratory typically will test these products for protein, fat, moisture, as well as for levels of several minerals to ensure that the nutrient content meets the standard as well as the "Guaranteed Analysis" levels displayed on the label. In general, each of these complete food samples will be run through 12-15 tests.

Our laboratory also analyzes pet treats. Since pet treats are not normally fed as an animal's complete diet, there is no standard for nutrient requirement. Instead, these treats are tested to ensure that they meet the nutrients guaranteed in the "Guaranteed Analysis" which can be found on the packaging. Our Feed Program runs these tests to make sure that you are getting what the firm says you are getting!

A summary of the results of all of these tests can be found in our Commercial Feed Bulletin that is available on our website: http://www.rs.uky.edu/regulatory/feed/feed_bulletins/. The table of Official Feed Samples Analyzed lists the number of samples our inspectors took for a particular firm, the number of samples that met the nutrient standard/guarantees as well as the total tests run on those samples and the number of those tests that 'passed'. The final column, the sample violations column shows you which tests did not pass.

To use this table, you will need to review your pet food package to determine which company is responsible for your product. The firm listed on your packaging with name and address is the one that you should look up. Please do remember that the usefulness of the data increases with the number of samples taken. One sample that shows a 50% pass rate for 2 tests is much less statistically reliable than 15 samples that overall show a 50% pass rate for 50 tests.

Our division hopes that you find this information helpful and that it gives you a better idea of some of the work completed each year by our Feed Program and Division laboratory.

Kristen Green,
Registration Specialist

Feed Facility Inspections under Food Safety Modernization Act Regulations – Part 2

In our previous newsletter, I presented an introduction to feed facility inspection under The Food Safety Modernization Act (FSMA). Under FSMA, two major regulations affect animal feed production and distribution: Preventative Controls for Animal Food (PC's) and Good Manufacturing Practices (GMP's). The Food and Drug Administration (FDA) staggered compliance dates for PC's and GMP's based on the size of the business and the final compliance date for Good Manufacturing Practices is upon us (September 17, 2018). Effectively, what this means is that all facilities, regardless of size, that manufacture, process, pack, or hold animal food will need to comply with these GMP regulations by this fall. This article and a subsequent article in our next newsletter will discuss what is covered in these new GMP's and how this will impact a feed facility inspection. Preventative controls will be discussed in more detail in future articles.

As part of our new inspection contract with FDA, our inspectors are scheduled to conduct 24 GMP inspections under FSMA regulations (21 CRF Part 507). By October 1, we will have 9 inspectors trained to conduct these GMP inspections. If your facility manufactures medicated feed, you should be familiar with our inspectors conducting GMP

inspections where the focus is primarily on proper handling and use of medications added to feed. While there are components of medicated GMP's that are similar to the Part 507 GMP's, there are additional areas that the new regulations address.

The 8 sections in 21 CFR Part 507, Subpart B are: 1) Personnel, 2) Plant and grounds, 3) Sanitation, 4) Water supply and plumbing, 5) Equipment and utensils, 6) Plant operations, 7) Holding and distribution, and 8) Holding and distribution of human food by-products for use as animal food. This article will deal with the first 4 sections. Additionally, you should also be aware of the General Provisions in Subpart A that address the qualifications of employees and training. Please note that this is my condensed version of the regulations, the compliance areas where our inspectors will focus, and expectations.

Qualifications – 21 CFR 507.4

- Management ensures that all individuals involved in manufacturing, processing, packing, or holding animal food are qualified to perform assigned duties.
- A training program is in place and records of training maintained.

Personnel – 21 CFR 507.14

- Management provides necessary facilities to store personal effects, to wash or sanitize hands, and adequate signage to enforce appropriate practices.
- Management has established a personnel cleanliness protocol with training and expectations regarding hand cleaning and prevention of contamination of feed.

Plant and grounds – 21 CFR 507.17

- Grounds around establishment plant under the control of the management are maintained to protect against the contamination of animal feed – free of litter and waste or conditions that may attract and harbor pests and adequately drained.
- The plant is suitable in size, construction, and design to facilitate cleaning, maintenance, and pest control – adequate access, moisture control, ventilation, and lighting.
- Feed stored outdoors in bulk is protected from contamination by any effective means – protective covering and/or pest control protocols.

Sanitation – 21 CFR 507.19

- Buildings, structures, fixtures, and other physical facilities of the plant are kept clean and in good repair to prevent animal feed from becoming adulterated.
- Feed-contact and non-contact surfaces of utensils and equipment are cleaned, maintained, and properly stored.
- Cleaning compounds and sanitizing agents utilized are safe and adequate under the conditions of use.
- Toxic materials in the plant area are properly identified and stored and limited to those required to maintain clean and sanitary conditions, necessary for use in laboratory testing procedures, necessary for plant and equipment maintenance and operation; and necessary for use in the plant's operations.
- Effective measures are employed to exclude pests from the feed manufacturing, processing, packing, and holding areas.
- Trash is conveyed, stored, and disposed to protect against the contamination of feed and minimizes the potential for trash to attract and harbor pests.

Water supply and plumbing – 21 CFR 507.20

- The water supply is adequate, at a suitable temperature and pressure as needed, provided where required for cleaning of equipment and hygiene, and safe for its intended use.
- Plumbing is designed, installed, and maintained to carry adequate quantities, properly convey sewage and liquid disposable waste, avoid being a source of contamination, provide adequate floor drainage, and to ensure there is no backflow from discharge waste water or sewage.
- The plant provides employees with adequate, readily accessible toilet facilities.

Continued on page 10

FSMA inspections, continued

- The plant provides hand-washing facilities designed to ensure that an employee's hands are not a potential source of contamination of animal feed.

Meeting all these requirements, particularly with older facilities, may seem daunting at first glance. However, FDA has worked to structure these regulations to provide flexibility in how these requirements are met. Programs and practices currently in place may meet the regulations, though some additional documentation may be needed. Our inspectors have been informed by FDA that the initial inspection for compliance with GMP's under Part 507 will focus on education. When requirements are not met, our inspectors will be looking for plans to meet requirements and monitoring progress.

In our next newsletter, I will review the last 4 sections of the Part 507 Good Manufacturing Practices.

For more information, you can download the regulations or the guidance for industry documents.

https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfCFR/CFRSearch.cfm?CFRPart=507

https://www.fda.gov/downloads/AnimalVeterinary/GuidanceComplianceEnforcement/GuidanceforIndustry/UCM499200.pdf

Dr. Alan Harrison,
Director of Feed and Milk Programs

What is a FERN Laboratory?

In response to the threat of terrorist attacks and potential natural disasters, several national laboratory networks have been developed to provide coordination, capability, and capacity to respond during emergency events. The Laboratory Response Network (LRN) was established by the Department of Health and Human Services and the Centers for Disease Control and Prevention to maintain an integrated national and international network of laboratories that are fully equipped to respond quickly to acts of chemical or biological terrorism, emerging infectious diseases, and other public health threats and emergencies.

The Food Emergency Response Network (FERN) is the network that was developed in response to Homeland Security Presidential Directive 9 (HSPD-9) and is coordinated by both HHS/FDA and USDA/FSIS. HSPD-9 was issued in January 2004 and established a national policy to defend the agriculture and food system against terrorist attacks, major disasters, and other emergencies. HSPD-9 addresses the need for the development of surveillance and monitoring systems for early detection and awareness of food contamination events; tracking systems; mitigation strategies in response to events; response planning and recovery activities that will be integrated into the National Response Plan; nationwide laboratory networks for food, veterinary, plant health, and water quality that integrate existing federal and state laboratory resources, are interconnected, and utilize standardized diagnostic protocols and procedures.

FERN is part of the U.S. Department of Agriculture Food Safety and Inspection Service. Its mission is to integrate the nation's food-testing laboratories for the detection and identification of threat agents in food and feed at the federal, state, local, tribal, and territorial levels. There are three levels to this effort covering biological, chemical, and radiological agents.

FERN provides for an early means of detecting threat agents in the U.S. food supply and will prepare the nation's laboratories to be capable of responding to food related emergency events. They are helping to prepare laboratories by strengthening their capabilities of testing by offering training and proficiency testing samples. The purpose of FERN is to integrate all of these food laboratories into a functioning network. This integration involves developing standardized food testing methodologies; providing training opportunities; and facilitating communication between member laboratories.

Training is a major component in the development of analytical capability. FERN provides chemical, microbiological, and radiological training opportunities to member laboratories. Training is a component of FERN Support Programs. Training programs are coordinated through FDA and USDA and their partners. The FERN National Training

Program utilizes a blended learning approach to support these goals and to develop the skills of member laboratory analysts. The use of e-learning modules, face-to-face hands-on training, on-the-job training proficiencies, and training practice samples are incorporated to complement the program. Since 2003, FERN has trained over 250 people from 35 states, and Canada and Mexico. Courses have included all three disciplines and have been hosted at FDA, USDA, and state facilities.

FERN coordinates a food proficiency testing program for chemical, microbiological, and radiological analytes. FERN also coordinates with the Laboratory Response Network (LRN) to provide joint food proficiency tests for LRN and FERN microbiological laboratories. Proficiency tests are offered on an approximately quarterly basis to FERN member laboratories. The proficiency testing program is coordinated by the FERN National Program Office and facilitated by the FDA and USDA laboratories. Proficiency tests (PTs) have been sent out in all FERN analytical areas. FERN and LRN worked together to send joint food testing proficiency tests to their member laboratories.

The FERN Methods Coordination Committee (MCC) has written standard operating procedures (SOPs) that define the FERN method submission process. This process will be followed for all method submissions to FERN. Selected methods will be evaluated on their relevance and applicability to FERN, as well as their technical merit. The MCC has also developed an SOP and checklist for use in the technical review of submitted methods. As methods are developed and approved for use by FERN member laboratories, they are posted on the FERN data entry site for all member labs to utilize.

FERN laboratory membership is open to federal, state, local and tribal government food testing laboratories with chemical, microbiological, and/or radiological analytical capabilities. To become a member of FERN, laboratories must complete the FERN Laboratory Qualification Checklist. The checklist includes analytical discipline-specific components (chemical, microbiological, and radiological). Laboratories can request membership for any or all of the analytical disciplines based on their current capabilities. FERN laboratories are prepared to assist each other with sample analytical testing capacity during the event of a food/feed emergency. Laboratories are identified as screening laboratories or confirmatory laboratories based on their current equipment, facilities, or training/personnel for individual agents.

FERN laboratories are prepared to assist each other with sample analytical testing capacity during the event of a food emergency. In order to facilitate collaboration between FERN laboratories, formalized agreements may need to be in place between states and between federal and state partners. When developed, these agreements can outline roles and responsibilities of the signatories and can outline resource distribution and administrative requirements related to FERN activities.

There are 134 laboratories representing 50 states and Puerto Rico that have qualified to be a FERN laboratory. There are 94 laboratories qualified for chemical methods; 106 for microbiological methods; and 29 for radiological methods. I am proud to say that we at the University of Kentucky, Division of Regulatory Services, Feed and Fertilizer Laboratory are a FERN laboratory verified for chemical methods.

Although you may not of heard of FERN, it and it's laboratory partners were activated for the E. coli O157:H7 in spinach in 2006; melamine in pet food in 2007; melamine in infant formula and milk based products in 2008; salmonella in peppers in 2008 and in peanut butter in 2009; and most recently for the outbreak of polyaromatic hydrocarbons (PAH) in seafood resulting from the 2010 Deepwater Horizon Oil Spill.

Feed safety is very important to us. By moving towards ISO 17025 accreditation and implementing more strenuous quality guidelines, we will increase the defensibility of our data and the safety of food and feed in the Commonwealth. This will allow for standardization of laboratory competencies and validity of laboratory results across the nation. By working with other state, federal, and international laboratories, we are strengthening our food and feed supplies safety.

Dr. Sharon F. Webb,
Director, Quality Program

Kentucky Agriculture Experiment Station Annual Report

In this issue we will finish up our summaries from the annual report by providing the summaries from the feed program, fertilizer program, and seed service program.

Feed Regulatory Program

The feed regulatory program provides consumer protection for livestock feed and pet food according to provisions of the Kentucky Commercial Feed Law. The program ensures safety, suitability and quality of animal feed in producing meat, milk, and eggs for human consumption and products for companion animals. The program also provides standards of quality, safety, efficacy, and labeling for feed products. A statewide inspection, sampling, and laboratory analysis program monitors feed ingredients and feed products, including pet food. Feed labels are evaluated to identify purpose of feed, guaranteed composition, ingredient list, feeding directions, and the need for any warning or caution statements. A strong feed regulatory program not only provides the consumer with safe and effective products but supports a level playing field for Kentucky businesses.

The feed program participates in food safety efforts that promote consumer confidence in the nation's food supply. We work cooperatively with the U. S. Food and Drug Administration (FDA) in assessing compliance with the ruminant-to-ruminant feeding ban to prevent any establishment or amplification of bovine spongiform encephalopathy (BSE, or "mad cow disease"). Since September of 2016, Kentucky has been a national leader in the Animal Feed Regulatory Program Standards (AFRPS) initiative, a joint effort by the American Association of Feed Control Officials (AAFCO) and the FDA to help build a more robust integrated food safety system by concentrating on regulation of animal feed production. This cooperative agreement will bring $3,000,000 into the division and the university over the next 5 years.

2017 Highlights

- Our division is responsible for regulation of a diverse state feed industry that includes approximately 1,000 Kentucky businesses involved in the manufacture and/or distribution of animal feed.
- Our inspectors conducted 1,061 official inspections at Kentucky feed manufacturers and dealers in 2017.
- Our division processed 3,417 animal feed samples and performed over 34,000 lab analyses. Of these 3,417 feed samples, 3103 were classified as official samples and product guarantees were compared to lab analyses.
- Pet food sampling continues to be a major focus of our division with 1,385 pet food samples collected in 2017.
- Unofficial samples included 104 service samples provided by Kentucky consumers, feed dealers, or manufacturers and analyzed at no charge by our laboratory to answer a question or address a complaint.
- Other unofficial samples included 25 feed samples from quality control programs, 16 university research samples, and 8 samples provided by other state regulatory programs.
- Our laboratory used 45 different approved analytical methods in providing results.
- Under our contract with FDA for the 2016-2017 fiscal year, inspectors conducted a total of 79 inspections for compliance with the ruminant to ruminant feed ban including 28 inspections of medicated feed mills for compliance with current Good Manufacturing Practices. This FDA contract brings approximately $50,000 annually to the division.
- At the end of 2017, there were over 20,000 feed products registered for sale in Kentucky and 1,336 registered feed manufacturers offering feed products for sale in the state.

Fertilizer Regulatory Program

The fertilizer regulatory program ensures Kentucky farmers and urban consumers of quality fertilizer while promoting fair and equitable competition among fertilizer manufacturers and dealers through inspection and analysis of products found in the marketplace. The Division, which administers and implements the Kentucky Fertilizer Law, promotes compliance through facility inspections, sampling and analysis of fertilizer offered for sale. The law requires proper labeling of fertilizer which

includes the grade and guaranteed analysis of nutrients. The Division is also responsible for maintaining registration of fertilizer products.

2017 Highlights:

- Conducted 1,070 visits to perform inspections and to sample agricultural, lawn, turf, and garden fertilizer at Kentucky processing, wholesale and retail locations.
- Administered actions on 2,623 official and 9 unofficial samples of fertilizer involving over 6,950 chemical tests.
- Issued stop-sale orders on 206 official fertilizer samples which resulted in penalties worth over $81,000 which were reimbursed back to famers or discounted at the time of sale.
- The official samples represented about 50,896 tons out of the approximately 1,039,790 tons of fertilizer distributed in Kentucky during 2017, or about 4.89%.
- Reviewed labels and registered over 5,500 products from 450 firms and issued licenses to 187 companies that manufactured custom-blended fertilizers.
- Analyzed laboratory check sample materials from Magruder®, UAN, and AFPC.
- Provided support for 15 different analytical methods that yield results for 28 analytes and contaminants.

Seed Service Program

Our seed service program maintains the only certified seed testing facility in Kentucky. In addition to the regulatory work they perform, the lab provides service testing for seed producers, dealers, retailers, research projects and homeowners for a fee. More than 90% of the service samples accepted were submitted by Kentucky firms or individuals.

2017 Highlights

- Analyzed 2,489 service samples.
- Collaborated with researchers to analyze 76 seed samples.
- Collaborated with AOSA to analyze 28 referee seed samples.
- Supported the equine and livestock pasture management programs in analyzing 205 plant samples for endophyte.
- Analyzed 29 hemp samples in accordance with new KDA hemp program.
- Analyzed 31 seed samples under the provision that allows one free sample for testing each year from Kentucky residents.

Dr. Darrell Johnson
Executive Director

Upcoming events:

Agribusiness Association of Kentucky summer meeting.
Hampton Inn
Bardstown, Kentucky
August 14-15

Kentucky Milk Quality Conference
Lake Barkley State Park
Cadiz, KY
August 28-30

Beef Bash
University of Kentucky Research and Education Center, Princeton, Ky.,
September 20, 8:30-5:00
http://afs.ca.uky.edu/events/BeefBash2018

Mountain Fest Field Day
UK Robinson Center
Jackson, Ky
Saturday, September 22
https://rcars.ca.uky.edu/event/mountain-fest-field-day

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