Regulatory Services News

Vol. 63, No. 4

Feed - Fertilizer - Milk - Seed - Seed Testing - Soil Testing - Ag Lime Testing - Industrial Hemp Testing

Winter 2020

<u>Director's Digest</u>

What Does Sustainability Mean to You?

Here we are three months from our last newsletter and we are still battling Covid 19. I look forward to having this pandemic behind us and also to not watching any more political advertisements.

Consumer expectations have changed as a result of the coronavirus pandemic. One that keeps popping up in articles I read is an increased interest in sustainability. A recent survey of American consumers by Boston Consulting Group found that 75 percent of consumers view sustainability as "important" or "very important" with more than one third reporting they have at some point switched from their preferred brand to a more environmentally friendly alternative. Environmental concerns have actually increased as a result of the pandemic. Seventy percent of respondents are now more aware that our climate is affected by human activity than they were before the crisis began.

So what does sustainability mean to you? There is lots of confusion among consumers, academia, and industry as to the definition of sustainability. I have had a note taped over my desk for several years now that the three components of sustainability are:

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- Environmental stewardship
- Economic viability
- Social responsibility

These three components are common to most definitions I see for sustainability but are interpreted differently depending on the group.

Many universities have sustainable agriculture as part of their curriculum (including the University of To quote one of these programs: Kentucky). "Sustainability rests on the principle that we must meet the needs of the present without compromising the ability of future generations to meet their own needs. Therefore, stewardship of both natural and human resources is of prime importance. Stewardship of human resources includes consideration of social responsibilities such as working and living conditions of laborers, the needs of rural communities, and consumer health and safety both in the present and future. Stewardship of land and natural resources involves maintaining or enhancing this vital resource base for the long term." All of this must be done while maintaining a profitable industry.

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Director's Digest, continued

Many principles of sustainable production agriculture have been in place for years such as crop rotation, planting cover crops, methane digesters, eliminating or reducing tillage, using integrated pest management, integrated resource management, and adopting agroforestry practices. Stewardship of human resources is perhaps where we are most behind. The important point from a consumer standpoint is that we convey to them that we are practicing sustainability and many of them expect third party verification.

Popular consumer companies realize the sustainability expectation and have incorporated this into their marketing campaigns. Patagonia is an outdoor clothing and gear company that proudly emphasizes their sustainability efforts on their website. The mission statement for their company is: "Build the best product, cause no unnecessary harm, use business to inspire, and implement solutions to the environmental crisis." That certainly covers all areas of sustainability.

The agricultural industry is realizing that sustainability is expected in their segment as well and many major companies are promoting their sustainability initiatives. DSM Animal Nutrition and Health has recently launched a new strategic initiative, We Make It Possible. The company aims to build on its heritage and experience in bringing sustainable business solutions to both its customers and the supply chain by transforming sustainable animal protein production. The initiative is driven by six sustainability platforms that will address the major challenges facing the animal farming industry: improving the lifetime performance of farm animals, improving the quality of food while reducing food loss and waste, reducing emissions from livestock, making efficient use of natural resources, reducing reliance on marine resources, and helping tackle anti-microbial resistance. I don't think you'll find consumers opposed to these tenets.

Closer to home, Purina announced last August

that it reached the goal to achieve zero waste for disposal across all (21) U.S. petfood manufacturing operations and its corporate headquarters in St. Louis, Missouri. Every facility involved has found ways to derive benefits from materials that would have otherwise been discarded, and all locations now recycle, reuse, recover or compost waste from daily operations. In certain cases, locations also may utilize destinations that convert waste to energy to generate power. Just last month, Pedigree Ovens and The Pound Bakery in Harvard, Illinois completed installing 200,000 square feet of solar panels. This will provide all the electricity needed for the 212,000 square feet pet treat facility.

Even closer to home is a new company name AppHarvest located in Morehead, Kentucky. Sometime in the next few weeks this 60-acre high-tech greenhouse will begin production of tomatoes and cucumbers. AppHarvest aims to solve four distinct problems:

- America needs to farm more sustainably: Controlled environment agriculture technology will allow AppHarvest to grow pesticide-free produce year-round using 90% less water than traditional farming. The 60-acre facility's needs will be met entirely with a 10-acre retention pond and sophisticated circular irrigation systems.
- America needs a homegrown food supply: The U.S. relies increasingly on imports, with produce picked pre-ripe and aged up to a week on a truck before briefly sitting in grocery stores. The Morehead site is within a day's drive of 70% of the U.S. population, and cuts 80% of diesel use for transport to the East Coast from the supply chain. This geographic advantage makes Kentucky a logistics powerhouse for potential AgriTech aspirations.
- America needs better access to nutritious food: Just one in 10 adults eat enough fruits and vegetables according to the Centers for Control and Prevention. Feeding America, a nonprofit dedicated to hunger relief, estimates 12.9% of

Americans at times struggle with lack of access to enough nutritionally adequate food and 17.5% of children deal with food insecurity. AppHarvest expects to improve access to fresher, costcompetitive produce.

Appalachia needs investment and jobs: The coal industry is in decline and its employment is the lowest level since 1898; 50,000 miners have lost their jobs. AppHarvest will provide some much needed jobs in this area and has educational partnership initiatives for employees with regional universities and colleges.

Addressing these four problems falls in line with the definition of sustainability given earlier. Hopefully, Kentucky's initiative to promote AgriTech will yield more such businesses in the future.

Consumers expect sustainability and it has become more than a buzzword. Agriculture has addressed this in many practices over the last 20 years and we need to make sure consumers are aware of our efforts. We need to continue looking for ways to be more sustainable.

Dr. Darrell D. Johnson Executive Director

Seed Registration and Permit Renewals for 2021

The renewal process for seed registrations and permits will occur in the next few weeks. Applications will be emailed or mailed to seedsmen, seed dealers, and seed conditioners who were permitted and registered in 2020.

Firms that sell seed at retail in container sizes of 40 pounds or more are required to register as Seed Dealers. Locations that condition uncertified seed for distribution in Kentucky are required to register as NonCertified Seed Conditioners. Those who condition only certified seed are registered as a part of the certification process under the Kentucky Seed Improvement Association.

Anyone who labels agricultural seed or agricultural seed mixtures is required to obtain a Permit to Label Agricultural Seed. Those who obtain this permit are also required to file Semi-Annual reports and pay fees based on the container size of the product. Semi-Annual reporting forms are emailed or mailed to agricultural seed permit holders at the end of each period and are required to be filed within 45 days after the end of each period.

Anyone who labels vegetable seed, flower seed, or combination mulch, seed and fertilizer is required to obtain a Permit to Label Vegetable Seed, Flower Seed, or Combination Mulch, Seed, and Fertilizer Products. These products are not subject to the Semi-Annual reporting schedule.

Fees for registrations and permits are \$25 each. Locations that are required to obtain both a labeling permit and a registration or both registrations only pay one \$25 fee for all. It is common for a location to be involved in conditioning seed, labeling seed and also selling seed at retail. All three applications are required, but only one \$25 fee is paid. A \$50 fee would only be required if both labeling permits are needed. The registration fees are waived if one or both permits are obtained.

Applications will be emailed or mailed to your location and are based on the applications that you currently have. Please complete the applications and return with the application fee stated to our office. If you have questions about this process, please contact Marilyn Smith at 859-218-2468 or mm.smith@uky.edu.

Steve McMurry, Director of Fertilizer and Seed Programs

Inspector News

This will be a year that none of us will ever forget. Covid-19 has certainly changed the way we go about our everyday life, at home and at work. It does not appear that this is going to change anytime soon, but as an industry agriculture has been declared essential, so we must continue to perform our work while staying as safe as possible.

It is imperative that our inspectors continue to collect samples to ensure that your customers are

getting the safe and high-quality products that they expect when buying feed, seed and fertilizer. Our goal and mission is to make sure that the feed you sell is safe for animals, the seed you sell is going to germinate and is free from noxious weed seed, and the fertilizer products you sell meet their guaranteed analysis.

The University of Kentucky has adopted the CDC guidelines for personal safety which include wearing a mask, practicing social distancing, and hand washing or hand sanitizer as often as possible. Our inspectors are following these policies for their safety and to protect the safety of the employees of your business when we visit for our feed, seed, or fertilizer sampling and inspections.

Our inspectors are committed to following these policies and protecting your health and safety of you and your employees during their visits to your firms. We certainly appreciate the work you do to service the consumers of Kentucky during this uncertain pandemic. Thank you for what you do to keep our ag industry safe and growing.

FDA Inspections: Our inspectors will be starting to conduct the FDA inspections over the next several months. This year we will be doing multiple inspections at most firms. The inspections will be the following: 1) cGMP225 inspections, for any firm making medicated feed, 2) cGMP507 inspections, for all feed mills that manufacture any feed, 3) BSE inspections, only for firms that use prohibited material in manufacturing feed, and 4) Preventative Control inspections, for larger feed mills that are required to have a food safety plan and identify hazards with preventative controls.

We will start doing the Preventative Control inspections this year at the larger feed mills as these inspections are now part of FSMA and are now in effect. The smaller firms are not all subject to these inspections. If your firm falls under the Preventative Control regulations, you will need to have a food safety plan and identify your potential hazards and how your food safety plan will prevent each hazard. Examples of Hazards: Mycotoxins, Toxicities or Deficiencies, Foreign objects (such as metal).

The cGMP507 is for all firms that manufacture any kind of feed, and this inspection looks at all the processes and housekeeping issues that are required to make safe feed for animals. Don't forget that one of the requirements for this inspection is that your firm must have annual training with all of your employees that are involved in the feed manufacturing process. This includes good hygiene practices and documenting each employee was in attendance.

The cGMP225 is for firms that make any medicated feed and this inspection will review all records for medicated feed production such as batch records, labeling, and production processes. The BSE inspections are now only conducted at firms that manufacture feed using prohibited material.

Because of Covid-19 concerns for this year, we will be contacting you before we come to do these inspections to make sure that none of your employees have recently tested positive for Covid-19. If you currently have employees with Covid-19 we will wait and reschedule for a later date.

Inspectors Years of Service

I just completed my 11th year as Inspector Coordinator and wanted to recognize our inspectors for their years of service with the Division of Regulatory Services.

> John Flood- 34 years Dave Mason- 33 years Terry Prather- 27 years Brad Johnston- 23 years Bob Hickerson-22 years Mark Barrow- 16 years Warren Pinkston- 15 years Bart Young- 9 years Nathan Keith- 7 years

> > Jim True, Inspection Program Coordinator

FERTILIZER PRODUCT REGISTRATION FOR 2021 IN KENTUCKY

All Kentucky fertilizer registrations and licenses expire on December 31, 2020 and must be renewed to legally sell fertilizer in the state for 2020. Renewal notices to all current Kentucky registrants/ licensees will be mailed or emailed early November. The renewals list all products registered in the state for 2020, all licenses approved for 2020, and instructions for completing the task.

BE ON THE LOOK-OUT FOR YOUR RENEWAL NOTICE

As always, if you have questions Call: 859 257-2785, Fax: 859 257-9478, or E-Mail: June.Crawford@uky.edu

SURVEY OF COMMERCIAL VALUES OF FERTILIZER NUTRIENTS

Over the next few weeks you will receive or you may have already received a survey to determine the commercial values of fertilizer nutrients. Under the provisions of KRS 250.401, I am conducting a survey to determine the commercial values of the fertilizer nutrients for Calendar Year 2021. This survey is of utmost importance for the Division as well as the retail community of fertilizer sales. The values will be published and used in determining and assessing penalty payments if needed. It is important that we include as many surveys as possible. Our inspection staff will be asking if you have received and/or responded to this survey. Please note that we want the current retail value of fertilizers in dollars per ton. All information will, of course, be held in strict confidence. You can give the survey to your respective inspector or fax to 859-257-9478 to the attention of Steve McMurry or e-mail to smcmurry@uky.edu.

Last year's values are located on our website below:

http://www.rs.uky.edu/regulatory/fertilizer/ index.php

> Steve McMurry, Director of Fertilizer and Seed Programs

Application of NIR Technology in Feed Compliance Testing

The use of NIR – near infrared reflectance spectroscopy – in the feed industry goes back to the mid-1970's when it was first used to estimate forage composition. Without going too deep in the weeds with an explanation of how NIR works, the basic principle is that NIR uses light reflectance in the near infrared range to interpret the kind and amount of organic compounds present in the feed. This allows for predictions of crude protein, fat, fiber, and moisture content.

In addition to the use of NIR in forage analyses, NIR is also commonly used to estimate the composition of ingredients and less commonly in mixed feeds. All NIR estimations or equations are based on wet chemistry results. Calibrations for NIR can be purchased or can be developed for more specialized use.

Compared to traditional wet chemistry methods, NIR is nondestructive (the sample is not changed in any way), faster, and can be done at a much lower cost. NIR results are only as good as the wet chemistry data that was used to develop the models. Samples analyzed by NIR must be similar to the samples that were analyzed to develop the model equations.

For the past few months, we have been evaluating the potential use of NIR in determining compliance in our feed sample program. In November, we will begin using NIR as a screening tool with livestock feeds and ingredients. We also plan to use NIR with dry pet foods and possibly, wet pet foods. Samples will be scanned after grinding but prior to submission to the lab for wet chemistry. If the NIR scan indicates the analyte passes, the NIR value would be reported and the sample would go to the lab for any further analyses needed. If the NIR scan indicates the sample would not meet the guarantee of the analyte in question, the sample would be analyzed by the appropriate wet chemistry method. Since this is a screening test, we would never issue a violation based solely on the NIR estimate. Analysis of minerals and medications will continue to be conducted with traditional wet chemistry methods. For sample reports, we will indicate which analytes were estimated using NIR. NIR will also allow the reporting of analytes that we do not typically measure in some feed types. For instance, expect to see crude fat and crude fiber reported for poultry and swine feeds.

For our lab, the advantages of using NIR as a screening test include both the speed of analysis with results available immediately and lower cost in both lab reagents and labor. The labor savings also means that we can redeploy lab labor and lower our sample turnaround time. The major focus of our NIR use will be in compliance testing but there is also the potential to provide faster results with service samples from manufacturers and producers. In the last couple of months, I have provided NIR estimated results on service samples within a day of the sample arriving at the lab.

Dr. Alan Harrison, Director Feed and Milk Programs

AAFCO Sampling Study

The Division of Regulatory Services was recently awarded a grant from the Association of American Feed Control Officials (AAFCO) to conduct a feed sampling study. The purpose of the study was to determine if the current AAFCO recommendation of collecting samples from 10 bags of a lot of feed is adequate to provide a representative sample for compliance testing. The 10-probe recommendation was based on studies conducted in the 1950's with a limited number of feed types and analytes.

In the first phase of this study, we collected samples from 8 different feed types including meals, pellets, textured feeds, and extruded feeds. Analytes tested included crude protein, minerals, and a medication. We are now in the data analysis stage of the study.

The Division would like to express our appreciation to the Kentucky manufacturers that allowed us to collect these research samples at their facilities. These manufacturers were Burkmann Nutrition - Danville, Bagdad Roller Mills, and Willard Milling. I would also like to personally thank Brent Williams, Charlie Jeffers, and Angie Sexton for their assistance in this project.

Dr. Alan Harrison, Director Feed and Milk Programs

Moisture Content of Ag Lime

Agricultural lime is tested in our lab with rereported on our website at http:// sults www.rs.uky.edu/soil/technical info/index.php. Results reported are percent calcium carbonate equivalence (CCE), percent passing #10 mesh sieve, percent passing #50 mesh sieve, percent Ca, percent Mg, and % relative neutralizing value (RNV). The most important result is %RNV. This result gives an indication of how effective the lime would be compared to pure calcium carbonate in raising soil pH to optimum levels for plant growth. For ag lime with 50% RNV, twice as much lime is needed compared to pure calcium carbonate. Most of the county extension offices have soil test reports that calculate the lime requirement for a soil based on the specific RNV values from quarries in the area.

A common question arising during periods of heavy rain in the sampling season is how moisture affects test results and application rates. The moisture content of the ag lime when sampled from the quarry does not affect the %RNV results from our

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<u>Ag Lime, continued</u>

laboratory analysis. We dry the sample before any testing and all results reported are based on concentrations in the dry lime. Therefore, our results provide maximum concentration of RNV that can be achieved without any moisture in the lime. We do not present RNV and application rates on the wet basis of ag lime because the normal moisture levels have little effect on application rates and the wetness of the lime can change with time.

Below are data showing the difference in RNV and application rates for dry versus wet lime. The data on the left shows a typical RNV of 67% and a recommended application rate of 3 tons/acre. The RNV and application rate would be the same from our lab regardless of the moisture content that may range from 0 to 9%. Data on the right shows how the actual RNV and application rates change with varying moisture levels. As moisture level increases, the RNV value decreases. The resultant application rate increases with the decreased RNV but only slightly. We round application rates to whole or half ton per acre. Therefore, lime application rate would remain at 3 tons per acre from 0 to 7% moisture. Application rate would be 3.5 tons per acre at 8 to 9% moisture.

Dry Ag Lime			Wet Ag Lime		
Moisture content	RNV	Application rate	Moisture content	RNV	Application rate
%		tons/acre	%		tons/acre
0	67	3	0	67.0	3.0
1	67	3	1	66.3	3.0
2	67	3	2	65.7	3.1
3	67	3	3	65.0	3.1
4	67	3	4	64.3	3.1
5	67	3	5	63.7	3.2
6	67	3	6	63.0	3.2
7	67	3	7	62.3	3.2
8	67	3	8	61.6	3.3
9	67	3	9	61.0	3.3

Application rate of ag lime may need to be increased by a half ton per acre only if the moisture content exceeds 8%. The average moisture content of ag lime we tested in 2020 was 2.7%. Only 5 of

We Did It!

The journey we started about four years ago is complete! UKDRS Feed & Fertilizer Laboratory has received our accreditation from our Accreditation Body, American Association for Laboratory Accreditation, to the ISO/IEC 17025:2017 International Standard for eight methods and 24 analytes! This means UKDRS, our management team, and our laboratory staff meets the technical competence for the methods on our scope and successfully operate a laboratory quality management system! I am so proud of everyone's hard work and cooperation! the 135 samples taken had moisture levels greater than 7%.

Dr. Frank Sikora, Director of Soils and Laboratories

Every other quarter I've written an article to help you understand the process of ISO accreditation, including the dedication and professionalism of UKDRS. Now, we have achieved our goal which is our "objective evidence" of these outstanding qualities. You are probably asking yourself, so what are you going to do next?

If you remember from the beginning in one of our first discussions of accreditation, what it means, and what it entails, you will recall that all of our documents, policies, and procedures are living, not stagnant! ISO makes sure we document those changes and perhaps why we made the changes. So, we will

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continue to perform internal audits on all of our methods—not just the few on our scope of accreditation! And we will continue to perform annual evaluations of our quality management system! This will allow for us to make continuous improvements within our laboratories and Division. As time moves forward, we will continue to add methods of analysis to our scope of accreditation. We will prioritize them based on our customers' (our regulatory and service programs) needs, our capability, and resources. We will have discussions with our regulatory and service customers to see what we can improve on and what testing needs to be added. There is still much to do and no time to sit idle! The ISO/IEC 17025:2017 standard requires "objective evidence" of how we meet each part of the standard. Now that we have our procedures and policies in place, have completed internal and external audits, and given our objective evidence to our accrediting body, we are accredited to the ISO/IEC 17025:2017 standard. We will continue adding analytical methods to our repertoire and our scope of accreditation that will benefit the people of the Commonwealth. We will continue to provide our Regulatory and Service Programs unbiased and accurate results in a timely manner.

Dr. Sharon F. Webb Director, Quality Program



Personnel Notes

Seed Lab Supervisor

Jonathan Collett was chosen as the new Seed Lab Supervisor following the retirement of Tina Tillery. Jonathan is originally from Letcher county and moved to Garrard County in the late 90's where his family grew tobacco and raised cattle, hogs, chickens, trail horses and goats. While in high school he participated in FFA, obtaining his American degree in 2007. During college he was very active in collegiate FFA and was President of the Forestry Club in 2010. Jonathan obtained a B.S. degree in Forestry from UK in 2010 and an M.S. in Agricultural Sustainability from Murray State University in 2018. He worked for the Kentucky Division of Forestry, Columbia Gas (as a contractor), and Berea College before coming to Regulatory Services in 2013 (where he had worked as a student). Jonathan also serves as feed microscopist for the Division.

He currently lives in Richmond with his husband Joe and works on remodeling projects, home repair/ improvement projects and farm work for family and friends as time permits. He enjoys gardening, reading about American history and outdoor activities such as hiking, camping, etc. and restoring antique electronics, specifically tube radios.

Former Director of Regulatory Services Passes

We are sad to report that Dr. Wilbur Frye passed



away recently. Dr. Frye was Director of Regula-Services tory from 1992 to 2000. He had a distinguished career in Plant and Soil Sciences prior to that. His obituary is shown below:

Dr. Wilbur Frye, Emeritus Professor of Plant and Soil Science

at the University of Kentucky died on September 27th, 2020, at his home, he was 87.

Wilbur Frye was born August 6, 1933 and raised on a farm in western Tennessee near the town of Finger. After serving in the U.S. Air Force and working as an air traffic controller with the Federal Aviation Administration, Dr. Frye attended the University of Tennessee and graduated in 1967 with a Master's of Science in Agronomy. Dr. Frye then attended Virginia Tech University and graduated in 1970 with a Ph.D. in Soil Science. He taught at Tennessee Technological University in Cookeville between 1970 and 1974. He then moved to Lexington and worked at the University of Kentucky for 25 years. He taught in the Plant and Soil Science Department as well as serving as Director of Regulatory Services from 1992-2000. After retiring from UK in 2000, Dr. Frve served as the Executive Director of the Office of Consumer and Environmental Protection with the Kentucky Department of Agriculture between 2004 and 2008.

During Dr. Frye's career in education, he taught and conducted extensive research in soil science and environmental management. He proudly directed and co-directed 15 graduate students, four of whom received their Ph.D. He also chaired the University Senate Council and was a faculty representative on the presidential search committee. While teaching at the University of Kentucky, Dr. Frye notably lectured at Shandong University in China in 1985.

Dr. Frye authored and co-authored close to 80 articles in scientific journals, as well as numerous symposium proceedings and book chapters in his area of expertise. He was the editor on one book and served as a n associate editor for the Soil Science Society of America Journal between 1990 and 1993.

Very proud of his decision to teach long ago, it was evident to Dr. Frye early on that he would pursue a career in the agriculture field. Born and raised on a farm in western Tennessee, when he went on to college, he knew that studying the scientific approach to agriculture would be a field that he would both excel in and be passionate about.

He is a former president of the board of directors of the Soil and Water Conservation Society and the recipient of a 1980 Fellow Award. He is a former member of the board of directors of the Soil Science Society of America and the recipient of a 1992 Fellow Award and a 1995 Soil Science Education Award. He is also a member of the American Society of Agronomy and the recipient of a 1992 fellow Award and a 1995 Agronomic Resident Education Award. Furthermore, Dr. Frye is a lifetime member and former member of the board of directors of the Council for Agricultural Science and Technology and the Association of American Feed Control Officials, as well as a lifetime member of the Association of American Plant Food Control Officials.

Dr. Frye earned several teaching awards, a Science Faculty Fellowship award form the National Science Foundation and was named Master Builder of Men by the International Farmhouse Fraternity, among other recognitions. In his free time, he loved to work with his hands, gardening, doing stone work, woodworking and home improvement projects.

Married in 1957, Dr. Frye is survived by his wife Martha (Hoskins) Frye and his two sons, Thomas and John Frye and five grandchildren.

Upcoming Meetings

Kentucky Agribusiness Summit-Virtual November 3-4, 2020 https://kyagbusiness.org/ky-ag-biz-summit AAFCO Mid-Year Meeting-Virtual Week of January 18 https://www.aafco.org/Meetings

AAPFCO Mid-Year Meeting-Virtual Week of February 21 http://www.aapfco.org/meetings.html

We know it will be different this year but we at Regulatory Services hope each of you have a Happy Thanksgiving, Merry Christmas and Happy New Year!



Regulatory Services News is published by:

Division of Regulatory Services College of Agriculture, Food and Environment University of Kentucky 103 Regulatory Services Building Lexington, KY 40546-0275

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