A Review of the Division of Regulatory Services

The Division of Regulatory Services is charged with agricultural and consumer protection and to provide service to Kentucky’s citizens. The primary role of the organization is to administer four laws designated to the Division and to provide seed and soil testing services.

Laws administered by the Division include the Kentucky Commercial Feed Law, Kentucky Farm Milk Handlers Law, Kentucky Fertilizer Law and the Kentucky Seed Law. The first law enacted was the Fertilizer Law in 1886. This monitoring of products provides a fair and equitable market for producers and processors and protects the purchasers and consumers of various agricultural products – fertilizers and feeds (including dog, cat and specialty pet foods) as well as buyers of grain, lawn and garden seed.

Laboratory space for regulatory testing in each of these program areas is provided by the Division as well as laboratories for service testing of soil and seed products. More than 50,000 samples are tested in the soil labs and more than 20,000 tests are conducted in the seed testing lab each year.

The Division is a unit of the College of Agriculture and has facilities located on UK’s main campus in Lexington and at the Research and Education Center in Princeton as well as an inspection staff strategically located across the state. Activities are supported by state funding, inspection (tonnage) fees and service fees.

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Having an elusive high bacteria count on a dairy farm is one of the most frustrating problems that producers encounter. There are many possible sources for bacterial contamination. Some potential problem areas include: equipment cleaning and sanitizing, milk cooling, milking procedures, herd health, plus on any given farm, a number of other environmental factors may be the source of bacteria.

Some bacteria counts provide general information about overall milk quality. Other bacteria counts are more selective for the types of bacteria they identify. Making sense of all these different counts is sometimes considered to be an art as well as a science. Thus, when troubleshooting bacteria problems, we need to have a basic understanding of the different types of bacterial counts available from laboratories in order to be able to use them to address a problem.

**Standard Plate Count (SPC)** determines the total number of aerobic bacteria that can grow and form countable colonies. These bacteria originate from a wide range of sources including the cow’s udder, poorly prepped teats, dirty milking equipment and poor milk cooling. The SPC is conducted by “plating” the fresh (less than 48 hours old) sample in a growing media and incubating it for 48 hours at 90° F (32° C). Today, many dairy laboratories that test large volumes of samples each day use automated rapid methods for performing the SPC. The FOSS BactoScan™ utilizes fluorescent staining to count individual bacterial cells. This method has proven to be quite reliable. It has allowed larger volume labs to have the ability to provide SPC results immediately as opposed to having to wait for the incubation process as required with plating.

The legal maximum SPC for producer milk is 100,000/ml, but generally, most SPC values should be less than 10,000/ml. The information provided by the SPC is useful for satisfying regulatory testing requirements and for determining quality premiums, but it is of less value when attempting to identify specific sources of high bacteria counts. Selective tests that identify and quantify a specific type or group of bacteria usually prove more useful for this task.

**Preliminary Incubation Count (PIC)** is performed by stressing a milk sample with an incubation period and then conducting a SPC. This "stressful" incubation period selects for “cold loving” bacteria. The PIC is a test used to determine if poor hygiene practices are present on the farm and is most useful when compared with a SPC. To make a valid comparison, the PIC and the SPC should be conducted on the same milk sample. The source of the bacteria that thrive during this incubation period can typically be traced back to unclean milking equipment or poor milk cooling.

**Lab Pasteurization Count (LPC)** is performed by pasteurizing the milk sample and then conducting an SPC. This procedure selects for bacteria that can survive heat treatment. These bacteria are problematic for processors because, since they survive the pasteurization process, they can result in finished product spoilage. LPC values should generally be less than 250/ml. A high LPC can be caused by unclean equipment, milkstone deposits and deteriorated gaskets, inflations or other rubber parts.

**Coliform Bacteria Count** is performed by plating the sample on a special media which selects for bacteria associated with fecal and environmental contamination. The presence of coliform is an indication of unsanitary production practices such as dirty cows and/or poor udder prep. Coliform counts in raw milk ideally should not exceed 50/ml.

**Bulk tank culturing to identify bacteria and the cause of the problem.** A bulk tank culture that provides the number of different types of bacteria is commonly used to diagnose mastitis problems and high somatic cells. This quantitative bulk tank culture can also be used to diagnose the cause of high bacteria counts.
Troubleshooting

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Mastitis infections generally do not cause high bacteria counts in milk. However, certain types of mastitis causing bacteria such as Strep. ag. or Strep. uberis can, in certain instances, contribute to high bacteria counts in the bulk tank sample. The number of strep bacteria from the quantitative bulk tank culture can be used to estimate the contribution of these organisms to the SPC. Some milk handler labs will run bulk tank cultures on a routine monthly basis or upon request.

The chart below can be helpful with determining the source of bacteriological milk quality problems.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Mastitis¹</th>
<th>Dirty Cows</th>
<th>Dirty Equipment</th>
<th>Poor Cooling</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPC &gt; 10,000</td>
<td>Possible</td>
<td>Possible</td>
<td>Possible</td>
<td>Possible</td>
</tr>
<tr>
<td>SPC &gt; 100,000</td>
<td>Possible (rare)</td>
<td>Not likely</td>
<td>Possible *</td>
<td>Possible *</td>
</tr>
<tr>
<td>LPC &gt; 250</td>
<td>Not likely</td>
<td>Possible</td>
<td>Possible *</td>
<td>Not likely</td>
</tr>
<tr>
<td>PIC high vs. SPC</td>
<td>Not likely</td>
<td>Possible</td>
<td>Possible *</td>
<td>Possible *</td>
</tr>
<tr>
<td>SPC high/ no increase in PIC</td>
<td>Possible</td>
<td>Possible (but not likely)</td>
<td>Possible (but not likely)</td>
<td>Not likely but possible</td>
</tr>
<tr>
<td>Coliform Count high</td>
<td>Possible (rare)</td>
<td>Possible</td>
<td>Possible</td>
<td>Not likely but possible</td>
</tr>
</tbody>
</table>

¹ Culturing for mastitis bacteria and SCC data would be useful. (Adapted from Murphy, 1998)
* A more likely possible cause.

If you are having bacteria count problems, work with your field representative or other dairy professionals to ensure the proper testing is being conducted that will allow you to pinpoint problem areas. Most milk handler laboratories can perform a variety of tests that can help you troubleshoot your problem. If your handler’s lab cannot perform these tests, contact UK Dairy Extension or Regulatory Services for a listing of lab contacts that may be able to provide these services for you.

C. Thompson, Milk Program
Bill Crist, Dairy Extension Specialist

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Enhancement in Laboratory Analysis of Mycotoxins in Feeds

The chromatography laboratory has needed an instrument to perform mycotoxin analysis on feed materials. Mycotoxins may be present at parts per billion or parts per million in feeds and grains. Measuring these toxins is important to protect certain animal species. Recently, the lab added a new instrument to perform these analyses. The lab has used test kits for some time for the toxins but the data is not compound specific. The chromatographic separation of the different toxins will provide more reliable and accurate data.

The new instrument is a Waters Corporation High Pressure Liquid Chromatographic system with a mass spectrometer detector. The chromatographic system is an Acquity UPLC Model that operates at a very high pressure. This higher pressure reduces analysis time and provides excellent separation of the analyte peaks. The performance is better than older Alliance systems. The Waters® ZQ Detector is a single quadrupole, benchtop mass spectrometric detector. The mass spectrometer will

Continued on page 4
The Kentucky Seed law requires a variety statement for most seed kinds. This statement can either be the legitimate variety name of the seed or if the variety is not known, the statement “Variety Unknown.” All soybean seed except black soybeans can be labeled by variety name only. Tobacco and canola seed must be certified in Kentucky. Certification of seed documents and guarantees varietal purity. All certified seed is required to be labeled as to variety.

Labeling by variety is very important to the seed consumer. When a variety is released to the public, the plant breeder who developed the variety also describes the variety. This is called a variety description. The variety description defines the characteristics of the variety. These descriptions provide the consumer with valuable information about the variety. This information can include distinct plant characteristics such as flower color, pubescence, plant height, days to maturity, yield characteristics, tolerance to drought and disease, chemical tolerance and other characteristics which the seed consumer needs to know when selecting seed to plant.

Seed kinds labeled as “Variety Unknown” are exactly what the statement implies. The seed labeler is declaring that no information as to the variety characteristics of the seed are known. We commonly see wheat and a small amount of rye offered for sale during the fall season under the variety statement “Variety Unknown.” Wheat is commonly used as a cover crop in Kentucky. The seedsman guarantees the purity and germination of the wheat but no variety name is provided. Its suitability as a crop for grain production is unknown because variety information is not known.

Another labeling approach that is legal in some states is to use a brand name in place of the variety name and utilize the statement "Variety Not Stated" as the variety statement. Since this labeling approach does not provide a variety name, it does not provide the grower with enough information to utilize the strategy of spreading risk by planting different varieties. Different companies commonly market the same varieties by different brand names.

Seed can be legally branded in Kentucky but the variety name of the brand must also be declared on the seed label. The label also must clearly differentiate which is which by use of the word "Brand" and "Variety" beside each designation. It is not uncommon to see the brand designation of a seed kind printed on the seed label in much larger lettering than the variety designation. This practice does generate more attention to the brand designation, but the legitimate variety designation must also be declared in a manner that is legible. Consumers should examine the seed label to make sure the variety is declared.

The Association of American Seed Control Officials (AASCO); seedcontrol.org, has developed a brochure that explains the difference between a brand and a variety. This brochure is also being printed in this edition of our Regulatory Services News on the following page.

D. Buckingham
Seed Regulatory Program
What's in a Name?

Varieties & Brands –
Understanding the Seed Label!

If you have any questions about the labeling on the seed you purchase, contact your state Seed Control Official. A list is maintained on the Association of American Seed Control Officials' website at:

www.seedcontrol.org

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Variety

What's in a name?

A great deal – if you are talking about VARIETY names!

The term "variety" means a subdivision of a kind that is distinct, uniform & stable, characterized by growth, yield, plant, maturity, seed, disease resistance, or other characteristics by which it can be differentiated from other varieties of public knowledge. It's the type of information you need to determine if it would grow well on your farm or in your crop rotation. You need to know the variety to be sure you are "spreading your risk" from unknowns such as disease or insect pressure.

Variety names are unique to a species and cannot be changed.

(Once a variety name is assigned for a specific kind of seed, the name cannot be used again by anyone for another introduction of the same kind of seed. The name remains exclusive forever, even if seed of that variety is no longer available.)

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Brand

(Optional)
The "Brand" identifies the company that is marketing or selling this seed. The brand name may be on the label as long as it's not misleading or cannot be confused with a variety name.

ABC 555 Brand

Kind: Soybeans
Variety: 123B
Lot #: B12
Origin: AR

Pure Seed: 98.00%
Weed Seed: 0.05%
Other Crop: 0.10%
Inert: 1.85%

Germination: 80% Date Tested: 12/2004
Noxious Weeds per Pound: None

ABC Seed Co., PO Box 10, Anywhere, USA

Although some states allow use of the statement "Variety Not Stated" or "Variety Unknown", many of the newer varieties are protected by Plant Variety Protection (PVP 94) laws and are required to be sold by variety name.
Ammonium Nitrate Legislative Update

Ammonium Nitrate was in the news again recently. It made the news because fertilizer dealers either were not aware of or did not follow the “Industry Standard” of ammonium nitrate security. The “Standard” was developed by TFI and is described below.

TFI - "America’s Security Begins with You"  See http://www.tfi.org
The campaign urges everyone who handles ammonium nitrate to implement security plans, maintain records of all sales of ammonium nitrate and alert law enforcement officials of suspicious activity utilizing a toll-free hotline (800) 800-3855 operated by ATF. “America’s Security Begins with You” campaign materials are available on a complimentary basis upon request from TFI. Please contact TFI via telephone at (202)962-0490, at <tfi.org>, or via e-mail at informationtfi@tfi.org to order posters, brochures and window stickers.

Federal Legislation Update
The latest information on Federal Legislation involving ammonium nitrate security is that both the senate and the house have passed out of committee similar bills that authorizes the Secretary of Homeland Security to regulate the handling and purchase of ammonium nitrate to prevent its misappropriation or use in violation of law. If the “Lame Duck” session does not enact the legislation, it will have to start all over in the “new” congress in January 2007.

In general both bills authorize the Secretary of Homeland Security to promulgate regulations that require ammonium nitrate handlers (producers or sellers):
   (1) to register facilities,
   (2) to sell or distribute ammonium nitrate only to handlers and purchasers registered under this Act, and
   (3) to maintain records of sale or distribution that include the name, address, telephone number, of the immediate subsequent purchaser of ammonium nitrate.

One version of the house bill exempted purchasers from being registered.

Here are the internet locations of the bills:
Secure Handling of Ammonium Nitrate Act of 2005 (S. 1141 & H.R.3197)
For Senate Version:<http://thomas.loc.gov/cgi-bin/bdquery/z?d109:SN01141:>
For House Version: <http://thomas.loc.gov/cgi-bin/bdquerytr/z?d109:HR03197:>

What can Kentucky Ammonium Nitrate Dealers/Handlers do NOW?
Since it is my belief that federal legislation will be passed very soon, here are my recommendations for implementation NOW:
1. Contact TFI and implement immediately the “America’s Security Begins With You” program.
2. Secure all your ammonium nitrate both bulk and bag against unauthorized access. Allow no one including your employees access without your permission. Be able to account for all your inventory!
3. Require all purchasers to identify themselves with a photo identification card and record name and address of all purchasers and the amount purchased.
4. Do not sell to anyone who acts suspiciously or you believe will use the product for other than fertilizer purposes.

D. Terry, Fertilizer Program

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Seed Permits and Registrations

Any firm labeling agricultural, vegetable, flower seed, or combination seed, mulch and fertilizer products must obtain a permit from the Division of Regulatory Services. Also, dealers selling seed in containers of 40 lbs. or more need to register with the Seed Regulatory Program. More information about permit and registration categories and necessary applications are available online at www.rs.uky.edu/seed/permits.htm.

Fertilizer Registrations for 2007

Annual Fertilizer Registration and License Renewal
All Kentucky fertilizer registrants and licensees have received or will shortly receive a notice to renew registrations or licenses for calendar year 2007. The notice will include:
(a) detailed instructions for both new and/or renewal of registrations or licenses
(b) print-out of the 2006 registrations/licenses
(c) blank forms for 2007 actions

Helpful Suggestions:
(1) Take action the same day you receive your notice
(2) If you want to have the same-set-up in 2007 (including no change in name and address) as you had in 2006:
   -Check the topic: “Renewal with no changes”
   -Complete the Name and address section
   -Sign; and,
   -Return with your printout.
(3) Address and name changes must be accompanied by revised labels showing new information where applicable.

Help is Available:
(1) By telephone: 859/257-2668 or 859/257-2970
(2) By internet: <http://www.rs.uky.edu> click on “Fertilizer”.

D. Terry, Fertilizer Program

Employee News

Wayne Ingram joined the Division of Regulatory Services in the feed and fertilizer lab as a Senior Laboratory Technician in October. Wayne has twenty-four years of laboratory experience in chemical and microbiological analysis of agricultural products and by-products. He provided both technical knowledge and assistance to faculty and graduate students as they researched various environmental projects, completed academic publications and fulfilled the requirements for masters and doctoral programs. He has a BA degree in Biology and Secondary Education from Berea College and a MS in Soil Science from the University of Kentucky. His responsibilities in the feed and fertilizer laboratory are with potash analysis and quality systems. He will be involved with other instruments and analysis as time permits. We welcome Wayne to Regulatory Services and look forward to his contributing to our efforts with feed and fertilizer in the coming years.
Regulatory Services News is published quarterly for the feed, fertilizer, milk and seed regulatory programs and the seed and soil service testing programs of the Division of Regulatory Services. It is provided free to persons interested in these programs. For subscriptions or address changes, contact Cindy Finneseth either by email at cfinnese@uky.edu or by telephone at (859) 257-2785. You can also access Regulatory Services News on the Internet at http://www.rs.uky.edu.

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