



Seed Regulatory and Testing Branch

ITEMS OF INTEREST IN SEED

April 2011

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Items of Interest in Seed April 2011

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EDITOR'S NOTES

The Seed Regulatory and Testing Branch (SRTB) would like to welcome you to this edition of the Items of Interest in Seed (IOI).

In this issue, three of the SRTB botanists have prepared scientific articles that seed analysts may find pertinent: "Seed Identification of Selected *Setaria* Species," by Ernest Allen, "Coated-Seed Testing," by Sandy Dawson, and "Using the Oat Fluorescence Test to Distinguish Oat Varieties," by Todd Erickson.

Don't forget to register for our annual seed schools or to submit seed samples for spring trueness-to-variety grow outs; see relevant articles for details. Additionally, our service testing customers should read the article introducing our new e-mail procedure for questions relating to seed testing. Finally, be sure to read the article introducing our new IOI index, now accessible from the SRTB website.

On behalf of the SRTB staff, I hope you enjoy these as well as all the other articles and continue to find them informative.

Linda Vanderhoof
IOI Editor

FEDERAL SEED ACT CASES SETTLED

The Federal Seed Act (FSA) regulates the interstate shipment of agricultural and vegetable seeds. The FSA requires that seed shipped in interstate commerce be labeled with certain information necessary for the seed buyer to make an informed choice. The labeling information and any advertisements pertaining to the seed must be truthful. The FSA helps promote uniformity among the State laws and fair competition within the seed trade.

The following cases were settled administratively under the FSA between March 6, 2010, and February 18, 2011. Under the administrative settlement procedure, the Seed Regulatory and Testing Branch and the firms agreed to settle the cases, for the amount specified, with the firms neither admitting nor denying the charges. Official Program Announcements on each of these cases are accessible on the following Web site under the "Latest Releases" link: <http://www.ams.usda.gov/news/newsrel.htm>.

Agriliance AFC LLC, Decatur, AL, has paid \$1,925 for cases involving three seed shipments to Georgia. Seed regulatory officials in Georgia cooperated in the initial sampling and inspection. The alleged violations, while not the same for all shipments, were:

- false labeling of kind name, variety name, and percentages of pure seed, other crop seed, and germination;
- failure to label the presence of noxious-weed seeds; and
- failure to keep or supply required records.

Allied Seed LLC, Nampa, ID, has paid \$2,925 for cases involving three seed shipments to Georgia and Missouri. Seed regulatory officials in Georgia and Missouri cooperated in the initial sampling and inspection. The alleged violations, while not the same for all shipments, were:

- false labeling of test date and the percentages of pure seed and other crop seed;
- failure to label the presence of noxious-weed seeds; and
- failure to test for germination within the prescribed time prior to interstate shipment.

American Grass Seed Producers, Inc., Tangent, OR, has paid \$1,400 for cases involving three seed shipments to Missouri. Seed regulatory officials in Missouri cooperated in the initial sampling and inspection. The alleged violations, while not the same for all shipments, were:

- false labeling of kind name and the percentages of pure seed, other crop seed, inert matter, germination, and hard seed.

American Grass Seed Producers, Inc., Tangent, OR, has paid \$2,250 for cases involving three seed shipments to Missouri and Texas. Seed regulatory officials in Missouri and Texas cooperated in the initial sampling and inspection. The alleged violations, while not the same for all shipments, were:

- false labeling of kind name, variety name, and the percentage of pure seed;
- failure to label the presence of noxious-weed seeds and to label as a mixture; and
- failure to test for germination within the prescribed time prior to interstate shipment.

Barenbrug USA, Tangent, OR, has paid \$5,200 for cases involving four seed shipments into Alabama, Missouri, Pennsylvania, and Texas. Seed regulatory officials in Missouri, Pennsylvania, and Texas cooperated in the initial sampling and inspection. The alleged violations, while not the same for all shipments, were:

- false labeling of test date and the percentages of pure seed and germination;
- failure to label the presence of noxious-weed seeds (undesirable grass seeds) and to label as a mixture; and
- failure to test for germination within the prescribed time prior to interstate shipment and to test for germination after seed coating process.

Beachner Seed Company, St. Paul, KS, has paid \$1,650 for cases involving three seed shipments to Kentucky and Missouri. Seed regulatory officials in Kentucky and Missouri cooperated in the initial sampling and inspection. The alleged violation was:

- false labeling of germination percentages.

B&G Seed Processors, Inc., Williston, FL, has paid \$1,750 for cases involving five seed shipments to Georgia. Seed regulatory officials in Georgia cooperated in the initial sampling and inspection. The alleged violations, while not the same for all shipments, were:

- false labeling of pure seed, other crop seed, germination, and dormant seed percentages.

W. Atlee Burpee Company, Inc., Warminster, PA, has paid \$1,575 for cases involving three seed shipments to North Carolina. This investigation was completed by AMS seed regulatory officials in North Carolina. The alleged violations, while not the same for all shipments, were:

- false labeling of variety name and
- failure to keep or supply required records.

Creative Garden Concepts, Grandview, MO, has paid \$2,275 for cases involving five seed shipments to Indiana. Seed regulatory officials in Indiana cooperated in the initial sampling and inspection. The alleged violations, while not the same for all shipments, were:

- false labeling of kind names;
- failure to test for germination within the prescribed time prior to interstate shipment; and
- failure to label variety name and to properly label seed germinating “less-than-standard.”

Ferry-Morse Seed Company, Fulton, KY, has paid \$1,925 for cases involving three seed shipments to Indiana and North Carolina. This investigation was completed by seed regulatory officials in Indiana and AMS seed regulatory officials in North Carolina. The alleged violations, while not the same for all shipments, were:

- false labeling of variety names;
- failure to properly label seed germinating “less-than-standard”;
- failure to test for germination within the prescribed time prior to interstate shipment; and
- failure to keep or supply required records.

Pennington Seed, Inc., Madison, GA, has paid \$21,775 for cases involving eleven seed shipments to Alabama, Georgia, Indiana, Kentucky, Maryland, Minnesota, Ohio, and Pennsylvania. Seed regulatory officials in Georgia, Indiana, Kentucky, Minnesota, Ohio, Pennsylvania, and Texas cooperated in the initial sampling and inspection. The alleged violations, while not the same for all shipments, were:

- false labeling of kind names, variety names, origin, test date, and the percentages of pure seed, weed seed, other crop seed, and germination;
- failure to label the presence of noxious-weed seeds and to label as a mixture;
- shipping seed containing noxious-weed seeds in excess of State’s limit;
- falsely labeling a seed mixture as a variety name; and
- failure to keep or supply required records.

ProSeeds Marketing, Inc., Jefferson, OR, has paid \$1,350 for cases involving two seed shipments to Georgia and Vermont. Seed regulatory officials in Georgia and Vermont cooperated in the initial sampling and inspection. The alleged violations, while not the same for both shipments, were:

- false labeling of pure seed and inert matter percentages and
- failure to label the presence of noxious-weed seeds.

Southern States Cooperative, Inc., Richmond, VA, has paid \$2,800 for cases involving six seed shipments from the company's location in Farmville, NC, to Georgia. Seed regulatory officials in Georgia cooperated in the initial sampling and inspection. The alleged violations, while not the same for all shipments, were:

- false labeling of germination and other crop seed percentages;
- failure to test for germination within the prescribed time prior to shipment; and
- advertising seed with a brand name, of which could be construed as a variety name.

Terra Organics LLC, Maxwell, CA, has paid \$1,575 for cases involving five seed shipments to North Carolina. This investigation was completed by AMS seed regulatory officials in North Carolina. The alleged violations, while not the same for all shipments, were:

- false labeling of variety names and
- failure to keep or supply required records.

SPRING TRUENESS-TO-VARIETY GROW-OUTS

Each year, the Seed Regulatory and Testing Branch (SRTB) conducts trueness-to-variety (TTV) field tests to determine if seed lots are properly labeled for variety, as required by the Federal Seed Act (FSA) and State seed laws. Field testing is conducted by crop experts at State universities and State departments of agriculture in cooperation with SRTB. SRTB relies on State seed control programs to submit samples for inclusion in the TTV tests.

The SRTB is completing TTV tests of collards, broccoli, and cabbage at the Sandhills Research Station in Jackson Springs, NC. This spring, SRTB plans to plant **cowpeas** at the Alcorn State University, Lorman, MS; **summer squash** and **cucumbers** at the Piedmont Research Station, Salisbury, NC; **carrots** at the Sandhills Research Station, Jackson Springs, NC; and **collards**, **kohlrabi**, and **lettuce** in the SRTB greenhouse. **Cotton**, **rice**, and **popcorn** will also be tested, if a sufficient number of samples are received. This fall, winter small grains are scheduled for planting at the Piedmont Research Station in Salisbury, NC.

We encourage all State seed control programs to submit seed samples of the previously mentioned kinds (in bold) for TTV testing.

If there are any questions concerning the TTV program or directions for submitting samples, please contact Seed Marketing Specialist Kevin Robinson (704) 810-7264; kevin.robinson2@ams.usda.gov.

UPCOMING FEDERAL SEED SCHOOLS IN GASTONIA, NC

The Seed Regulatory and Testing Branch will hold two Federal Seed Schools at their facility in Gastonia, NC, May 9-13, 2011 and August 15-19, 2011. The first three and a half days will focus on purity and identification of similar crop and weed species, with emphasis on identification of noxious-weed seeds. Other topics such as the uniform blowing procedure, ryegrass fluorescence test, and pure seed definitions also will be covered. The last day and a half of the week will focus on variety testing including trait testing and seed health testing such as detection of seed treatments by bioassay methods, depending upon the interest of the participants.

These seed schools are open to seed analysts from private and government seed testing laboratories. Presentation of topics will be on a level appropriate for experienced seed analysts. Enrollment at each of the seed schools will be limited to 20 participants due to the hands-on nature of the topics and one-on-one attention from the instructors. Participants from non-government laboratories will be charged a fee of \$160 (\$32 per day). Those wishing to attend should register by April 8th for the May seed school and by July 15th for the August seed school.

For more information about these seed schools or to request a pre-registration sheet, please contact Botanist Patsy Jackson at patsy.jackson@ams.usda.gov or Laboratory Supervisor Susan Maxon at susan.maxon@ams.usda.gov.

NEW INDEX FOR THE ITEMS OF INTEREST IN SEED PUBLICATION

In an effort to provide our customers an easier method of locating specific articles from past Items of Interest in Seed (IOI) publications, the Seed Regulatory and Testing Branch (SRTB) is pleased to announce a new IOI Index which is located on the SRTB Web site at www.ams.usda.gov/seed. Using the tool bars in the right hand column, click on "Publications," "Find an IOI Publication," and "Go To the IOI Index." Customers can also reach the IOI Index by directly using the link <http://www.ams.usda.gov/SeedIOIIndex>.

The new index provides our customers with an excellent reference tool to easily locate past IOI articles on subjects such as rule changes and clarifications, seed identifications and testing procedures, and seed labeling and advertising issues. The IOI Index will be updated each May and November.

For information regarding this article, contact Linda Vanderhoof at (704) 810-8879; linda.vanderhoof@ams.usda.gov.

THE USA ACCREDITED SEED CONDITIONING PROGRAM

The Seed Regulatory and Testing Branch in cooperation with the Audit, Review, and Compliance Branch implemented a new Process Verified Seed Program in November 2010, the USA Accredited Seed Conditioning Program (ASCP). The program is a voluntary user-fee service that is available to seed-conditioning entities and allows them to represent themselves as a USDA Process Verified Program, USA Accredited Seed Conditioner. The USDA Process Verified Seed Program ensures that ASCP requirements are supported by a documented quality management system.

A seed-conditioning facility which is accredited under this program will be able to provide an additional level of quality assurance to customers. The program may be of special value to facilities that are involved or may become involved in refuge-in-a-bag (RIB) blending and in fulfilling related Environmental Protection Agency requirements.

For more information about the Process Verified Seed Programs, check out the following link [Process Verified Seed Programs](#), or go directly to the Accredited Seed Conditioning Program at [ASCP](#). For additional information concerning the ASCP, please contact Perry Bohn at (704) 810-7262 or perry.bohn@ams.usda.gov or Diana Young at Diana.Young@ams.usda.gov.

NEW E-MAIL ACCOUNT FOR SERVICE TESTING CUSTOMERS

The Seed Regulatory and Testing Branch (SRTB) has a new e-mail address for service testing customers seedservice@ams.usda.gov. This e-mail account was established in response to requests from SRTB's service testing customers and is monitored by several SRTB staff members. The new e-mail address should be used for status requests or other questions regarding samples submitted for service testing. Fax continues to be available for those who prefer to use it.

Service testing customers are also requested to notify the Seed Regulatory and Testing Branch of any changes regarding the following information:

- Addresses (physical, mailing, or billing)
- Telephone numbers (voice and fax)
- Company contacts
- Updated DBA (doing business as) information
- Any other changes to your existing account, such as mailing or courier instructions for Seed Analysis Certificates, etc.

For further information or to submit updates, please contact seedservice@ams.usda.gov or fax Carolyn Camidge at (704) 852-4189.

NOXIOUS-WEED SEED LIST FOR 2011

The Seed Regulatory and Testing Branch (SRTB) staff is revising the "State Noxious-Weed Seeds Recognized in the Administration of the Federal Seed Act." The SRTB staff is grateful to the State seed control officials and contacts for submitting State seed-law changes to this office.

The SRTB will post the 2011 issue on our Web site in the spring. To receive electronic notifications when SRTB posts new publications or changes to existing publications on the Web site, click on <http://www.ams.usda.gov/seed>, choose "Subscribe to Publications" under the Resources heading, and follow the instructions.

For information regarding this article, contact Seed Marketing Specialist Jerry Irwin at (704) 810-8878; jerry.irwin@ams.usda.gov.

SEED REGULATORY AND TESTING BRANCH OFFICIAL VISITS IRAQ

Perry Bohn, U.S. OECD Program Manager, in response to a request from the U.S. Embassy in Baghdad, traveled to Iraq and Jordan in September 2010 to participate in efforts to assist Iraqi farmers by promoting modern seed varieties. The effort included suggestions for changes to Iraqi seed-import laws that could improve farmer access to higher-yielding seed varieties.

While in Iraq, Mr. Bohn met with the Iraqi Seed Traders Association, Ministry of Agriculture officials, the Prime Minister's Advisory Council, and representatives of the U.S. Agency for International Development (USAID). Topics under discussion included ways to improve access to modern varieties of seed and the impact of existing seed laws that limit seed choices. Mr. Bohn recommended the use of the OECD Seed Schemes list of approved varieties (over 43,000 varieties approved for use in over 58 nations).

Photo by U.S. Embassy official



U.S. OECD Program Manager Perry Bohn, just left of the Iraqi flag, meets with Ministry of Agriculture officials.

In Amman, Jordan, Mr. Bohn participated in a two-day Iraq Vegetable Seed Workshop co-sponsored by the Food and Agriculture Organization of the United Nations and the Ministry of Agriculture of the Republic of Iraq. His presentation focused on encouraging adoption of the OECD Seed Schemes as an avenue to allow Iraqi farmers greater access to seed varieties.

Photo by U.S. Embassy official



Vegetable Seed Workshop attendees at the Iraqi Foreign Affairs Office in Amman, Jordan.

See Gene Wilson's article "Shipping Seed through OECD" in this edition of the IOI for additional information and links.

For further information about this article, contact Perry Bohn at (704) 810-7262; perry.bohn@ams.usa.gov

AGRONOMIST ATTENDS WEED SCIENCE SOCIETY OF AMERICA ANNUAL MEETING

Seed Regulatory and Testing Branch Plant Agronomist Michael Lovelace, Ph.D., attended the annual meeting of the Weed Science Society of America (WSSA) in Portland, OR, February 7-10, 2011, to learn more about upcoming herbicide-resistance technology in seeds. While much of the information presented at the meeting focused on the impacts of glyphosate-resistant weeds on crop production, some information introduced attendees to new unregistered seed technologies that are currently on their way to market.

Soybean varieties for release in the near future will possess new genetic modifications that impart a resistance to the herbicides 2,4-D, dicamba (Banvel®), and mesotrione (Callisto®). In addition, corn hybrid releases with new genetic modifications will exhibit resistance to certain selective grass herbicides as well as an enhanced resistance to 2,4-D. While the new technologies are ultimately aimed at increasing control strategies for managing herbicide-resistant weeds, these new technologies could result in the need for new testing procedures to help identify varieties with these herbicide resistant traits.

QUALITY MANAGEMENT TRAINING AT WASHINGTON STATE SEED LABORATORY

Seed Regulatory and Testing Branch (SRTB) Seed Marketing Specialist Perry Bohn provided Quality Management Training at the Washington State Seed Laboratory in Yakima, WA, on February 9-10, 2011. Mr. Bohn provided training to 19 individuals from private seed companies and state seed laboratories. This training included presentations and hands-on training regarding quality management and the USDA Process Verified Programs. The training objectives were to increase understanding of the importance of a formal quality management system, to detail options that are available, and to explain how to reach the goal of becoming accredited.

The USDA Process Verified Seed Program ensures, through audits, that seed testing laboratories' process and procedural requirements are supported by a documented quality management system which conforms to the ARC 1001 Standard.

For more information about Process Verified Seed Programs, visit the [LS Accredited Seed Programs](#) Web site. For additional information concerning this article, please contact Perry Bohn at perry.bohn@ams.usda.gov.

SHIPPING SEED THROUGH OECD SEED SCHEMES

Seed is shipped in international commerce primarily for marketing or for multiplication increases in another country. Among the alternatives seed companies have for shipping seed in international commerce is the Organization for Economic Cooperation and Development Schemes for the Varietal Certification or the Control of Seed Moving in International Trade, commonly referred to as the OECD Seed Schemes.

The OECD Seed Schemes, in operation since 1958, has 58 participating countries with a shared purpose of enhancing trade in seed by creating a quality assurance framework. The OECD Seed Schemes are composed of the following seven Schemes: Grass and Legume Seed, Crucifer and Other Oil or Fiber Species Seed, Cereal Seed, Maize and Sorghum Seed, Sugar Beet and Fodder Beet Seed, Subterranean Clover and Similar Species, and Vegetable Seed. The United States does not participate in the Scheme for Seed of Subterranean Clover and Similar Species or the Vegetable Seed Scheme.

Shipping seed through OECD Seed Schemes may benefit seed companies in at least two ways. The first is the ability to ship seed into nations or regions (the European Union for example) that require OECD tagging for agronomic seed. The second benefit is that OECD Seed Schemes tags and certificates present a level of quality assurance for the seed customer concerning the varietal identity and quality of the seed based on OECD Seed Schemes program requirements. For individual seed companies, this may improve their ability to compete in the international marketplace. For the seed industry as a whole, the assurances provided by the OECD Seed Schemes encourage international commerce in seed.

In the United States, the Designated Authority for implementing the OECD Seed Schemes is the Agricultural Marketing Service (AMS) of the United States Department of Agriculture (USDA). The U.S. OECD Seed Schemes Program Manager is Perry Bohn, operating from the Seed Regulatory and Testing Branch in Gastonia, NC.

For the effective implementation of the OECD Seed Schemes in the United States, the Program Manager works in close cooperation with 26 State seed certifying agencies (SCAs) that have cooperative agreements with the Designated Authority for OECD Seed Schemes participation.

The effective operation of the OECD Seed Schemes relies on the SCAs for field inspections, seed certifications, tag and/or certificate printing for the program, and record maintenance of these activities. In fact, the SCAs should be the first point of contact for anyone thinking of shipping seed through OECD Seed Schemes.

For a company considering the use of the OECD Seed Schemes program, planning ahead, even before the seed is planted, is essential. Seed must be enrolled in a State seed certification program, usually through a State seed certifying agency. The seed must be field inspected and meet all U.S. seed certification requirements.

Eligible seed kinds are listed in the appendices for each OECD Seed Scheme and can be found in the 2011 OECD Seed Schemes: [Rules and Regulations](#). Most commonly grown species are already included in the program, but less common species may not be. The procedure for adding species to the program can be lengthy so it should be initiated as soon as the company anticipates shipping a currently unlisted species. Information about this process is available either from the State seed certifying agency or the U.S. OECD Seed Schemes Program Manager.

In order to ship seed with OECD tags/certificates, the variety must be on the OECD List of Varieties Eligible for Certification. Prior to submitting the variety for addition to the list, the seed company can check the variety name with both the U.S. OECD Program data file: [US OECD Varieties List](#) and the official OECD List of Varieties Eligible for Certification which is updated

twice per year: [OECD Varieties List](#). If the variety is not on the list, the company can request its addition through the State seed certification agency. If approved, the listing is forwarded to the U.S. OECD Seed Schemes Program Manager for inclusion. If a new variety has been developed and a variety name is submitted that already exists for that kind, or one closely related, the name may be rejected.

After meeting certification requirements, seed may be shipped through OECD Seed Schemes labeled with special tags that are widely recognized. Optional certificates of authenticity are also available. The seed company must apply to the same State authority that certified the seed for the OECD Seed Schemes tags and/or certificate.

Additional information relevant to the program may be found in the U.S. OECD Users Guide located on the Seed Regulatory and Testing Branch Web site. The following link will connect to the guide: [US OECD Users Guide](#). Although this guide is designed with the State seed certifying agencies in mind, there is useful information for seed companies desiring to ship seed through the program. For more general information, the reader is directed to the following link for the International OECD Seed Schemes: [OECD](#). This webpage has additional links to seed related information.

For information regarding this article or participation in the OECD Seed Schemes, contact U.S. OECD Seed Schemes Program Manager Perry Bohn at perry.bohn@ams.usda.gov or Gene Wilson at gene.wilson@ams.usda.gov.

ANNUAL VS. ITALIAN RYEGRASS

Q. Can annual ryegrass be labeled Italian ryegrass?

A. Section 201.2(h) of the Federal Seed Act (FSA) Regulations lists “Ryegrass, annual or Italian—*Lolium multiflorum*” as a kind regulated by the FSA. Therefore, labeling the seed as either annual ryegrass or Italian ryegrass would be in compliance with the FSA.

For more information, contact Branch Chief Richard Payne, Ph.D., at (704) 810-8884; richard.payne@ams.usda.gov.

REPACKAGING SEED FROM HERMETICALLY-SEALED CONTAINERS

Q. A company shipped a hermetically-sealed 1-lb. packet of vegetable seed to a customer in March 2009 with a November 2008 germination test date. Can the customer break the hermetically-sealed packet and repackage the seed into small non-hermetic garden packets for retail sale?

A. Section 201.22(a) of the Federal Seed Act (FSA) Regulations requires hermetically-sealed seed to be shipped in interstate commerce within 24 months (not counting the month of the test) of the completion of a germination test used for labeling. However, when the hermetically-sealed container is opened, the seed is no longer considered hermetically sealed and the FSA requirements for hermetically-sealed containers no longer apply. Section 201.30a of the FSA Regulations requires vegetable seed (non-hermetically sealed) to be tested for germination within five months (not counting the month of the test) of an interstate shipment of

seed. Based on the November 2008 test date, a new germination test would be required if the customer were to ship the repackaged seed in interstate commerce after April 2009. If the seed was not shipped in interstate commerce and only sold in-State, the seed law of that State would apply.

For more information, contact Branch Chief Richard Payne, Ph.D., at (704) 810-8884; richard.payne@ams.usda.gov.

COATED-SEED TESTING

Q. In 2010, the Association of Official Seed Analysts (AOSA) implemented changes to the procedures for testing coated/pelleted seed. Do the new procedures differ from Federal Seed Act (FSA) procedures and if so, how?

A. The current AOSA procedures differ from FSA procedures, primarily in relation to whether de-coating is required prior to purity testing, or prior to planting for the germination test. See the tables below for a comparison of FSA, AOSA, and International Seed Testing Association (ISTA) de-coating requirements.

Notes:

- The current AOSA Rules also specify that when pelleted-seed units are de-coated for a purity analysis, the Uniform Blowing Procedure is not used. De-coated seed units must be examined for the presence of at least one caryopsis with some degree of endosperm to be considered pure seed.
- FSA and AOSA both specify that coated seed samples must be de-coated prior to performing a noxious weed-seed test. ISTA Rules also specify the removal of pelleting material (de-coating) for the determination of the number of seeds of other species, which would include examination for noxious weed-seeds.
- See the applicable rules or regulations for details of coated-seed testing, for definitions of coated-seed categories, for de-coating procedures, and for information on which categories are covered under each organization's coated-seed procedures.

PURITY TEST – Treatment of Coated Seed before Separation

	Single Component Kinds	Mixtures That Can Be Separated Visually	Mixtures That Cannot Be Separated Visually
FSA	De-coat	De-coat	De-coat
AOSA	De-coat <i>Poaceae</i> kinds. De-coat other kinds by request only.	De-coat	De-coat
ISTA	Test in the condition received. De-coat by request only.	Test in the condition received. De-coat by request only.	Test in the condition received. De-coat by request only.

GERMINATION TEST – Treatment of Coated Seed Before Planting

	Single Component Kinds	Mixtures That Can Be Separated Visually	Mixtures That Cannot Be Separated Visually
FSA	Plant in the condition received. Kinds for which soaking or washing is required per FSA Regulations, Part 201, Section 201.58 (such as beet, Swiss chard, and rescuegrass) are not soaked or washed.	Plant in the condition received.	De-coat, air dry, separate and plant by kind per FSA Regulations.
AOSA	Plant in the condition received with the two exceptions below. 1. If sample is de-coated for the purity test (<i>Poaceae</i> kinds), plant from the de-coated pure-seed component. 2. If seed was received for a germination test, only, de-coat the seeds before planting. Kinds for which soaking or washing is specified in section 6.8 of the AOSA Rules (beet, Swiss chard, and rescuegrass) are not soaked or washed before planting.	Plant in the condition received.	De-coat, air dry, separate and plant by kind per AOSA Rules.
ISTA	Plant in the condition received from the pure seed component of the purity separation.	N/A—ISTA Rules do not have provisions for mixtures.	N/A—ISTA Rules do not have provisions for mixtures.

Links:

AOSA: www.aosaseed.com

FSA: www.ams.usda.gov/seed

ISTA: www.seedtest.org

For information regarding this article, contact Botanist Sandy Dawson at (704) 810-7270; sandy.dawson@ams.usda.gov.

TOMATILLO AND HUSK TOMATO

The Seed Regulatory and Testing Branch has received requests for variety name clearance for the kind tomatillo. According to the Germplasm Resources Information Network (GRIN), tomatillo is used as the common name for several species including *Physalis philadelphica*, *Solanum cheesmaniae*, *S. galapagense*, and *S. lycopersicum* var. *cerasiforme*. In addition, GRIN lists *Physalis philadelphica* with both husk tomato and tomatillo as common names. GRIN also lists *Physalis pubescens* with the common name husk tomato. The Association of Official Seed Analysts (AOSA) Rules for Testing Seeds lists husk tomato and groundcherry as common names for *Physalis pubescens*, and groundcherry and physalis as common names for *Physalis* spp. The AOSA Rules do not list tomatillo as a kind or provide a species name for

tomatillo. Husk tomato (*Physalis pubescens*) is one of the kinds of seeds that has been regulated under the Federal Seed Act (FSA) since 1940, when the FSA regulations were first implemented. There may be several different species names for husk tomato and tomatillo, however, the FSA regulates husk tomato, not tomatillo.

If there are any questions concerning variety names, please contact Seed Marketing Specialist Kevin Robinson at (704) 810-7264; kevin.robinson2@ams.usda.gov.

SEED IDENTIFICATION OF SELECTED *SETARIA* SPECIES

The *Setaria* genus consists of over 125 species; 28 can be found in the United States and Canada. The four species detailed in this article, *Setaria faberi*, *S. italica* subsp. *viridis*, *S. parviflora*, and *S. pumila*, are considered undesirable agricultural weed seeds world-wide. These four seed species have the ability to grow and flourish in a wide range of environmental conditions, resist various herbicide treatments, and significantly reduce crop yields. *Setaria faberi* is a noxious-weed seed in many States. For these reasons, it is important for seed analysts to accurately identify these common *Setaria* seeds during purity and noxious-weed seed exams.

The morphological characteristics used in describing the four seed species within this article are very similar. They can, however, be distinguished reliably with the appropriate knowledge of common structures shared within the genus (fig. 1). The transverse lines of nodules (transverse ridges) located on the fertile lemma of the *Setaria* seed are an example of a characteristic that can greatly help in *Setaria* seed identifications. Scrutinizing the texture made by the transverse ridges might play a key role in narrowing the possible seed choices during identification.

SPIKELET STRUCTURE

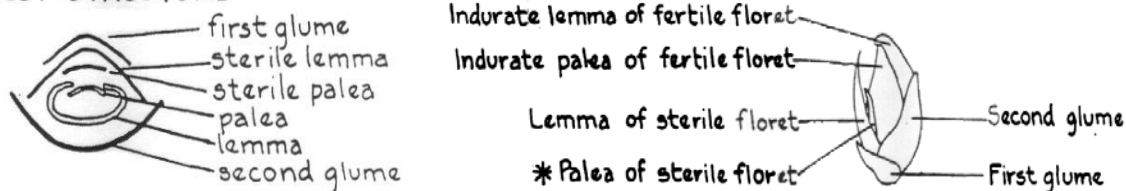


FIGURE 1.--Spikelet structure of *Setaria* spp.

Setaria faberi (fig. 2) (giant foxtail, Japanese bristlegrass) is found in much of the eastern half of the United States and Canada. The seed dimensions are approximately 2.75 mm long, 1.75 mm wide, and 1 mm thick. Its shape is ellipsoid with the greatest area of thickness about midway between the apex and callus. Usually, a profile view of this seed will reveal a slight indentation and hump defining the thickest area of the seed. The lemma of the seed displays somewhat coarse transverse ridges that fade near the apex, leaving the tip smooth and shiny. If present, the second glume covers $\frac{3}{4}$ the lemma. The outline of the fertile palea is oblong with, longitudinally striate, glossy margins evident on mature spikelets. The sterile palea is narrow and shorter than the fertile palea.

Photo by Ernest L. Allen, USDA, AMS 2007

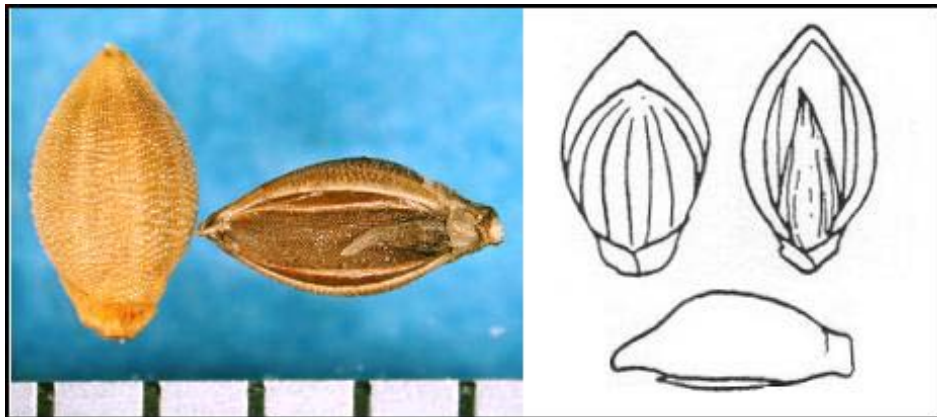


FIGURE 2.--*Setaria faberi* (lemma and palea view)

Setaria italica subsp. *viridis* (fig. 3) (green foxtail) is the one of the most widespread of the *Setaria* genera in North America. It is found throughout the United States and Canada. Its seed is approximately 2 mm long, 1.5 mm wide, and 0.75 mm thick. It is oval with a rounded and blunt apex. In profile, the seed maintains the same thickness throughout. The transverse ridges on the lemma are fine, very closely spaced, and evident to the apex. The second glume, when persisting, is as long as the lemma. The palea outline is oblong with smooth glossy margins. The sterile palea is narrow and shorter than the fertile palea. *Setaria italica* subsp. *viridis* seeds are usually greenish-yellow or light brown with dark brown mottling.

Photo by Ernest L. Allen, USDA, AMS 2007

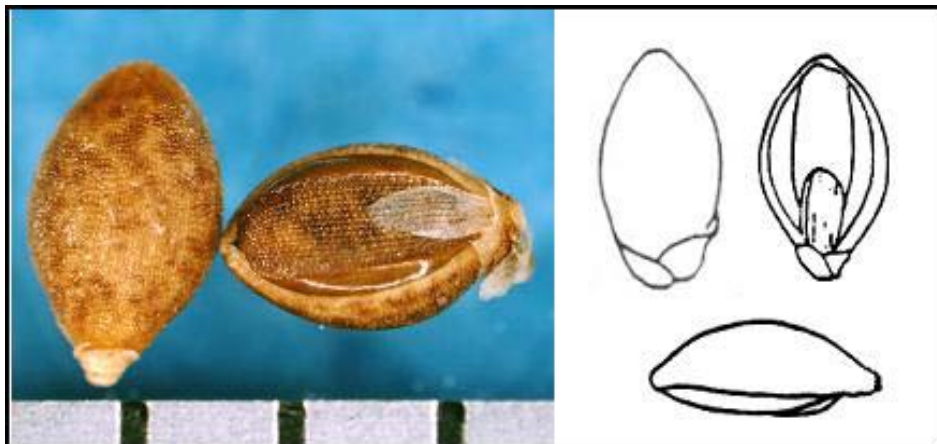


FIGURE 3.--*Setaria italica* subsp. *viridis* (lemma and palea view)

Setaria parviflora (fig. 4) (knotroot bristlegrass) is not found in most mid-western states, however, it is found in all other regions of the United States. Its seed is 2.5 mm long, 1.25 mm wide, and 0.75 mm thick. It is narrowly ellipsoid and thickest slightly below or at the midway point between the callus and the apex. The apex is usually narrow, straight, and distinctly three pronged. Occasionally, the apex is black at the tip. The transverse ridges are coarse, close spaced, and evident to the apex. The second glume is usually half the length of the lemma or

longer. Fertile palea outline is narrowly oval. Glossy margins are not evident unless part of the lemma is removed. The sterile palea is the same size in length and width as the fertile palea.

Photo by Ernest L. Allen, USDA, AMS 2007

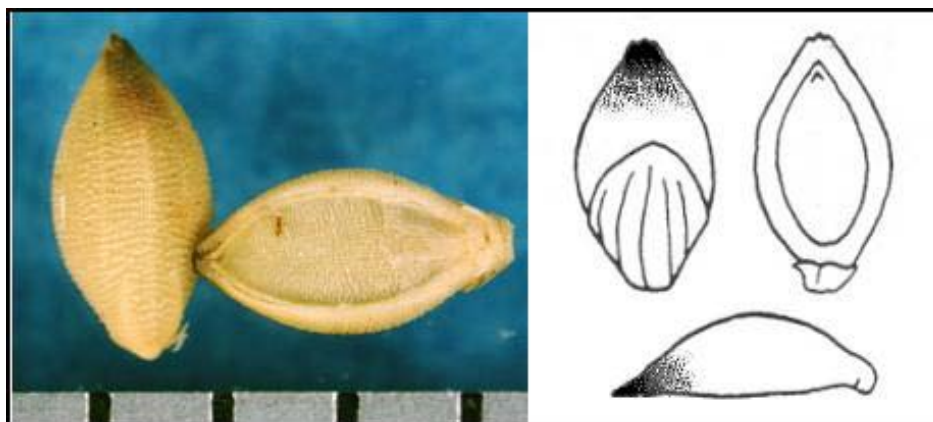


FIGURE 4.--*Setaria parviflora* (lemma and palea view)

Setaria pumila subsp. *pumila* (fig. 5) (yellow foxtail) is found throughout the United States and Canada. The seed is approximately 3 mm long, 2 mm wide, and 1.25 mm thick. It is broadly ellipsoid with a short, hooked, and three pronged apex. *Setaria pumila* subsp. *pumila* is thickest mid-way between the apex and callus. The very coarse, widely-spaced transverse ridges are clearly visible with the naked eye and extend the entire length of the lemma. The fertile palea is broadly oval in outline with fine hairs sometimes observed near the tip. Glossy margins are not evident unless the lemma is removed. The second glume size varies, usually, plus or minus half the length of the lemma. The sterile palea is about the same size as the fertile palea.

Photo by Ernest L. Allen, USDA, AMS 2007



FIGURE 5.--*Setaria pumila* (lemma and palea view)

Accurately differentiating between *Setaria* seeds is problematic because of the numerous morphological similarities amongst species within this genus. Therefore, it is good practice for the seed analyst not to rely on one characteristic but multiple characteristics to ensure correct identification of *Setaria* seeds.

References:

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- USDA, NRCS. 2011. The PLANTS Database (<http://plants.usda.gov>), 18 February 2011. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.
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- For more information regarding this article, contact Botanist Ernest L. Allen at (704) 810-8873, ernest.allen@ams.usda.gov.

USING THE OAT FLUORESCENCE TEST TO DISTINGUISH OAT VARIETIES

The Federal Seed Act (FSA) Regulations, Section 201.58a(e) and Association of Official Seed Analysts (AOSA) Rules, 5.2b(1) indicate that a fluorescence test may be used to distinguish between oat varieties. Four hundred representative seeds should be viewed under ultraviolet (UV) light in an area where other sources of light are excluded. FSA Regulations, Section 201.58a(e) states: "Seeds are considered fluorescent if the lemma or palea fluoresce or appear light in color. 'Partially fluorescent' seeds shall be considered fluorescent. Seeds are considered non-fluorescent if the lemma and palea do not fluoresce and appear dark in color under the ultraviolet light." The International Rules for Seed Testing (ISTA), 8.8.1 state that "in *Avena*, the colour of the grain under ultra-violet light is sometimes diagnostic." This test is obviously subjective in nature, so additional information and morphological characteristics may prove useful in helping the analyst to distinguish between oat varieties.

Fluorescent oat varieties are often referred to as "white type," while non-fluorescent varieties are "yellow type." The analyst may be able to detect this color difference under normal light (fig. 6). However, the differences are more pronounced under ultraviolet light, with white types fluorescing and appearing pale bluish-white, and yellow types appearing dark orange-brown (fig. 7). Note that only the palea and lemma fluoresce. Thus, the callus and rachilla of a non-fluorescent seed may exhibit a whitish color under UV light. While any amount of fluorescence on the palea or lemma indicates that the seed is a white type, the callus and rachilla are not considered in this determination. Also, caryopses do not fluoresce, so seeds lacking the lemma and palea should be excluded from the 400-seed test. The condition and age of the seeds may also play a role, as old or dirty seeds will not fluoresce as strongly as fresh, clean seeds. It is important to review the fluorescence characteristics of the variety being tested so that the results will be interpreted accurately. Finally, the strength of the UV light bulbs and amount of interference from other light sources can affect the degree of fluorescence. Analysts at the USDA Seed Regulatory and Testing Branch conduct the oat fluorescence test in a dark room on a black surface under two UV bulbs. Ideally, two analysts view the test to verify each other's

results. A consideration of these factors should promote uniformity when performing the oat fluorescence test.

Photo by Todd Erickson, USDA, AMS, 2011



FIGURE 6.--Rodgers oat (white type) and Centennial oat (yellow type) under normal lighting

Photo by Todd Erickson, USDA, AMS, 2011



FIGURE 7.--Rodgers oat (white type) and Centennial oat (yellow type) under fluorescent lighting

References:

International Seed Testing Association: Handbook of Variety Testing. Rapid chemical identification techniques. 1993. Fluorescence tests. pp. 3-1, 3-2.

Payne, R.C., T.J. Koszykowski, and L.F. Morris. 1982. An evaluation of the oat seed fluorescence test. Newsletter of the Association of Official Seed Analysts. 56(1):41-50.

For more information on this article, please contact Botanist Todd Erickson at (704) 810-7266; todd.erickson@ams.usda.gov.

COMPARING RYEGRASS SEED AND SEEDLING BANDING PATTERNS OF ANNUAL AND PERENNIAL VARIETIES

Seed Regulatory and Testing Branch (SRTB) Plant Physiologist Yujia Wu, Ph.D., has developed an electrophoresis variety test for annual ryegrass (*Lolium multiflorum* Lam.) and perennial ryegrass (*Lolium perenne* L.) that could be used in addition to, and in support of, the root fluorescence test (see the October 2010 issue of the *Items of Interest in Seed*). Through recent investigations of seed and seedlings by isoelectric focusing (IEF) gel electrophoresis, Dr. Wu has discovered various consistent banding patterns of esterase enzymes in annual and perennial ryegrass. This new information on ryegrass seed and seedling banding patterns provides advantages for varietal identification testing.

Four annual and three perennial ryegrass seed samples, each representing pure seed of different varieties, were used in the study. The seedling samples were obtained by germinating the seed samples on filter paper in plastic boxes at 15°C/25°C (night/day) for two weeks before seedling harvest. Seed and seedling samples were extracted in buffer (75 mM Tris, pH7.5, and 0.1% β -mercaptoethanol), followed by centrifuging at 10,000 rpm for 10 minutes at 4 °C. Vertical pH 5-8 IEF gels were loaded with 15 μ l supernatants and run at 100 volts for 60 minutes, 250 volts for 60 minutes, and 500 volts for 30 minutes. After running, the gel was soaked in a staining solution for about 30 minutes for detection of esterase isozymes bands (fig. 8).

Photo by Dr. Yujia Wu, USDA, AMS, 2011

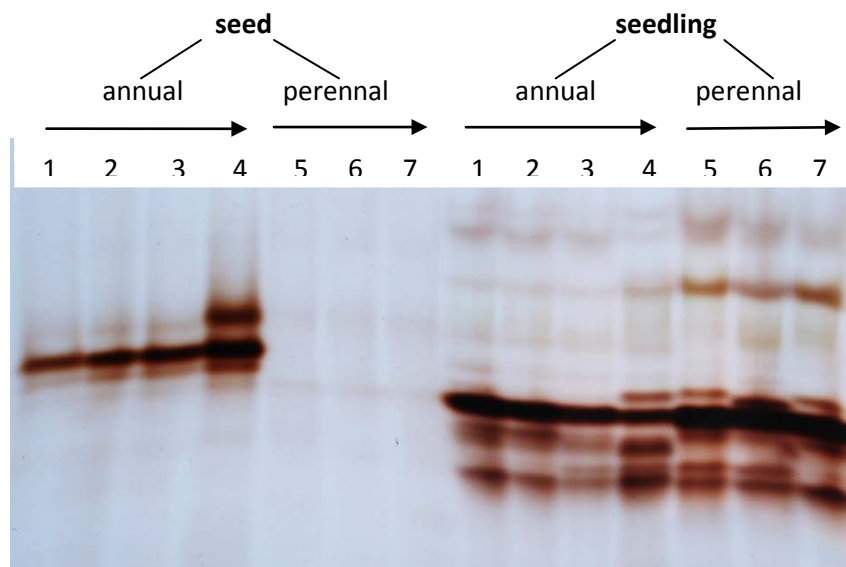


FIGURE 8.--Esterase staining of ryegrass seed and seedling IEF gel, pH5-8

The IEF gel of bulk seed samples indicates the presence of active esterase enzymes with a protein Isoelectric point (pI) between a pH of 5 to 8 in the annual ryegrass samples (fig. 8, annual seed, lanes 1-4). The perennial ryegrass samples (fig. 8, perennial seed, lanes 5-7) lack active esterase enzymes in the seeds, which is comparable to previous findings (Payne *et al.*, 1980). This is a strong distinguishing characteristic for annual and perennial ryegrass identification. Conversely, the IEF gel of ryegrass seedling samples indicates numerous

esterase bands in both annual and perennial ryegrass. Most seedling samples show a distinct difference in banding-pattern among varieties (fig. 8, lanes 1-7). All three perennial samples contain stained esterase bands in the upper portion of the gel, that are absent from the annual varieties.

According to the IEF gel results, esterase-banding patterns in seed samples provide a rapid and simple way to identify annual and perennial ryegrass since esterase enzyme activity is shown only in annual ryegrass. IEF gels of seed samples, however, are not suitable for further varietal identification, since banding is uniform among most of the annual varieties tested, but lacking in perennial varieties. Ryegrass seedling samples, run on IEF gels, show more diverse banding patterns than seed samples, making it easier to distinguish individual varieties. This method, however, has the disadvantage of an additional two-week germination time. A comparison of seed and seedling samples in IEF gels reveals a difference in the locations of esterase enzymes. Both seed and seedlings are appropriate for use in the test to distinguish between annual and perennial ryegrass, but only seedling samples are suitable for further ryegrass varietal identification.

Reference:

Payne, R.C., J.A. Scott, and T.J. Koszykowski. 1980. An esterase isoenzyme difference in seed extracts of annual and perennial ryegrass. *J. Seed Technol.* 5(2):15-21.

For more information about this article, contact Plant Physiologist Yujia Wu, Ph.D., at (704) 810-7267; yujia.wu@ams.usda.gov.

SEED SEGMENTS By Jerry Irwin

A JOURNEY TO WISCONSIN

Among its many agricultural commodities, Wisconsin is widely known for its cheese production. Seeds play an indirect, but significant, role in the cheese industry through their impact on raising dairy cattle. For example, it is important that farmers plant quality seed, not only to ensure healthy forage grasses and nutritious grain, but also to avoid the introduction of noxious weeds that may either be harmful to the animals or reduce production of quality milk.

I wanted to know more about seeds in Wisconsin, so Greg Helmbrecht, Plant Pest Disease Specialist of the Department of Agriculture, Trade and Consumer Protection in Madison, WI, provided some interesting information about Wisconsin's seed program.

What are the main functions of the Wisconsin Seed Program and what activities are included?

The main function of the program is to ensure quality seed is sold to consumers/farmers by enforcing the State's seed laws and rules. Enforcing these laws and rules protects farmers, consumers, industry, and the environment and promotes fair business practices through the surveillance of the seed industry in order to prevent the sale of poor quality and/or incorrectly labeled seed.

Do you have a seed-testing laboratory?

We contract for our laboratory work. The Wisconsin Crop Improvement Association has the contract for the next four years. For compliance samples, all company identifications and lot numbers are removed from samples before they go to the laboratory to remove any possible testing bias.

What does a seed-labeling license allow a company to do?

A seed-labeling license allows a person or business to sell, distribute, offer, or expose agricultural seed for sale in the State. Agricultural seed includes crop seed, vegetable seed, lawn or turf seed, flower seed, and native species seed.

What are the major crops in your State?

Corn, forage, soybean, small grains, processing crops (sweet corn, snap beans, peas), and potatoes.

Is your State known more for growing, processing and shipping, or receiving seed for retail?

Over the past 10 years, I would say that Wisconsin has made a shift towards receiving more seed for retail sales.

What are some of the more extraordinary duties or unique challenges that the Wisconsin seed program has dealt with?

One unique challenge I've dealt with a couple times over my years here has been dealing with Plant Variety Protection (PVP) violations. I've been very frustrated on a couple of occasions when I've invested time and program revenue into investigating PVP violations only to have the owner of the variety not pursue any action against the violator. I've been assured this will not be the case in the future and this has prompted me to change the Standard Operating Procedure on PVP investigations. I will now ask an owner of a variety if they will pursue actions before moving forward with an investigation.

The most challenging project has been updating the State seed laws and rules. Our initial goal was to align our seed law and rule with the Recommended Uniform State Seed Law (RUSSL) created by Association of American Seed Control Officials (AASCO), and we accomplished that goal. One major difference in our final law and rule is that the majority of it will be in rule to help accommodate technical changes in the future (e.g., prohibited and restricted noxious weed list). We are in the final steps of these updates now and should have a new permanent rule in place very soon.

Tell me about the inspectors. What kinds of seed do your inspectors usually sample? Do they sample other commodities as well as seed? How do you communicate with inspectors who work remotely?

As budgets have restricted the number of samples we are able to collect each year, I've had to get creative on our focus for seed sampling year to year. Our target sampling is based on three things:

1. Problem seed – focus on seed with poor compliance. At the end of each year, I compile a list of seed kinds and types of violations associated to help target problem seed.
2. Problem seed labelers – focus on seed labelers with poor compliance history. If a seed labeler has a violation rate greater than the state average, for two consecutive years, they are notified and targeted for compliance sampling.
3. Three year rotation – all labelers are sampled at least once on a three year rotation. Inspectors are provided a list of facilities, in their assigned areas, that have not been sampled in greater than two years.

These three things are meant to be only guides to help an investigator; there's still an element of random sampling as well. This approach seems to be working well as the violation rate has significantly dropped in the last 10 years. In 2000, we recorded a 20.44% violation rate and in 2009 that rate was down to 9.64%.

Our inspectors are both permanent and part-time staff with agricultural backgrounds and educations. They share a variety of duties including: seed sampling, nursery and phytosanitary inspections, crop surveys, insect trapping, and Christmas tree inspections. Some have also sampled feed and fertilizer.

All of our field staff have been issued cellular phones and remote offices with computers and internet access that they operate from.

How does the Wisconsin Seed Program benefit from the Cooperative Agreement between the Wisconsin seed program and the Agricultural Marketing Service?

I routinely use any violations issued by the Agricultural Marketing Service as supportive documents in compliance discussions I have with seed labelers having compliance issues in Wisconsin.

I'm finding the annual trueness-to-variety grow-out testing program a valuable tool in compliance planning.

What advice would you give to someone who is interested in working in the field of seed regulation?

I would offer two things:

1. If your department will allow it, try to use a progressive enforcement approach. I always try to educate first. Use the law and progressively get stronger if compliance issues continue. This approach is appreciated by industry and they end up wanting to work with you instead of regretting to see you.
2. Get to know AASCO members, call on them, and be an active member in the seed associations! These are your counterparts in other States/regions and they're an invaluable resource with experience in just about anything you'll ever encounter. I couldn't stress this enough. Many times, I've called on fellow members for their experience and expertise.

These people are always willing to give assistance. Being active will keep you in the loop on what's coming down the pipe, it will help you in compliance and give you a better understanding of the science behind what you see in the market.

What type of education or experience helped you the most in your job?

I would say my farming background was the most helpful when I started and as time went by the on-the-job experiences have become most relevant. We should always be learning.

How does your Wisconsin seed program benefit seed buyers and sellers in your State?

By enforcing the State seed laws and rules, we protect seed purchasers by ensuring fair and accurate labeling of seed through marketplace inspections, sampling, and laboratory testing. Enforcing these laws and rules also ensures that all labelers are following the same rules, which in turn promotes fair competition in the sale of seed.

When a customer contacts your office with a concern, what do they ask about the most and how do you help them?

The most common complaint I receive is related to poor germination of vegetable seed. I must gather as much information about the seed in question as I can; it will determine how I will be able to help/proceed. Important information would include:

1. Who labeled the seed?
2. What kind of seed was it?
3. Do they have any of the seed left over?
 - a. Do they have any packaging left over?
 - b. How big of a container was it?
 - c. Do they know a lot number?
4. Planting information
 - a. Date?
 - b. Depth?
 - c. Water?
 - d. Weather? (past and present)
 - e. Soil?

The SRTB thanks Greg Helmbrecht for submitting information for the IOI's Seed Segments column. I may contact you to share information about your seed program.

For information regarding this article, contact Seed Marketing Specialist Jerry Irwin at (704) 810-8878; jerry.irwin@ams.usda.gov.

AN IMPORTANT NOTE TO STATE SEED CONTROL OFFICIALS

Please contact the Seed Regulatory and Testing Branch (SRTB) when your office or laboratory has changes regarding the following information:

- Seed Control Officials or regulatory and laboratory contacts
- Commissioners, Directors, or Secretaries

- Titles
- Department names (as well as division, section, bureau, or branch names)
- Addresses (physical and mailing)
- Telephone numbers (voice and fax)
- E-mail addresses
- Web sites

SRTB wants to make sure laboratory reports, copies of regulatory correspondence, training notices, program announcements, and requests for information reach the correct person as soon as possible. Sometimes SRTB may need to refer a customer to a State office, and directing them to the appropriate contact person can be a helpful service.

Please e-mail Seed Marketing Specialist Jerry Irwin at jerry.irwin@ams.usda.gov to submit updates.

SUBSCRIPTION INFORMATION

The Seed Regulatory and Testing Branch (SRTB) Web site (<http://www.ams.usda.gov/seed>) contains links to SRTB publications. Some of those publications are the Federal Seed Act (FSA), FSA Regulations, "State Noxious-Weed Seed Requirements Recognized in the Administration of the Federal Seed Act," and current and past issues of the "Items of Interest in Seed." An electronic subscription option is available on the SRTB home page. The subscription service provides an e-mail notification when SRTB publications are issued or changed. The e-mail notice includes the option of unsubscribing or viewing the publications.

For information regarding this article, contact Seed Marketing Specialist Jerry Irwin at (704) 810-8878; jerry.irwin@ams.usda.gov.

RYEGRASS FLUORESCENCE LIST

The Association of Official Seed Certifying Agencies (AOSCA) revises the Variety Fluorescence Levels Recognized by the AOSCA National Ryegrass Review Board report twice a year. Click on the Grass National Variety Review Board section of the Web site (<http://www.aosca.org/VarietyReviewBoards/Grass/Grass.html>) then click on the National Perennial Ryegrass Variety Fluorescence Report link to view the most current report.

PLANT VARIETY PROTECTION CERTIFICATE STATUS

The Plant Variety Protection Office (PVPO) posts a public version of the Certificate Status Database. Access the [PVPO Certificate Status Database](#) to check the status of certification or to search for expired certificates. To view the PVPO List of U.S. Protected Varieties, visit the [PVPO List of U.S. Protected Varieties](#). This is a large document that may take several minutes to open. Both links are updated monthly or as time permits.

PERSONNEL CHANGES

Seed Regulatory and Testing Branch (SRTB) Branch Secretary Winston Robinson has retired due to medical reasons after seven years of Federal service. Winston provided administrative

support in daily operation of the office and could always be counted on to provide accurate and timely responses to staff needs. His broad range of skills and understanding of SRTB regulatory and laboratory issues were invaluable to this office, in particular, when directing customer communications to SRTB personnel or assisting Federal Seed School or meeting attendees visiting our Gastonia facility. His dedication, expertise, and friendly manner contributed greatly to the overall success of the SRTB mission.

Jonathan Farmer has retired after more than 35 years of Federal service. Jonathan came to the SRTB as a Seed Marketing Specialist in 1976. In addition to his primary duties investigating Federal Seed Act cases, Jonathan had worked with many projects, such as automating tolerance calculations, performing statistical analyses for reports, and publishing the State noxious-weed seed list. His expertise in the use of computer technology was invaluable to SRTB throughout his career, especially so during the recent transition to a new information management system.

SRTB Agronomist Michael Lovelace, Ph.D., has resigned after more than seven years of Federal service. Mike was responsible for trueness-to-variety grow-out testing in the field and in the greenhouse. He provided training in variety testing techniques at SRTB workshops. Mike participated in the Association of Official Seed Analysts (AOSA) and the International Seed Testing Association (ISTA); he was chairman of the AOSA Cultivar Purity Committee and a member of the ISTA Variety Committee. In addition, Mike made significant contributions to the new information management system. Mike provided valuable support to the Branch by willingly sharing his wide knowledge and skills in many areas including statistics, photography, Adobe Photoshop, Microsoft PowerPoint presentations, equipment maintenance, and calibration.

We appreciate their years of dedicated service with SRTB and wish them all well in the future.

CALENDAR OF EVENTS

Federal Seed School Gastonia, NC	May 9-13, 2011
OECD Seed Schemes Annual Meeting Istanbul, Turkey	May 10-14, 2011
Association of Official Seed Analysts (AOSA) Annual Meeting Williamsburg, VA	June 6-11, 2011
International Seed Testing Association (ISTA) Annual Meeting Tsukuba, Japan	June 13-16, 2011
American Seed Trade Association (ASTA) Annual Meeting Huntington Beach, CA	June 18-22, 2011
American Association of Seed Control Officials (AASCO) Annual Meeting Madison, WI	July 17-21, 2011
Association of Official Seed Certifying Agencies (AOSCA) Annual Meeting St. Louis, MO	July 24-27, 2011
Federal Seed School Gastonia, NC	August 15-19, 2011
ASTA Corn & Sorghum and Soybean Seed Research Conference Chicago, IL	Dec. 6-9, 2011

Seed Regulatory and Testing Branch (SRTB) sponsored training is shown in **bold**.

For further information regarding the Calendar of Events, contact Management Analyst Karen Sussman at (704) 810-7272; karen.sussman@ams.usda.gov.

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*A good gardener always plants 3 seeds –
one for the bugs, one for the weather and one for himself.*

--Leo Aikman

(Contributed by Seed Regulatory and Testing Branch Botanist Sandy Dawson)

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