



United States  
Department of  
Agriculture

Marketing and  
Regulatory  
Programs

Agricultural  
Marketing  
Service

Livestock and  
Seed Program

# Items of Interest in Seed

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## EDITOR'S NOTES

Each year, Seed Regulatory and Testing Branch (SRTB) employees have the privilege of representing the U.S. Department of Agriculture at various meetings, nationally and internationally. Not only does participation in these meetings increase our employees' skills and experiences, but SRTB also benefits. These interactions strengthen our connection with other seed organizations and increase our understanding of other seed related programs. They also provide an opportunity to represent SRTB's viewpoint on matters or to establish our interest in various activities. In addition, meetings serve as an information gathering resource and give feedback on the effectiveness of SRTB procedures and policies.

This issue highlights several important meetings and workshops that SRTB staff members have participated in recently, including the annual meetings of the American Seed Trade Association, the Association of Official Seed Analysts and Society of Commercial Seed Technologists, the International Seed Testing Association, and the Organization for Economic Cooperation and Development Seed Schemes. Other features include Botanist Sandy Dawson's article on botanical nomenclature, Seed Marketing Specialist Gene Wilson's second article in a series on tolerances, and Seed Marketing Specialist Jeri Irwin's Seed Segments interview with Joe Garvey, Seed Section Supervisor with the Pennsylvania Department of Agriculture. In addition, you will find more information about activities related to enforcement of the Federal Seed Act and about laboratory testing.

The SRTB is committed to providing quality service to its customers. Participation in meetings, and communications through publications such as the IOI, are examples of how SRTB remains aware of current issues and concerns that affect our seed industry customers.

Please let me know if you have suggestions for future IOI topics by sending an e-mail to [linda.vanderhoof@usda.gov](mailto:linda.vanderhoof@usda.gov).

We hope that you enjoy this issue.

Linda Vanderhoof  
IOI Editor

**Correction:** The IOI staff regrets that an error was made in the Q & A section of the April 2008 issue. The answer to the first question incorrectly referenced "Section 201.51b" of the Federal Seed Act Regulations. The correct reference is "Section 201.51b(f)."

### **OECD SEED SCHEMES 2008 MEETING HELD IN CHICAGO, IL**

The Annual Meeting of the Organization for Economic Cooperation and Development (OECD) Seed Schemes was held in Chicago, IL, on July 1-3, 2008. Over 85 individuals participated, representing over 40 nations and a variety of professional and seed trade organizations. This meeting marked the 50<sup>th</sup> anniversary of the OECD Seed Schemes, an international organization founded in 1958 to facilitate the certification of agricultural seed moving in the world marketplace.

Illinois Department of Agriculture Director Tom Jennings welcomed the OECD delegates to Illinois, presenting an overview of the State's agriculture. Following Mr. Jennings, Agricultural Marketing Service (AMS) Administrator Lloyd Day welcomed the delegates to the United States and reaffirmed AMS's support of the OECD Seed Schemes. He made an informative

presentation regarding American agriculture and AMS's role in agricultural trade. The United States participates in five of the seven agricultural Seed Schemes.



Left to right: Karen Sussman (SRTB Management Analyst), Randall Jones (Associate Deputy Administrator, Livestock and Seed), Michael Ryan (OECD Seed Schemes Secretariat), Lloyd Day (AMS Administrator), Tom Jennings (Director, Illinois Department of Agriculture), Perry Bohn (U.S. OECD Seed Schemes Manager).

When the meeting began, 55 nations participated in the OECD Seed Schemes, but by the end of the meeting, that number had grown to 57 with the addition of India and Moldova. In addition to admitting two new member nations into the Seed Schemes, the meetings undertook several other matters. The agenda included further discussion on a strategic plan for the organization and decisions on changes regarding several technical issues. Various working groups also met to proceed with different issues.

The delegates, many of whom had never been to the United States, found their visit more pleasant through the assistance of the Association of Official Seed Certifying Agencies (AOSCA) and the American Seed Trade Association (ASTA). AOSCA hosted a hospitality room and orientation center that gave delegates a location to gather, discuss various issues informally, and plan excursions in Chicago. ASTA provided a reception and education seminar on the first evening of the meeting. This helped break the ice for many delegates who were new to the organization and to the United States, in addition to providing useful information.

As part of the effort to enlighten delegates about U.S. agriculture, a visit to the Chicago Board of Trade (CBOT) was arranged for after the meeting. At the CBOT, millions of dollars worth of agricultural products are traded daily in the form of futures contracts.

AMS served as the facilitator of the meeting, cooperating with OECD officials located in Europe. Feedback indicates the meetings were successful.

U.S. OECD Seed Schemes Program Manager Perry Bohn represented the United States during the meeting while Seed Regulatory and Testing Branch (SRTB) Management Analyst Karen Sussman and SRTB Seed Marketing Specialist Gene Wilson provided logistical support.

For information regarding this article, contact the OECD Seed Schemes Program Manager Perry Bohn at (704) 810-7262; [perry.bohn@usda.gov](mailto:perry.bohn@usda.gov).

### **DR. RICHARD PAYNE HONORED BY THE AMERICAN SEED TRADE ASSOCIATION**

Seed Regulatory and Testing Branch (SRTB) Chief Richard Payne was presented the American Seed Trade Association's (ASTA) Special Service Award on June 24, 2008, in Orlando, FL. He was recognized for his participation at the annual meeting, during which ASTA celebrated its 125th Anniversary.



Dr. Payne took a proactive approach at the meeting in discussing the regulatory components of the Federal Seed Act, the governing legislation under which the SRTB is authorized to regulate seed trade. His goal was to bring awareness of the regulations to encourage compliance among industry prior to any violation of the Federal Seed Act. Therefore, as an organization whose members are regulated by the SRTB, ASTA's recognition of Dr. Payne represented an appreciation from industry for the services he and his branch provide to the seed industry.

In 2005 Dr. Payne was also awarded ASTA's President's Distinguished Service Award for his outstanding service to the seed industry. His outreach efforts regarding the requirements of the Federal Seed Act have resulted in a significant reduction in seed labeling violations.

Dr. Payne's distinguished career began in 1975 as a plant physiologist with the Seed Regulatory and Testing Branch. In 1982 he became the SRTB Laboratory Supervisor. Dr. Payne has been the SRTB Chief for over 9 years.

Thank you and congratulations, Dr. Payne.

For information regarding this article, contact U.S. OECD Program Manager Perry Bohn at (704) 810-7262; [perry.bohn@usda.gov](mailto:perry.bohn@usda.gov).

## **2008 ASSOCIATION OF OFFICIAL SEED ANALYSTS-SOCIETY OF COMMERCIAL SEED TECHNOLOGISTS ANNUAL MEETING**

The 2008 annual meeting of the Association of Official Seed Analysts (AOSA) and Society of Commercial Seed Technologists (SCST) was held June 6-11, 2008, in St. Paul, MN.

Twenty-seven rule proposals were submitted for acceptance, and seven proposals were amended prior to the open Rules Committee meeting. Many of the rule changes were to improve clarity and to add supplemental information to the AOSA Rules. Some of the AOSA rule changes pertain to tetrazolium testing and setting tolerances for the tetrazolium test, which is not covered as a stand-alone test under the Federal Seed Act (FSA). AOSA rule changes go into effect October 1, 2008. For more details on rule changes, go to the AOSA Web site at [www.aosaseed.com](http://www.aosaseed.com).

Consolidation of AOSA and SCST has been under consideration for a number of years. The members of the AOSA and the SCST voted to go forward with consideration of consolidating the two organizations. Suggestions were made to consider combining committees and the examinations for the AOSA Certified Seed Analyst and SCST Registered Seed Technologist, as well as to develop a consolidation plan before combining the two organizations. Efforts are underway to review both exams and look at ways to improve them.

Seed Regulatory and Testing Branch (SRTB) staff members participated in workshops and committee meetings, as well as the business meeting. Botanist Patsy Jackson participated in the Statistics workshop and the AOSA Rules Committee meetings; Agronomist Michael Lovelace participated in the Genetic Technology workshop as well as chaired the Cultivar Purity Committee meeting; and Plant Pathologist Sandra Walker chaired the Seed Pathology Committee meeting. The Seed Regulatory and Testing Branch is a member laboratory of the AOSA.

The next annual meeting is scheduled to be held May 30-June 5, 2009, in Fort Collins, CO.

For information regarding this article, contact Botanist Patsy Jackson at (704) 810-8881; [patsy.jackson@usda.gov](mailto:patsy.jackson@usda.gov). Patsy Jackson is a member of the AOSA Rules Committee.

## **MEETING OF THE INTERNATIONAL SEED TESTING ASSOCIATION**

Seed Regulatory and Testing Branch Assistant Chief/Laboratory Supervisor Susan Maxon and Agronomist Michael Lovelace participated in the annual meeting of the International Seed Testing Association (ISTA), June 16-19, 2008, Bologna, Italy. Of the 72 ISTA member countries, 46 were represented by Designated Members entitled to vote at the Ordinary Meeting, exceeding the required quorum of 29.



Robert Karrfalt and Susan Maxon at the ISTA official dinner.

Participants enjoyed a tour of the Seed Research and Testing Laboratory at the University of Bologna. Seed analysts from around the world envied the amount of natural, north light afforded by the layout of the laboratory with large windows on three sides. Following the tour, ISTA Honorary President Attilio Lovato and the staff of the laboratory hosted a reception to celebrate the 100<sup>th</sup> anniversary of the laboratory.

Mr. Marco Nardi, Secretary of the Italian Seed Association, gave a keynote presentation on the challenges to the seed industry in Italy. Agriculture contributes 2.2 percent to the national economy of Italy. There are 1.9 million farms in Italy, with an average farm size of 7 hectares. This is less than half the average farm size in Europe. One of the challenges to the seed industry in Italy is the amount of farm-saved seed, made possible because the small farmers are exempt from paying royalties that would otherwise be required on protected varieties.

The ISTA GMO Task Force presented a one-day seminar: Specified Trait Seed Testing. Christoph Haldemann (Switzerland) chairs the Task Force. Nine proficiency test rounds have been conducted over the last several years, and eight laboratories have been accredited for specified trait testing by the performance-based approach.

Highlights of the business meeting:

- ISTA recognized Mr. Ronald Don as an Honorary Life Member. He made significant contributions while serving on many ISTA committees. He recently retired from his position as the head of the Official Seed Testing Station for Scotland.
- By majority vote, the membership approved the proposal to increase the annual dues by 2 percent for 2009.
- Among the 14 rule change proposals, one of the most significant was the increase in seed lot size to 30,000 kilograms for 3 *Sorghum* spp. and 21 species of large-seeded legumes, collectively known as pulses. The adoption of this proposal will benefit trade, particularly within the OECD Seed Schemes, which follow the ISTA lot size limitations. The rule changes will take effect January 1, 2009.

Susan Maxon served as head of the U.S. delegation and also participated in the ISTA Executive Committee meetings on June 15 and 20. She is currently serving a three-year term on the ISTA Executive Committee. Robert Karrfalt (Director, National Tree Seed Laboratory, USDA Forest Service) accompanied the U.S. delegation, serving as alternate delegate to the Ordinary Meeting.

Representatives of invited organizations included:

- Marcel Bruins (International Seed Federation)
- Anita Hall (Society of Commercial Seed Technologists)
- Brent Turnipseed (Association of Official Seed Analysts)

The next ISTA Annual Meeting is scheduled to be held in Zurich, Switzerland, June 15-18, 2009.

For more information regarding this article, contact Susan Maxon at (704) 810-8877; [susan.maxon@usda.gov](mailto:susan.maxon@usda.gov), or Michael Lovelace at (704) 810-7261; [michael.lovelace@usda.gov](mailto:michael.lovelace@usda.gov).

### **AMS REPRESENTATIVE TRAVELS TO INDIA**

From April 2-10, 2008, U.S. OECD Seed Schemes Program Manager Perry Bohn traveled to India on behalf of the Organization for Economic Cooperation and Development (OECD) Seed Schemes international headquarters. The trip was organized following India's application to become a participating country in the OECD Seed Schemes. Perry accompanied Dr. Michael Ryan, Head of the OECD Seed Schemes Secretariat, and served as the technical evaluator.

Before granting admittance of a country to participate in the OECD Seed Schemes, the Secretariat conducts an "evaluation mission" to ensure the country has the technical ability and infrastructure involving seed certification for successful participation in the program. Areas that Perry evaluated included Federal and State certification offices and public and private seed companies and laboratories located near Bangalore, Hyderabad, and New Delhi. He also reviewed their variety registration process to ensure it met the requirements of the Seed Schemes.

As a result of the successful evaluation, India was granted permission to participate in the Seed Schemes by consensus decision at the July 2008 Annual OECD Seed Schemes Meeting. India, the world's largest producer of cottonseed and a leading producer of many vegetables, exports seed primarily to Pakistan and other Asian markets.



From left to right: Perry Bohn (U.S. OECD Seed Schemes Program Manager), Shri Pattanayak (Joint Secretary (Seeds)) and M.B. Haskaran (Director, National Seed Research Center), both from India Government, after the admission of India for participation in the OECD Seed Schemes at the Annual Meeting in Chicago.

Anyone with questions about the evaluation or requests for additional information regarding this article may contact the U.S. OECD Seed Schemes Program Manager Perry Bohn at (704) 810-7262; [perry.bohn@usda.gov](mailto:perry.bohn@usda.gov).

### **OECD SEED SCHEMES FEE CHANGES**

Effective October 1, 2008, the Seed Regulatory and Testing Branch will implement a change in the fee structure for seed shipped through the Organization for Economic Cooperation and Development (OECD) Seed Schemes. This action is necessary in order to keep up with the increasing OECD assessment from the Paris office due, in part, to the decrease in value of the U.S. dollar. With the increase in fees, the U.S. OECD Seed Schemes Program can continue to support activities at the current level. The last fee change was October 1, 2004.

If you have any questions about these changes, you may contact your local seed certifying agency or contact U.S. OECD Seed Schemes Program Manager Perry Bohn at (704) 810-7262; [perry.bohn@usda.gov](mailto:perry.bohn@usda.gov).

### **AMENDMENTS TO CFIA REGULATIONS PUBLISHED**

The Canadian Food Inspection Agency (CFIA) has announced amendments to their “Seeds Regulations.” The amendments remove the requirements for kernel visual distinguishability (KVD) of wheat seed and for distinguishability of seed of spring barley imported into western Canada.

The change was announced February 11, 2008, and published August 11, 2008; it is expected to increase timely access to innovations in the marketplace and to increase options for farmers to select new value-added varieties. Also, seed companies may have an increased interest in developing new varieties for western Canada. The "Seeds Regulations" still require registration of varieties in Canada prior to sale.

CFIA is planning additional discussions on the importation of seed of unregistered wheat varieties for planting by the importer. This practice is currently prohibited.

See [http://www.agr.gc.ca/cb/index\\_e.php?s1=n&s2=2008&page=n80211](http://www.agr.gc.ca/cb/index_e.php?s1=n&s2=2008&page=n80211) or call 1-800-442-2342 for more information and details; or contact OECD Seed Schemes Program Manager Perry Bohn at (704) 810-7262; [perry.bohn@usda.gov](mailto:perry.bohn@usda.gov).

## **SEED GRADER NEWS**

For those who may be interested in the USDA Seed Grader Program, we are in the process of scheduling training and examinations. While the training session is optional, it is highly recommended as preparation for the required examinations.

If you think you may like to do one or both, please contact Perry Bohn, [perry.bohn@usda.gov](mailto:perry.bohn@usda.gov), or Gene Wilson, [gene.wilson@usda.gov](mailto:gene.wilson@usda.gov).

## **SEED SAMPLING TRAINING**

Seed Regulatory and Testing Branch (SRTB) Seed Marketing Specialists Roger Burton and Kevin Robinson conducted a three-day Seed Inspector Sampling Training in Vermont on July 8-10, 2008. They presented the training to a Vermont State plant pathologist and two Vermont State inspectors.

The following main topics were covered:

- Seed shipments covered by the Federal Seed Act
- Seed labeling, formatting and interpretation
- Seed labeling violations
- Sampling principles, documentation, and problems
- Sampling packets, containers, and bulk seed
- Planning and execution of sampling
- Proper selection and use of seed sampling triers
- Proper handling, storage, and shipping of seed samples
- Submission of suspected seed violations to the SRTB

Throughout the training sessions, SRTB personnel emphasized actual hands-on practice in sampling. They worked with the inspectors to show them proper use of each sampling trier. After the hands-on training, SRTB personnel evaluated the inspectors as they conducted seed sampling procedures.

A sincere thank you to the management of L.D. Oliver in Milton, VT, Lawes AG Service in Brandon, VT, and Northeast Agricultural Sales in Lyndonville, VT, for the use of their company facilities for these seed sampling training sessions.

Anyone interested in having seed sampler training should contact SRTB Branch Chief Richard Payne at (704) 810-8884; [richard.payne2@usda.gov](mailto:richard.payne2@usda.gov). For information regarding this article, contact Seed Marketing Specialist Roger Burton at (704) 810-7265; [roger.burton@usda.gov](mailto:roger.burton@usda.gov).

## **FEDERAL SEED SCHOOLS**

The Seed Regulatory and Testing Branch (SRTB) hosts Federal Seed Schools twice a year (spring and summer) in Gastonia, NC, to promote uniformity in seed testing. The focus of these workshops is usually purity testing of crop kinds that are subject to the Federal Seed Act (FSA) and seed identification of similar-appearing crop and weed species. Additional topics may include germination and fluorescence tests, the uniform blowing procedure, and others as relevant. Limited training may also be offered in quality management systems, laboratory quality assurance, seed grader accreditation, variety testing, or biotechnology training. Based on topics and hands-on involvement, continuing education points are available for Certified Seed Analysts and Registered Seed Technologists.

The workshops are open to seed analysts from private and government seed testing laboratories. Enrollment is limited due to the hands-on nature of the topics and one-on-one attention from instructors. Participants from non-government laboratories are charged a fee of \$32 per day. If you would like to request specific topics, send your suggestions no later than October 31, 2008, and we will try to accommodate the areas of widest interest.

For more information about these workshops, please contact Botanist Patsy Jackson at [patsy.jackson@usda.gov](mailto:patsy.jackson@usda.gov) or Laboratory Supervisor Susan Maxon at [susan.maxon@usda.gov](mailto:susan.maxon@usda.gov).

## **INTERNATIONAL SEED TESTING ASSOCIATION 6<sup>TH</sup> SEED HEALTH SYMPOSIUM**

Seed Regulatory and Testing Branch Plant Pathologist Sandra Walker was one of 65 participants from 28 countries at the International Seed Testing Association's (ISTA) 6<sup>th</sup> Seed Health Symposium. It was held April 14-18, 2008, in Kruger National Park, South Africa and featured posters and presentations on seed treatments, phytosanitary issues, seed-borne pathogens, and seed health testing methods. Many presentations dealt with African seed health issues.

Sandra is a member of the ISTA Seed Health Committee (SHC) which met on April 13, 2008, in Kruger National Park. Hotly debated topics included a new definition of "seed treatment" for the ISTA rules and the reinsertion of a "minimum number of seeds required for testing" into the ISTA seed health testing methods. The SHC decided to update and republish *An Annotated List of Seed-borne Diseases*, last published by ISTA in 1979. Sandra is chair of the Editorial Sub-committee and a member of the Endophyte Working Group.

For information regarding this article, contact Plant Pathologist Sandra Walker at 704-810-7268; [sandra.walker@usda.gov](mailto:sandra.walker@usda.gov).

## ISTA WORKSHOP ON SPECIES AND VARIETY TESTING

Seed Regulatory and Testing Branch (SRTB) Agronomist Dr. Michael Lovelace and Plant Physiologist Dr. Yujia Wu participated in the International Seed Testing Association (ISTA) Workshop on Species and Variety Testing, April 21-25, 2008, in Freising, Germany, near Munich. The workshop was hosted by Dr. Berta Killermann, ISTA Variety Committee Chair, and her staff at the Bavarian State Research Center for Agriculture, Institute for Crop Science and Plant Breeding, Seed Testing and Research Laboratory. Participants came from nine countries, including Austria, Belgium, Germany, India, Korea, Latvia, the Netherlands, Serbia, and the United States.

The workshop focused on four main topics of seed varietal testing: the determination of bitter seed *Lupinus*, the identification of *Poa* spp., the fluorescence test and protein electrophoresis. Varieties of *Lupinus* spp. have been developed with a low alkaloid content, called sweet lupine and with a high alkaloid content, called bitter lupine. The current ISTA method (Chapter 8, *ISTA International Rules for Seed Testing*) uses this characteristic to distinguish seeds of sweet lupine and bitter lupine. Dr. Killermann's laboratory has improved this method by soaking the seed in water for 2 hours instead of 24 hours and scarifying by piercing with a needle instead of cutting a thin slice from the seed. The new method is easy and efficient, requiring much less time than the existing ISTA method.

The *Poa* seed identification section focused on characteristics of seed anatomy in *Poa annua*, *Poa pratensis*, *Poa trivialis*, *Poa nemoralis*, and *Poa supina*. The fluorescence test focused on *Avena sativa*, *Sinapis arvensis*, *Lolium* spp., and *Festuca* spp. and was based on the natural fluorescence of seeds or seedlings to distinguish varieties. For instance, white and yellow oats (*Avena sativa*) are easy to distinguish by fluorescence under ultraviolet light.

The protein electrophoresis test was a main topic in the workshop. Protein electrophoresis is a molecular technique that can be compared with traditional variety tests that are based on visible characteristics of the seed, seedling, or plant. Electrophoresis separates a seed protein sample into a pattern of bands by molecular weight as it travels through a gel, propelled by an electric current. The gel-banding pattern provides a picture of proteins at the molecular level and is specific to particular species and varieties. Dr. Killermann discussed the principles of protein electrophoresis and presented information about suitable methods generally used for seed protein testing. There are three methods in the current ISTA Handbook of Variety Testing: A-PAGE (acid polyacrylamide gel electrophoresis), SDS-PAGE (sodium dodecyl sulphate polyacrylamide gel electrophoresis) and UTLIEF (ultrathin-layer isoelectric focusing). A-PAGE is a unique method used to differentiate *Triticum* (wheat) seed varieties.

The ISTA Workshop on Species and Variety Testing provided detailed information and professional contacts that will help scientists at SRTB perform qualified ISTA tests in the future.

For information regarding this article, contact Plant Physiologist Yujia Wu at (704)-810-7267; [yujia.wu@usda.gov](mailto:yujia.wu@usda.gov). Dr. Lovelace and Dr. Wu participate on Working Groups of the ISTA Variety Committee.

## NATIONAL ORGANIC PROGRAM WORKSHOP

From May 12-16, 2008, OECD Seed Schemes Program Manager Perry Bohn and Seed Marketing Specialist Gene Wilson participated in a training workshop for the National Organic Program (NOP). The workshop was designed to familiarize participants with the NOP and with

the requirements for auditing entities the NOP has accredited. With the successful completion of the workshop, both individuals are now qualified to participate in audits for the NOP.

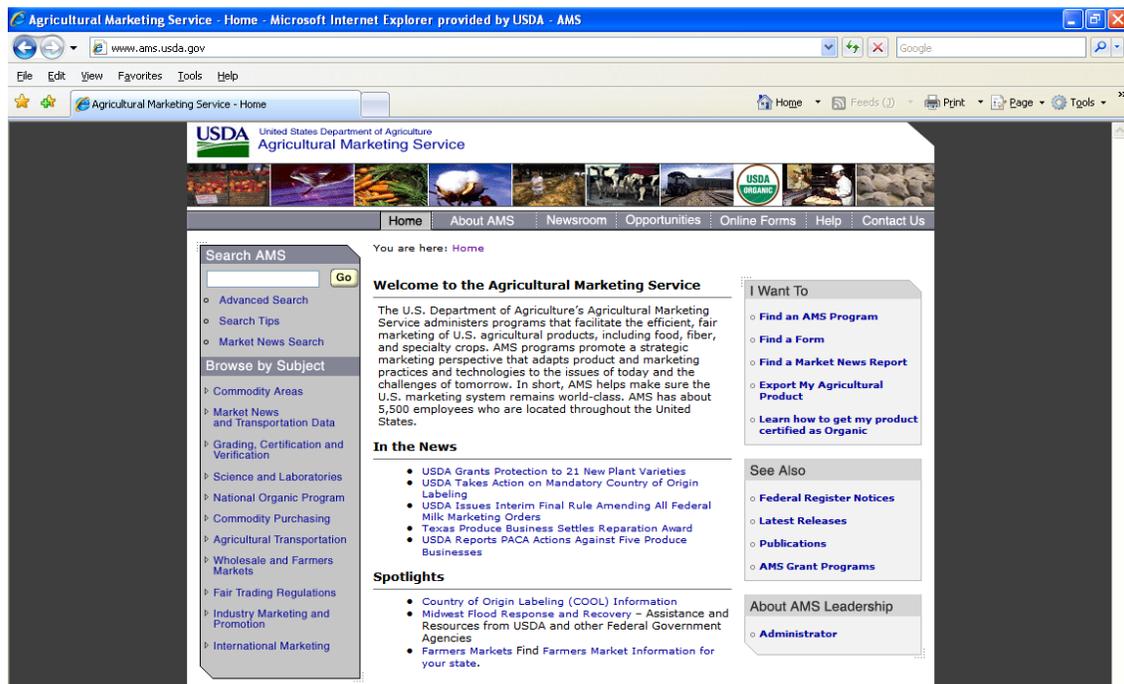
The National Organic Program is administered by the Agricultural Marketing Service. Additional information is available on the AMS Web site at [www.ams.usda.gov/nop](http://www.ams.usda.gov/nop).

For information regarding this article contact Perry Bohn at (704) 810-7262; [perry.bohn@usda.gov](mailto:perry.bohn@usda.gov) or Gene Wilson at (704) 810-8888; [gene.wilson@usda.gov](mailto:gene.wilson@usda.gov).

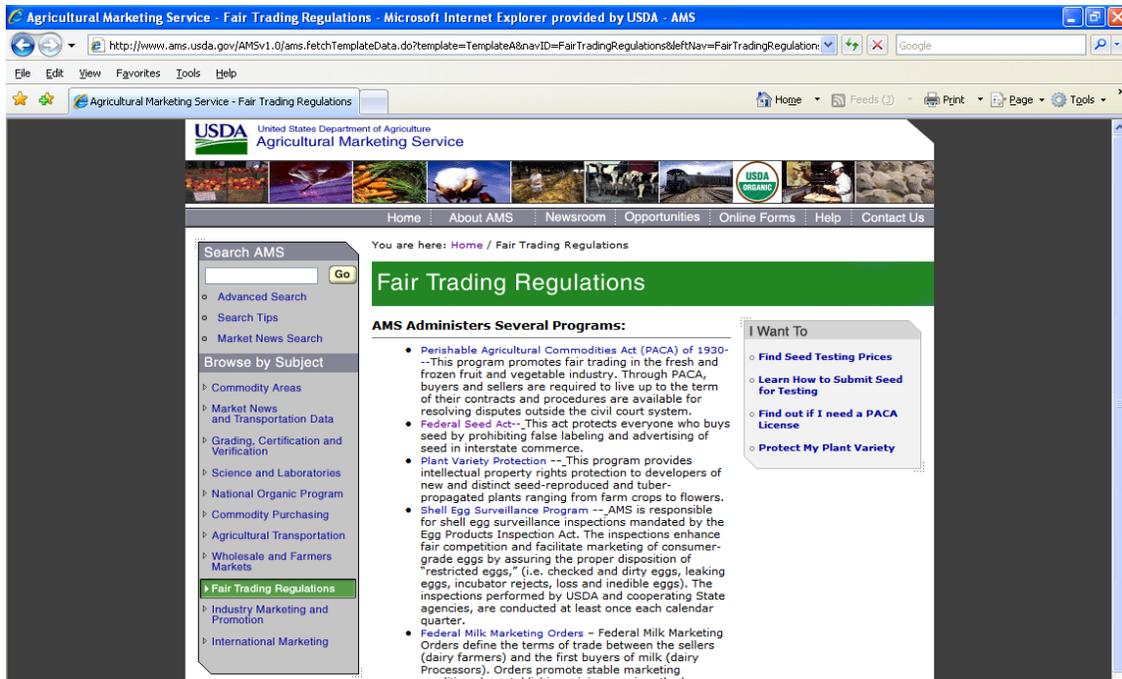
## NEW WEB SITE

The Agricultural Marketing Service (AMS) launched their new Web site [www.ams.usda.gov](http://www.ams.usda.gov) in April 2008. Information about all AMS programs is accessible through the main USDA Web site. The Seed Regulatory and Testing Branch (SRTB) has had several inquiries about how to locate the new Web site, and below is a quick guide on how to find the SRTB Web site and the information it provides.

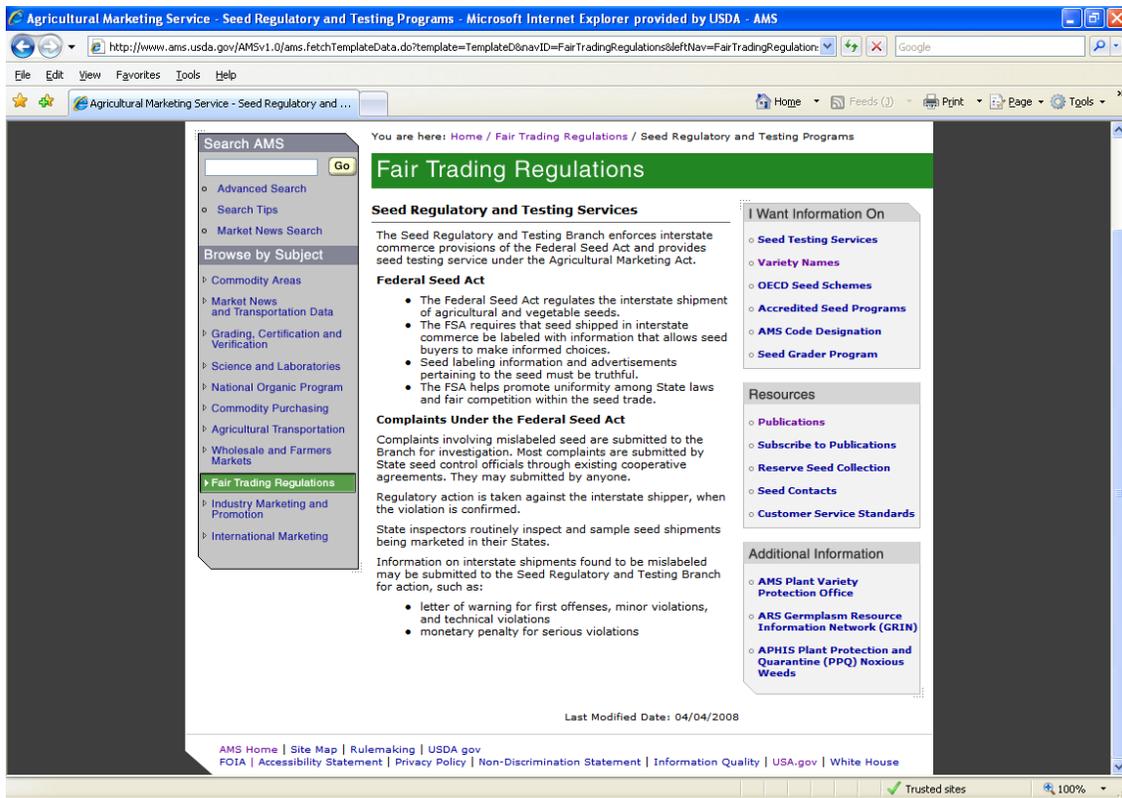
First, locate the AMS Home page at [www.ams.usda.gov](http://www.ams.usda.gov).



Next, go to the far left column under “Browse by Subjects” and click on the link “Fair Trading Regulations.” This will take you to a list of programs that AMS administers. Finally, to find the Home page of SRTB, click on the second program listed on this page, the “Federal Seed Act.”



Once you are on the “Seed Regulatory and Testing Services” page, the information and resources that SRTB provides is located in the tool bars in the right hand column. The SRTB home page may also be reached directly using the alias [www.ams.usda.gov/seed](http://www.ams.usda.gov/seed).



For information regarding this article, contact Seed Marketing Specialist Kevin Robinson at (704) 810-7264; [kevin.robinson2@usda.gov](mailto:kevin.robinson2@usda.gov).

## AG-DISCOVERY VISIT

On July 29, 2008, a group of 16 high school students, their counselors, and instructors with Ag-Discovery visited the Seed Regulatory and Testing Branch (SRTB). Ag-Discovery is an outreach program designed to help high school students learn about careers in plant science. SRTB staff provided hands-on activities related to various aspects of seed testing, including sampling, purity and germination testing, seed health testing, and variety testing.



Dr. Yujia Wu, Plant Physiologist (left), explains the principles of using gel-electrophoresis as a variety test.



Botanist Patsy Jackson (right) demonstrates germination test procedures for Ag-Discovery students.

Ag-Discovery is a 2-week program that allows students to live on campus and learn about science from university professors and U.S. government entomologists, botanists, and plant pathologists. The program includes hands-on lab activities, workshops, and field trips, as well as character and team-building activities and diversity workshops. USDA's Animal and Plant Health Inspection Service provides the funding for Ag-Discovery, and North Carolina State University hosts the participants on campus in Raleigh. Students provide their own transportation costs to Raleigh. Most students came from high schools in North Carolina, a few came from as far away as Florida and New York.

The field trip was coordinated by Dr. Betsy Randall-Schadel, Plant Pathologist/Risk Analyst with USDA, APHIS, Plant Epidemiology & Risk Analysis Laboratory in Raleigh, NC. For more information about Ag-Discovery, contact her at [betsy.randall-schadel@aphis.usda.gov](mailto:betsy.randall-schadel@aphis.usda.gov). The application deadline for Ag-Discovery is early April.

For more information about this article, contact SRTB Assistant Chief/Laboratory Supervisor Susan Maxon at 704-810-8870; [susan.maxon@usda.gov](mailto:susan.maxon@usda.gov).

## FEDERAL SEED ACT CASES SETTLED

The following cases were settled administratively under the Federal Seed Act between March 1 and August 31, 2008. 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: <http://www.ams.usda.gov/news/newsrel.htm> (click on the "Latest Releases" link).

Barenbrug USA, Tangent, OR, has paid \$3,700 for cases involving three shipments of seed into Ohio, Pennsylvania, and Texas. The shipment to Ohio was subsequently reshipped into Indiana. The alleged violations, while not the same for all shipments, were false labeling of pure seed, other crop seed, and germination percentages; false labeling of kind name and test date; and failure to test for germination prior to interstate shipment. Seed regulatory officials in Indiana, Pennsylvania, and Texas cooperated in the initial sampling and inspection.

Discount Seeds, Inc., Watertown, SD, has paid \$3,225 for cases involving five shipments of seed into Michigan, Oklahoma, and Texas. The shipment to Oklahoma was subsequently reshipped into Texas. The alleged violations, while not the same for all shipments, were false labeling of germination percentage, failure to label the presence of noxious-weed seeds, and failure to keep and/or supply required records. Seed regulatory officials in Michigan and Texas cooperated in the initial sampling and inspection.

Forage First, Fort Dodge, IA, has paid \$1,725 for cases involving four shipments of seed into Michigan and Ohio. The alleged violations, while not the same for all shipments, were false labeling of pure seed and other crop seed percentages, false labeling of test date and shipper's code designation, failure to label as a mixture, and failure to keep and/or supply required records. Seed regulatory officials in Michigan and Ohio cooperated in the initial sampling and inspection.

Harvest States, Tangent, OR, has paid \$1,200 for cases involving three shipments of seed into Connecticut, Georgia, and Kansas. The shipments to Connecticut and Kansas were reshipped into Georgia and Indiana, respectively. The alleged violations, while not the same for all shipments, were false labeling of germination percentage and noxious-weed seeds. Seed regulatory officials in Georgia and Indiana cooperated in the initial sampling and inspection.

Mixon Seed Company, Inc., Orangeburg, SC, has paid \$2,350 for cases involving three shipments of seed into Georgia. The alleged violations, while not the same for all shipments, were false labeling of germination percentage, test date, and noxious-weed seeds; failure to keep and/or supply required records; and failure to label shipper's name and address or code designation. Seed regulatory officials in Georgia cooperated in the initial sampling and inspection.

Sexauer Discount Farm Services, Inc., Brookings, SD, has paid \$1,400 for cases involving three shipments of seed into Georgia and Texas. The alleged violations, while not the same for all shipments, were false labeling of germination, pure seed, and inert matter percentages; failure to keep and/or supply required records; and failure to label shipper's name and address or code designation. Seed regulatory officials in Georgia and Texas cooperated in the initial sampling and inspection.

Texas Oklahoma Production Company, Enid, OK, has paid \$2,275 for cases involving three shipments of seed into Georgia, South Carolina, and Texas. The shipments to Georgia and South Carolina were reshipped into Virginia and Georgia, respectively. The alleged violations, while not the same for all shipments, were false labeling of germination percentage, shipping seed containing prohibited noxious-weed seeds, and failure to label the presence of noxious-weed seeds and to keep and/or supply required records. Seed regulatory officials in Georgia, Texas, and Virginia cooperated in the initial sampling and inspection.

For information regarding this article, please contact Branch Chief Richard Payne at (704) 810-8884; [richard.payne2@usda.gov](mailto:richard.payne2@usda.gov).

## **FALL TRUENESS-TO-VARIETY OVERVIEW**

The Seed Regulatory and Testing Branch (SRTB) conducts trueness-to-variety (TTV) field tests to determine if seed lots are properly labeled for variety, which is required by the Federal Seed Act (FSA) and State seed laws. The primary focus of this testing is to identify seed lots that bear the wrong variety name on the label or that have significant levels of off-type plants within the lot. The goal of the TTV field tests is not to identify varieties (i.e., to say that a specific seed lot is definitely a specific variety) or to make comparisons between varieties for yield, suitability, or any other quality. Therefore, TTV field tests are designed differently than yield or suitability tests.

Crop experts at State universities and State departments of agriculture carry out the field-testing in cooperation with the SRTB. Seed samples are obtained by State inspectors and SRTB staff as part of routine State and Federal seed inspection programs. SRTB staff logs, sorts, and ships the samples to the test sites. Then, crop specialists organize, plant, and cultivate the test samples. Together, SRTB personnel and State seed control officials make observations to determine whether the seed lot is properly labeled for variety. Interested seed industry representatives and others are often invited to observe the plots first-hand. If a seed lot is judged to be an apparent violation of the FSA, the data and sample information is referred to SRTB seed marketing specialists for investigation of company labeling and shipping records concerning the lot. If the company records support the test findings, the company involved may be cited with a violation of the FSA and/or State seed laws. Regulatory actions range from warnings to monetary penalties.

This year, about 1,000 total TTV samples were planted: cowpea and summer squash at Southern University and A&M College, Baton Rouge, LA; carrot and tall fescue at North Carolina State University, Jackson Springs, NC, and pumpkin and winter squash at Salisbury, NC; various millets at Texas Department of Agriculture, Giddings, TX; and collard, onion, radish, and turnip at the SRTB greenhouse, Gastonia, NC.

The SRTB would like to thank the seed control programs in Alabama, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Kansas, Kentucky, Maryland, Minnesota, Mississippi, Missouri, North Carolina, Nebraska, New York, Ohio, Pennsylvania, South Carolina, South Dakota, Texas, Utah, Vermont, Virginia, West Virginia, and Wisconsin for participation in the TTV program. Once the TTV results have been compiled, participating States will be notified of any mislabeling.

This fall, SRTB will grow alfalfa, red clover, and white clover at the Sandhills Research Station, Jackson Springs, NC. If any State seed control program wishes to submit samples to the TTV program, please contact Agronomist Mike Lovelace at (704) 810-7261; [michael.lovelace@usda.gov](mailto:michael.lovelace@usda.gov).

## **REASONS FOR CHANGING THE NAME OF A VARIETY**

Section 201.34(d)(2) of the Federal Seed Act (FSA) Regulations says that the variety name is the name assigned by the originator of the variety or the name used when the variety first enters U.S. commerce for sale to the public. This means that once a variety has been named, that

name must be used for the variety for its lifetime. However, discussed below, are several circumstances that will require a variety name to be changed.

- (1) The name chosen for a new variety is the same as the name of an existing trademark: Occasionally, a seed company will inadvertently choose a name for a new variety that is the same as an established trademark. In response to legal action taken by the owner of the trademark, the owner of the variety may be required to choose a new name for their variety. While the FSA Regulations do not address this specific issue, a section of the FSA Regulations does address an issue involving trademarks and variety names. The U.S. Patent and Trademark Office is not supposed to approve trademarks that are existing variety names. Section 201.34(d)(4) addresses this situation, should it occur, by stating, “The status under the Federal Seed Act of a variety name is not modified by the registration of such name as a trademark.” This means that if a variety is named prior to the existing name receiving trademark status, the owner of the variety is entitled to keep selling the variety with the original name.
- (2) The name chosen for a new variety is the same as the name of an existing variety of the same kind of seed: Section 201.34(d)(3) of the FSA Regulations states, in part, “The same variety name shall not be assigned to more than one variety of the same kind of seed.” In this case, the name is valid for the existing variety because the name was assigned to this variety first. Therefore, a different name has to be chosen for the new variety.
- (3) The name of an imported variety is the same as the name of an existing variety of the same kind that has been previously sold in the United States: A new name will have to be chosen for the imported variety prior to sale in the United States because the FSA prohibits two varieties of the same kind from having the same name.
- (4) The name of a variety imported for sale in the United States is in a foreign language that does not use the Roman alphabet: Section 201.34(d)(2) says that if the variety name is in a language not using the Roman alphabet, the variety shall be given a name in a language using the Roman alphabet. For example, if a variety was imported from China and the variety name was in Chinese characters, the variety would have to be assigned a name in English prior to sale in the United States.
- (5) A variety name is considered misleading: For example, the name ‘Giant,’ given to a cherry tomato variety, would be considered misleading because the name would infer that the variety would produce large tomato fruit. Section 201.34(d)(3) of the FSA Regulations states, in part, “The variety name shall not be misleading.” Therefore, the variety would have to be assigned a more suitable name that would not be misleading.

The Seed Regulatory and Testing Branch (SRTB) maintains a database of existing variety names, by kind of seed, on its Web site that can be viewed by the public. The database can be searched to determine if a specific name has been used as a variety name. A publication titled “Facts About: Naming and Labeling Varieties of Seed” is posted on the SRTB Web site and can provide guidance when choosing a name for a new variety. The SRTB staff is always available to provide assistance with variety name issues.

For information regarding this article contact Branch Chief Richard Payne at (704) 810-8884; [richard.payne2@usda.gov](mailto:richard.payne2@usda.gov).

## TOLERANCES AND THE FEDERAL SEED ACT REGULATIONS - PART II

A previous IOI article (April 2008) introduced the concept of tolerances and discussed the specific application of tolerances to germination labeling and testing. This article addresses the application of tolerances to purity labeling and testing.

Tolerances are important in the regulatory process: they establish the limits within which a labeled value must fall in order to be considered accurate. The choice between taking regulatory action or not may depend on the accurate application of tolerances. The Seed Regulatory and Testing Branch (SRTB) is guided by Sections 201.59 through 201.66 of the Federal Seed Act (FSA) Regulations in regard to the use of tolerances.

The regulations state, "Tolerances shall be recognized between the percentages or rates of occurrence found by analysis, test, or examination in the administration of the Act and percentages or rates of occurrence required or stated as required by the Act." In other words, a level of variation, expressed as a tolerance, is allowed between a labeled value and the result of a regulatory test.

Specifically, in regard to purity, "Tolerances...shall be determined from the mean of (a) the results being compared, or (b) the result found by test and the figures shown on a label, or (c) the result found by test and a standard." An example of the first might be a situation of comparing two tests, such as when seed is shipped in bulk with a seed test and a subsequent regulatory test is performed. The second example might be comparing labeled information with the results of a regulatory test, and the third, comparing the results of a regulatory test against an established standard.

Section 201.60 deals with tolerances regarding percentages of purity components. Table 3 of Section 201.60 provides tolerances for components of a purity analysis for single kinds of seed and for some mixtures involving a range of particle weight ratios (1:1 to 1.49:1). To use this table, an average of the regulatory test result and either the labeled value or standard must be taken and the tolerance determined in the appropriate column of the table. If more than one regulatory test has been made, all the test results that are in tolerance are averaged. The table has two columns of tolerance figures, one for non-chaffy seeds and the other for chaffy seeds. Kinds of chaffy seeds are listed in 201.60(a)(1). Wider tolerances are permitted for samples of seed composed of 33 percent or more chaffy seeds. However, the wider tolerance does not apply to seed devoid of hulls such as hulled Bermudagrass.

For example, suppose a tall fescue is labeled as 90.00 percent pure seed and a subsequent regulatory test finds 60.00 percent pure seed. The average of the two is 75.00 percent. The tolerance from Table 3 is found under the average analysis column within the range of 74.00-75.99 percent (See reproduction of a portion of Table 3 below.). The tolerance would be found under the column heading for chaffy seed as fescues are listed as such. The tolerance would be 3.04 percent. In other words, for the labeled value to be considered accurate, the difference between the labeled value and the regulatory test should not exceed the figure of 3.04 percent. In this instance, the difference greatly exceeds the tolerance (difference of 30 percent).

To restate the above example, consider if the labeled value was 90.00 percent pure seed and the regulatory test found 89.00 percent pure seed. The average of the two would be 89.50 percent. The tolerance would be 2.19 as found in the range 88.00-89.99. In this case, the difference would be only 1 percent or less than the tolerance of 2.19. The labeled figure of 90.00 percent would be considered accurate.

### Section 201.60, Table 3 (in part)

Average Analysis (A)	Average Analysis (B)	Non-chaffy Seeds (C)	Chaffy Seeds (D)
90.00-90.99	9.00 - 9.99	1.75	2.06
88.00-89.99	10.00-11.99	1.87	2.19
86.00-87.99	12.00-13.99	2.01	2.36
84.00-85.99	14.00-15.99	2.14	2.51
82.00-83.99	16.00-17.99	2.24	2.64
80.00-81.99	18.00-19.99	2.35	2.76
78.00-79.99	20.00-21.99	2.44	2.86
76.00-77.99	22.00-23.99	2.52	2.96
74.00-75.99	24.00-25.99	2.59	3.04
72.00-73.99	26.00-27.99	2.65	3.12

The same procedure is used to determine the tolerance of all purity figure components, i.e. pure seed, weed seed, other crop seed, and inert matter.

For seed with a particle-weight ratio of 1.5:1 to 20:1 and beyond, tolerances are calculated by a formula. The formula and definitions of symbols used in the formula can be found in 201.60(c) of the FSA Regulations.

#### Summary

As with germination tolerances, the correct use of tolerances for purity percentages permits regulatory bodies to get a better idea of the accuracy of labeled values. In turn, this enables buyers of seed to be assured of the seed's purity, and regulatory bodies can determine actions regarding seed labeling violations for purity with a higher degree of confidence.

For information regarding this article, contact Seed Marketing Specialist Gene Wilson at (704) 810-8888; [gene.wilson@usda.gov](mailto:gene.wilson@usda.gov).

### **BIOASSAY FOR FUNGICIDE AND GROWTH PERFORMANCE TESTS FOR PRESENCE OF NITROGEN-FIXING BACTERIA**

Seed Regulatory and Testing Branch Plant Pathologist Sandra Walker has received requests for information about a bioassay method to determine if seeds have been treated with a fungicide and for information on how to test for the presence of nitrogen-fixing microorganisms on previously inoculated seeds. Most seed testing laboratories are probably already aware of the methods to use, but perhaps a reminder that these techniques are available would be helpful. The Association of Official Seed Analysts (AOSA) has published these test methods in handbooks, which must be purchased separately from the AOSA rules.

Occasionally seed samples for testing are labeled as pesticide-treated but do not appear to have any seed treatment on them. These seeds are not dyed and a "sniff" test does not reveal traces of a pesticide odor. This is usually not a problem and, for safety purposes, the seeds can be handled and tested as if they are fungicide-treated. If it is critical to testing procedures to know if pesticide is present, a bioassay can be performed. The procedure for the bioassay is in *Microbiological Assay of Fungicide-Treated Seeds* by Martin M. Kulik and Willard F. Crosier (Contribution No. 26 to the Handbook on Seed Testing, Association of Official Seed Analysts,

revised 1982 by J. F. Schoen and M.M. Kulik) and is available at minimal cost from the AOSA Web site ([www.aosaseed.com](http://www.aosaseed.com)).

*Growth Performance Tests for the Presence of Rhizobia on Preinoculated Seed* by J.F. Schoen and L.C. Shenberger (Contribution No. 30 to the Handbook on Seed Testing, Association of Official Seed Analysts, 1973, revised 1974) is also available from the AOSA Web site. This paper outlines a method for detecting nitrogen-fixing bacteria in young plants grown from inoculated seed, based on observation of increased plant growth and root nodulation correlating with nitrogen fixation as compared to plants grown from a negative control. It describes various techniques for planting seeds coated with a nitrogen-fixing microorganism and seeds of the negative control, for fertilizing the plants, and for evaluating plant development.

For information regarding this article, contact Plant Pathologist Sandra Walker at 704-810-7268; [sandra.walker@usda.gov](mailto:sandra.walker@usda.gov).

## **ENDOPHYTE TESTING**

The Seed Regulatory and Testing Branch has experienced an increase in requests for endophyte testing on tall fescue. Federal Seed Act (FSA) regulations and Association of Official Seed Analysts (AOSA) rules each have procedures for staining both seeds and seedlings for the presence of endophyte, *Neotyphodium coenophialum* (fig. 1). These staining procedures are relatively inexpensive but are time consuming and laborious. The AOSA rules also allow the use of immunoblot test kits, which are relatively expensive but much less time consuming. Immunoblot test kits are available not only to test seeds for the presence or absence of endophyte (fig. 2), but also to test seedlings or field tillers for the presence of living endophyte. Seed companies are now marketing tall fescue varieties containing “friendly” endophyte, which does not produce the high levels of ergot alkaloids associated with tall fescue toxicosis but does give the plants the good agronomic characteristics associated with the presence of the endophyte symbiont. Test kits are also available for testing plant tissue for levels of ergot alkaloids that should distinguish the “friendly” endophyte from *N. coenophialum*.

Photo by Sandra Walker, USDA, AMS, 2006

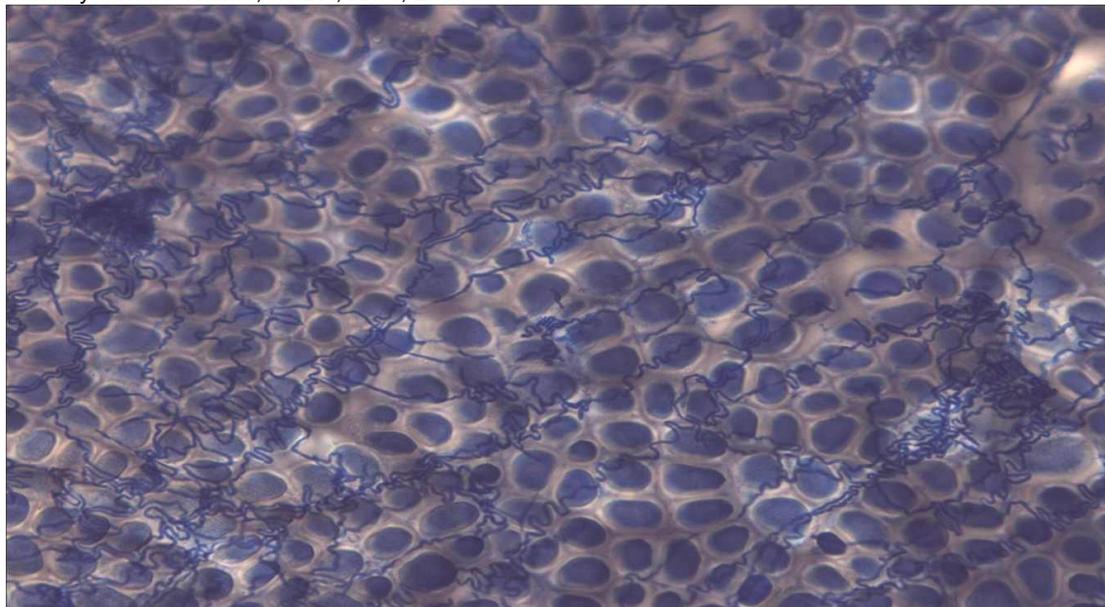


Figure 1.--Tall fescue seed digested, deglumed, crushed, and stained with lactic acid aniline blue showing blue hyphal strands of *Neotyphodium coenophialum* and blue color in aleurone cells (200X).

Photo by Sandra Walker, USDA, AMS, 2006

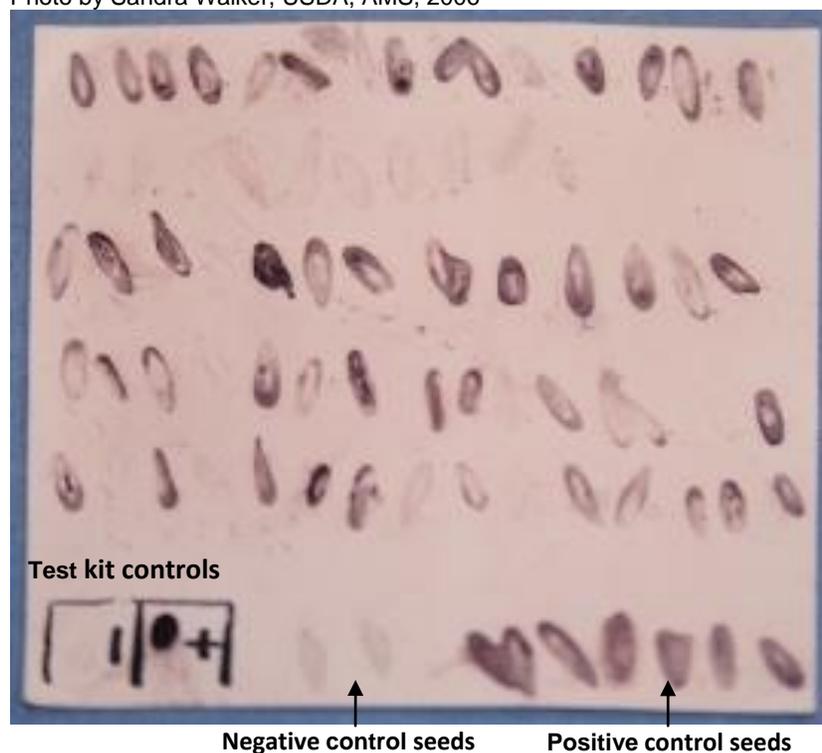


FIGURE 2.—Seed immunoblot membrane showing imprints of endophyte positive (dark pink) and negative (barely visible to not visible) seeds of tall fescue.

For information regarding this article, please contact Plant Pathologist Sandra Walker at 704-810-7268; [sandra.walker@usda.gov](mailto:sandra.walker@usda.gov).

## TIPS FOR USING THE MICROSCOPE FOR SEED IDENTIFICATION

The microscope is an indispensable tool for seed identification, and each analyst will develop a set of procedures that works best for him or her. Sometimes small changes can make big improvements in comfort and productivity. Try the following techniques and adopt the ones successful for you.

- Set the microscope to the lowest magnification before viewing seeds. Examine the visible characteristics at this power and then gradually increase the magnification to the highest level needed. This is important, as distinguishing traits are sometimes lost at high magnifications.
- When using a stereomicroscope, adjust the focus of both eyepieces to ensure the sharpest image.
- After viewing the overall characteristics (color, shape, size, shininess, etc.) at low magnification, gradually increase to the highest magnification to view the seed surface.
- Look at a seed from all angles.
- Rotate the fine adjustment up and down to help visualize surface details.
- Conditioning, weather, maturity, or the developmental position of the seed (such as on a rachis or in a pod) may alter its appearance. For example, seed conditioning may cause the outer layer of a seed coat to wear away, removing some of the textural elements. Sometimes the analyst must be aware of what is missing as well as what is present.
- Some analysts prefer forceps with a smooth, flat gripping surface and rounded tips to avoid damage to fragile seeds and to lessen the incidence of “jumping” seeds.
- Padded forceps handles may reduce discomfort in fingers and hands during long sessions at the microscope. Alternatively, try switching from a thumb and index finger grip to a thumb and middle finger grip.
- Keep the field of vision free of dirt and dust by using lens paper regularly.
- Adjust lighting for optimum clarity.
- Rest your eyes by periodically looking out a window or off into the distance.
- Adjust chair to the most comfortable position. It is crucial to have the eyepieces at a comfortable height that does not strain the neck muscles.
- To increase circulation and reduce muscle strain, stand up and walk around occasionally. Raise and lower shoulders a few times and gently roll your head to the right, down to the center, and around to the left; repeat in the opposite direction. Do not roll head to the back, as injury may occur.
- Have the microscope professionally cleaned and adjusted periodically. At the Seed Regulatory and Testing Branch, we have this done yearly.

## References:

USDA, "Being Comfortable at Work";

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University of South Carolina Environmental Health & Safety Web site:

<http://ehs.sc.edu/Ergonomics/Lab%20Ergonomics%20-%20Microscope%20Tips.htm>

<http://ehs.sc.edu/Ergonomics/Lab%20Ergonomics%20-%20Lab%20Tips.htm>

For information regarding this article, contact Botanist Sandy Dawson at (704) 810-7270;

[sandy.dawson@usda.gov](mailto:sandy.dawson@usda.gov).

## UNDERSTANDING BOTANICAL NOMENCLATURE

The word **nomenclature** refers to the assignment of names based on a formal agreed-upon set of rules. Accurate communication and data referencing between scientists and non-scientists around the world are primary goals of a nomenclatural system. Botanical nomenclature is particularly important to anyone involved in the seed industry. Although **common** or **vernacular names** are often used when referring to a plant, this practice may lead to problems. Because there are no rules governing common names, a single plant species often has more than one common name; and a common name often refers to more than one plant species. (Note: The word "species" always ends in "s." This is the singular and the plural form of the word.) Names vary widely between and even within different geographic areas. This leads to misunderstandings in communication and results in problems in seed testing and labeling. In contrast, a **scientific name** represents the same plant around the nation and around the world. Another advantage of using botanical nomenclature is that plant names are arranged in levels or **ranks**, creating a hierarchy that shows **phylogenetic**, or evolutionary, relationships.

### The ICBN

The **International Code of Botanical Nomenclature (ICBN or Code)** is the document that governs plant nomenclature. A different Code, the **International Code of Nomenclature for Cultivated Plants**, is the authority for cultivated plants. The ICBN has jurisdiction over the assignment of names to newly discovered plants and over the correction of previously named plants. Corrections are necessary when an assigned name is not in accordance with the ICBN or when research indicates the current position of a plant in the hierarchy is inaccurate. The Code is organized into a Preamble that describes its purpose and over-all organization; six Principles that form the foundation of the system; Articles (Rules), Notes and Recommendations that set forth the provisions; and finally, Examples and Footnotes that clarify specific points. Approximately every six years, the International Botanical Congress meets in a designated city around the world to debate and vote on proposed changes to the Code. The most recent Congress, held in Vienna, resulted in the current 2006 version of the ICBN, which is available online at [www.ibot.sav.sk/icbn/main.htm](http://www.ibot.sav.sk/icbn/main.htm).

### Scientific Names

The scientific name of a plant **species** consists of a **genus** name and a **specific epithet**. This two-word name or **binomial** forms the scientific name and is, by convention, Latin or Latinized. The scientific name is always either italicized or underlined. If underlined, the space between the genus and specific epithet is not underlined. When referring to a species by its scientific name, the complete binomial must be used. The specific epithet alone does not represent the name of a species. For example, the binomial *Trifolium repens* or *T. repens* is a scientific name

indicating a species of clover. The word *repens* does not indicate the species when used alone. After being spelled out completely, the genus name may be abbreviated in subsequent use. When a genus is known but the species is not known, the abbreviation **sp.** may be used to indicate “species” when referring to one seed (i.e. *Trifolium* sp.). When referring to more than one seed, the abbreviation **spp.** (plural) may be used since there may be more than one species present (i.e. *Trifolium* spp.). The abbreviations following a scientific name are not italicized or underlined.

### Correct Species Names

*Trifolium repens*  
Trifolium repens  
*T. repens*  
T. repens  
*Trifolium* sp. (a single species)  
*Trifolium* spp. (more than one species)

### Incorrect Species Names

*Trifolium Repens*  
*Trifolium repens*  
*repens* or repens  
Repens, *Repens* or Repens  
*Trifolium* sp.  
Trifolium spp.

### Authorship and Legitimate Names

Sometimes a letter, abbreviation and/or additional words will follow a scientific name. *Trifolium repens* L., for example, includes an L. to indicate that Carl Linnaeus was the **author** or the person who first **validly published** the scientific name (i.e. published the name according to the ICBN). The term “**legitimate** name” refers to a validly published name. The trinomial *Brassica oleracea* L. var. *alboglabra* (L. H. Bailey) is a validly published or legitimate scientific name indicating that Linnaeus has authorship of the species *Brassica oleracea* and Liberty Hyde Bailey has authorship of the variety *Brassica oleracea* L. var. *alboglabra*. The letters **ex** between two author citations indicates the first person cited originally assigned the name and the second person cited validly published the name. The author may choose to acknowledge a person responsible for naming a plant in this way but is not required to do so.

If a scientific name is considered **illegitimate** under the Code, for example because a scientist discovers a previous valid publication, the name may be retained as a **conserved** or alternate name if it is well known. In this case, both names are acceptable. A name that has been rejected by one or more authors, either because it is illegitimate or because of a disagreement based on **taxonomy** (a field of science that includes identification, description, classification, and nomenclature.), is called a **synonym**. A synonym may be enclosed in brackets.

Plant names can become quite complex and may include **subspecies** (abbreviated as **subsp.**) and **variety** names (abbreviated as **var.**). The first letter of a cultivar or cultivated variety name is capitalized and the name is enclosed in single quotation marks. In addition, names often change as a result of changes in classification. When this occurs, a citation of the original author is sometimes followed by a citation of the author making the change. The citation of the original author is enclosed in parentheses. An example follows:

Current name:	<i>Medicago sativa</i> L. subsp. <i>falcata</i> (L.) Arcang. var. <i>viscosa</i> (Rchb.) Posp.
genus	<i>Medicago</i>
specific epithet	<i>sativa</i>
author of original binomial:	Carl Linnaeus
person invalidly naming the subspecies	Carl Linnaeus
author of current subspecies	Giovanni Arcange
person invalidly naming the variety	(Heinrich Gottlieb) Ludwig Reichenbach
author of current variety	Eduard Pospichal

The original author of the species was Carl Linnaeus, but Giovanni Arcangeli (1840-1921) later changed the scientific name to *Medicago sativa* L. subsp. *falcata* (L.) Arcang. Heinrich Gottlieb Ludwig Reichenbach (1793-1879) was the original author of the variety, but Eduard Pospichal (1835-1905) later changed the variety name to *Medicago sativa* L. subsp. *falcata* (L.) Arcang. var. *viscosa* (Rchb.) Posp.

### Hierarchy

The species is the lowest principal **rank** (taxonomic category) in a hierarchy organized so that each rank includes all lower ranks. The ICBN either specifies or recommends a suffix (ending), depending on the rank of the name. A conserved name may have a suffix other than that specified or recommended by the ICBN. The principal ranks are kingdom, division or phylum, class, order, family, genus, and species. Each principal rank may be subdivided if necessary, as in the example below:

Rank	Suffix	Example
Kingdom	ae	Plantae (Plants)
Subkingdom	--	Tracheobiota (Vascular plants)
Superdivision	phyta	Spermophyta (Seed plants)
Division or Phylum	phyta	Magnoliophyta (Flowering plants)
Class	opsida	Magnoliopsida (Dicotyledons)
Subclass	--	Rosidae
Order	ales	Fabales
Family	aceae	Fabaceae* (pea family)
Subfamily	oideae	Fabioideae
Tribe	eae	Trifolieae
Genus	(various)	<i>Trifolium</i> L.
Subgenus	(various)	<i>Trifolium</i>
Section	(various)	<i>Trifoliastrum</i>
Species	(various)	<i>Trifolium repens</i> L.

\*A conserved family name for Fabaceae is Leguminosae.

### Summary

The rules of the ICBN strive to insure there is only one correct name for a given plant, based on the first validly published name. A complete knowledge of the complex subject of botanical nomenclature is not necessary for seed regulatory, seed testing, and seed production personnel. However, a basic understanding does promote better communication, which may save time and result in fewer misunderstandings and errors.

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USDA-NRCS PLANTS Database. [www.plants.usda.gov](http://www.plants.usda.gov).

For information regarding this article, contact Botanist Sandy Dawson; 704-810-7270 or [sandy.dawson@usda.gov](mailto:sandy.dawson@usda.gov). Sandy is a new member of the International Seed Testing Association Nomenclature Committee.

## **USDA NATURAL RESOURCES CONSERVATION SERVICE PLANTS DATABASE: A USEFUL TOOL IN SEED LABORATORIES**

The United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), PLANTS Database Web site contains a wealth of information on plants and seeds. This is a helpful resource for everything from seed identification to writing articles or putting together a presentation for educational purposes. The Home page contains a user-friendly index and information describing how to search the database. When the scientific or common name is entered into the search box, a "PLANTS Profile" appears. Located here is an index of topics such as "Image Gallery," "Distribution Update" (including maps), "Classification," and "Invasive and Noxious Weeds." The Home page also features a "Plant of the Week" and a "Spotlight" section that notes new additions and updated information in the PLANTS Database.

The "Image Gallery" section contains over 40,000 plant images and line drawings. The copyright status is included with each image, along with usage requirements and format for citations. Steve Hurst, a former botanist with USDA and currently a seed analyst with the Maryland Department of Agriculture, has contributed many digital images of seeds to this database. These seed images are a useful aid to narrow down the identity of an unknown seed in a purity test sample. Maps in the "Distribution Update" section show whether a species has been reported in a particular geographic area. The database is continually expanding, and directions for submitting images to the Gallery are located in this section. In addition to searching by common or scientific name, there are numerous other search criteria to explore in the NRCS PLANTS Database, such as growth habit, native status, or State distribution. To see any of the more than 1,600 seed photographs taken by Steve Hurst, search the Image Gallery by artist Steve Hurst.

Just click on the link and give it a try. Visit the PLANTS Database at <http://plants.usda.gov>.

For information regarding this article contact Botanist Charlene Burton at (704) 810-8880; [charlene.burton@usda.gov](mailto:charlene.burton@usda.gov).

# **SEED SEGMENTS** By Jeri Irwin

## **A JOURNEY TO PENNSYLVANIA**

Previous Seed Segments show that seed issues in Hawaii and Kentucky are as far apart as the 4,443 miles between them; still, both inspect, test, and regulate seeds. It is time for the reporter to leave Kentucky and travel about 540 miles northeast to Harrisburg, PA. Pennsylvania has about 9,000,000 acres of agricultural farmland. Dairy products, mushrooms, and apples are a few of the leading farm products. In fact, Pennsylvania ranks first in the production of commercially grown mushrooms, with the highest market value for a single crop grown in Pennsylvania. Another interesting fact is the sometimes-labeled invasive species "crownvetch" is "Pennsylvania's State Beautification Plant." To learn about their State seed program, the

reporter contacted Joe Garvey and asked him several questions. Joe Garvey is the Seed Section Supervisor in the Division of Agronomic and Regional Services, Bureau of Plant Industry, Department of Agriculture located in Harrisburg, PA.

#### What activities are included in the Seed Section?

The Pennsylvania Seed Section has four primary functions: regulatory, seed testing, seed inspection, and seed certification.

#### What are the main functions of the Seed Section?

The main function of the Seed Section is the support and administration of the Pennsylvania Seed Act. The goal for the Seed Regulatory Program is to provide protection for seed consumers through inspection, sampling, and testing. The goal for the Seed Laboratory Program is to provide timely and accurate seed analysis for the Seed Regulatory Program, seed producers, and seed consumers. The goal for the Seed Certification Program is to provide timely and accurate seed inspection and testing for all certified seed producers. All three programs rely on each program's strengths to provide quality service to all of our seed customers.

The Seed Regulatory Program typically samples between 2,000-3,000 samples annually. The Pennsylvania Seed Act covers all seed types--agriculture, vegetable, flower, seeds for sprouting, tree, and shrub seeds--so the kinds of seed inspected are quite diverse. The Seed Laboratory Program typically tests between 4,000 and 5,000 service samples. This year the laboratory set a new record with 5,358 samples tested. We also set a record for total number of samples processed with 7,700 for all sample categories. The laboratory also analyzes seed for the Seed Certification Program and other State agencies, with approximately 275 to 300 samples being tested. Four of Pennsylvania's seed analysts are certified in both purity and germination. One of our newly hired analysts is working towards certification. The laboratory also participates regularly in national seed referees to maintain training and proficiency.

The Seed Regulatory Program has several main duties or functions. We issued 350 seed dealers licenses and the inspection staff inspected and sampled approximately 2,200 regulatory samples last fiscal year. There were 315 stop sales issued. Most stop sales placed by the inspection staff are for expired test dates. Stop sales are also issued when laboratory analysis determines that the labeled analysis is out of tolerance. The Seed Regulatory Program also submits samples to the Seed Regulatory and Testing Branch (SRTB) to assist in the administration of the Federal Seed Act. We also mail an annual report showing the activities of our Seed Regulatory, Seed Laboratory, and Seed Certification Programs.

The Seed Certification Program inspected 3,602 acres. Crops entered in the certification program include small grains (spring oats, rye, and wheat), potatoes, crownvetch, sod, and sod mixes. More and more of the acreage entered in the certification program is to meet standards for "Quality Assurance" programs for proprietary varieties.

What unique challenges does the Seed Section face?

One of our unique challenges has been the administering of “Undesirable Grass Seeds,” more affectionately known as “UGS” in our seed regulations. Pennsylvania is one of seven States that recognize certain agricultural seed kinds found in lawn and turf grasses, normally categorized as crop seeds, as restricted noxious-weed seeds or “UGS.” These regulations arose from complaints from the sod industry about the presence of “clump” growth habit grass seeds contaminating their cool season lawn and turf grass seed. Over the years, the seed industry has become accustomed to these requirements and there have been fewer problems in labeling these UGS kinds.

Do the inspectors sample other commodities as well as seed?

Pennsylvania’s inspectors are multi-task inspectors. The State is divided into seven regions. Each region has Agriculture Products Inspectors (API) and Plant Inspectors (PI). The APIs sample all basic agricultural products, seed, fertilizer, lime, pesticides, and seed certification acreage. The PIs inspect nursery products and seed.

In emergency situations, both APIs and PIs may be inspecting in the same areas such as the Emerald Ash Borer survey.

How do you communicate with the inspectors who work remotely?

All of our inspectors are equipped with laptop computers and cell phones so that we can maintain direct contact with the inspectors. Our new computer software program allows the inspectors to directly view the status of their samples and instantly retrieve information to determine if a company is currently licensed. Our inspectors are also equipped with GPS units, which have been invaluable for locating certification fields.

How does the Seed Section benefit from the cooperative agreement between the Seed Section and the Agricultural Marketing Service?

Nearly all seed marketed in Pennsylvania comes through interstate shipments. When violations are found with these shipments, samples of these lots are submitted to SRTB to determine if further action needs to be taken. These actions have significantly improved the quality of seed being shipped into Pennsylvania. Also, samples submitted for tolerance violations serve as a comparison between our laboratory results and SRTB’s results.

One area that has been highly beneficial to the Seed Section is the seed schools conducted by the SRTB staff. Ongoing education has improved the overall capabilities of our seed analysts. This then improves the quality and accuracy for our customers.

You seem to care a great deal about seed issues. You are a past president of the Association of American Seed Control Officials (AASCO) and the current president of the Association of Seed Control Officials of the Northeast States (ASCONES), and you currently serve on several committees. What advice do you have for people entering the field of seed enforcement or seed inspection?

To me, one of the greatest benefits to my career has been the invaluable associations I have had with my fellow seed control officials and seed analysts. Their knowledge and willingness to give assistance has been the biggest help in my career. In some cases, it

goes beyond work relationships. If I could give any advice, it would be to become active and stay active in our seed organizations, whatever they are. I have learned more from the many colleagues I have been associated with over the years than from any book.

The SRTB thanks Joe Garvey for submitting information for the IOI's Seed Segments column. The Seed Segments reporter may contact you to share information about your seed program.

For information regarding this article, contact Seed Marketing Specialist Jeri Irwin at (704) 810-8878; [jeri.irwin@usda.gov](mailto:jeri.irwin@usda.gov).

## **RYEGRASS FLUORESCENCE LIST**

Open the following pdf file to view the current ryegrass fluorescence list by the National Grass Variety Review Board. Access the Web site for additional reports and information (<http://www.aosca.org/VarietyReviewBoards/Grass.html>).



NGVRB.VFL.list0808.  
pdf

## **PLANT VARIETY PROTECTION CERTIFICATE STATUS**

Check the status of certification and search for expired certificates by accessing the Plant Variety Protection Office's Web site and entering their Public Access Databases: <http://www.ams.usda.gov/science/pvpo/PVPindex.htm>.

## CALENDAR OF EVENTS

American Seed Trade Association (ASTA) Farm Seed Meeting Kansas City, MO	November 2-3, 2008
Texas Seed Trade Association Annual Meeting Galveston, TX	November 16-18, 2008
American Seed Trade Association (ASTA) Corn, Sorghum, and Soybean Conference Chicago, IL	December 9-12, 2008
Independent Professional Seed Association (IPSA) Annual Meeting Indianapolis, IN	January 20-22, 2009
Association of Official Seed Analysts (AOSA) and Society of Commercial Seed Technologists (SCST) Annual Meeting Fort Collins, CO	May 30-June 5, 2009
Organization for Economic Cooperation and Development (OECD) Seed Schemes Annual Meeting Paris, France	June 9-13, 2009
International Seed Testing Association (ISTA) Annual Meeting Zurich, Switzerland	June 15-18, 2009
American Seed Trade Association (ASTA) Annual Meeting Scottsdale, AZ	June 20-24, 2009
Association of Official Seed Certifying Agencies (AOSCA) Annual Meeting Portland, OR	June 28-July 1, 2009
Association of American Seed Control Officials (AASCO) Annual Meeting Phoenix, AZ	To be announced
<b>Federal Seed Schools Gastonia, NC</b>	<b>To be announced</b>

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

For further information regarding the Calendar of Events, contact Branch Secretary Winston Robinson at (704) 810-8871; [winston.robinson@usda.gov](mailto:winston.robinson@usda.gov).

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*“Think small. Planting tiny seeds in the small space given you  
can change the whole world  
or, at the very least, your view of it.”*

*Linus Mundy*

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

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