



Seed Regulatory and Testing Division

ITEMS OF INTEREST IN SEED

2016



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Seed Regulatory and Testing Division
801 Summit Crossing Place, Suite C
Gastonia, North Carolina 28054-2193

Fax -Regulatory Section (704) 852-4109
Fax- Testing Section (704) 852-4189
<http://www.ams.usda.gov/rules-regulations/fsa>

EDITOR'S NOTES

*“Whatever our dreams, ideas, or projects, we plant a seed,
nurture it and then reap the fruits of our labor”*
- Oprah Winfrey

Welcome to another edition of the “Items of Interest in Seed” (IOI) publication. The above quotation reminds us that our work stems from small ideas, as seen in the seed! The Seed Regulatory and Testing Division is here to assist you in meeting your goals. One way we can help is discussed in Seed Marketing Specialist Chi Tran’s article about extending assistance to State laboratories on page 11. SRTD also offers yearly training to help sharpen your seed identification skills and answer other seed testing questions. Our four botanists are all Certified Seed Analyst and conduct the classes. To learn more about this training please see the Seed School article on page 22.

This issues highlights several important meetings the SRTD staff attended this year. Meeting reviews are found for the Association of Official Seed Analyst and Society of Commercial Seed Technologist annual meeting, the International Seed Testing Association annual meeting, the Association of American Seed Control annual meeting, and the Organization for Economic Cooperation and Development Seed Schemes meeting.

Also included in this year’s publication are two scientific articles written by Botanist Anitra Walker, “Roots Encountered During Seedling Evaluation” on page 17 and Plant Pathologist Dr. Yujia Wu, “Seed Treatment Effects on PCR Testing” on page 19. We also hope you enjoy the new column with descriptions of seeds on the Noxious-weed Seeds under the Federal Seed Act.

Please let me know if you have suggestions for topics to be covered in the future by sending an e-mail to elizabeth.tatum@ams.usda.gov.

On behalf of the SRTD staff, I hope you enjoy these articles and continue to find them informative.

Elizabeth Tatum
IOI Editor

SEED REGULATORY AND TESTING DIVISION WELCOMES NEW EMPLOYEES

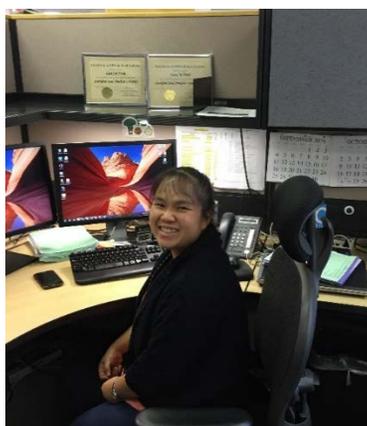
This year SRTD hired two new employees, Seed Marketing Specialist Chi Trinh and Biological Laboratory Technician Rodney McNeace. Chi attended Lebanon Valley College with a major in Biochemistry and a minor in Forensic Science. She then served in the Plum Pox Program, and was ELISA Laboratory Supervisor at Pennsylvania Department of Agriculture before transferring to the seed laboratory in 2010. Chi became a Certified Seed Analyst in 2012 and then worked as Seed Laboratory Supervisor for Pennsylvania Department of Agriculture since 2013. She began working for SRTD on January 25, 2016.

Rodney McNeace has an Associate's degree in Science from the University of South Carolina and a Bachelor's degree in Forest Resource Management from Clemson University. He is a retired Staff Sergeant with the South Carolina Army National Guard and then worked as a Safety Manager with the South Carolina Department of Transportation. Rodney joined SRTD on January 10, 2016 as a Biological Laboratory Technician and also assists as Office Automation Specialist.

Please join SRTD in congratulating the new Seed Marketing Specialist and Biological Laboratory Technician!



Biological Laboratory Technician
Rodney McNeace



Seed Marketing Specialist
Chi Trinh

FEDERAL SEED ACT CASES SETTLED

The Federal Seed Act (FSA) provides authority for the regulation of the interstate shipments of agricultural and vegetable seeds. The FSA requires that seed shipped in interstate commerce are 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. Between September 1, 2015, and August 31, 2016, a total of 35 seed companies paid \$55,875 to settle alleged violations of the FSA.

For specific information regarding these violations, please visit <https://www.ams.usda.gov/rules-regulations/fsa> then [Filing a Complaint](#) and [View a list of settled FSA cases](#) . AMS administers the FSA by leveraging its resources with State departments of agriculture. These investigations were a result of joint efforts with seed regulatory officials in Alabama, Arkansas, Florida, Georgia, Indiana, Kansas, Kentucky, Maryland, Missouri, New Mexico, Texas, and West Virginia. By working collaboratively with State partners, SRTD helps promote uniformity among State seed laws and fair competition within the seed trade through the enforcement of the FSA.

FALL TRUENESS-TO-VARIETY OVERVIEW

Each year the Seed Regulatory and Testing Division (SRTD) 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 SRTD. SRTD relies on State seed control programs to submit the samples for inclusion in the TTV tests.

The SRTD conducted tests on cucumbers and melons at Piedmont Research Station, Salisbury, NC. We are currently evaluating soybeans at Clemson University, in Clemson SC. This summer, the SRTD also planted ryegrass samples at the Sandhills Research Station in Jackson Springs, NC to be evaluated in the upcoming spring 2017.

SRTD would like to thank all the States for participating in the TTV program. Once results and information have been compiled, participating States will be notified of any mislabeling.

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

SRTD DONATES TO THE SALVATION ARMY FOR USDA'S FEDS FEED FAMILIES CAMPAIGN

Varieties of peppers and lettuce were grown in the SRTD green house for the People's Garden. Approximately 40 pounds of peppers and 15 pounds of lettuce were donated to the Salvation Army. Peppers and lettuce were donated as part of the USDA's Feds Feed Families Campaign, which strives to help our neighbors in need. In the coming weeks, the SRTD will also donate tomatoes, radish, and peppers which are now growing in the greenhouse.



Vegetables growing in STRD's greenhouse, taken by Akhtar Kazmi

For more information regarding this article, please contact Seed Marketing Specialist Akhtar Kazmi, (704)0810-8878, akhtar.kazmi@ams.usda.gov

SEED REGULATORY AND TESTING DIVISION PARTICIPATES IN AgDISCOVERY 2016

Seed Regulatory and Testing Division (SRTD) Plant Pathologist Sandra Walker taught a session on seed testing at the 2016 AgDiscovery camp held on the campus of North Carolina State University (NCSU). She was present at the opening session to answer questions from students and their families about the regulatory mission of SRTD and fee for service testing for companies who export seed.

Students looked for nematodes in an alfalfa seed sample that was extracted overnight using a Baermann funnel and they were excited to see wriggling round worms. Students set up germination tests with different kinds of vegetable seeds in towels and evaluated the seedlings development after the appropriate time.

AgDiscovery camps sponsored by the USDA are held for two weeks each summer at several universities across the United States and are designed to introduce high school students to careers in agriculture. The application process is competitive and open to high school students from across the USA. An opening session and luncheon introduced the students to the USDA and its various missions. Representatives from Forest Service, Veterinary Services, APHIS PPQ, the Plant Pathology Department of NCSU, Seed Regulatory and Testing Division, and the Science House were present to greet students and answer questions.

For more information on this topic please contact Plant Pathologist Sandra Walker at Sandra.walker@ams.usda.gov

2016 ASSOCIATION OF OFFICIAL SEED ANALYSTS – SOCIETY OF COMMERCIAL SEED TECHNOLOGISTS ANNUAL MEETING

The 2016 Joint Annual Meeting of the Association of Official Seed Analysts (AOSA) and the Society of Certified Seed Technologists (SCST) was held June 3 – 9 in Portland, Oregon. Seed Regulatory and Testing Division (SRTD) Supervisory Botanist Todd Erickson gave a presentation and represented the USDA's Agricultural Marketing Service and SRTD at the meeting.

The purpose of the annual meetings is to update and vote on proposed changes for the AOSA rules. These rules are used by testing laboratories and State departments of agriculture around the country to help keep seed testing methods uniform in the United States. The meetings also provide an opportunity for members, which include regulatory agencies, universities, certification entities, and private seed companies, to collaborate and discuss current issues important to the seed industry.

Mr. Erickson gave a presentation at the Regulatory meeting which included an update on SRTD's activities over the past year. The presentation also stressed the importance of the cooperative agreement between SRTD and the State seed agencies, and encouraged the States to continue working with SRTD in processing interstate shipping violations.

Mr. Erickson also serves as a member of the AOSA rules committee. The rules committee receives submissions for rule change proposals to ensure that they contain scientifically validated data before submitting them to the AOSA/SCST membership for review and vote. This year there were 17 proposals for changes to the AOSA Rules for testing seeds. All of the

submitted proposals were accepted by the membership to be added to the AOSA rules. Three of these rule changes conflict with the Federal Seed Act (FSA). Proposal 1 removed the need to apply the Multiple Unit Procedure to fine fescues. This conflicts with FSA Regulations section 201.51a, Special Procedures for purity analysis. Proposal 14 classifies all yellow lettuce seedlings as abnormal. This conflicts with FSA Regulations section 201.56-2, which describes the germination characteristics for the Asteraceae family. Proposal 17 changed the formula for calculating percentages of annual and perennial ryegrass following a fluorescence test. This conflicts with FSA Regulations section 201.58a, Indistinguishable seeds.

For more information on this year's AOSA/SCST joint annual meeting, please visit www.aosaseed.com or www.analyzeseed.com. The 2017 AOSA/SCST annual meeting will also be a joint meeting with the International Seed Testing Association in Denver, Colorado.

For more information regarding this article, contact Supervisory Botanist Todd Erickson at (704) 810-8877 or todd.erickson@ams.usda.gov.

31st INTERNATIONAL SEED TESTING ASSOCIATION CONGRESS

Seed Regulatory and Testing Division (SRTD) Director Ernest Allen and Forest Service's National Seed Laboratory Director Robert Karrfalt, participated in the 31st International Seed Testing Association (ISTA) Congress and Ordinary General Meeting, June 15-21, 2016, in Tallinn, Estonia. In addition to Mr. Allen and Dr. Karrfalt, several other United States ISTA members attended the meeting including Susan Alvarez (Ransom Seed), Jeremy Bergstrom (DuPont Pioneer), Daniel Curry (Oregon State Univ.), Robert Geneve (Univ. of Kentucky), David Johnston (Monsanto), Gary Munkvold (Iowa State Univ.), Beth Rubin-Wilson (Dow AgroSciences), Raymond Shillito (Bayer), Gilbert Waibel (Indiana Crop Improvement Assn.), and Lingyu Zhang (DuPont Pioneer).

The Congress began with a three day symposium covering a variety of topics involving recent advances in seed technology. Presentations included topics on seed health, germination and dormancy, environmental effects on seed quality, and new approaches in determining seed quality using cellular and molecular methods. Dr. Karrfalt spoke on the practical aspects of testing seed moisture using equilibrium relative humidity.

ISTA's Technical Committee chairs reported on committee activities since the last annual meeting which included updates on current and future projects, finalized projects, and rule proposals submitted by various committees. Ernest Allen presented the Nomenclature Committee report on behalf of chairman, John Wiersema (USDA Agricultural Research Service), who could not attend the meeting. Committee reports can be viewed on the [ISTA web site](#).

At the Ordinary Meeting on June 21, Mr. Allen served as the voting delegate on behalf of the Agricultural Marketing Service, which is the U.S. Designated Authority to ISTA. Over 250 seed professionals attended the 2016 ISTA Congress. Of 77 ISTA member countries and distinct economies, 53 were represented at the meeting. Forty-four designated members, entitled to vote at the Ordinary Meeting, were present. This exceeded the required quorum of 26. ISTA President, Joël Léchappé (France), gave the welcome address and chaired the Ordinary Meeting.

Discussion points and decisions of the Ordinary Meeting:

- The European Union has ruled that ISTA cannot use the word “accreditation” for its Auditing program in EU member countries. As a result, the Executive Committee took a survey of the Designated Authorities (DA) of member countries to determine if the word “authorization” would be acceptable. While a majority of the DA’s responses were accepting of the new wording, several DA’s expressed reservations because “authorization” is generally reserved for government entities. The Executive Committee is still reviewing its options.
- ISTA annual membership fees for 2017 will remain unchanged. No increase was proposed by the Executive Committee or the Secretariat of the organization.
- There were a total of 39 proposals submitted to the ISTA Rules Committee. Two were withdrawn prior to final vote. 37 proposals were passed. Approved rule changes which will take effect January 1, 2017, include the following:
 - Change of wording in paragraph 2.5.1.2 of the ISTA rules and in the headings of tables 2.1 and 2.2 for clarity. 2.5.1.2 “Minimum sampling intensity” “For seed lots in containers holding up to and including 100kg, the minimum sampling intensity is the following: ...” *This proposal underwent several major changes during the course of the meeting due to conversations between membership and the Bulking and Sampling Committee. SRTD voted to accept this rule.*
 - Add the option to use triers for obtaining submitted samples from very large composite samples. 2.5.1.5 “The submitted sample must be obtained by reducing the composite sample to an appropriate size by one of the methods referred to in 2.5.2.2. In the case of very large composite samples, a method according to 2.5.1.3 may also be used.” *This rule adds a method that is in the ISTA Handbook and is likely already being widely used. SRTD voted to accept this rule.*
 - Reduce the sample size from 10,000 to 2,500 for the other seed count test. 2.9.1.3(c) “...Each working sample must be a weight estimated to contain about 2500 seeds and a count is made in it of the number of seeds of the kind selected.” *SRTD voted to accept this rule.*
 - Add a tetrazolium test for vigor for *Glycine max.* 15.8.5 “Addition of New Method.” *SRTD voted to accept this rule.*
 - For a complete list of changes approved during the Ordinary meeting please visit the ISTA website at www.seedtest.org.

Next year, ISTA and AOSA/SCST will host their first joint annual meeting which is scheduled for June 16-22, 2017, in Denver, Colorado.

For more information, contact SRTD Director Ernest Allen at (704) 810-8884; ernest.allen@ams.usda.gov.



United States members attend the ISTA Annual Meeting in Tallinn, Estonia. (L to R) Robert Karrfalt, Ernest Allen, Ray Shillito, Lingyn Zhang, Sue Alvarez, David Johnston, Dan Curry, Beth Rubin-Wilson, and Gil Waibel.

ASSOCIATION OF AMERICAN SEED CONTROL OFFICIALS 30th ANNUAL MEETING

The AASCO 30th annual meeting was held in Kalispell, Montana on July 10 thru 14, 2016. This year's meeting was represented by a total of 52 attendees including Seed Control Officials from 23 States, American Seed Trade Association (ASTA), Association of Official Seed Certifying Agencies (AOSCA), Canadian Food Inspection Agency (CFIA), and numerous seed company representatives.

Seed Regulatory and Testing Division (SRTD) Regulatory Supervisor, Roger Burton and the Organization for Economic Co-Operation and Development (OECD) Program Manager, Steve Malone, gave an update on the 2015 and 2016 SRTD activities. They also discussed ongoing efforts by SRTD in assisting States with their regulatory testing as part of the cooperative agreements between the States and Agricultural Marketing Services.

Anita Gilmer (CFIA) presented a revised Canadian Weed Seeds Order, which will go into effect on November 1st, 2016.

Steve Malone (OECD Program Manager) gave a presentation related to International Seed Certification in addition to other responsibilities of OECD.

Pat Miller (ASTA) spoke regarding Biologicals as Seed Treatments and there were numerous comments from Seed Control Officials (SCOs) related to possible labeling issues and requirements.

Bridget Westfall and Greg Stordahl gave a presentation on the Montana State Seed Laboratory.

Current AASCO President, Jim Drews (MD), spoke about Regional Associations vs. Regional Committees and the lack of attendance in order to have a quorum.

Duane Sinning (CO) presented an Industrial Hemp update in addition to new developments.

David Svik (NE) spoke to non-commercial seed sharing/seed libraries. Currently, Omaha has a seed library exemption law. Illinois, reportedly, also has a bill in place. There were numerous discussions related to seed libraries and the fact that some States have now agreed to allow these seed shipments to be exempted from State seed laws governing germination testing and labeling. The Recommended Uniform State Seed Law (RUSSEL) amendment related to seed libraries was passed by the organization.

The National Seed Health System (NSHS) representative Tracy Bruns, discussed phytosanitary certification for export, developing standards, and processes to leverage for international trade. The program is administered by the Animal Plant Health Inspection Service (APHIS). APHIS is currently using the AASCO Seed Sampling Manual as a guide for seed sampling.

Roger Burton and Steve Malone (SRTD) attended and addressed The North Central Seed Control Officials Association meeting, the combined meetings of the Association of Southern Seed Control Officials, The Association of Seed Control Officials of the Northeast States, and the Western Association of Seed Control Officials. The AMS officials presented reviews of FSA activities for 2015 and 2016 relating to these four regions, responded to numerous questions pertaining to FSA requirements relating to seed shipped in interstate commerce, required labeling practices, as well as intrastate shipments/sales.

Several AASCO members have either retired or have been assigned to new positions other than SCOs of their States. Larry Nees (IN) has retired and David Svik (NE) also has announced his upcoming retirement. John Heaton (CA) and Greg Stordahl (MT) have accepted new positions within their States.

Jason Goltz (ND) has volunteered to accept the position of 2nd Vice President of AASCO.

There was a tour of the Northwestern Agricultural Research Center in Creston, Montana, where issues related to diseases affecting barley varieties were discussed along with the monitoring of pesticide, fertilizer, and water usage. There also was a tour of Glacier National Park where there was a fantastic view of McDonald Lake and the Continental Divide from Logan Pass. The tour ended with a visit to Lakeside, Montana and a boat on Flathead Lake.

Jim Drews (Maryland Department of Agriculture) (AASCO President) announced that the 2017 annual meeting is presently to be held in Charlotte, NC and requested that the membership give consideration to scheduling two years in advance the annual meeting locations.

The current AASCO officers are:

- President Jim Drews (MD)
- First Vice-President Johnny Zook (PA)
- Second Vice-President Jason Goltz (ND)
- Treasurer Greg Helmbrecht (WI)
- Secretary to be determined

For more information about AASCO, go to <http://www.seedcontrol.org>

For information regarding this article, contact Regulatory Supervisor Roger Burton at (704) 810-7265; roger.burton@ams.usda.gov.

OECD SEED SCHEMES 2016 ANNUAL MEETING

U.S. OECD Seed Schemes Program Manager Dr. Steve Malone represented the U.S. at the Organization for Economic Cooperation and Development (OECD) Seed Schemes Ad Hoc (AHWG) & Technical Working Group (TWG) meetings held January 25-29, 2016, in Cape Town, South Africa; and at the Working Group meetings and Annual Meeting held in Paris, France on June 6-10. Perry Bohn represented the American Seed Trade Association (ASTA) at the Cape Town and Paris meetings. Other U.S. participants at the Paris meetings included Chet Boruff, representing the Association of Official Seed Certifying Agencies (AOSCA) and Doug Miller from Illinois Crop Improvement Association representing the Association of Official Seed Analysts (AOSA).

Ad Hoc Working Groups (AHWG) are established to study specific seed schemes topics as needed, while Technical Working Groups (TWG) are standing committees that continually evaluate seed schemes rules and guidelines to make sure they are relevant and provide a framework for the worldwide movement of certified seed and make recommendations to the annual meeting. Decisions to change rules and guidelines of the schemes are determined by consensus of the official country delegates during the annual meeting. Those decisions become final upon concurrence by the OECD Council.

The Annual Meeting agreed on the following:

- Reintroduction of the amount of lump sum of the annual fee (EUR 2 700) into the seed schemes rules
- To separate the Maize and Sorghum scheme into two separate schemes.
- Acceptance of Tanzania as a participant in the Cereals scheme and the Maize and Sorghum scheme
- Updated language in the Rules on acceptance of varieties into the schemes.
- Updated varietal purity characters to be used in evaluating control plots and field inspections
- Additions to the guidelines for minimum information to be shared between countries for multiplications

Ongoing discussions to be continued by Ad Hoc and Technical Working Groups

- Varietal mixtures of the same species continues to be a concern which contradicts the European Union agreement on restricting maize mixtures to insect integrated refuge mixtures. Though the EU proposal has been revised to read “harmful organism” instead of “insect”, this restriction is opposed by several countries, especially the U.S. and New Zealand.
- The AHWG on labelling continues to gather information on methods to prevent counterfeiting but no firm proposals for new rules have been developed. The labelling working group will collect information from participating countries on additional official and non-official information allowed on labels with the goal of clarifying the rules regarding these allowances. Some countries favor requiring serial numbers on OECD tags. However, there is interest in other anti-counterfeiting measures such as the randomly generated alpha-numeric digital signature used by Oregon Seed Certification Services. This method will be demonstrated at the TWG meeting in January 2017.

- Work continues on the recognition of various biochemical and molecular techniques for assessing varietal identity and purity in partnership with seed analyst organizations such as AOSA and the International Seed Testing Association (ISTA).
- An Ad Hoc working group is in the process of evaluating maximum lot sizes and isolation distances for sorghum.
- Work on revision of the OECD Seed Schemes Strategic Plan will continue. Ad Hoc working groups are developing proposals for different sections of the plan for consideration at the January 2017 working group meetings. The U.S. is chairing the group tasked with developing proposals for the Mission and Vision statements.

Dates and locations for OECD Seed Schemes meetings for 2017 have been announced. The Ad Hoc and Technical Working Groups will meet January 31 – February 2, 2017 in Paris. The annual meeting and TWG meetings is scheduled for June 26-30, 2017 in Prague, Czech Republic.

For more information regarding this article, contact Steve Malone at (704) 810-8888; stephen.malone@ams.usda.gov For more information on the OECD Seed Schemes, go to <http://www.ams.usda.gov/rules-regulations/fsa/oecd-schemes> or <http://www.oecd.org>.

SEED REGULATORY AND TESTING DIVISION EXTENDING ASSISTANCE TO STATES

In recent years, there have been many turn-overs within the seed industry due to retirement, especially with state laboratories. Many States' seed programs have been either shut down or down-sized due to a shortage of personnel. In the effort to continue enforcing truth-in-labeling of agricultural and vegetable seeds, SRTD is offering extended assistance for State seed laboratories.

SRTD has always been a helpful resource for many seed related questions that the seed industry and the State Seed Control Officials may have. Now, with an effort to support the States' seed programs and to promote fair trade among the seed industry, SRTD offers testing for regulatory seed samples to State Seed Control Officials throughout the country. The Federal Seed Laboratory will conduct tests on the regulatory seed samples on behalf of the States. State Seed Control Officials can use the SRTD results and act accordingly to their own State Rules and Regulations.

The following procedures would help SRTD staff to process the samples in a proper and timely manner:

- Submit enough seed to test for all factors in question
- Submit as much information as possible, including labels, seed inspector's reports, invoice, interstate and intrastate shipping records, etc.
- Mark treated samples clearly as "Treated" and submit sample in a non-porous packaging
- Assure sample information matches with its corresponding documentation

Address for submitting samples:

ATTN: Regulatory Samples
C/O Roger Burton, Regulatory Supervisor
USDA, AMS, Livestock, Poultry & Seed Program
Seed Regulatory and Testing Division
801 Summit Crossing Place, Suite C
Gastonia, NC 28054-2193

For more information regarding this article or to submit regulatory samples, please contact Seed Marketing Specialist Lan Chi Trinh, (704) 810-7272; Lan-ChiN.Trinh@ams.usda.gov or Regulatory Supervisor Roger Burton (704)810-7265; Roger.Burton@ams.usda.gov

SUBMITTING REGULATORY COMPLAINTS FOR SEED CONTROL OFFICIALS

Inspection of seed in intrastate commerce may indicate that the seed was falsely labeled when shipped in interstate commerce. For that reason, the Seed Regulatory and Testing Division (SRTD) encourages cooperating States to submit complaints if a Federal Seed Act (FSA) violation is suspected. It is helpful for SRTD to receive as much evidence as possible from the State to aid in the investigation of an apparent interstate violation. The information needed varies among the following types of alleged FSA violations.

Quality violations affect the seed quality and include, for example, errors related to germination and purity percentages and the name and rate of occurrence of noxious-weed seeds.

Technical violations involve information on the label that may not necessarily affect the quality of the seed, as is the case with test dates, interstate shipper identity or Agricultural Marketing Service (AMS) number, and other labeling violations.

Advertisement violations involve all representations of kind, or kind and variety, names of seed regulated by the FSA, other than those on the label, disseminated in any manner or by any means.

Title V violations involve seed of which a plant variety protection certificate specifies that a variety can be sold by variety name only as a class of certified seed. Therefore, seed of that variety name cannot be advertised, sold, or offered for sale unless it is certified.

SRTD needs the following information for each type of Federal Seed Act complaint:

Quality Complaint

- Official sample (enough to test for factors in question)
- Official State test report showing analysis and nature of alleged violation
- Seed inspector's report or other sampling record
- Labeling – Original or copy of the analysis label that was on the seed container at the time of sampling (Include additional relevant information, if shown, such as the AMS number from the label and any bag lot numbers stenciled on the bags.)
- Interstate shipping documentation – A copy of interstate shipper's invoice or bill of lading if available

- Intrastate shipping documentation especially if the interstate shipper is unknown (If the interstate shipper did not ship the seed directly to the sampling location, SRTD must document each movement of the seed until the interstate shipper is identified.)

Technical Complaint

The same information is needed as for quality complaints, except that the official State test report may not be required.

Advertisement Complaint

- Copy of advertisement
- Violation report indicating the misleading nature of the advertisement
- Identity of publication including the name and date

Title V Complaint

- Advertisement or record of sale – such as an invoice, sales ticket, affidavit, or advertisement
- Variety representation – such as an advertisement, analysis tag, invoice, or affidavit
- Evidence that seed was not certified and not eligible for certification
-

The following procedures enable the SRTD staff to process samples in a timely manner. When submitting samples, please ensure that:

- Treated samples are clearly marked “Treated” and submitted in non-porous packaging
- Each sample clearly matches its corresponding documentation
- All documents for each Federal Seed Act complaint are stapled or clipped together
-

For more information regarding this article, please contact Regulatory Supervisor Roger Burton (704)810-7265; Roger.Burton@ams.usda.gov

MAINTAINING SHIPPING RECORDS AND FILE SAMPLES

Shippers of seed using interstate commerce to include seed companies and farmers are required and mandated by the Federal Seed Act (Part 201) and Federal Seed Act Regulations to maintain records relating to that lot of seed for a required time period and to supply records to the USDA upon request; this also includes maintaining and supplying file samples.

Section 202 of the Federal Seed Act states, “All persons transporting, or delivering for transportation, in interstate commerce, agricultural seeds shall keep for a period of three years a completed record of origin, treatment, germination and purity of each lot of such agricultural seeds and all persons transporting or delivering for transportation in interstate commerce, vegetable seeds shall keep for a period of three years a complete record of treatment, germination and variety of such vegetable seeds. The Secretary of Agriculture, or his duly authorized agents, shall have the right to inspect such records for the purpose of the effective administration of this Act.”

The Federal Seed Act Regulations Section 201.4 Maintenance and accessibility states, “each person transporting or delivering for transportation in interstate commerce agricultural or vegetable seeds subject to the Federal Seed Act shall keep for a period of three years a complete record of each lot of seed transported or delivered, to include a sample of each lot of such seed, except that any seed sample may be discarded one year after the entire lot represented by such sample has been disposed of by such person.”

Interstate shippers who fail to comply with the Federal Seed Act and Federal Seed Act Regulations requirements will be in violation. Penalties for violations vary from warning letters to monetary penalties. Habitual offenders are subject to more serious charges.

For more information regarding this article, contact Tina Jackson at 704-810-8882 or via email marshalle.jackson@ams.usda.gov

ORCHARDGRASS SEED PURITY RESULTS UNDER THE FEDERAL SEED ACT

In 2014, at the Joint Annual Meeting of the Association of Official Seed Analysts (AOSA) and the Society of Certified Seed Technologists (SCST), the rules committee proposed a new change eliminating the Multiple Unit Procedure in orchardgrass seed. This new rule was accepted and went into effect October 1, 2014.

Most states and private laboratories use AOSA Rules as a standard in seed testing, and many companies label their products based on states' or private laboratories' results. This change causes many companies to be in violation with the Federal Seed Act (FSA) regarding the labeling of pure seed and inert matter of orchardgrass seed.

Dr. Sabry Elias from Oregon State University presented an orchardgrass national referee to compare the differences in purity test results with and without applying the Multiple Unit Procedure in orchardgrass samples. The referee was conducted on six randomly selected orchardgrass samples among seven laboratories. The result of the referee showed that there is an average of 2% difference between applying and not applying the Multiple Unit Procedure in pure seed and inert matter results.

Federal Seed Act (FSA) has not changed its procedure for testing orchardgrass seed. The FSA applies the Multiple Unit Procedure when testing orchardgrass seed, using the Table of Factors to Apply to Multiple Units in Regulations under the Act Section 201.51a. Therefore, depending on how the companies label the seed lot, they can be in violation with the FSA.

For example, a company labeled 94% pure seed and 5% inert matter based on the AOSA results without applying the Multiple Unit Procedure but Federal Seed Lab (FSL) found the sample to contain 92% pure seed and 7% inert matter, based on the results where the Multiple Unit Procedure was applied. According to Regulations under the Act Section 201.60, the average of the 2 tests for pure seed and inert matter would be 93% and 6%, respectively. The tolerance of the pure seed as well as inert matter, is 1.73. The Federal Seed Laboratory results would be 1.2 times out of tolerance of labeled claims. This example shows how the 2% difference between applying and not applying the Multiple Unit Procedure affects the labeling of pure seed and inert matter.

The higher the percent of pure seed and the lower the percent of inert matter that are labeled, the smaller the tolerance will be, and the more likely a company would be in violation with the FSA.

Reference:

Elias, Sabry. *Comparison of Orchardgrass (Dactylis glomerata) purity test results with and without applying the factoring procedure to multiple seed units*. AOSA and SCST Joint Meeting, Fargo, ND, 2014.

For more information about this article, please contact Seed Marketing Specialist Lan Chi Trinh (704) 810-7272; Lan-ChiN.Trinh@ams.usda.gov

THE ASSOCIATION OF OFFICIAL SEED ANALYSTS PENSACOLA BAHIAGRASS MASTER CALIBRATION SAMPLES ARE AVAILABLE FOR LOAN

Pensacola Bahiagrass Master Calibration Samples are currently available for loan. All of the Master Calibration Samples (MCS's) are available on a loan-only basis from the USDA Seed Regulatory and Testing Division (SRTD) and must be used for the calibration of the general blower. An anemometer must also be used to determine air velocity.

Information regarding the loan procedure is located on the AOSA Web site. (Go to www.aosaseed.com and click on resources.) Read the current version of the AOSA Rules for Testing Seeds Volume 2 prior to using the calibration procedure for the first time.

Requesting and Returning Master Calibration Samples:

- Request the MCS's from the SRTD laboratory by phone, fax, or e-mail
 - MCS Program Administration
USDA AMS LPS SRTD
801 Summit Crossing Place
Suite C
Gastonia, NC 28054
 - 704-810-8870
 - FAX 704-852-4189
 - charlene.burton@ams.usda.gov

- Include the following information with your request:
 - a signed and dated Loan Agreement Form for the Master Calibration Samples (Read this agreement carefully before signing.)
 - species available: Pensacola bahiagrass, orchardgrass and Kentucky bluegrass
 - laboratory name
 - contact name
 - street address
 - phone number
 - fax number or e-mail address, if available

- Laboratories are notified if there is a waiting list at the time of a request and are contacted again when the samples are shipped. Whenever possible, samples are sent in the order requests are received.
- Upon receipt, a laboratory has five days, not counting the day of receipt, to calibrate and send samples back to SRTD.
- Copies of the *Guidelines for Users of Master Calibration Samples* and the *User's Data Sheet for Tracking Master Calibration Samples* will arrive with the MCS's. Read this information before calibrating.
- Perform the calibration as instructed in AOSA Rules for Testing Seeds Volume 2 and the *Guidelines for Users of Master Calibration Samples*. A Certified Seed Analyst (CSA), Registered Seed Technologist (RST), or person under the supervision of a CSA or RST should perform the calibration, taking care to follow the guidelines for **handling the samples** and **maintaining sample integrity**.
- Return the samples and completed *User's Data Sheet for Tracking Master Calibration Samples* by traceable overnight service (UPS, FedEx, DHL, USPS Express, etc.).
- There is no charge for borrowing the MCS's if the borrower follows all requirements in the *Loan Agreement for the Master Calibration Samples*, *Guidelines for Users of Master Calibration Samples*, and the *MCS Borrower Responsibility Guidelines*.
-

This article was revised from Sandy Dawson's article in the Fall 2007 October Items of Interest.

For information regarding this article contact Botanist Charlene Burton at 704-810-8880; charlene.burton@ams.usda.gov

WOOLY POD VETCH HERBARIUM SAMPLE

Woolly Pod Vetch (*Vicia villosa*) was grown in the green house of SRTD to use as a herbarium sample. The main objective was to verify the species by looking for any off-type plants in the growing population. Observations were made on the plants for leaf shape, flower color, flower pattern, and pod color at maturity. All the plants were uniform for the observed characteristics. The seed was then preserved in the SRTD herbarium.

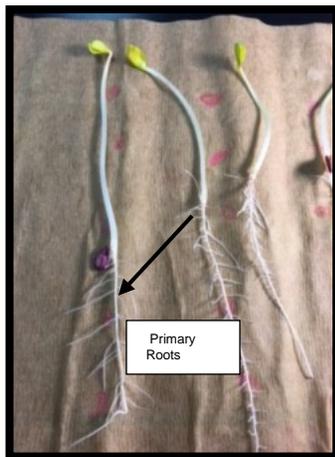


The plant and seeds of woolly pod vetch, taken by Akhtar Kazmi

For more information regarding this article, please contact Akhtar Kazmi, (704) 810-8878, akhtar.kazmi@ams.usda.gov

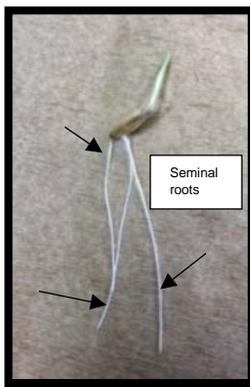
ROOTS ENCOUNTERED DURING SEEDLING EVALUATION

There are 4 types of roots that we encounter during seedling evaluation: primary roots, secondary roots, adventitious roots, and seminal roots. The roots purpose is to absorb water, support and anchor the seedling, and to transport water to the other essential parts of the seedling. However, they differ in location, size, and number. Roots also grow according to the various environmental conditions they encounter. For example, some seedlings have optimized root growth due to a dry environment in search of water. Some roots grow in places where damage has occurred and the seedling is trying to recover. Other roots, such as secondary roots, sometimes take place of a defective primary root. The type(s) of root(s) encountered during seedling evaluation depends on the species and other environmental conditions.



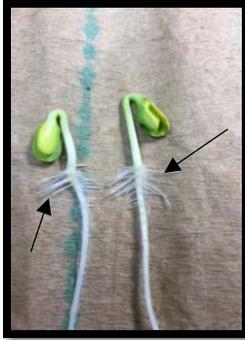
Primary roots are the first roots that emerge from the seedling, usually the end result of the radicle emergence. These roots are usually the strongest and longest root of the seedling. The watermelon species requires a sufficient primary root to be considered normal. In this case, other roots such as secondary roots cannot take its place. The primary root is also a seminal root. Therefore, in certain species, the primary roots are classified as seminal roots.

Watermelon (*Citrillus lanatus*);



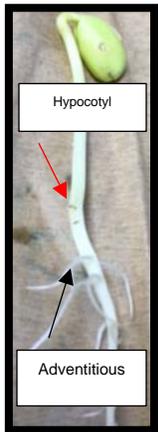
Seminal roots emerge from the seed itself like the primary root. Since these roots are indistinguishable from primary roots in some seed species such as cereals, all of the roots emerging from the seed are referred to as seminal roots. For example (as seen in the photo), Oat roots all emerge from the seed. Since, they are all strong, almost equivalent in length, and indistinguishable, they are all identified as seminal roots during seedling evaluation.

Oat (*Avena sativa*)



Sunflower (*Helianthus annuus*)

Secondary roots are roots that emerge from other roots. At times, when the primary root is damaged, these roots are sufficient enough to carry out the same essential duties of the primary root. In this picture of the sunflower, the secondary roots are small because of the long, strong primary root. However, if the primary root was defective, the secondary roots will proliferate and be sufficient enough for the seedling to be considered normal.



Garden Bean
(*Phaseolus lanatus*)

Adventitious roots are roots that emerges from other structures of the seedling such as the hypocotyl. These types of roots usually occur due to mechanical damage. They usually appear when the seed is trying to repair itself from the damage that has occurred. For example, the adventitious roots grew on the hypocotyl of the Garden Bean due to a hypocotyl lesion.

References:

Seed Technologist Training Manual
Miller B. McDonald- Tim J. Gutormson- Brent Turnipseed- Society of Commercial Seed Technologists-2001

Association of Official Seed Analysts (AOSA) Rules for Seed Testing 2015

For more information regarding this article, contact Botanist Anitra Walker at 704-810-7269; Anitra.Walker@ams.usda.gov

SEED REGULATORY AND TESTING DIVISION HERBARIUM PROJECT

Seed Regulatory and Testing Division retains the USDA herbarium collection containing many thousands of seeds. This collection dates back to the earliest days of the USDA. SRTD has started a project to enter this information into a searchable database

The oldest item found so far is dated 1820, which predates the creation of the USDA, and is labeled *Carex schweinitzii*, a sedge, collected by C. Dewey. The International Plant Names Index attributes *C. schweinitzii* to Chester Dewey who was a professor at the Williams College between 1810 and 1827. Dewey is recognized as an authority on the genus *Carex* who published a series of papers in the American Journal of Science.

Most of the labels on the vials are numbered and have a designated location: USDA Seed Herbarium, USDA Seed Collection or US National Herbarium Seed Collection. Of the first 50 vials, approximately 20 are grasses labeled US National Herbarium Seed Collection and were collected in Allenton, Missouri by G. W. Letterman. His name is commemorated in Letterman's bluegrass, *Poa lettermanii* Vasey.

For more information regarding this article, please contact Plant Pathologist Sandra Walker, (704) 810-7268, sandra.walker@ams.usda.gov

SEED TREATMENT EFFECTS ON PCR TESTING

Commercial sorghum seeds are normally treated with Thiram fungicide and Storicide II pesticide to prevent disease and insect infections. In order to determine the accuracy of PCR (Polymerase Chain Reaction) test results from treated sorghum seed, Plant Physiologist Dr. Yujia Wu compared tests from treated sorghum seed and un-treated seed.

Thiram and Storicide work as a fungicide and pesticide respectively. Both of the treatments have chemical structures that contain physiological inhibitors which could obstruct PCR testing. Dr. Wu conducted an experiment for testing the effects of these seed treatments on PCR. For this study, 35S promoters were used in corn seed as a positive and negative reference reaction. Treatment from sorghum seed were washed prior to PCR testing. The standard 20 ul PCR reaction was added to 2 ul dH₂O for a control. The PCR was followed by 94 °C; 58 °C and 72 °C PCR reaction for 35 cycles and finally 2.5 % agarose gel were used to check the PCR result.

PCR results indicate that the positive band completely disappeared in the treatment reaction. The control reaction showed the expected, one band. The seed treatment chemicals, Thiram and Storicide may inhibit PCR reactions.

<u>Control</u>		<u>Treatment</u>		
--	+	--	+	Marker
1	2	3	4	5



Line 1 (-) and 2 (+) are PCR reference reactions; line 3 (-) and 4 (+) are PCR treatment reactions. Line 5 is DNA marker. Picture taken by Yujia Wu.

For more information regarding this article, please contact Plant Physiologist Dr. Yujia Wu, (704) 810- 7267, yujia.wu@ams.usda.gov

FEDERAL NOXIOUS WEED SEED HIGHLIGHTS

Rottboellia cochinchinensis Common name: Itchgrass Family: Poaceae

Itchgrass is an annual grass that invades agricultural fields of warm season crops. Its stems and leaves are covered with stiff irritating hairs, and stems can grow between 1 to 10 feet. Reportedly found in several States in the south-east, commonly in fields of corn, sugar cane, and sorghums. Its rapid growth and spreading tillers make it very competitive amongst crops. Hand pulling the weed can pierce hands and clothing and cause infections, due to the stiff hairs on the stems and leaves which have been described as “fiber- glass like needles.” This weed could also cause harm to cattle and horses if eaten.



Steve Hurst, hosted by the USDA-NRCS PLANTS Database

Commelina benghalensis Common Name: Dayflower Family: Commelinaceae

Commelina benghalensis is an annual or perennial herb. It has fleshy sprawling stems and has the ability to root readily at the nodes, which causes it to be a problematic weed. It is normally found in moist environments in the south east US and California. The weed reproduces by both seeds and stolon and even has the ability to grow from vegetative cuttings. The plants form dense mats which can oppress other plants, particularly low growing crops and grasses.



Anitra Walker USDA SRTD 2016

Solanum viarum

Common Name: Tropical Soda Apple

Family: Solanaceae

Tropical Soda Apple is a perennial shrub which is found in the south east States of the US. It is commonly found in pastures and citrus groves. Not only is tropical soda apple a competitive weed to other crops, it also acts as a host to pathogens that can affect several vegetable crops. Livestock will eat the mature fruit and germination of the seed is promoted in their digestive system. The scent of the mature fruit attracts animals but it contains solasodine which is poisonous to humans.



Julia Scher, USDA APHIS PPQ, Bugwood.org

REFERENCES:

“Rottboellia Cochinchinensis.” Invasive Species Compendium , n.d. Web. 19 Sept. 2016.

USDA, NRCS. 2016. The PLANTS Database (<http://plants.usda.gov>, 19 September 2016). National Plant Data Team, Greensboro, NC 27401-4901 USA.

Holm, L; Plucknett, D; Pancho, Juan; Herberger, James (1977). *The World's Worst Weeds*. Honolulu: The University Press of Hawaii

For more information regarding this article, Please contact Botanist Elizabeth Tatum 704-810-8873 elizabeth.tatum@ams.usda.gov

SEED REGULATORY AND TESTING DIVISION HELPS ESTABLISH AOSA PROFICIENCY COMMITTEE

SRTD is a founding member of the Association of Official Seed Analysts (AOSA) Proficiency Committee established in January 2016. SRTD's role is to collaborate with AOSA in standardize testing procedures between Federal Seed Act regulations (FSA) and the AOSA rules.

The committee includes representatives from: New Mexico, Idaho, Pennsylvania, North Dakota and North Carolina.

The committee will organize two voluntary proficiency tests each year for state regulatory agencies and commercial seed labs. The committee's first proficiency test will be lettuce germination and a knowledge based questionnaire. If you would like to participate in AOSA proficiency testing, please contact Carolyn Langley at carolyn.langley@isda.idaho.gov.

Any questions about the contents of this article please contact Patsy Jackson at patsy.jackson@ams.usda.gov or (704) 810-8870.

2016 SEED ANALYSTS TRAINING WORKSHOP IN GASTONIA, NC

SRTD hosted Federal Seed School on August 22- 24 2016. Eighteen analysts from public and private laboratories across the country attended. During the workshop, presentations on seed identifications were given including *Poa* species, *Setaria* species, *Solanum* species and several more. Following each identification presentation participants studied samples to further help them identify the similar seed species. Also discussed during the week were Uniform Blower Calibrations, seed structures, coated seed unit procedures and tetrazolium testing in which participants cut and evaluated a ryegrass tetrazolium exam.

The yearly training helps promote the mission of the Federal Seed Act by emphasizing uniformity in seed laws and fair competition within the seed industry. This effort is supported by State seed control programs through authorization provided by cooperative agreements between the State and AMS. SRTD workshops, offered to State and other seed industry personnel, further these goals by promoting uniformity in testing and by fostering greater compliance with State and Federal seed-labeling laws.



From L to R: Anitra Walker(SRTD), Elizabeth Tatum(SRTD), Todd Erickson (SRTD), Patsy Jackson (SRTD), Chi Trinh (SRTD), Charlene Burton (SRTD), Lauren Ferguson (Seedway), Sandra Walker (SRTD), Michael Scruggs (Hulsey), Roger Burton (SRTD), Paige Ruppel (OH), Nishit Patel (PA), Emily Morrison (IN), Jessica McVay (IN), Kim McFarland (MD), Hillary Kelley (AL), Elizabeth Bada (Bayer)

For more information regarding this article please contact Botanist Elizabeth Tatum, (704) 810-8873. elizabeth.tatum@ams.usda.gov

RYEGRASS FLUORESCENCE LIST

The Association of Official Seed Certifying Agencies (AOSCA) revises its report of the Variety Fluorescence Levels recognized by the AOSCA Grass Variety Review Board twice a year. Click on the Grass Variety Review Board section of the [Web site](#), then click on the link for the Perennial Ryegrass Variety Fluorescence Report to view the most current list.

CALENDAR OF EVENTS

ASTA 56th Annual Vegetable & Flower Seed Conference
Orlando, FL

January 28 – 31, 2017

Association of Official Seed Analysts/ Society of Seed Technologist and International Seed Testing Association Annual Meeting
Denver, CO

June 19-22, 2017

Organization for Economic Cooperation and Development (OECD) Seed Schemes Annual Meeting
Prague, Czech Republic

June 26- 30, 2017

American Seed Trade Association (ASTA)
134th Annual Convention

Association of Official Seed Certifying Agencies (AOSCA) Annual Meeting
Cleveland Ohio

June 11- 14, 2017

Association of American Seed Control Officials (AASCO) Annual Meeting

STAFF DIRECTORY

Division Director

Ernest Allen, (704) 810-8877, ernest.allen@ams.usda.gov

Laboratory Supervisor

Todd Erickson, (704) 810-8877, todd.erickson@ams.usda.gov

Office Automation Assistant

Carolyn Camidge, (704) 810-7263, carolyn.camidge@ams.usda.gov

Management Analyst

Marshall (Tina) Jackson, (704) 810-8882, marshall.jackson@ams.usda.gov

Botanists

Charlene Burton, (704) 810-8880, charlene.burton@ams.usda.gov

Todd Erickson, (704) 810-7266, todd.erickson@ams.usda.gov

Patsy Jackson, (704) 810-8881, patsy.jackson@ams.usda.gov

Elizabeth Tatum, (704) 810-8873, elizabeth.tatum@ams.usda.gov

Anitra Walker, (704) 810-7269, anitra.walker@ams.usda.gov

Biological Science Technician

Rodney McNeace, (704) 810-8871, rodney.mcneace@ams.usda.gov

Plant Pathologist

Sandra Walker, (704) 810-7268, sandra.walker@ams.usda.gov

Plant Physiologist

Dr. Yujia Wu, (704) 810-7267, yuji.wu@ams.usda.gov

Seed Marketing Specialists (Regulatory)

Roger Burton, (704) 810-7265, roger.burton@ams.usda.gov

Akhtar Kazmi, (704) 810-8878, akhtar.kazmi@ams.usda.gov

Kevin Robinson, (704) 810-7264, kevin.robinson2@ams.usda.gov

Chi Tran, (704) 810-7272, lan-chi.trinh@ams.usda.gov

OECD Manager

Dr. Stephen Malone, (704) 810-8888, stephen.malone@ams.usda.gov

Main Office Phone, (704) 810-8871

Main Laboratory Phone, (704) 810-8870

Regulatory Section Fax, (704) 852-4109

Testing Section Fax, (704) 852-4189

SEED REGULATORY AND TESTING DIVISION

Items of Interest Editorial Staff

Elizabeth Tatum, Editor

Anitra Walker, Assistant Editor

Todd Erickson, Laboratory Supervisor

Items of Interest Staff Writers

Ernest Allen, Division Director

Charlene Burton, Botanist

Roger Burton, Seed Marketing Supervisor

Todd Erickson, Laboratory Supervisor

Tina Jackson, Seed Marketing Specialist

Patsy Jackson, Botanist

Steve Malone, OECD Program Manager

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