



Seed Regulatory and Testing Division

ITEMS OF INTEREST IN SEED

2021

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Science & Technology Program
Seed Regulatory and Testing Division
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EDITOR'S NOTES

This spring, I ordered several varieties of pepper and tomato seeds for my garden at home. Knowing the variety of seeds can be especially important because different varieties will thrive in different environments. I attempted to plant a variety of tomato that only grows well in cooler temperatures and, living in the piedmont of North Carolina, we do not have cool summers. Of



course, the experiment did not go well but two other varieties of tomatoes succeeded and are still going strong in the fall!

At the Seed Regulatory and Testing Division, our Seed Marketing Specialists pay close attention to variety names when looking at seed labels. Agronomist Laura Berrios-Ortiz runs an entire program (Trueness-to-Variety) dedicated to testing varieties of different crops through field trials.

In this edition of Items of Interest in Seeds, an article on seed labeling and reports of analysis is on page 12 by Seed Marketing Specialist Chi Trinh. Other topics in this edition are identifying spores versus seed, finding undesirable grass seed in samples, and what happens to abnormal seedlings when they are grown out to plants.

Next year, the Items of Interest in Seed release dates will be updated. It will be a quarterly publication to keep our readers better informed. Expect another edition in January!

As always, please let me know if you have suggestions for future topics by sending an email to Elizabeth.Stewart1@usda.gov.

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

Elizabeth Stewart
IOI Editor

ABNORMAL SEEDLING DEVELOPMENT IN THE LEGUME FAMILY

The legume family (Fabaceae) is one of the largest and most economically important families of the plant kingdom. This study documents the development of abnormal bean (*Phaseolus vulgaris*) and pea (*Pisum sativum*) seedlings into plants.

Seedling vigor is important for plants to thrive under biotic and abiotic stresses. Vigor is defined by the Association of Official Seed Analysts as the ability of a seed lot to produce seedlings under diverse conditions. To observe the effects of seedling vigor on plant development, the growth progression and the number of leaves produced on selected normal and abnormal seedlings were evaluated.

Seeds were planted in rolled towels. Beans were germinated in the 20-30°C chamber and peas in the 20°C chamber for seven days. The samples were evaluated, and a selection of normal and abnormal seedlings were planted in soil in the greenhouse. The abnormal seedlings characteristics included insufficient roots, epicotyl damage, short hypocotyls, and no roots.

Normal seedlings produced uniform and healthy plants which showed higher vigor in suboptimal conditions. Abnormal seedlings may produce normal plants but did not show uniform growth. In general, the plants from normal seedlings were taller than the plants from abnormal seedlings (fig. 1 and 2).

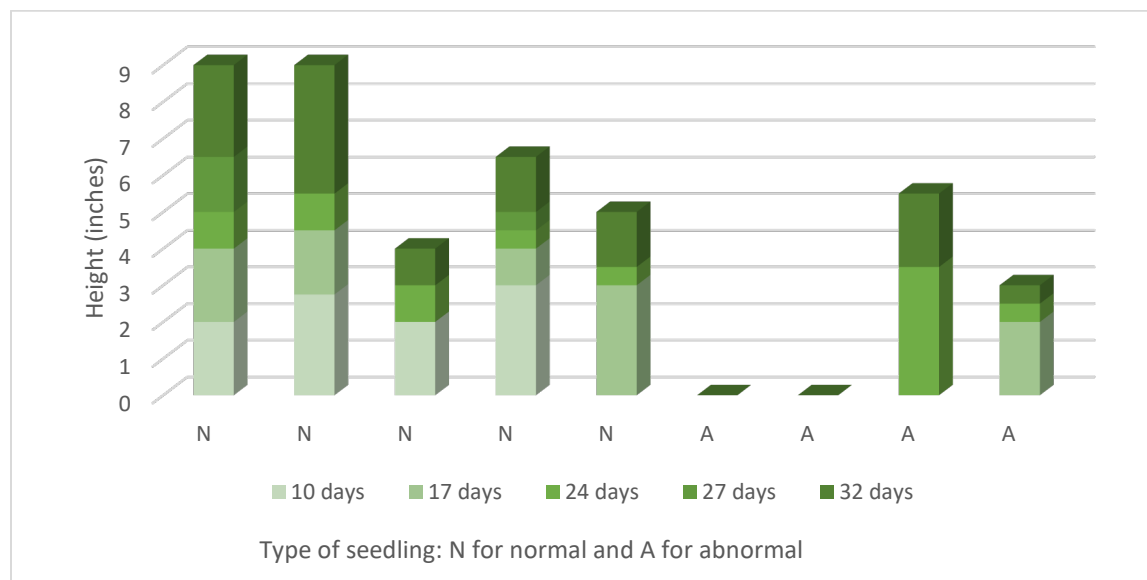


Figure 1. Bean seedlings height (inches) growth timeline in days after seeding. The two abnormal seedlings that didn't progress at all had insufficient roots.

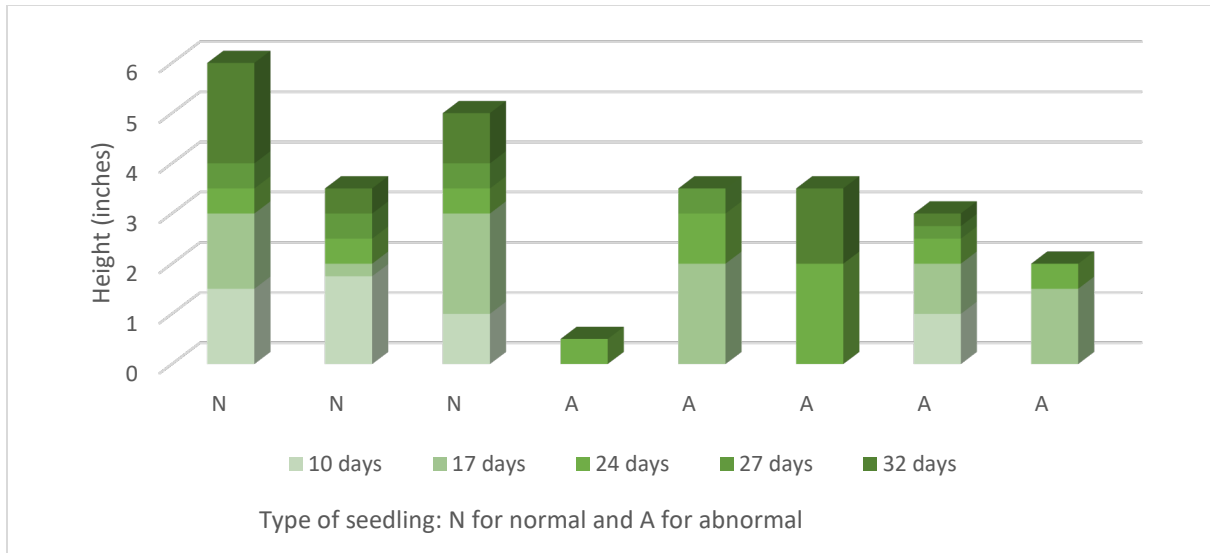


Figure 2. Pea seedlings height (inches) growth timeline in days after seeding. The pea seedling that only grew an inch had developed a stunted root, the other abnormal seedlings in general had insufficient roots and short, stubby hypocotyls.

The number and condition of leaves of the plants were also compared. The plants of normal seedlings produced more leaves. The plants of the abnormal seedlings produced leaves that were smaller and showed deformities. These deformities may cause them to be less productive when grown in the field.

Farmers require uniformity and high yield production from the seeds they purchase. Seed analysis fortifies the agricultural industry by providing uniform and accurate results across laboratories when germination test standards are met. Correct evaluation of abnormal seedlings will give the farmer a better idea of the total yield of the seed lot.



Normal and Abnormal pea plants at 32 days from seeding.



Normal and Abnormal bean plants at 32 days from seedling.

References:

- (2019). *Association of Official Seed Analyst Rules for Testing Seeds*.
- Burris, J. S., Edje, O. T., & Wahab, A. H. (1973). Effects of Seed Size on Seedling Performance in Soybeans: II. Seedling Growth and Photosynthesis and Field Performance 1. *Crop Science*, 13(2), 207-210.
- Oregon State University (OSU) (2021) Importance of Seed Vigor Testing. OSU Seed Laboratory. <https://seedlab.oregonstate.edu/importance-seed-vigor-testing>
- Pollock, B. M., & Roos, E. E. (1972). Seed and seedling vigor. *Seed Biology, I. Importance, development, and germination*, 314-387.

For more information regarding this article, contact Agronomist Laura Berrios-Ortiz (704) 810-8885; Laura.BerriosOrtiz@usda.gov.

SPORES VERSUS SEEDS

Spores are the evolutionary precursor to the seed. Spores are produced by bacteria, fungi, algae, and plants, but have different functions in each organism. The bacteria can form protective shells around themselves, called spores, which helps them survive through periods of unfavorable conditions. Fungal spores are copies of the parent, and can germinate and grow into fungi, such as mushrooms, in suitable conditions. Plant spores are how algae, mosses, and ferns reproduce, much like sperm and egg cells in animals.

Spores have morphological similarities to seeds. Small sacs of tiny particles have been found during the purity analysis that look similar to seeds. They come out of what appears to be sac-like pods or fruiting bodies. Many analysts have had to take a second glance to see if they were other seed kinds found in their sample. When found in a sample, there is a good chance that these seed-like structures might be spores instead of seeds. The difference is that the spores

are lacking nutrients and are only made up of a single cell. Spores contain genetic material and when exposed to favorable conditions, they can germinate into vegetative cells which are active, have nutrients, and can grow normally.

Seeds are usually located within the flowers or within fruits that are produced by flowering plants. The spores have a hard cell wall, but they do not have the other components that are found in seeds.

The Venn diagram (fig. 1) compares spores and seeds. The spores are usually microscopic but sometimes visible as they vary in size (fig. 2 and 3). Spores can still germinate and produce non-flowering plants and fungi, but they thrive in much wetter environments such as swamps. Most of the time, there will be numerous amounts of spores found in a group together compared to the seeds in number.

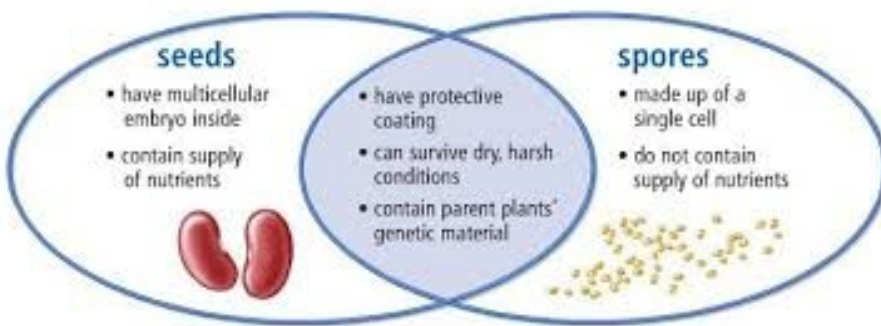


Figure 1: Venn diagram: seeds and spores (Weebly, 2016)

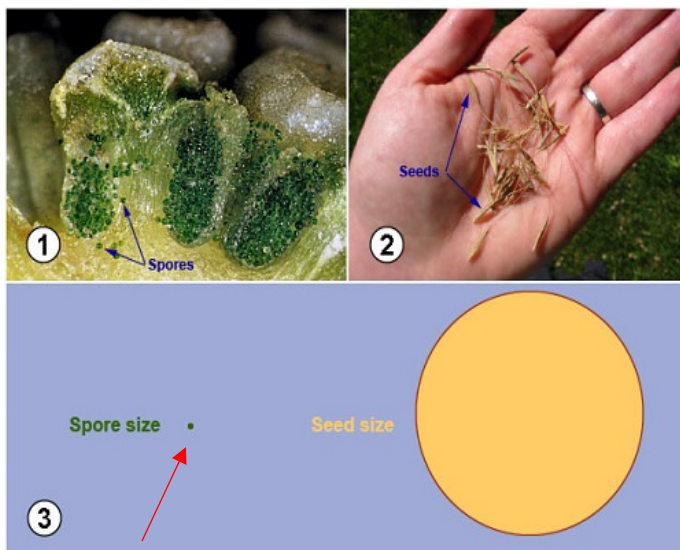


Figure 2: Size difference between spores and seeds (Mark, 2017)

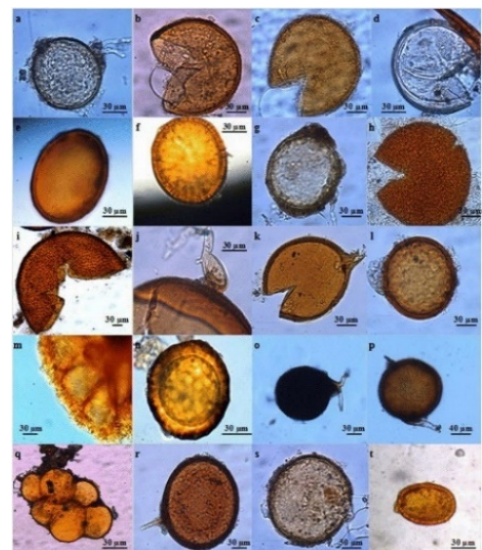


Figure 3. Fungal spores of Varying Sizes (Fungal spores archives- micro BIOMETER, 2020)

Currently there are no specific reference to spores in any of the rules for seed testing, but the International Seed Testing Association (ISTA) has been considering distinguishing them from inert matter because some ferns are considered noxious. Though they do not mention them specifically, spores are grouped in the inert matter when conducting a purity as stated in the rules:

FSA 201.51 Inert Matter

Inert matter shall include seeds and seed-like structures from both crop and weed plants and other materials as follows:

- (c) other matter that is not seed
- (2) ...and any other foreign material

ISTA 3.2.3. Inert Matter

Inert matter must include seed units and all other matter and structures not defined as pure seed or other seed as follows:

- (7) ...stems and all other non-seed matter

AOSA 3.5 Inert Matter

Inert matter shall include seeds and seed-like structures from both crop and weed plants and other materials not described in section 3.2 and Table 3A or can be described as follows:

- (c) other non-seed matter

Since spores can still germinate, the seed industry might consider removing them from the inert matter and including them in a category of its own. The reason it should be considered is because spores can produce fungi, bacteria, and other non-flowering plants in a field of seeds. This can be problematic depending on the type of spores existing in the field.

References:

- (2019). *Association of Official Seed Analyst Rules for Testing Seeds*.
- *Spore Biology*. (1998, July 20). Britannica. <https://www.britannica.com/science/spore-biology>
- *The Benefit of Fungal Spores*. (2020, June 3). Micro BIOMETER. microbiometer.com/the-benefit-of-fungal-spores/
- (2019). *International Seed Testing Association Rules for Testing Seeds*.
- Mark, T. (2017, August 2). *The Difference Between Spores and Seeds*. Knows Why. www.knowswwhy.com/difference-between-spores-and-seeds/.
- (2020). U.S. Dept. of Agriculture, Agricultural Marketing Service. *Federal Seed Act*.
- *Vascular and Nonvascular Plants*. (2016, July 1). weebly.com. http://sc6thgradescience.weebly.com/uploads/3/0/9/8/30980165/vascular_and_nonvascular_plant_slideshow.pdf

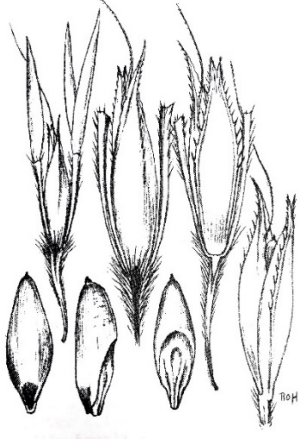
For more information regarding this article, contact Botanist Anitra Walker (704) 810-7269; Anitra.Walker@usda.gov.

NOXIOUS- WEED SEED SHOWCASE

Scientific Name: *Chrysopogon aciculatus*

Common Name: Golden False Beardgrass

Chrysopogon aciculatus is in the Poaceae family. It is a widely distributed grass that grows best in tropical environments. The grass can spread quickly to form dense mats that will crowd out other crops. The plant can withstand trampling and burning, and once fully grown can produce hundreds of seeds. The seeds are sharp and can spread by sticking to animals passing by. The seeds can prick human skin and injure animals' mouths if eaten.



Chrysopogon aciculatus (Reed, 1977; Illus. Hughes)

Scientific Name: *Crupina vulgaris*

Common Name: Common Crupina

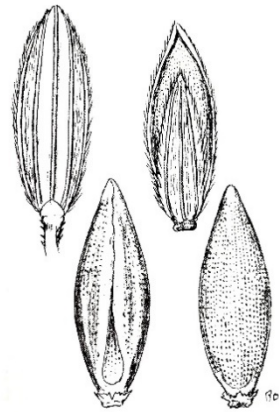
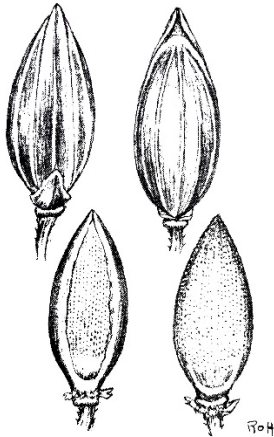
Crupina vulgaris is in the Asteraceae family and native to the Mediterranean region. The plant can adapt to different environmental conditions and will compete with other crops by taking away soil moisture. It can produce up to 850 seeds per plant. Most of the seeds will land by the plant, while others can be spread by livestock. In the right conditions, the seeds will have a high germination rate and will crowd out surrounding crops.



Crupina vulgaris; (Reed, 1977; Illus. Hughes)

Scientific Names: *Digitaria scalarum* and *Digitaria velutina*
Common Names: African couchgrass and common couchgrass

Digitaria spp. are in the Poaceae family and spread by rhizomes. The plant will produce thick roots that grow deep into the soil, making it difficult to remove. The rhizomes can grow large enough to crowd out other crops and the roots may even twirl around other crop roots and smother them.



Digitaria velutina (Reed, 1977; Illus. Hughes)

References:

- Reed, C. (1977). *Economically Important Foreign Weeds - Potential Problems in the United States*. APHIS USDA. Illustrator Hughes, R.O
- Scher, J. L., et al. (2015, April 1) *Federal Noxious Weed Disseminules of the United States* <http://idtools.org/id/fnw/index.php>.

For more information regarding this article, contact Botanist Elizabeth Stewart (704) 810-8873; Elizabeth.Stewart1@usda.gov.

WHAT ARE UNDESIRABLE GRASS SEEDS AND WHEN ARE THEY REQUIRED TO BE DECLARED ON THE LABEL?

Undesirable Grass Seeds (UGS) are seeds of grass species that are considered restricted noxious-weed seeds when found in lawn and turf seed or mixtures of lawn and turf seed.

There are ten grass seed species declared as UGS or restricted-noxious weed seeds: bentgrass (colonial, creeping and velvet), bermudagrass (common and giant), annual bluegrass, rough bluegrass, meadow fescue, tall fescue, orchardgrass, redtop, timothy, and velvetgrass.

All ten of these grass species are considered UGS or restricted noxious-weed seeds when found in bentgrass, Kentucky bluegrass, chewings fescue, hard fescue, red fescue, varieties of named turf-type tall fescue, varieties of perennial ryegrass, or a mixture containing two or more of these grasses.

Delaware, Maryland, New Hampshire, New Jersey, Pennsylvania, Virginia, and West Virginia include UGS in their noxious-weed seed lists. One must also be aware that the UGS are required to be labeled under the heading of either “Restricted Noxious-Weed Seed” or “Undesirable Grass Seed” and shall be declared by name and number per pound or ounce. Additionally, UGS may not exceed 0.5 percent by weight.

Notably, these States also indicate that these grass species may be included as a labeled component of a mixture when each is present in excess of five percent, by weight, of the mixture. Restricted noxious-weed seed or UGS labeling requirements do not apply to grasses and mixtures clearly labeled for pasture, forage, hay, conservation, or soil bank reclamation usage.

References:

- (2021) State Noxious-Weed Seed Requirements Recognized in the Administration of the Federal Seed Act for each of these seven States: Delaware, Maryland, New Hampshire, New Jersey, Pennsylvania, Virginia, and West Virginia State seed laws and regulations.
- Association of American Seed Control Officials (AASCO), Recommended Uniform State Seed Law (RUSSL)

For more information regarding this article, contact Botanist Charlene Burton (704) 810-8880; Charlene.Burton@usda.gov.

UNDERSTANDING NOXIOUS-WEED SEED TESTING

Section 201.16 in the Federal Seed Act (FSA) Regulations requires that “the names of the kinds of noxious-weed seeds and the rate of occurrence of each shall be expressed in the label in accordance with, and the rate of occurrence shall not exceed the rate permitted by the law and regulations of the State into which the seed is offered for transportation or is transported.” This means that the noxious-weed seed label needs to reflect the names and the number per pound of the noxious-weed seeds based on the law and regulations of the State that the seed will be shipped into.

In recent years, noxious-weed seed testing has become a topic of discussion for labeling purposes. There are multiple ways to request a noxious-weed seed test, including All States

Noxious-Weed Seed, Noxious-Weed Seed, and All States Noxious-Weed Seed Except Alaska and Hawaii. So, what is the difference between all these tests, and which one should be requested for labeling purposes?

- An All States Noxious-Weed Seed Test will look for seeds considered as noxious-weed seeds in any of the 50 states. This test is best requested when the company does not know precisely where or into which States the seed may be shipped.
- A Noxious-Weed Seed Test will look for seeds considered as noxious-weed seeds in a specific State. This test is used when the company knows where the seed will be shipped.
- An All States Noxious-Weed Seed Test Except Alaska and Hawaii will look for seeds considered as noxious-weed seeds in any State except for Alaska and Hawaii. Again, this test is used when the company does not know where the seed will be shipped, but the company knows that they will not ship this seed to Alaska and Hawaii.

Each noxious-weed seed test has its purpose. It is up to the company to know which noxious-weed test would best suit their labeling intentions.

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

HYBRID DESIGNATIONS

Hybrid designations, whether names or numbers, are variety names. Since more than one seed producer or company may use identical parent lines when producing a hybrid variety, it is possible that more than one variety name might be assigned to the same parent cross.

The same name is required to be used by all companies using the same parent lines to produce the hybrid since they are marketing an identical variety. If the developers of the parent lines have given the hybrid cross a variety name, that becomes the legal variety name. Otherwise, the variety name would be the one given by the producer or company that first introduced the hybrid seed into channels of commerce. If any of the initial parent seed lines were altered, the resultant cross would be required to have its own unique variety name assigned.

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

SEED REPORT OF ANALYSIS AND LABELING

The Federal Seed Act (FSA) requires seed lots to be tested and labeled accurately prior to being sold in interstate commerce. For correct labeling information, seed companies should have their lots tested by an experienced seed testing laboratory. The laboratory will provide the company a report of analysis containing quality information about the seed lot.

The following information, obtained from the report of analysis, is necessary for labeling purposes:

1. **Pure seed** - The percentage by weight of the submitted seed kind being tested. It does not include the inert matter and all other crop seeds. The pure seed percentage (%) will be used to label seed being offered for sale with the heading "Pure Seed."
2. **Other Crop Seed** - The percentage by weight of the seeds other than those included in the pure seed percentage of the submitted seed kind. If any single other crop seed kind is found to be 5% or more by weight, then it will need to be included on the label, and the sample becomes a mixture. The other crop seed percentage (%) will be used to label seed being offered for sale with the heading "Other Crop Seeds."
3. **Inert Matter** - The percentage by weight of all matter that are not seed. This includes broken seeds, sterile florets, chaff, fungus bodies, stones, soil, rocks, insects, and coating. The inert matter percentage (%) will be used to label seed being offered for sale with the heading "Inert matter."
4. **Weed Seed** - The percentage by weight of all the seeds and tubers that are recognized as weeds by general usage, and by the states and federal laws and regulations. The Weed Seed percentage (%) will be used to label seed being offered for sale with the heading "Weed Seeds."
5. **Noxious-Weed Seeds** - All the seeds of plants or tubers that are recognized as noxious-weeds by the states and federal laws and regulations. The noxious-weed seeds will be listed by common and/or scientific name along with the number found and the number per pound for each species found in the sample. The Noxious-weed seeds will be used to label seed being offered for sale with the heading "Noxious-weed seeds" along with the number of seeds per pound (# / lb.) for each species found.
6. **Germination** - The percentage of seeds that can produce a normal seedling under favorable growing conditions. The Germination percentage (%) will be used to label seed being offered for sale with the heading "Germination."
7. **Germination test date** - The date that the germination test was completed. The Germination test date will be used to label seed being offered for sale.

It is recommended that seed companies understand the following information, but this information is not required to be on the label.

1. **Grams analyzed for purity test** - The weight of the seed, approximately 2,500 seed units, that is required to be analyzed to determine the percentages of pure seed, other crop seeds, inert matter, and weed seeds according to the AOSA rules or FSA regulations for an official test report.

2. **Grams analyzed for noxious-weed seeds** - The weight of the seed, approximately 25,000 seed units, that is required to search for the weed seeds that are considered prohibited or restricted by State and Federal laws and to determine the number per pound for each species found.
3. **Viability** - The total percentages of germination, hard seeds, and dormant seeds. The viability percentage (%) shall not be used to label seed being offered for sale in place of germination percentage (%).
4. **Hard seed** - The percentage of seeds which remain hard at the end of the test period. The hard seed percentage (%) shall be reported separately from the germination percentage (%) on the label.
5. **Dormant seed** - The percentage of seeds that are still firm and have potential to grow but fail to germinate under favorable conditions at the end of the test period. It does not include the hard seed percentage (%). Laboratories usually determine whether a seed is dead or dormant by using a tetrazolium test. Dormant seed % may be included on the label, but it shall not be included as part of germination %.
6. **Abnormal Seedlings** - The percentage of seedlings that did not have all the essential structures that are necessary to produce a normal seedling. The abnormal % should not be included in the germination % for labeling purposes.
7. **Number of Seed Tested** - Most seed testing standards require 400 seeds to be tested for germination for a single component, or any component of a mixture that has more than 15% by weight. If a component has 15% or less by weight of the mixture, a minimum of 200 seeds must be tested for an official test report.

Every laboratory has its own seed report of analysis format, but they all contain the general information pertaining the condition of the specific seed lot. It will be up to the company to understand and interpret the analysis and label their seed lot following the state and federal rules and regulations.

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

REQUIRED LABELING FOR VEGETABLE SEED IN CONTAINERS OF 1 POUND OR LESS

The Federal Seed Act (FSA) regulates agricultural and vegetable seed shipped in interstate commerce. The required labeling for vegetable seed in one-pound containers or less may be different between the FSA than what is required by State laws and regulations.

Required labeling of vegetable seed in containers of one pound or less with germination percentages equal to or above the standard in Section 201.31 of the FSA Regulations:

- The name of each kind and variety. If two or more kinds or varieties are present, the percentage of each. Hybrid seed must be so designated on the label.
- Name and address of the interstate shipper or the name and address of the person to whom the seed was sold (for resale) and the AMS number of the interstate shipper.

Required labeling of vegetable seed in containers of one pound or less with germination less than the standard in Section 201.31 of the FSA Regulations.

- The name of each kind and variety. If two or more kinds or varieties are present, the percentage of each.
- For each kind and variety:
 - The germination percentage
 - The hard seed percentage; if present
 - The month and year the germination test was completed
 - The words “Below Standard” (no smaller than 8 point type)
 - Name and address of the interstate shipper or the name and address of the person to whom the seed was sold (for resale) and the AMS number of the interstate shipper

These requirements can be found in Section 201(b) of the FSA and Sections 201.25 through 201.31 of the FSA Regulations.

For more information regarding this article, contact Seed Marketing Specialist Kevin Robinson (704) 810-7264; Kevin.Robinson2@usda.gov.

SEED PACKAGING AND LABELING REVIEWS

The Seed Regulatory and Testing Division (SRTD) offers the service of reviewing seed labeling and packaging information. This service is offered to the seed industry as well as State seed control officials. There is no charge for this service and SRTD welcomes everyone to take advantage of this whenever needed.

When a company is considering a request for review of seed labeling, packaging, or advertising prior to shipping in interstate commerce, the following information is needed:

- Company name and address
- Name of company representative making request
- Telephone or e-mail address, and
- Image of the labeling, packaging, or advertising proposal

It is preferred that the request be made via e-mail with the image as an attachment. An immediate response will be made verifying receipt of the request for review. The actual response pertaining to the findings and possible recommendations should take no more than five business days. The response will be from the perspective of Federal Seed Act (ACT) compliance. These requests are kept confidential.

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

TRUENESS-TO-VARIETY OVERVIEW 2021

Each year, the Seed Regulatory and Testing Division (SRTD) conducts Trueness-To-Variety (TTV) field tests. These tests determine if seed lots are properly labeled for variety, as required by the Federal Seed Act and State seed laws. This year, SRTD has conducted its TTV field tests on cole crops (*Brassica* spp.) and eggplant (*Solanum melongena*) in two different research stations in North Carolina. The seedlings were grown in SRTD's greenhouse and were transplanted in the field for further testing and evaluation.

SRTD will also test an estimated 200 samples of tall fescue (*Festuca arundinacea*) in fall 2021. SRTD is growing tall fescue seedlings in the greenhouse which will be transplanted and later evaluated during the spring of 2022. SRTD will also conduct electrophoresis tests on Kentucky 31 tall fescue samples to identify those that have different banding patterns when compared with Kentucky 31 foundation seed check samples.

Last year, with the help of the research stations, SRTD was able to donate approximately 16,667 pounds of watermelon and 2,050 pounds of eggplant to the Society of St. Andrews, who distributed the produce to several food banks around the Charlotte area. SRTD would like to thank the States that participated in the TTV program. Once results and information have been compiled, participating States will be notified of any violations of the Federal Seed Act.

For more information regarding this article, contact Agronomist Laura Berrios-Ortiz (704) 810-8885; Laura.BerriosOrtiz@usda.gov.

FEDERAL SEED ACT CASES SETTLED

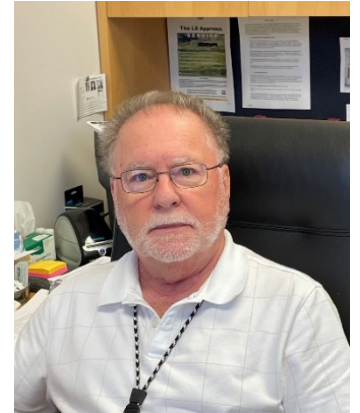
The Federal Seed Act (FSA) provides authority for the regulation of the interstate shipments of agricultural and vegetable seeds. The FSA requires that seed shipped in interstate commerce are labeled with certain information necessary for the seed buyer to make an informed choice. The labeling information and any advertisements pertaining to the seed must be truthful. Between September 1, 2020, and August 31, 2021, a total of 33 seed companies paid \$65,050 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](#). USDA's Agricultural Marketing Service (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 Florida, Georgia, Illinois, Indiana, Kentucky, Louisiana, Maryland, Mississippi, Missouri, New York, Pennsylvania, and Virginia. By working collaboratively with State partners, the Seed Regulatory and Testing Division helps promote uniformity among State seed laws and fair competition within the seed trade through the enforcement of the FSA.

For more information regarding this article, contact Seed Marketing Specialist Kevin Robinson (704) 810-7264; Kevin.Robinson2@usda.gov.

MEET THE SEED MARKETING SPECIALISTS

Roger Burton worked with the Maryland Department of Agriculture for 27 years serving as an Agricultural Field Inspector and later as a Supervisory Inspector in charge of the Seed Regulatory Program. He started with SRTD in March 2004 as a Seed Marketing Specialist. In 2016 he became the Division's first Regulatory Supervisor. Roger's knowledge and 40+ years of expertise is invaluable to SRTD and the seed industry.



Kevin Robinson graduated from Limestone College in Gaffney, South Carolina. Kevin began as an intern for SRTD's Seed Laboratory during the summer of 2003, and after graduating college, he started full time as a Seed Marketing Specialist. For several years he led SRTD's TTV program.



Chi Trinh 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. She began working with the SRTD in January 2016 and brought her extensive seed testing knowledge to the team.



Rodney McNeace has a bachelor's degree in Forest Resource Management from Clemson University. He served in the South Carolina Army National Guard and the United States Army. After his military service, he then worked for 10 years with the South Carolina Department of Transportation as a safety manager. Rodney joined SRTD in January 2016 as a Biological Laboratory Technician and later was selected to fill his current role as a Seed Marketing Specialist



For more information regarding this article, contact Seed Marketing Specialist Rodney McNeace (704) 810-8879; RodneyB.McNeace@usda.gov.

2021 MEETING OF THE INTERNATIONAL SEED TESTING ASSOCIATION

For the second year in a row, the Open Rules Committee Session and the Annual Meeting occurred virtually (May 31- June 3, 2021) due to the COVID-19 pandemic. ISTA has made the most of this unfortunate situation by finding ways to improve the rules process. One of the improvements include making the Open Rules Session a permanent virtual meeting. In making this session virtual, ISTA capitalized on the technical knowledge and experience of seed analysts and scientists from around the world who may not regularly attend the in-person meeting. The added input in rules proposal discussions ensures that the ISTA rules will continue to provide a world-class document containing the most applicable scientific knowledge available.

The Technical Committees (TCOMs) of ISTA are responsible for maintaining, through annual updates, chapters within the ISTA rules. They accomplish this by carefully reviewing or developing rule proposals. These proposals are then submitted to the Rules Committee and the Executive Committee for review and approval. Finally, all changes are submitted to the membership at least two months before the Ordinary General Meeting (OGM) for review.

At the Ordinary Meeting on June 3, 2021, SRTD Director Ernest Allen served as Rules Chair for ISTA and presented proposals to the membership. He also represented the United States as the voting delegate on behalf of the Agricultural Marketing Service, which is the U.S. Designated Authority to ISTA.

Decisions of the Ordinary General Meeting:

- ISTA annual membership fees for 2022 will remain unchanged. No increase was proposed by the Executive Committee or the Secretariat of the organization.
- There were 16 proposals and 10 editorial corrections. One proposal, C.3.1., was withdrawn by the Purity Technical Committee. All other proposals passed. Those proposals that were accepted will be incorporated in to the 2022 Edition of the ISTA Rules which will become effective 1 January 2022. The following is a summary of approved ISTA rule proposals:

New Species and Changes to Species Names

- Addition of new species to Table 2C (*Chenopodium quinoa*)

Chapter 1: ISTA Certificates

- Revision of 1.5.2.4, Clarifying primary nomenclature reporting source

Chapter 2: Sampling

- Clarification of 2.2.12 and 2.2.13, Treated and Coated seed additives
- Revision of 2.5.2.2.1, Mechanical divider method (*Clarification of divider types that may be used for sample reduction*)
- Clarification of 2.5.3, Storage of samples (*Added a reference to other chapters within the rules*)
- Revision of Table 2C Part 1 and Table 2C Part 3 (*Moving *Salvia hispanica* from Table 2C Part 3 to Table 2C Part 1 to reflect its market use as an agricultural crop*)

Chapter 3: The purity analysis

- ~~Revision of 3.2.3, Inert matter (*adding "fern spores" to section 3.2.3*)~~ **Withdrawn**
- Revision of 3.2, Revision of the pure seed definition for *Ornithopus sativus*

Chapter 5: The germination test

- Revision of Table 5A Part 3, Adding an alternate germination for *Eustoma exaltatum* (*Adding 20°C as an alternative germination temperature*)
- Revision of Table 5A Part 1, Adding an alternate germination media for *Glycine max* (*Adding Crepe Cellulose Paper as a substrate*)
- Revision of Table 5A Part 2 and various sections within Chapter 5, Adding Agar as a primary media for *Pinus sylvestris*
- Revision of 5.6.2.1.1, Methods using germination paper (*wording revision*)
- Revision of 5.2.8.1, Revision of abnormal seedling evaluation of *Allium spp.*

Chapter 7: Seed health testing

- Revision of validated seed health methods 7-013a and 7-013b
- Harmonization of pre-treatments for Methods 7-005, 7-006, 7-014, 7-016, and 7-022

Chapter 9: Determination of moisture content

- Revision of 9.2.7 and 9.3.2.7, Guidance for species not listed in Table 9A but is included in Table 2C

For a complete list of approved documents and presentations from the annual meeting, please visit the [ISTA website](#). The 33rd ISTA Congress is scheduled for June 11-14, 2022, in Christchurch, New Zealand.

For more information regarding this article, contact SRTD Director Ernest Allen (704) 810-8884; Ernest.Allen@usda.gov.

OECD SEED SCHEMES 2021

The Organization for Economic Cooperation and Development (OECD) Seed Schemes is an international agreement involving 61 countries for the purpose of promoting the use of high-quality seed around the world through the establishment of harmonized standards for certified seed moving in international trade. The Seed Schemes was first established in 1958 and became part of OECD in 1961. USDA AMS S&T SRTD serves as the National Designated Authority (NDA), representing the U.S. to the Seed Schemes and coordinating the OECD Seed Schemes activities performed by 30 Seed Certification Agencies (SCA's) under a cooperative agreement.

2021 Annual Meeting Outcomes

Due to COVID-19 related restrictions around the world, the in-person annual meeting was cancelled. Ad Hoc Working Groups (AHWG) meet via Zoom during the month of May. The Technical Working Group (TWG) and Annual Meeting was conducted in 2-hour sessions on June 7 and 11, 2021, over Zoom. Pending confirmation by the Committee on Agriculture (CoAg) and the OECD Council, the following approved changes will go into effect on January 1, 2022:

- Require the Date Sealed (month & year) on all OECD labels. This is common practice, but currently only appears in the rules for Certified Mixtures of Herbage Seed found in the Grass and Legume Scheme.
- Changes to Common Rule 11 (Re-packaging and Re-labeling) were approved. The changes mainly pertain to record-keeping by the NDA (Certifying Agency) and the seed company.
- A pilot project on digitalization of the Seed Schemes was approved. If successful, it will streamline the process for NDAs to share information on OECD Certified Seed lots, variety descriptions, and information related to multiplication abroad. With this approval, the Secretariat can seek voluntary contributions to offset start-up costs such as evaluation of potential software developers, legal considerations, etc.
- Guidelines for consideration of control of the certification process for new seed production methods was approved. The AHWG that developed these guidelines was subsequently disbanded.
- The AHWG on Biochemical & Molecular Techniques (BMTs) is now an Advisory Group. This new designation gives it some additional flexibility to incorporate input from experts in the field and more streamlined updating of the list of methods available to aid in varietal purity and identity judgements by NDAs.
- The request by Ukraine to extend their participation to the Grass & Legume Scheme to be able to certify soybean seed was approved.
- Standards for certification of parental lines and commercial hybrid wheat seed were approved on a temporary basis through 2030. Between now and 2030, NDAs will be asked to provide information on their experience with the standards to help determine whether these temporary standards should be made permanent or revised.
- Wilhelmina "Willy" Drost (Canada) was elected to serve on the Bureau as Incoming Chair. For the next two years, Mona El-Kasier (Egypt) will serve as Chair, and Kristiina Digryte (Estonia) will move to Past-Chair.

Ongoing discussions to be continued by AHWGs and the January 2022 TWG.

- The AWHG on Mixtures of Certified Seed will continue to work on the proposal to eliminate mixture rules from the individual schemes to be replaced by one set of common rules governing the mixtures of certified seed. The US OECD Program's position is that more work needs to be done on protection of PVP/PBR rights, modified labeling requirements for small packages, and maximum lot sizes.
- The AHWG on Intervention Processes after Certification will continue to work on proposed rules pertaining to blending lots of the same variety to make larger lots (Common Rule 7.8).
- Hemp standards: the AHWG will continue to develop proposals for updated standards for fiber hemp and new standards for feminized and hybrid seed production processes.
- Proposed requirement to list parent lines as varieties on the OECD international list was referred to the next TWG. Currently, the rules state that if a hybrid is listed that assumes that parent lines are included. However, this creates a problem when countries ship parent line seed with OECD tags for increase because it is cumbersome to verify that the variety is eligible for certification. Although this is a good proposal, the specific language needs some additional work for clarity, as well as addressing concerns of countries that currently do not list parent lines separately.

The next meeting of the Technical Working Group is scheduled for January 24-27, 2022, in either Egypt or France. The 2022 annual meeting is scheduled for June 13-17, 2022, in Tallinn, Estonia. Due to the many impacts of COVID-19 on every organization's meetings, dates and locations for meetings in 2023 and beyond are to be determined.

U.S. Program Assessment Fees:

Current U.S. OECD Seed Schemes Program assessment fees are 15 cents per hundredweight for all species, except corn which is assessed at 26 cents per hundredweight and will remain in effect until June 30, 2022. The program revenue and expenses will be reviewed this fall and announced in December. Since it will have been three years since the last change, an increase is anticipated, but the specifics will be determined by analysis of program revenue and expenses.

For more information regarding this article, contact Dr. Stephen Malone (704) 810-8888; Stephen.Malone@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>.

CALENDAR OF EVENTS

EVENT	DATE
Western Seed Convention Kansas City, MO	November 1-4, 2021
American Seed Trade Association (ASTA) CSS & Seed Expo Chicago, IL	December 6-9, 2021
Organization for Economic Cooperation and Development (OECD) Seed Schemes Technical Working Group Meetings Egypt	January 24-27, 2022
33 rd IPSA Annual Conference Indianapolis, IN	January 24-28, 2022
ASTA Vegetable and Flower Seed Conference San Diego, CA	January 28- February 1, 2022
Association of Official Seed Analysts/ Society of Commercial Seed Technologist (AOSA/ SCST) Annual Meeting Chicago, IL	June 2022
Organization for Economic Cooperation and Development (OECD) Seed Schemes Annual Meeting Tallinn, Estonia	June 13-17, 2022
Association of Official Seed Certifying Agencies (AOSCA) Annual Meeting Seattle, WA	June 2022
AASCO Annual Meeting Geneva, NY	July 2022
33 rd International Seed Testing Association Congress New Zealand	May 4-10, 2022
SRTD Seed School Gastonia, NC	August 2022

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