



The Seed Technologist Newsletter

A newsletter for

**The Association of Official Seed Analysts
and The Society of Commercial Seed Technologist**

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NOTES FROM THE EDITORS

Please do not be alarmed at the length of this edition of the newsletter – it contains lots of valuable information. Apologies to the TZ committee for exclusion of the report from the annual meeting in the last newsletter. That report appears in this newsletter.

Because of the length of this edition, the ‘Ask the Expert’ column has been compressed. Please review the questions posed in this edition and if you feel comfortable answering, please forward responses to either of the editors. We will publish the responses in the next newsletter. Thanks to Larry Prentice at Nebraska Crop Improvement for providing tips for distinguishing between triticale and wheat.

Lastly, articles can be submitted at anytime. Don’t wait for the deadline! Anyone can submit an article, but we consider the appropriateness and timing, and will not break copyright laws. We reserve the right to edit, but will not change content.

Some suggestions for articles:

Seed testing or method ideas, Analyst news, Lab spotlight, General interest, Technical information, Position announcements/Employment opportunities, Workshop announcements, Seed school announcements, Meeting summaries or announcements

Deadline for the May 2006 Newsletter Issue: April 21, 2006

Submit articles on disk or by email to Cindy Finneseth, Wendy Zillgitt, or your regional editor. Find the names and addresses on page 4.

Please type all articles in Arial 12 pt.

One-inch margins on all sides

Please no indents

Please do not define headings

Cindy Finneseth, AOSA Editor
Wendy Zillgitt, SCST Editor

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EXECUTIVE BOARD AND COMMITTEE REPORTS

Letter from the AOSA President

Dear Members,

It has been a busy year and I can't believe that we are already thinking of the 2006 annual meeting. Our hosts have been working diligently to accommodate the many needs of the three organizations meeting together this year. Unfortunately, the length of the meeting doesn't get any shorter. Each year, additional committees are formed which need to be squeezed into the program. Also, with a significant number of analysts holding dual membership in AOSA and SCST, it makes planning more difficult. Dual analysts want to attend both Business Meetings as well as association specific meetings.

Before long I will be sending out a survey to get your input as to what are the most important aspects of the annual meeting. What do you consider to be the necessities and what are the extras? Please take time to fill this survey out for it will greatly assist the host laboratory's plans for the 2007 meeting.

Included in this issue of the Newsletter is the report of the Strategic Planning Session that was held in Kansas City last October. It was an interesting exercise and I am anxious to learn of your reactions to the results. There will be more discussion on the session at the annual meeting, so please review the material. The Board and I look forward to your comments and/or suggestions.

In October I announced to the Board my plans to retire in February with the intention of staying active in AOSA until the meeting. You can continue to reach me at my current email (emc1@nysaes.cornell.edu). I expect to be involved in a number of seed related projects in retirement. Please do not hesitate to contact me with any comments and/or concerns about AOSA.

I am looking forward to the annual meeting and to seeing everyone in Indianapolis!

Sincerely,
Ellen
AOSA President

AOSA Board Meeting Minutes
October 12, 2005
GIPSA, USDA Building in Kansas City, MO

1:00 PM Board meeting is called to order by President Chirco
Roll Call by Executive Assistant Jan Osburn – Board members present: Chirco, Guerke, Curry, Turnipseed, Koechevar, Hafdahl, Waibel, Donaldson, Effenberger and guests Lair and McGuire.
Board Member Absent: Joe Garvey

Agenda Items:

AOSA Business

1. **List of Committee Chairs:** President Chirco and members reviewed the list of AOSA committees and chairpersons for correctness. Chirco suggested that since the Science, Education and Conditioning committees were no longer viable, they be removed. An email will be sent soliciting volunteers to chair the committees that are currently vacant. It was suggested that Chirco check with the USDA in Gastonia for a possible Seed Pathology chair. Laura Donaldson will chair the audit committee for 2006.

President Chirco announced that she would be retiring from her position at the NY State Seed Laboratory in March 2006. Discussion followed and it was determined that, although this situation was not specifically addressed, there was nothing stated in the By-laws that would prevent her from carrying out her duties until the end of her tenure as President. To ensure that there would be nothing to prevent her from continuing her term Curry moved and Guerke seconded a motion that allows the elected president, Ellen Chirco, to finish her term as President until the completion of the 2006 Annual Meeting. Motion passed. The minutes of this board meeting will be published in the next Newsletter in order to inform the membership of the situation. Chirco proposed a conference call in January.

2. **Committee Restructure Proposal (AOSA/SCST):** A proposal to restructure the AOSA and SCST committees was presented. Committees could be divided into such categories as: Administrative, Informational, Technical, etc. Guerke suggested that we form a committee with SCST to see if there is interest to restructure AOSA/SCST committees. Chirco and Diane Mesa will get together and come up with a committee.

3. **Native Species Task Force:** The Native Species Task Force will deal with testing issues and get buyers and sellers and seed analysts together to deal with issues. The goal of the task force is to get a white paper report to the next annual meeting. This will help seed analysts agree on testing methods.

4. **AOSA/SCST Seed Certification Examination:** Turnipseed reported on the Seed Certification Exams. Turnipseed reported that this committee is still working on the possibility of combining the exam. Discussion pursued concerning the possibility of charging for the CSA exam. Turnipseed lead the discussion on the proposals of 1) charging for AOSA exams, 2) having exams only at the annual meetings or having exams in different regions of the country throughout the year or both.

Hafdahl moved that the AOSA should charge a \$100 application fee for candidates that want to take the AOSA Purity exam, Germination exam or to take both exams. Guerke seconded the motion. Motion carried.

5. **Journal Update and Replacement of Editor:** Guerke has resigned the Journal editorship as of spring 2006. Guerke read a letter from Dr. Dennis TeKrony concerning the time and type of work involved in the editorship of the Journal. Guerke also read a letter written by Quentin Schultz concerning advertising and management of the Journal.

Guerke moved and Effenberger seconded that the board approves of the concept of advertising and management that comes from the Journal Marketing Committee as stated in the handout. Motion carried.

6. **Proposed Policy on Copying AOSA Materials:** Waible presented a draft of the AOSA Copy Policy: "This policy pertains to all AOSA publications, current and archived. Permission is granted to anyone to copy small parts or segments of any AOSA publication as part of a handout, a published research paper, or published article. Such use may also be included in presentations. Such uses may be included with education, legal or research purposes. All other purposes must be approved by contacting the AOSA Management Office. In the event that any of these publications is used in its near entirety in an educational format, each student and instructor must own a copy of the respective publication. Proper credits must be made to AOSA." The policy was discussed and it was decided that a vote would be taken at the next Executive Board meeting whether or not to accept the draft.

7. **Website Agreement Update:** Waibel moved and Guerke seconded the motion to accept the written agreement for 2006 as stated. Motion carried. Waibel also would like to send compliments to the web designer for her excellent work.

8. **Seed Analysts Survey Results:** Discussion concerning the results of the Seed Analysts Survey ensued. Topics of discussion included: who should view these results and what should be done about it. There was a suggestion of handing a brochure to all agronomy students about job possibilities in Seed Testing. This would be a project that we could do jointly with SCST. McGuire suggested we connect with the movers and shakers to let them know of the shortage of qualified analysts. Effenberger stated that AOSA/SCST had a symposium ("Promoting Professionalism In Seed Analysis") in Ames, Iowa in 2000 on the subject of promoting seed analysts and he suggested that this survey and this topic be discussed at the next annual meeting with the membership.

Board meeting adjourned for supper at 5:00 pm
Re-adjourn October 12, 2005 7:12 pm

9. **APG Manual Update:** The APG information concerns by-laws, timeline of jobs for officers and committee chairs, etc. Kochevar reported that the updated APG information will be put on a disk and sent to Osburn and Chirco. It was suggested that it could be posted on the website for informational use by new board members and others.

10. **AOSA Rules:** Discussion continued concerning the possibility of a French translation of the Rules. Kochevar will also investigate the feasibility of a Spanish translation.

11. **2005-2006 Annual Meeting:** Donaldson gave a brief update on plans for the 2006 annual meeting to be held June 3-7, 2006 in Indianapolis, Indiana. She mentioned the approximate price (\$270) for registration.

12. **AOSA Bylaws Proposals for 2005-2006:** Osburn discussed the draft of the proposed By-laws changes dealing with Article V and Article X. Article V has section (C) added to address the duties of the Executive Assistant. The change in Article X would change the reference to the "Handbook on Seed Testing" to "Rules for Testing Seed." etc.

Osburn also presented the Balance Sheet and Income Statement and discussed the Vanguard money market of \$7100. The Certificate of Deposit with Bank of America was closed out in July when it matured. The Board decided to move these funds into the Vanguard Prime Money Market to get a better return on our investment.

Osburn also informed the Board that Bank of America in conjunction with Security Metrics had advised the AOSA Management Office that the credit card companies we use to process credit card payments now require that a security check be performed on agencies who process their credit card payments. This will be done on an annual basis. The cost this year was \$99.95 (50% discount was given because we are a Bank of America customer). The security check was performed on the AOSA Management Office laptop and we passed the Site Certification. The CPA is in the process of completing the June 30 Financial Statements for the 2005. These should be available by November 15 as well as the required tax return due by November 15.

13. **AOSA Representatives at all the ISTA and OECD Meetings held around the world:** Curry discussed the importance in involvement of the AOSA with attending the meetings of the OECD. In the past the chair of the International committee has represented AOSA. Chirco suggested that we contact Dick Lawson to learn the proper channels to go through to attend the OECD annual meeting. Turnipseed will talk with Pat Brownfield, Dr. Dick Payne and Susan Maxon and we could discuss this with ASTA.

14. **Doug Ashton-Thank You:** A thank you note from Doug Ashton was read to the group.

AOSA Financial Issues:

1. **Bank Statements/Charges:** Osburn discussed that Bank of America now will charge a monthly bank charge of \$3/month for return of paper checks with the bank statements. It was decided that Osburn would speak with the CPA that works for AOSA and discuss the necessity of returned paper checks.

AOSA Expenditure Requests:

1. **Purchase of a laptop for Rules Committee:** Osburn discussed the possibility of purchasing a laptop for the new Rule Committee chair. It was decided to wait until the new chair was chosen to see if there would still be a need.

2. **Request for TZ Database Funding:** Annette Miller had submitted a request to hire a programmer to complete the coding for an interactive online database for TZ testing. The cost would be close to \$2,000.

Effenberger discussed the possibility of AOSA purchasing database software that would allow persons interested in TZ testing to download TZ images to one site. It was mentioned that there is not one place where people can locate good TZ images. Effenberger said that money could come from different sponsors, including the possibility of SCST helping to support this effort. After considerable

discussion a motion was made and seconded that AOSA submit \$2000 for software with the idea that sponsors will be approached. The motion failed. Turnipseed suggested that someone should line up sponsors, get SCST to agree to support this worthwhile project and then come to the annual meeting with a motion.

Further Discussion/New Business:

Guerke spoke briefly about AASCO producing a sampling handbook that will be sold in 2006. The purpose of the handbook is to promote uniformity in sampling. It was discussed that possibly AOSA would like to partner with AASCO in promoting this handbook. The title of the book is, "Handbook on Seed Sampling." A sample of the handbook was passed around for observation.

Meeting adjourned: 8:55 pm

Respectively submitted,
Dan Curry Secretary

Rapid Strategic Planning Session

Kansas City, Missouri
October 13, 2005

AOSA QUESTION:

How Do We BEST Increase relevance and effectiveness as a seed testing organization to promote education, research, development, and publication of uniform methods to meet the needs of agriculture?

AOSA MISSION:

AOSA educates and promotes research, development, and publication of uniform/standardized methods through collaboration to meet the changing needs of agriculture.

AOSA VISION:

AOSA will continue the pooling of resources with SCST and other affiliate organizations to maintain financial stability and relevance through active development of seed testing protocols and joint publications. We will encourage mentoring, development, and involvement of new seed analysts.

Final - Strategic Profile Statements:

1. AOSA will encourage and support joint workshops designed for continuing education and meeting the needs of new seed analysts.
2. AOSA will collaborate with SCST and other organizations in the areas of education and publications both by pooling money and human resources.
3. AOSA promotes education and "Rules" development by promoting referees and Proficiency Testing.
4. Consolidate AOSA/SCST committees as appropriate.
5. Expand representation at meetings and through media and enhance meeting organization.
6. Explore revenue expansion.

Final - Strategic Profile Statements and Objectives:

Strategic Profile Statement #1: AOSA will encourage and support joint workshops designed for continuing education and meeting the needs of new seed analysts.

Specific Objective: By January 2006 AOSA will mandate a representative to attend all invited affiliate organization annual meetings so AOSA will always be represented as the needs may arise.

Strategic Profile #2: AOSA will collaborate with SCST and other organizations in the areas of education and publications both by pooling money and human resources.

Specific Objective: At the June 2006 Annual AOSA/SCST meeting, the boards will develop a preliminary plan for pooling financial and human resources through shared publications and workshops.

- Identify needed handbooks and updates to existing publications and other shared revenue projects.
- Develop expectations for Journal publications from future symposium/workshops.

Strategic Profile #3: AOSA promotes education and “Rules” development by promoting referees and Proficiency Testing.

Specific Objective: A program of continuing education requirements will be developed by January, 2006 and presented to the executive board members during the January conference call to be voted on by the membership by June 2006. The program will include referee and proficiency testing requirements for every CSA to enhance understanding uniformity and development of the “Rules”.

Strategic Profile #4: Consolidate AOSA/SCST committees as appropriate.

Specific Objective: The boards of AOSA and SCST will have a joint conference call in the first week of February, 2006 to adopt a plan of consolidation of committees for better use of joint organizational resources and to determine any prerequisites, necessary by-law changes and committee structure.

Strategic Profile #5: Expand representation at meetings and through media and enhance meeting organization.

Specific Objective: The president will appoint an action group to develop a continuing education point system to be implemented by July 1, 2006. All AOSA seed analysts will be required to participate in the point system to keep all analysts involved and proficient.

Strategic Profile #6: Explore revenue expansion.

Specific Objective: The AOSA President will contact the SCST President by November 15, 2005 to form a joint SCST/AOSA ad hoc revenue enhancement committee* to propose innovative mechanisms to ensure long-term sustainability. At the June 2006 annual meeting the committee will make at least 4 recommendations to the respective association boards to raise an additional \$20,000 per year for financing association business.

- *Suggested that the ad hoc committee consist of business managers and treasurers and 2 at large members from each association.*

Strategic Profile Statements from Planning Session:

Have a joint planning session with the SCST Board to identify a long-range plan of collaboration and cooperation.

- Consolidate AOSA/SCST committees as appropriate.
- Develop a common analyst certification exam.
- Rules translation into French and Spanish
- Expand representation at meetings and through media and enhance meeting organization.
- Explore revenue expansion.
- AOSA/SCST actively pursues statements of support from: AASCO, ASTA, AOSCA, USDA-APHIS, USDA-AMS SRTB, NASDA by a joint resolution.
- AOSA will collaborate with SCST and other organizations in the areas of education and publications both by pooling money and human resources.
- AOSA promotes education and “Rules” development by promoting referee and proficiency testing.
- AOSA will encourage and support joint workshops designed for continuing education and meeting the needs of new seed analysts.
- By continuing to pool our resources with SCST both organizations will achieve better financial stability.

Specific Objectives from Planning Session:

- The AOSA president will contact the SCST president by November 15, 2005 to form a joint SCST/AOSA ad hoc revenue enhancement committee* to propose innovative mechanisms to ensure long-term sustainability. At the June 2006 annual meeting the committee will make at least 4 recommendations to the respective association boards to raise an additional \$20,000 per year for financing association business.
- A program of continuing education requirements will be developed by January 2006 and presented to the executive board members during the January conference call to be voted on by the membership by June 2006. The program will include referee and proficiency testing requirements for every CSA and will be implemented July 1, 2006 to enhance understanding, uniformity and development of the “Rules”.
- By January 2006, AOSA will mandate a representative to attend all invited affiliate organization annual meetings so AOSA will always be represented as the needs may arise.
- The president will appoint an action group to develop a continuing education point system to be implemented by July 1, 2006. All AOSA seed analysts will be required to participate in the point system to keep all analysts involved and proficient.
- The boards of AOSA and SCST will have a joint conference call in the first week of February 2006 to adopt a plan of consolidation of committees for better use of joint organizational resources and to determine any prerequisites, necessary bylaw changes, and committee structures.

-
- At the June 2006 Annual AOSA/SCST meeting, the boards will develop a preliminary plan for pooling financial and human resources through shared publications and workshops.
 - Identify needed handbooks, updates to existing publications and other shared revenue projects.
 - Develop expectations for Journal publications from future symposia/workshops.

**Suggested that ad hoc committee consist of business managers and treasurers and 2 at-large members from an association.*

SCST President's Report

Diane Mesa

Your SCST executive board met in December to have our usual mid-winter board meeting and this year our third strategic planning session. Some of us are becoming old hands at the strategic planning process (read more on this process later in the Newsletter), allowing us to cover more ground in less time. The initiatives resulting from the session will help our organization better serve the diverse membership and reinforce our mission to promote professionalism and ensure proficiency by examining and continuing to educate seed analysts.

There are several significant initiatives committees and tasks forces will be working on in the next two years. One that is underway is the re-write of the Constitution and By-Laws of SCST. This is a long overdue process that will remove redundancy and improve readability of the document as well as make it easier to review for revisions.

AOSA and SCST will be launching a joint task force that will examine novel ways to increase revenue of both organizations. Members of this group are: Matt Levy, Anita Hall, Dan Curry, and Jan Osburn. They are charged with looking for ways to raise \$10,000 for each organization.

A perennial issue for our organization is non-uniformity of test results. This is a problem the seed industry has found even for "standardized" tests such as germination for certain species. A task force will be looking into this to find what can be done to assure more consistency from one lab to another running the same test on the same species.

The Journal of Seed Technology, a joint publication between AOSA and SCST is in need of a new editor. A job description for this position is being written and a search is underway. The board has identified the need for a journal committee that will be responsible for supporting the editor by soliciting papers, assisting with production, and look for ways to raise awareness of the publication and increase subscriptions.

The annual meeting planning group has a tentative schedule made up for the June 2006 meetings. With AOSA, SCST, and AOSCA meeting together, it is a balancing act to please all participants and still allow time to network and enjoy the hospitality of Indianapolis. Compromise will be necessary in order to keep the meeting length reasonable. The challenges reinforce the need for committees to complete their work prior to the annual meeting and use this opportunity to update members on the committee's activities.

SCST Executive Director Update

It is hard to believe that the annual meeting is only four months away. The host committee is hard at work planning what will be an excellent opportunity for both work and recreation. The committee chairs are completing projects and developing agendas for their meetings. There is a lot to accomplish in only three and half days but it can be completed with cooperation, preparation and participation.

This is a banner year for the SCST as members officially vote on the AOSA Rule Proposals for the first time. Please take the time to review the proposals included in this newsletter and plan to attend the open Rules Committee meeting in Indianapolis. Included in this newsletter is an article explaining how the voting process will work. The executive board plans to send a survey in the spring designed to encourage deliberation on the proposals and to identify which proposals will require extensive discussion at the meeting.

Thank you to those who participated for returning their proficiency testing results. The analysis of results will be published in the May newsletter.

Please remember:

- March 1, 2006, applications deadline for the RST, CVT, CPT, RGT, and CGT exams. Please contact me if you have any questions.
- Long Range Planning Agenda items need to be submitted to the board by April 15, 2006.
- 2006-2007 Dues need to be paid by May 1st, 2006.

SCST Membership Update January 2005

RST	141
Associates	54
Research	11
RGT	19
CGT	13
CVT	3
CVT/CGT	1
RST/CGT	6
RST/RGT	1
Total Membership	249

New Associate Members

Emily Skelton, Seeds of Change, San Juan Pueblo, New Mexico

Robert Kehres, Ohio Prairie Nursery, Hiram, OH

Richard Larsen, Precision Ag Services, Versailles, KY

RST to RMI

Mira Kvame, Seneca Foods, WA.

Laura Furu, Universal Seed Testing, Modesto, CA

New RGTs

Ryan Johnson, Illinois Crop Improvement, Champagne, IL.

Brenda Johnson, BioDiagnostics, Inc. River Falls, WI

Michael Thompson, BioDiagnostics, Inc. River Falls, WI

New CGTs

Erin Murphy-Untz, BioDiagnostics, Inc. River Falls, WI

RGT to RMI

Rhonda Raley, BioDiagnostics, River Falls, WI

SCST Executive Board Winter Meeting

12/10/2005

Chicago, Illinois

Present- President Diane Mesa, Vice-President Gil Waibel, Directors-at-large Quentin Schultz, Brent Reschly, Doug Miller and Stewart Oliver, Executive Director Anita Hall.

I. Call to order

The meeting was called to order at 8:09am CST.

II. Additions to the Agenda

A review of the strategic planning objectives was added to the agenda.

The board decided to discuss a number of items out of order as Quentin had to leave at noon.

III. Executive Board Reports

A. Executive Director

Anita Hall presented the membership and financial update. The board suggested sending another notice to members regarding accessing the newsletter on line. The CD duplication company will be contacted to see if there is an alternative to the plastic case. Options for boosting sales of the Training Manual were also discussed.

Gil moved to pay Gary Gibbons \$500 plus travel expenses for the strategic planning session. Brent seconded, motion carried.

B. President

Diane Mesa reported that she had attended the AASCO and AOSCA summer meetings and the monthly SCST board conference calls. She was appointed to the AOSCA Advisory Committee and has corresponded with several AOSA board members.

C. Vice President

Gil Waibel reported that the RGT board of examiners met for a conference call in November and the RST board of examiners will meet in January. One member of the RST and one member of the RGT BOE need to be replaced.

D. Reports of the Directors at Large

Stewart Oliver reported that he worked with the Rules Committee to develop the procedures for SCST members to vote on the AOSA rules and has participated in the monthly conference calls.

Doug Miller reported that he has contacted the Ethics Committee and has worked with the Immunoassay and Genetic Technology Committees to organize workshops. He is serving as the Herbicide Bioassay working group representative to the Proficiency Testing committee.

Brent Reschly reported on his activities as ISST president, co-chair of the Proficiency Testing Committee and RST Board of Examiners.

Quentin Schultz reported on the C&B review task force progress and the Journal Marketing Committee plans for increasing subscribers and submissions.

*Gil moved to accept the report of the executive board. Doug seconded, **motion carried.***

IV. Committee Reports

The standing and special committee reports were reviewed. Responses from the board will be sent to the committee chairs by Hall.

V. Correspondence

A. Annette Miller, TZ Database

The board discussed the proposal from the TZ committee to fund the programming of a TZ database to be hosted on the SCST website. Several questions were raised about the database; these will be sent back to the committee for clarification.

The committee would like to raise money from the seed industry and it was suggested that STRF be used as a vehicle for these donations so that they can be tax deductible.

*Gil Waibel moved that the SCST board propose to the STRF board that STRF fund the Tetrazolium Testing database. Stewart Oliver seconded, **motion carried.***

Anita will draft a letter and proposal to STRF and circulate it to the board.

VI. Old Business

A. The Journal, Seed Technology

1. Financial/subscription update

A reduction in costs is needed; the board suggested making the publication available in other formats. Current subscribers have been invoiced for 2006.

2. Discussion

Marketing plans- the committee discussed putting together a job description and compensation recommendations for the editor position. Submissions from US researchers need to be encouraged. It was suggested that a past journal volumes, a "journal library" could be offered on CD. Publication of abstracts should be required from research papers presented at the annual meeting. The duties of the editor and the Journal marketing committee need to be defined so that an AOSA and SCST can set-up an effective structure for promoting and running the Journal.

*Quentin moved to draft a job description for a paid editor position for the Journal Seed Technology. Brent seconded, **motion carried.***

Anita will draft the job description and circulate to the Journal marketing committee and the board. The proposal will be forwarded to the AOSA board.

*Quentin moved that revenues generated from advertising on the AOSA and SCST websites and in the Newsletter directory be used for funding the editor position for the Journal. Doug seconded., **motion carried.***

B. Proficiency Testing

1. Program Plan

The board reviewed the draft program, the following suggestions will be returned to the committee:

- Provide examples of corrective actions
- Draft changes to Maintenance of Membership section of the C&B
- Outline an "appeals process" for out of tolerance results
- Include information about statistical analysis of results
- Develop a form that can be used to identify reasons for out of tolerance results.

C. Executive Director Evaluation

Tabled until January 19th conference call, Anita was asked to provide information for cost of a term life insurance policy naming SCST as the beneficiary.

VII. New Business

A. AOSA/SCST Joint Strategic Planning Objectives

1. Joint revenue committee
2. Committee consolidation

The board discussed the letter from AOSA President Ellen Chirco regarding two joint strategic planning objectives and the planned joint board conference call scheduled for February 16th, 2006. The board discussed three topics for the conference call: A draft proposal for committee consolidation as well as requirements for committees to prepare in advance for the annual meeting; establishing a joint revenue committee that will look both at ways to increase revenue and reduce operational costs; and forming a committee to review the AOSA and SCST exams with the goal of creating a single exam for both organizations. Anita and Doug will serve as SCST representatives to the joint revenue committee. Gil Waibel and Brent Turnipseed will participate on the exam committee. Anita will draft a correspondence to Ellen stating SCST interest in these joint strategic objectives.

B. Annual Meeting update/Call for Long Range Topics

Topics for the 2006 long range planning meeting were discussed and reviewed. A call for topics and preliminary agenda will be published in the February Newsletter. The preliminary annual meeting agenda was reviewed. Committee chairs will be reminded that they need to complete as much work as possible prior to the annual meeting as meeting time will be limited.

C. Rule Voting Procedures

Stewart Oliver presented a draft proposal from the Rules Committee; the board suggested clarifying what an "abstention" is. The procedures will be printed in the February Newsletter along with the rule proposals. SCST members will be surveyed in April about the proposals and strongly encouraged to attend the open rules committee meeting.

D. Grader Accreditation

Ideas for moving forward on the accreditation of graders in the US were reviewed and discussed.

E. C&B Review Committee

Quentin presented the work of the committee to date. The committee requested approval from the board to move forward with a rewrite of the C&B.

Quentin moved that the board authorize the task force to move forward with rewriting the Constitution and By-Laws with the goal of having a preliminary draft reviewed by the board in summer 2006, published in February 2007 and discussed at the 2007 annual meeting, with a ballot to be sent to the members following the meeting or the proposal returned to the task force for additional consideration. Gil seconded.

Discussion:

The board decided to move forward with the project and suggested that a C&B committee be added to the standing committees, duties to include a periodic review of the C&B.

Motion carried.

F. SCST Privacy Policy

An umbrella privacy policy and procedures to cover exams, proficiency testing, ethics, membership information, credit card payments, document retention, document tracking and board motions is being developed and will be reviewed by the board during the 2006 meeting.

VIII. Adjournment

Gil moved to adjourn, Brent seconded, the meeting adjourned at 4:45pm.

SCST Strategic Planning Review

12/2005

Chicago, Illinois

In December the SCST executive board met in Chicago for a strategic planning session. This was the third time the SCST leadership has undergone the strategic planning process. Strategic planning is an invaluable tool for understanding the challenges and opportunities facing the SCST and ensures that we remain relevant and responsive to the needs of members and the seed industry.

What is Strategic Planning?

In its simplest form the purpose of strategic planning is to determine where an organization is going in the next 18-24 months, how it is going to get there and who is going to be responsible for actions along the way. Through strategic planning, an organization is able to set goals and develop specific plans to achieve these goals. In order to set realistic and relevant goals, the organization should have an unambiguous mission or vision statement and a key question that it is trying to answer or respond to during the strategic planning process.

The Strategic Planning Process

The basis of strategic planning is a clear and truthful understanding of the issues currently facing the organization. The group compiles a large list of concerns, opportunities, questions, problems, and potential benefits for the organization and through a process of weighting by importance, reduces this list to five or six main objectives. These objectives or goals are further refined until the organization has specific implementation plans for each strategic objective.

SCST Key Question

How can we best illustrate the value of SCST to our members and the seed industry in the next 18-24 months?

SCST Mission/Vision Statement

"SCST promotes professionalism and ensures proficiency by examining and continuing to educate seed analysts. This provides accurate and timely information to the seed industry. The SCST will build upon these strengths by broadening the membership base to include emerging technologies. SCST will continue to promote research and develop publications which enhance seed technology."

SCST Strategic Objectives for 2006-2007:

- Combine committees and increase collaboration with AOSA to provide a positive, strong and united resource on seed technology for the seed industry.
- Understand the needs of the seed industry and SCST members to better serve these groups.
- Explore and develop potential new membership categories.
- Strive to achieve standardization of protocols and higher uniformity of test results.
- Expand funding to support prioritized SCST goals and objectives.

Tetrazolium Subcommittee Report

Chair: Annette Miller

Website contents were reviewed and handbook updates for 2005 were approved. These include the following pages: Sparganiaceae (new page), Fabaceae II new language about green embryos, and Tropaeolaceae (new illustrations). These will be posted by this fall.

Interest was expressed in creating a separate *Lupinus* page. Other priorities for new pages will be species listed in NE, SD, and ID seed law lists of those allowed for labeling based on TZ as the primary viability indicator. Photos and assistance for new pages were solicited. Terry Freeman (UT) is looking for TZ photos of *Bassia*, *Atriplex*, *Linum*, and *Elymus elymoides*. terryfreeman@utah.gov

Assistance with captions for the Moore *Zea* TZ slides was solicited. Pat Brownfield was recommended as a possible information source about the slides.

TTC supply problems were discussed. Sigma has suspended shipments of TTC to North America. Fisher has resumed supply of TTC after a brief interruption earlier this year. Other suppliers listed in the handbook still have the compound available.

Marian Stephenson showed the progress on the TZ/GERM database project. We currently need a volunteer with SQL/PHP experience who is willing to work on the project.

There was little interest expressed in an indexing project for the TZ bibliography. The project was deemed low priority unless we can find appropriate indexing software.

Annette presented Marian Stephenson with an AOSA Certificate of Appreciation and gift for her many years of assistance on the TZ committee.

ISST Report to SCST/AOSA Newsletter

The ISST Board of Directors has met two times during the Fall of 2005.

The ISST Board of Directors consists of Brent Reschly, Izelle Allison, Sharon Rettaler, Matthew Levy, Glen Green, Mary Van Zelst, Barb Bolan, Mike O'Neal, and Etebom Wille (representing Nigeria).

Committee Chairs are as follows:

President: Brent Reschly

Vice President (acting): Izelle Allison

Secretary: Sharon Rettaler

Treasurer:

Membership: Glen Green

Examination/Education: Pat Brownfield/Mike O'Neal

Editorial/Public Relations (acting): Brent Reschly

Research: Barb Bolan

Ethics/Legislative: Laurie Conradson

The Examination and Education Committee has been working on the continued development of an ISTA exam for analyst accreditation. This has been the main focus of the There has been several communications with the ISTA Board and ISST and a meeting is being arranged for the upcoming ISTA meeting in Zurich to review the exam and structure.

The Public Relations and Editorial Committee submitted the 2005 Summer ISST report to members. The report was filled with information on the seed industry and research around the world. If you did not receive the report or would like to view it, they are available for downloading from our website: www.isstech.org The committee is soliciting article for the 2006 Winter Report which should be released in April.

In closing, we would like to thank everyone that has helped on committees and with the organization, we will continue to ask for your help and support in the future. We feel that the ISST message is making its way in the world.

Seed Testing Standardization Research Funding Committee Results of Membership Survey to Establish Research Priorities 2005

Ranking of Research Areas

- 1 Germination and Dormancy
- 2 Analytical Purity
- 3 Viability Testing
- 4 Vigor
- 5 Genetic Technology
- 6 Seed Pathology
- 7 Sampling and Tolerances
- 8 Storage and Deterioration
- 9 Moisture Testing
- 10 Other

Specific Crops Needing Research

***** Native Species, Soybeans

***** Corn, Grass Seeds, Wheat

**** Bluegrass, Legumes

*** Asteraceae, Native Grasses, Range Grasses, Ryegrass

** *Brassica* spp., Flowers, Orchardgrass

* All crops, Barley, Bean, Bermudagrass, *Beta vulgaris*, Bromegrasses, Canola, Clovers, Coated Seed, Fescue, Grain, Kentucky Bluegrass, Lettuce, Millet, Mixtures, *Nepeta caria*, Oats, Onion, Panicum, Quackgrass, Reed canarygrass, Sorghum, Wheatgrasses

Specific Problems Needing Research

Analytical Purity

- Define the seed unit in natives in the Asteraceae

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- Pure vs. inert in Asteraceae
 - Asteraceae family- should we be using “intact achene” on species such as sagebrush when we can visibly determine whether or not it is empty- possibly adopt ISTA rules for this family
 - Adding new species to AOSA Rules
 - Blowing points of grass species
 - Analyst’s proficiency in Kentucky bluegrass purity
 - Purity in range grasses
 - Develop blowing procedures for all grass seeds
 - Pure seed definitions for species not in the rules
 - Pure seed definitions for low grade samples
 - Develop better method to deal with multiple florets in grass seeds
 - Develop time saving methods for purity in native grasses
 - Need 1/3 rule on more grass species
 - Repeatability of purity analysis in soybeans
 - Develop time saving methods for purity tests
 - Educating Analysts in Techniques of native species
 - Define pure seed and inert in native species (Asteraceae, Graminae)
 - Develop methods to determine pure seed and inert in native species
 - Identification of different varieties of wheatgrasses
 - Identification of different varieties of bluegrasses
 - Identification of different varieties of bromegrasses
 - Identification of annual vs. perennial ryegrass
 - General Blower replacement
 - Determine blowing points
 - Fluorescence test in Ryegrass
 - Inert and multiple florets in orchardgrass
 - Analytical problems with coated seed
 - Current definition of pure seed unit in quackgrass allows for seed that is most likely non-viable to be counted as weed seed

Genetic Technology

- Method comparisons in corn: ELISA, herbicide bioassay
- Protein versus DNA tests for traits
- Proper techniques to test for new traits
- Need (PCR) method to test annual from perennial Rye grass
- Need biochemical/genetic technologies to separate bentgrasses, bluegrasses, tall fescue/ryegrass.
- Improve genetic technology tests for corn
- Need a rule on genetic tests for soybeans
- Need a quick affordable test on genetic characters in soybeans
- Methods to test for GMO traits
- Improved methodology
- Round-up testing in soybeans
- Genetic technology in wheat

-
- Genetic test to differentiate between annual and perennial ryegrass

Germination and Dormancy

- Standardization between laboratories interpretation of AOSA Rules on reporting dormancy – “Additional directions”
- Methods of determining dormancy in range grasses
- Need faster dormancy breaking methods for all grasses
- Need effective dormancy breaking methods for native grasses
- Improving germination tests in corn
- Improving germination tests on soybeans
- Mold growth on Kimpac in soybeans
- Testing 400 vs. 200 seeds in soybeans
- Labeling of traits- tolerance in corn and soybeans
- Other crop/variety/trait classifications in corn and soybeans
- Develop time saving methods for germination tests
- Dormancy in native species
- Dormancy in native grass species
- Dormancy in sunflower
- Standardization in flowers
- Germination methodology for native species
- Should we be breaking dormancy on a germination test for range grasses and native species? More research to determine when germination tests should be terminated. Are we killing viable seed with longer germination tests?
- More work on TZ testing, maybe a series of pictures of real tests and seed stained
- Problems with prechilling and temperature in bluegrass
- Examples of deformities in oat and wheat
- TZ and germination relationships in native species
- Hardseededness in *Nepeta cataria*
- Ungerminated seeds in *Beta vulgaris*
- Acceptance of TZ in dormant natives
- Dormancy in Bermuda grass
- Dormancy in millet
- Dormancy in Barley
- Discrepancies between TZ and germination results in Kentucky bluegrass
- Surface seed mold in Kentucky bluegrass
- Seed surface mold in reed canarygrass

Moisture Testing

- Accuracy of moisture testing on high moisture corn at harvest
- Improve moisture testing of soybeans
- Develop microwave method to assess seed moisture in less than 10 minutes for all seeds
- Guidelines or acceptable tables for moisture tests in legumes
- Moisture test for wheat
- Moisture test for corn

Sampling and Tolerances

- Size of sample and number of replicates for corn
- Size of sample and number of replicates for sorghum
- Size of sample and number of replicates for soybeans
- Develop sampling and tolerances for all crops
- Develop tolerances for TZ tests for all species
- Send out story problems for extra practice in sampling and tolerances in grasses and legumes
- Sampling for orchardgrass
- Sampling and tolerances for mixtures
- Sampling and tolerances for bluegrass

Seed Pathology

- *Phomopsis* on soybeans
- Stewarts wilt field inspection compared with laboratory tests in corn
- Evaluating mold growth on Kimpak and interpreting seed quality in soybeans
- Effect of temperature i.e. AA @41° c on *Phomopsis* in soybeans
- Effect of temperature i.e. AA@ 41°c or 10°c cool test on *Fusarium* in small grains and wheat
- Rate of growth of decay *Rhizopus* etc on sunflowers
- Types, causes and solutions for pathogens on *Brassica* spp.
- Seed pathology in soybeans
- Seed pathology in corn
- Seed pathology in wheat

Storage and Deterioration

- How production environment determines “shelf life” in corn
- Storage and deterioration on corn
- Relation to longevity of accurate test results
- How to identify decay caused by inadequate storage
- Insect and rodent problems in grain
- Insect and rodent problems in grasses
- Insect and rodent problems in soybeans

Viability Testing

- Bringing all labs on the same page for viability testing
- Research of TZ testing
- Definition of “hard seeds”
- Use of TZ tests in corn
- Use of TZ tests in soybeans
- Vigor testing of vegetable and flower species
- Evaluate if TZ can be used as an official test in grasses
- Interpretation of immature seed in a viability test

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- Interpretation of TZ results in native species
 - Interpretation of secondary infection i.e. *Phomopsis* in soybeans and *Fusarium* in small grains
 - Start developing rules for TZ testing protocols in range grasses and native species
 - Develop viability tests for new species of flowers
 - Continue to explore current methods for viability testing on grasses and legumes
 - TZ and germination relationships in native species
 - Viability testing in soybeans
 - Viability testing in wheat
 - Viability testing in sorghum

Vigor

- Standardized methods and media differences in cold tests on corn
- Vigor tests on corn
- Vigor tests on soybeans
- Develop vigor tests for grasses
- Develop measures of uniformity for lettuce, onion, and beans
- Vigor test for wheat
- Vigor test for fescue
- AA, Cold, or other vigor test protocols for Brassicas and canola

Other

- Clarify the reporting requirements for dormancy breaking methods listed in additional directions in the rules.
- Seed treatment effect on germination (i.e. Vitavax)
- Uniformity in testing between labs (funded blind referees)
- Pure Research at the discretion of the researcher

Research presently being conducted in AOSA and SCST Laboratories

- Cold test comparison of methods and field emergence
- Storability of various seed treatments and effects on viability and vigor
- Research on vigor and viability of corn and soybeans
- Tetrazolium tests on grasses and legumes
- Native grass test methods
- Viability studies to determine if length of test is adversely affecting total viability in Sagebrush, Antelope Bitterbrush and Switchgrass
- Research on blowing procedure by air velocity calibration on perennial ryegrass, tall fescue, annual ryegrass, orchardgrass and Kentucky bluegrass.

AOSA and SCST Seed Testing Standardization Research Funding Committee Funded Projects 1989-2005

- 1989 Effects of Temperature, Testing Time, and Gibberellic Acid on Big Bluestem (*Andropogon gerardii* Vitman) – Tim Gutormson
- 1989 Sources of Variation in the Standard Germination Test for Peanut (*Arachis hypogaea*) – Janet M. Ferguson
- 1990 Effects of Temperature, Testing Time, and Gibberellic Acid on Big Bluestem (*Andropogon gerardii* Vitman) Year 2 - Tim Gutormson
- 1990 Seed Germination and Vigor in Purple Coneflower (*Echinacea purpurea*) after Seed Priming - Robert L. Geneve
- 1990 Dealing with the Effects of *Phomopsis longicola* in Soybean Towel Germination Tests – Richard S Ferris
- 1991 Effects of temperatures and moistening agents on Switchgrass (*Panicum virgatum*) seed viability - Tim Gutormson
- 1991 Seed Germination and Vigor in Purple Coneflower (*Echinacea purpurea*) after seed priming - Year 2 - Robert Geneve
- 1992 Effects of temperatures and moistening agents on Switchgrass (*Panicum virgatum*) seed viability Year 2 – Tim Gutormson
- 1992 Germination of Pelleted Tobacco (*Nicotiana tabacum*) Seed– Alan L. Taylor and Ellen Chirco
- 1993 Germination Requirements of *Penstemon pendlandii* an endangered species – Julie Laufmann and Loren Wiesner
- 1994 Germination Requirements of *Penstemon pendlandii* an endangered species - Year 2- Julie Laufmann and Loren Wiesner
- 1995 Coleoptile damage in wheat - Robert L. Warner and Stephen C. Speath
- 1996 Seed Dormancy and Germination Requirements for Needle-and-Thread Grass (*Hesperostipa comata*) – Stanley G. Kitchen
- 1997 An Investigation of Seed Dormancy and Germination Requirements in Four Globemallow (*Sphaeralcea*) Species – Stanley G. Kitchen
- 1998 Seed Dormancy and Germination Requirements for Three *Eriogonum* (Wild Buckwheat) species – Stanley G. Kitchen and Susan E. Meyer
- 1999 An Investigation of Methods to Break Peanut (*Arachis hypogaea*, L.) Seed Dormancy– Jan Spears, Jewell Stallings, and Brenda Penny
- 2000 Saturated salt Accelerated Aging (SSAA) Test for Assessing and comparing sh3 and se Sweet Corn Lots – Mark Bennett, Andy Evans, and Elaine Grassbaugh
- 2002 Reevaluating AOSA Standard Germination Methods for Big Bluestem (*Andropogon gerardii*), Little Bluestem (*Schizachyrium scoparium*) and Indiangrass (*Sorghastrum nutans*)- Amanda Patton and Tim Gutormson

2003 Improving reproducibility of soybean standard germination test: interaction between seed moisture content and substrate – A. Susana Goggi

2004 Improving reproducibility of soybean standard germination test: interaction between seed moisture content and substrate – Year 2- A. Susana Goggi

2005 The efficacy of the stratification- redry method in overcoming dormancy in North American fir (Abies) seeds – George Edwards and Victor Vankus

Summary of Results of Research Funded by Seed Testing Standardization Research Funding Committee 1989-2004

Projects Funded – 20

Reports to Committee - 20

Newsletter Publications -18

Abstracts published in the Newsletter -10

Articles published in the Newsletter - 2

Rules Proposals - 6

Journal Publications - 4

AOSA/SCST Seed Testing Standardization Research Funding Committee Committee Members 1985-2004

Membership of the committee is made up of chairmen of the Rules, Research, Referee, and Germination and Dormancy Committees.

Doug Ashton, Kelly Brook, Pat Brownfield, Ellen Chirco, Sharon Davidson, J. Curt Delouche, Sabry Elias, Eric Fabrizius, Mark Hafdahl, Steve Hurst, Wayne Guerke, Robert Karrfalt, Alan Knapp*, Miller McDonald, Steve McGuire*, Deborah Meyer, Richard Payne, Bryan Savoy, Janet Spears, Phil Stanwood, Dave Svik, Dennis TeKrony*, Nancy Vivrette*, Loren Wiesner, Rodney Young

**Served as Committee Chairmen*

Bookshelf

By Nancy Vivrette

In my other life, I am a Research Associate at the Santa Barbara Botanic Garden. The Garden is dedicated to research and education focused on California Native Plants. This year they published two books of interest.

California Native Plants for the Garden 2005

Carol Bornstein, David Fross, and Bart O'Brien

Hardbound and softbound, 10x7"

271 pp.

ISBN 0-9628505-8-6

\$27.95

Cachuma Press

P.O. Box 560

Los Olivos, CA 93441

The introductory chapters include a history of the horticultural use of California Native Plants, a description of the floristic regions of California and a chapter on Native Plant Care. The bulk of the text includes the Plant Profiles featuring 500 California native plants. This includes a description of the plant type; geographic zone; light, soil, and water requirements and the natural habitat and range. The text includes a description of the plant and uses in the garden. There are 450 excellent photographs, primarily by Steve Ingram. The book is well indexed with many cross references by common name, Latin name and topic. The appendix includes places to see California Native Plants in cultivation, sources for literature, and sources of plant material and seeds. This 6 year effort culminates over 100 years of collective experience of the authors in propagating California Native Plants. It is one thing to say "plant natives", it is another to tell you how. This book helps to fill that gap.

Trees of Santa Barbara 2005

Robert N. Muller and J. Robert Haller

Hardbound 7 ½ x 11 ½ "

462 pp.

ISBN 0-916436-04-7

\$45

Santa Barbara Botanic Garden

1212 Mission Canyon Rd.

Santa Barbara, CA 93105-2126

This is the third publication the Santa Barbara Botanic Garden has produced on the Trees of Santa Barbara. The trees included are planted in parks and along the streets of Santa Barbara. The 430 species of trees are organized by plant family, so similar species are grouped together. The text includes a description of the habit, Inflorescence, fruit, twigs, bark, leaves, notes of interest and location. There are one to four photographs per tree. The primary photographer was J. Robert Haller. Because of the mild climate in Santa Barbara, many trees from around the world can grow here. The great diversity is also a reflection of the long history of botany and horticulture in Santa Barbara. Enjoy!

REGIONAL REPORTS AND ANALYST NEWS

2004 AOSA/SCST Symposium: Referee, Proficiency and Ring Tests Tunica, Mississippi June 12, 2004

Introduction

This symposium was organized to help clarify and define methods that are being used in the seed organizations to educate and standardize seed testing from analyst to analyst and laboratory to laboratory. In today's business world more emphasis has been put on management and quality control as businesses merge and become global. This business climate has introduced more systems for standardization, and an interest for proficiency testing has developed.

In the presentations today we will try to define some of these systems.

As seed technologists, our goals remain the same - to provide accurate and useful scientific data that is standardized between laboratories to the seed industry and to facilitate an orderly movement of seeds from one country or state where the seeds are produced to the next where they are used.

Symposium organizer
Aleta Meyr, R.S.T., Ransom Seed Laboratory

The following are summaries of the talks that were given at this symposium.

Referee Testing

Susan Alvarez
Ransom Seed Laboratory

“A referee test is a specially designed test which is sent out to a number of seed laboratories in order to obtain information intended to improve seed testing and to provide valuable feedback to the participating laboratories.” – SCST website

The terms “referee testing” and “proficiency testing” are sometimes used interchangeably, but they are not really the same thing.

AOSA has been conducting referee testing since the Association was formed in 1908, and AOSA and SCST have been jointly working on referee projects since at least the 1920's. Referee testing is coordinated by the Joint AOSA/SCST Referee/Research Committees, which have divided the United States and Canada into six regions. There are usually two projects per region per year. The results of referee projects are reported at the annual AOSA/SCST meeting, and summaries or full reports are published each year in the Proceedings of the annual meeting. At the end of the oral presentations at the annual meeting, there is a “buzz session” during which the membership splits up into regional groups and decides upon the referee projects for the next year. The SCST website lists the current referee projects and coordinators' contact information. Anyone can participate, within and outside of their region. Projects are conducted during the year, results are collected and analyzed, and reports are generated to be presented at the next annual meeting. In addition to the six regional groups, referee tests are often conducted by other groups such as the different AOSA Research subcommittees, other seed analyst organizations, or as all-region referees. Different types of referee tests can be sent out to labs. These include independent sub-samples, round-robin samples, surveys, worksheets, and “virtual” referees.

Referee projects serve three main purposes: 1) training/education; 2) standardization in testing; and 3) development of new methods for testing. A problem is identified, a referee is designed and conducted, results are compiled, and the conclusions reached may lead to additional training, new research projects, or Rules proposals. There are many personal and professional benefits to participation in referee testing as well.

While similar in many ways, proficiency testing is not the same thing as referee testing. The purposes of proficiency testing include: 1) ensuring that analysts are current and competent in their testing abilities; 2) providing analysts an opportunity to see how they compare to analysts in other laboratories; 3) providing analysts with feedback on what they need to do to improve

their own seed testing; and 4) component of a laboratory accreditation scheme. Currently, SCST members are participating in a voluntary proficiency testing program for RST's.

Proficiency Testing: A Global Company's Perspective

Michael H. Gerdes
Syngenta Seeds Inc.

Proficiency is skill, ability, and expertness. One who is well advanced or an expert in his or her field.

There are many variables that can interfere with proficiency testing: variability in sampling, lot sampling, dividing, testing constraints (temperature, humidity, media, sowing process, time, watering), and evaluation technique.

Intra-Laboratory Testing

Syngenta uses proficiency testing in crop evaluation and laboratory testing (germination, vigor, physical purity, pathology, hybridity, and genetic identity). After removing excess interference, we start at the analyst level because the analyst is the root of the evaluation. Round robin checks are used to reduce variability in test evaluation as much as possible. Problem samples are planted from the week before. An example may be a sample that had a germination value of 70% - 89%, or exhibits a unique abnormality that is not often seen, or shows an excess of one or another type of abnormality.

From that sample choose ten seedlings. Each seedling is labeled with a unique number, and analysts are given an opportunity to evaluate for normalcy. All analysts that evaluate at anytime in that particular area of testing need to be present for the round robin to keep everyone current with evaluation technique. Seedlings are identified with a description of why they are abnormal or normal. It is important to allow time for discussion of each seedling. These checks should be done once every two weeks.

Performing round robins identifies individuals who do not frequently read the rules. One of the most common mistakes is to interchange the words "And" & "Or" while interpreting the rules. Round robins are used to alleviate problems in a team environment.

Intra-Company Testing

Laboratories within a company that are evaluating like materials and tests, must work together toward a common goal. Evaluation techniques and testing methods must be synchronized. Results provided should be accurate and repeatable. One way to accomplish this is to standardize processes. If processes can not be standardized, then laboratories should be aware of the difference and its affect on interpreted crop quality.

Every year analysts must recertify in each area for every crop tested. Several samples with varying germination are taken and divided into many sub samples. Each sub sample is tested using multiple replicate tests. The data is analyzed for variability among replicates within a test, within a laboratory, and between each laboratory. The sample data is further analyzed for variability among tests within each laboratory, and between each laboratory.

Inter-Company Testing

When testing with local analyst groups, state or federal laboratories a referee is used instead of a proficiency test. Differences arise such as sampling, mean deviation, methods, and participation.

<u>Referee</u>	<u>Proficiency Test</u>
<ul style="list-style-type: none">○ Sampling<ul style="list-style-type: none">▪ Divided Traditionally▪ Send bulk sample○ Mean<ul style="list-style-type: none">▪ Determined by results.○ Methods<ul style="list-style-type: none">▪ Various testing methods○ Participation<ul style="list-style-type: none">▪ Not required	<ul style="list-style-type: none">○ Sampling<ul style="list-style-type: none">▪ Divided and sub sampled.▪ No bulk sample sent○ Mean<ul style="list-style-type: none">▪ Determined by a homogeneity validation.○ Methods<ul style="list-style-type: none">▪ Limited testing methods○ Participation<ul style="list-style-type: none">▪ Mandatory

Proficiency testing is a very important tool. After all, it is stated in our SCST constitution in article II titled *Purpose and Powers*

“The purpose of this Society shall be to maintain and encourage the highest **proficiency** and professional standards among its members..”.

Citations

- <http://scidiv.bcc.ctc.edu/Physics/Measure&sigfigs/B-Acc-Prec-Unc.html>
- Moore D.S. , and McCabe G.P. (1993) “Introduction to the Practice of Statistics.” W.H. Freeman and Company, New York.
- Zar J.H. (1984) “Biostatistical Analysis, Third Edition.” Prentice Hall, New Jersey.
- (2004) “Constitution and By-Laws of the Society of Commercial Seed Technologists, Inc.”

Testing for Biotechnology – Derived Grains and Oilseeds: The USDA/GIPSA Proficiency Program

Don Kendall

Assistant to Director, Technical Services Division, USDA/GIPSA

The Grain Inspection, Packers, and Stockyard Administration (GIPSA) is an agency of the USDA. Its objectives are to develop and maintain grain standards and testing methodologies, to provide third-party official testing services and mandatory grain testing for export, and to facilitate marketing of grain. However, authority for seed lies with USDA/AMS, not GIPSA.

Regulatory issues for biotech grains and seeds include the following: 1) Uneven approvals – The US continues to approve new events, but approvals lag in other countries; 2) Labeling regulations – labeling is voluntary in the US, but it is mandatory in other countries; 3) Adventitious presence (AP) – There is no common agreement; and 4) Credible testing.

Scientific issues for biotech grains include protein expression, reference materials, methods, units for results, stability issues (protein and DNA), adventitious presence (AP), and intellectual property rights.

Testing technologies include protein-based testing, which detects protein produced as a result of the genetic transformation; and DNA-based testing, which detects a specific sequence of nucleotides associated with the genetic transformation.

Examples of protein-based tests are antibody-based assay technology (ELISA) and lateral flow strip technology (LFS). Protein-based tests for the Performance Verification Program are comprised of manufacturer data submission, GIPSA data review, and GIPSA in-house performance verification. No false negative/false positives are allowed; a fee is charged on an hourly basis for evaluation; and a certificate of performance is issued. Commercial protein-based tests can be either performance-verified or non-performance-verified. GIPSA verifies "Performance Verified Rapid Test Kits" produced by manufacturers for the analyses of biotechnology-derived grains.

DNA-based tests consist of Polymerase Chain Reaction (PCR) and include both conventional PCR (gel electrophoresis) and Real Time PCR (TagMan, LightCycler, ICycler).

The purpose of the USDA/GIPSA Proficiency Program is to improve the reliability and credibility of testing. First offered in 2002, there are now 100 organizations enrolled in the program. Corn and soybeans are the only crops tested, and there are no prescribed methods. The program is global, with 47 participants from Europe in 2004. Characteristics of the USDA/GIPSA Proficiency Program are:

- Voluntary participation (anonymity offered)
- Quarterly sample distributions: six corn and three soybean samples
- Corn events: TC1507, MON863, CBH351, E176, MON810, E176, BT11, NK603, GA21
- Soybean event: Glyphosate Tolerance
- Qualitative and quantitative results accepted
- Results are posted on GIPSA's biotechnology web page
www.usda.gov/gipsa/biotech/biotech.htm

Some general observations of the USDA/GIPSA Proficiency program: Participants use protein and DNA-based tests. Results are correct more than 90% of the time. Performance improves over time. Some organizations have stopped testing. False positives and negatives are less than 10%.

GTPSA activities include cooperation with national and international organizations such as NIST (National Institute of Standards and Technology), Life Science Organizations, the Institute for Reference Materials and Measurements (IRMM/Europe), the National Research Council (NRC/Canada), the National Food Research Institute (NFRI/Japan), and other international organizations (Codex, ISO, CEN, AOAC-I, AACC, and AOCS). Research continues in the areas of DNA isolation procedures and quantitative methods.

Inter-Laboratory Testing: An ISTA Perspective

Doug Ashton
Canadian Food Inspection Agency, Ottawa

ISTA inter-laboratory testing began as early as 1929, with 14 agricultural and 11 forestry samples. In 1931, the purpose of inter-laboratory testing as stated by ISTA was to “attain results which compare within reasonable latitude.” In 1934 these tests were referred to as “Referee” samples. A conclusion from early comparative tests (1931) contained the following wording:

“In order to obtain more uniform results, it would naturally be of great importance if, to a larger extent than hitherto, *heads and analysts in seed testing stations could visit each other* for the purpose of becoming familiar with the various methods of analysis.”

References to inter-laboratory testing are found in the following:

- Accreditation Standards (ISO 17025, ISTA Accreditation Standard, USDA Accreditation Standard, Canadian Seed Laboratory Accreditation Protocol)
- EU Experiment
- OECD Experiment
- ISTA Method Validation Handbook
- SCST Constitution
- AOSA Constitution

Commonly used names for inter-laboratory testing include “ring,” “comparative,” “round robin,” “check sample,” and “referee,” which refer to *type of test*; and “validation,” “arbitration,” and “proficiency,” which refer to *end use*. In January 2003, ISTA changed the name from “referee test” to “proficiency test.”

A “round robin” test is one sample that is sent from one lab to the next: Lab A sends it to Lab B, who sends it on to Lab C, etc. A “ring test” consists of multiple sub-samples prepared by an organizer who sends out the samples to all participating labs at the same time. In a “check test,” one sample is divided; each sub-sample is tested by the check lab as well as by a monitoring lab for comparison of results.

The purpose for inter-laboratory testing includes gathering information, method development, method validation, problem solving, arbitration, performance measurement, and education/training.

As of 2004, Genetic Testing within ISTA uses “performance-based methods.” The method is not prescribed; the laboratory chooses the method and initiates or participates in a ring test. The laboratory participates in an ISTA Proficiency Test, and the laboratory is “accredited” and authorized to report using an ISTA Certificate.

The ISTA Proficiency Test Program measures proficiency using prescribed methods. Tests are sent out by a “test leader.” Performance is measured by a “within round” rating of A, B, C, or BMP (below minimum performance), and by an overall rating across six rounds. Three lots are sent to each laboratory.

The purpose of inter-laboratory testing in 1931 was to “attain results which compare within reasonable latitude.” In 2004 the purpose remains exactly the same.

CSAAC Update

January 2006

The CSAAC held their 61st Annual Meeting in conjunction with the Society of Commercial Seed Technologist, the Association of Official Seed Analysts and the International Society of Seed Technologists, June 14th to 22nd in Saskatoon Saskatchewan. Meeting highlights included:

Michael Scheffel, Chief of Seed Standards updated our membership on the recently CFIA recognition of the US Lab Accreditation Program. The program will allow US Lab taking part in the US Lab Program will be able to issue seed testing reports that will be used by graders to apply a pedigreed name to seed. The program does not include common seed. In the future they will be looking to recognize US graders for labeling seed with a pedigreed name.

Doug Ashton, Acting Section Head for the Ottawa Lab gave our Members an update on the discussions to use a combination of AOSA Rules and M&P Rules to test seed. Since the meetings, Doug Ashton has retired from CFIA and Frank Lewis will be taking on the responsibilities of the review. A draft document will be circulated to consult the industry on this proposal for comment and consultation. CSAAC believe a full review will be required in order to determine the true impact on how this will affect not only the Seed Industry, but also Seed Testing. We need to determine the cost/benefit of the changes, impact on Customers needs, Grading factors and how those will need to altered, or if they will need to be altered.

Things to consider in a full review would include items such as:

- how to adapt the AOSA rules to meet Canadian Grade standards (CPM)
- changes required in lab, equipment and personnel to test 400 seeds vs. presently only 200 seeds germination tests
- acceptance by industry (and labs) of increased cost if testing #s are increased - is the result truly a better indication of germination/purity or is it just added time and cost?
- training analysts, industry and assessors re AOSA vs. M&P and required deviations to meet grade standards

Until there is a first draft document to be review and assimilated by the Industry, it is too premature to fully speculate on the impacts and benefits. In conversation with Frank Lewis at CFIA Lab Services since our Annual Meeting, it is unclear when their first draft will actually be available for review. It was suggested that it might not be until just before our summer meetings.

Frank Lewis, Manager of Lab and Analyst Accreditation, presented the membership with revisions to Seed Lab Accreditation and Audit Protocol and the Candidates Guide to the Seed Analysts Exams.

CSAAC has been working with Canadian Seed Institute to assist with grading workshops in conjunction with Canadian Seed Growers branch meetings. Workshop were held December 12th -London Ontario for the Ontario Branch meetings and Dec. 14th - Brandon for the Manitoba Branch meetings. Jan 23, a workshop was held in Edmonton and in March we will offer a grading workshop in Saskatoon. Next fall we hope of offer a grader workshop in Quebec.

The Grading workshops consist of 6 stations covering topics such as Sampling, Documentation, Weed Identification, the New Weed Seed Order, Cereals and large seeded crop kinds. The workshops are intended as a refresher course of Table 1- 6 accredited graders or an introductory course for those considering becoming a grader. CFIA and CSI staff will be on hand to answer questions and assist CSAAC with the Sampling and Documentation stations. Of importance to graders will be reviewing the changes in the Weed Seed Order that came into effect July 1st of this year.

In 2003, CSAAC created 5 new membership categories with one of those being a Grader Member. With Membership in CSAAC, Grader would have access to information, opportunities to participate in workshops to enhance their retrieval and identification skills and opportunities to meet with their peers and review changes in the industry. CSAAC believes it is very important that seed testing professionals be those analysts or graders, have access to up to date information and continuing educational experiences. If you would like further information on the Grader membership, please contact the CSAAC Office.

CSAAC are very pleased to be able to join with CSGA again in 2006 for our Annual Meeting, July 11th to 14th in Charlottetown, Prince Edward Island. CSAAC will be hosting their Board meeting, a continuing education workshop and their Annual Business meeting in PEI. The CSGA always offer an interesting and entertaining program for their members and families. We will have information on the meeting agenda and registration for both CSAAC and CSGA in the near future. We look forward to seeing you there.

For more information on CSAAC, please remember to visit our website at www.seedanalysts.com

Jeremy Sharp, RST

Hi, I am Jeremy Sharp, a new RST. I earned a Bachelor of Arts degree in Environmental Biology from Southwest State University in Marshall, MN in 1998. After several jobs, I found a career at Syngenta Seeds, Inc. in Owatonna, MN. I have been with Syngenta for almost 7 years now. I passed my RST in June, 2005 in Saskatoon. My wife is Social Worker in Austin, MN for the developmentally disabled. We have a son, Aidan, who is 3. Needless to say, he occupies a lot of time, so when I do get some time away, I enjoy fishing, restoring antique tractors or small engines, home improvement, and sleep. I look forward to working with the SCST in the future.

Brad Johnson, RST

Greetings:

I am honored to become a member of the SCST. I have enjoyed all of the meetings I have attended thus far and look forward to getting to know more of the members.

After having received my M.S. degree in Weed Science, I began my seed testing career in February 2001 as the Assistant Lab Manager of Quality Assurance at AgReliant Genetics in Elmwood, IL. In June of 2003 I became the Lab Manager and I must say that I've greatly enjoyed my experiences in seed testing over the past 5 years. It has been both challenging and rewarding. Our lab is primarily focused on corn and soybeans, which I'm used to, having grown up on a small farm near Abingdon, IL.

I'd like to thank my wife, Lori and sons Travis and Lucas, for the misery I put them through while studying (not only was I missing a lot, but I was grumpy about it). I'd like to thank my lab staff for allowing me some study time at work. Thank you to Stewart Oliver, RST, the folks at Illinois Crop Improvement, and those who put on workshops that I have attended. Thank you to Harold Armstrong, RST for introducing me to the world of seed testing. To all the seed analysts, may your seed be pure and your germinations high.

Sincerely,
Brad Johnson, RST

GENERAL AND TECHNICAL INFORMATION

PROPOSED BYLAW CHANGES FOR 2005-2006

Proposal Number 1

Present By-laws:

ARTICLE V - OFFICERS AND EXECUTIVE BOARD

b. Secretary-Treasurer:

(1)The Secretary-Treasurer shall perform the duties common to that office in all organizations, and, in addition, shall receive all moneys for dues or from other sources: and acknowledge receipt of the same. The Secretary-Treasurer shall deposit to the credit of the Association in a recognized bank all moneys received, and pay out there from such accounts as are approved by the Executive Board. The Secretary-Treasurer shall be bonded; the amount to be decided by the Executive Board. (1998)

(2)The term of office of the Secretary-Treasurer shall be for three years and an incumbent may succeed him/herself if re-elected

Proposed By-law changes:

ARTICLE V - OFFICERS AND EXECUTIVE BOARD

b. Secretary-Treasurer:

(1)The Secretary-Treasurer shall perform the duties common to that office in all organizations, and, in addition, shall **oversee and guide the contracted administrative management firm or employee approved by the Executive Board when receive receiving** all moneys for dues or from other sources; and acknowledge receipt of the same. The Secretary-Treasurer shall **work with the contracted administrative management firm or employee to ensure** deposit to the credit of the Association in a recognized bank all moneys received, and pay out there from such accounts as are approved by the Executive Board. The Secretary-Treasurer shall be bonded; the amount to be decided by the Executive Board. (1998)

(2)The term of office of the Secretary-Treasurer shall be for three years and an incumbent may succeed him/herself if re-elected.

c. **The Contracted Administrative Management Firm or Employee (also called the Executive Assistant):**

(1) The contracted administrative management firm or employee shall perform all duties necessary for the daily operation of the association, including, but not limited to: receiving and processing orders, depositing funds, sending out publications and subscription notices, and conducting phone, fax and email communications for the Association. The firm or individual shall be bonded; the amount to be decided by the Executive Board.

Proposed by:

Janice Osburn, AOSA Executive Assistant,
Endorsed by the 2005-2006 AOSA Executive Board

Date: October 25, 2005

Proposal Number 2

Present By-laws:

ARTICLE X - PUBLICATIONS

The official publications shall be the journal, the newsletter, the Handbook on Seed Testing, and such special publications as may be provided or ordered by the Executive Board.

9. The Association shall publish the proceedings of the annual meeting. This shall consist of, but not be limited to, minutes of the Executive Board meetings, minutes of the general business meeting, committee reports and abstracts of referee papers. The proceedings shall be compiled, edited and prepared for publication by the Secretary-Treasurer. Copies of the proceedings shall be furnished to member laboratories in good standing in the ratios of one copy for every ten Affiliate Members, or fraction thereof, and to Association members not attached to member laboratories. Other copies of the proceeding shall be distributed as the Executive Board may direct. (1998)

Proposed By-law changes:

ARTICLE X - PUBLICATIONS

The official publications shall be the journal, [Seed Technology](#), the newsletter, [The Seed Technologists Newsletter](#), the ~~Handbook on Seed Testing~~ [Rules for Testing Seed](#), and such special publications as may be provided or ordered by the Executive Board

9. The Association shall publish the proceedings of the annual meeting. This shall consist of, but not be limited to, minutes of the Executive Board meetings, minutes of the general business meeting, committee reports and abstracts of referee papers. ~~The proceedings shall be compiled, edited and prepared for publication by the Secretary-Treasurer. Copies of the proceedings shall be furnished to member laboratories in good standing in the ratio of one copy for every ten Affiliate Members, or fraction thereof, and to Associate Members not attached to member laboratories. Other copies of the proceeding shall be distributed as the Executive Board may direct. (1998)~~ [The Newsletter and Proceedings are compiled by the SCST editor, the AOSA editor and edited by the SCST Executive Director. The SCST Executive Director creates the PDF file and master CD for duplication. The Newsletter and Proceedings are made available to all member laboratories on the Members Only Link of our website.](#) Other copies of the proceeding shall be distributed as the Executive Board may direct. (1998)

Proposed by:

Janice Osburn, AOSA Executive Assistant,
Endorsed by the 2005-2006 AOSA Executive Board

Date: October 25, 2005

2006 RULE CHANGE PROPOSALS

AOSA Rules Committee
Deborah J. Lionakis Meyer, Chair
California Department of Food and Agriculture
Plant Pest Diagnostics Center, 3294 Meadowview Road
Sacramento, CA 95832-1448

Phone: (916) 262-1137; Fax: (916) 262-1140; e-mail: dmeyer@cdfa.ca.gov

The following table is a summary of the 29 proposals (and 4 alternate proposals) for changes in or additions to the AOSA Rules that have been reviewed and approved by the Rules Committee for further consideration by the AOSA and SCST membership at the 2006 AOSA/SCST Annual Meeting. Please note that "approval" does not mean that the Rules Committee or its members endorse these proposals.

Proposal Number	Purpose of Proposal
1	Revise statement in AOSA Rules introduction regarding samples that require special treatment resulting in deviations from the rules.
2	To correct terminology regarding the number of decimal places to which the working sample shall be weighted for purity analyses of coated seed and noxious weed seed examinations.
3	To adjust noxious weed examination working sample weights to equal ten times the amount of the purity analysis working sample weight for certain kinds of vegetable seeds.
4	To adjust minimum weights for purity analysis to represent approximately 2,500 seed units, and to adjust minimum weights for noxious weed seed or bulk examination to represent approximately 25,000 seed units for certain kind of vegetable seeds.
5	Change existing AOSA working samples weights of Table 1 to be closer to the AOSA stated 2,500 seed analysis goal for purity and the 25,000 seed unit goal for the noxious-weed examination for soybean (<i>Glycine max</i>), cotton (<i>Gossypium spp.</i>), sunflower (<i>Helianthus annuus</i>), beans (<i>Phaseolus vulgaris</i>), peas (<i>Pisum sativum</i>), faba bean (<i>Vicia faba</i>), and corn (<i>Zea mays</i>).
6	Change existing AOSA Table 1 weights for working samples footnote 'a' from 500 grams to 1,000 grams. <u>This proposal need only be considered if the proposal to increase large seed species noxious weights is adopted.</u>

7	To provide uniform treatment of pure seed and other crop seed for species with PSU #22. In 2005 the definition of PSU #22 changed with regard to the length of the caryopsis, however the definition of other crop seed for species with PSU #22 was not changed in this respect.
8	The properly describe the structure usually regarded as a seed in planting practices and commercial channels for spinach (<i>Spinacia oleracea</i>). The new description for spinach will appear under the PSU # 49.
9	To clarify how to classify weevil infested pea (<i>Pisum sativum</i>) seed when found in a purity test.
10	Clarification of pure seed and inert matter in for members of the legume family (Fabaceae) with separated cotyledons.
11	Change existing AOSA rules for testing seeds Explanation of Table 3 wording for T substratum to include germinating seed on top of towel in a horizontal position.
12	Combine existing AOSA rules for germination testing of field pea and garden pea in Section 4.10, Table 3. Methods of testing for laboratory germination.
13A	Add TCS (on top of creped cellulose paper without a blotter with 1/2 to ¾ inch layer of sand covering the seeds) as an alternative substratum to existing AOSA rules for germination testing of field and garden pea. <u>Note: this proposal will only be considered it Proposal 12 is adopted.</u>
13B	Add TCS (on top of creped cellulose paper without a blotter with 1/2 to ¾ inch layer of sand covering the seeds) as an alternative substratum to existing AOSA rules for germination testing of field and garden pea. <u>Note: this proposal will only be considered it Proposal 12 fails.</u>
14	Add TCS (on top of creped cellulose paper without a blotter with 1/2 to ¾ inch layer of sand covering the seeds) as an alternative substratum to existing AOSA rules for germination testing of field and garden bean.
15	Add TC (on top of creped cellulose paper without a blotter) as an alternative substratum to existing AOSA rules for germination testing of <i>Sorghum bicolor</i> (Sorghum).
16	To add on top of creped cellulose paper without a blotter and covered with 1/2 to ¾ inch layer of sand (TCS) as an alternative substratum to existing AOSA rules for germination testing of cotton (<i>Gossypium</i> spp.).

17	Add TCS (on top of creped cellulose paper without a blotter and covered with ½ to ¾ inch layer of sand) as an alternative substratum and add an alternative temperature of 25°C to existing AOSA rules for germination testing of <i>Helianthus annuus</i> (sunflower).
18A	Add TC (on top of creped cellulose paper without a blotter) as an alternative substratum to existing AOSA rules for germination testing of <i>Picea</i> spp.
18B	<u>This proposal will only be considered if proposal 18A fails.</u> Add TC (on top of creped cellulose paper without a blotter) as an alternative substratum to existing AOSA rules for germination testing of <i>Picea mariana</i> .
19A	Add TC (on top of creped cellulose paper without a blotter) as an alternative substratum to existing AOSA rules for germination testing of <i>Pinus</i> spp.
19B	<u>This proposal will only be considered if proposal 19A fails.</u> Add TC (on top of creped cellulose paper without a blotter) as an alternative substratum to existing AOSA rules for germination testing of <i>Pinus palustris</i> (longleaf pine), <i>Pinus taeda</i> (loblolly pine) and <i>Pinus elliottii</i> (slash pine).
20	Add predry option to additional directions in Table 3 to existing AOSA rules for germination testing of pearl millet (<i>Pennisetum glaucum</i>).
21	Add GA ₃ (gibberellic acid) as an alternative moistening agent to the additional directions in Table 3 of the AOSA rules for germination testing of habanero peppers (<i>Capsicum chinense</i> Jacq.). The result is a separate entry in Table 3 for habanero peppers.
22	Remove “Fresh and Dormant” instructions from “Additional Directions” for <i>Panicum virgatum</i> (Switchgrass) in Table 3. Place the “Fresh and Dormant” instructions in a new Appendix 5 “Supplement: Dormancy Breaking Methods for Paired Testing” as appendix information to existing AOSA rules for testing seed for switchgrass (<i>Panicum virgatum</i>).
23	<u>To remove Geraniaceae, geranium family, from the “Miscellaneous Agricultural and Horticultural” section of the AOSA Seedling Evaluation Handbook and to place it in its own section of the Handbook as a separate family description.</u>
24	Change the directions for the rounding of the calculated percentages of each germination test component to those described in the ISTA Rules. The current rule does not provide a process for when there is more than one component with fractions that are the same whether less than 0.5% or more than 0.5 %. The proposed procedure would be less subjective and ensure uniformity in the rounding of the germination component percentages. Adopting this procedure would provide increased objectivity when rounding using the AOSA Rules and reduce variation between analysts and laboratories.
25	To clarify instructions in Section 11 for reporting test results.

26A	<p>To clarify the procedures for use of the regular and special purity tolerance tables, and add descriptive titles to all purity tolerance tables.</p> <p>Replace Table 4 Regular Purity Tolerances with two tables, 4A and 4B; based on the work of Miles, S.R., 1963, Handbook of Tolerances and of Measures of Precision for Seed Testing:</p> <ul style="list-style-type: none"> • Table 4A to compare test results of two sub-samples from the same submitted sample (two-way test, P = 5%). This is useful for quality assurance checks within a laboratory or between laboratories to determine if two test results are significantly different (better or poorer than one another, or compatible). • Table 4B to compare test results of two different submitted samples from the same seed lot (one-way test, P = 1%). This is useful for regulatory work to determine if a second test demonstrates a seed lot is significantly poorer in quality than a label claim or first test. • This change will harmonize AOSA and ISTA Rules for regular purity tolerances. <p>Replace special purity tolerance Tables 6 and 7 (P = 5%) with tables based on a probability level of 1% (the replacement tables are adapted from Miles 1963) to share the same probability level and purpose as Table 4B.</p>
26B	<p><u>This proposal will only be considered if Proposal 26A fails.</u></p> <p>To clarify the procedures for use of the regular and special purity tolerance tables, and add descriptive titles to all purity tolerance tables.</p> <p>Replace Table 4 Regular Purity Tolerances with two tables, 4A and 4B; based on the work of Miles, S.R., 1963, Handbook of Tolerances and of Measures of Precision for Seed Testing:</p> <ul style="list-style-type: none"> • Table 4A to compare test results of two sub-samples from the same submitted sample (two-way test, P = 5%). This is useful for quality assurance checks within a laboratory or between laboratories to determine if two test results are significantly different (better or poorer than one another, or compatible). • Table 4B to compare test results of two different submitted samples from the same seed lot (one-way test, P = 5%). This is useful for regulatory work to determine if a second test demonstrates a seed lot is significantly poorer in quality than a label claim or first test.
27	<p>To correct the application of nomenclature and common name for <i>Corispermum villosum</i> Rydb. and <i>C. orientale</i> auct. Amer.</p>
28	<p>To correct the application of nomenclature and common name for <i>Argemone albiflora</i> Hornem. and <i>A. polyanthemos</i> (Fedde) G. B. Ownbey.</p>

29	<p>Replace the current method for general blower calibration for the Uniform Blowing Procedure as outlined in the AOSA Handbook Contribution No. 24 and the AOSA Rules for Testing Seeds with a new standard blowing procedures using air velocity calibration. The new method will be applicable to all the species that currently require the Uniform Blowing Procedure: Kentucky bluegrass (<i>Poa pratensis</i>), Canada bluegrass (<i>P. compressa</i>), rough bluegrass (<i>P. trivialis</i>), weeping alkaligrass (<i>Puccinellia distans</i>), Pensacola variety of bahiagrass (<i>Paspalum notatum</i>), orchardgrass (<i>Dactylis glomerata</i>), blue grama (<i>Bouteloua gracilis</i>), and side-oats grama (<i>B. curtipendula</i>).</p>
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Full text of the proposals and supporting evidence is contained in the accompanying PDF documents. If you do not have Acrobat Reader on your computer you may download the program free of charge from the Acrobat website. Hard copies may be printed from these files.

The proposals are published in *The Seed Technologist Newsletter* so they may be evaluated by all interested parties prior to the 2006 annual meeting. You are encouraged to circulate the proposals among interested parties within both public and private sectors. The names and addresses of the proposal authors are included so that you may contact them directly if you would like further information concerning a particular proposal. You may also submit written comments (preferably via email) to the Rules Committee Chair prior to the annual meeting.

Important note: Time will be available during the Open Rules Committee Meeting for discussion on each proposal. All amendments to the proposals, if any, will be completed during the Open Rules Committee Meeting. No amendments will be allowed from the floor during the AOSA or SCST business meetings. Please bring your own hard copy of the 2006 proposals with you to the annual meeting, as additional copies of the proposals **will not** be made available at the meeting.

Rule Change Proposal No. 4

PURPOSE OF PROPOSAL: To adjust minimum weights for purity analysis to represent approximately 2,500 seed units, and to adjust minimum weights for noxious weed seed or bulk examination to represent approximately 25,000 seed units for certain kind of vegetable seeds.

PRESENT RULE:

SECTION 2: ANALYSIS OF THE SEED

Section 2.4, Table 1. Weights for working samples

Kind of seed	Minimum weight for purity analysis ^a	Minimum weight for noxious-weed seed or bulk examination	Approximate number of seeds per gram ^b	Approximate number of seeds per ounce ^c
	Grams	Grams	Number	Number
<i>Allium porrum</i> L. leek	7	50	395	11,225
<i>Rheum x hybridum</i> Murray rhubarb	50	300	60	1,700
<i>Salvia officinalis</i> L. sage	25	150	120	3,435
<i>Satureja hortensis</i> L. summer savory	2	35	1,750	49,700
<i>Solanum melongena</i> L. eggplant	10	50	230	6,465
<i>Tragopogon porrifolius</i> L. salsify	50	300	65	1,870

PROPOSED RULE: (blue text indicates changes, orange text indicates additional information included for comparison but not for final publication in the Rules)

SECTION 2: ANALYSIS OF THE SEED

Section 2.4, Table 1. Weights for working samples

Kind of seed	Minimum weight for purity analysis ^a	Minimum weight for noxious-weed seed or bulk examination	Approximate number of seeds per gram ^b	Approximate number of seeds per ounce ^c	Working sample for purity analysis ISTA (for comparison only)	Working sample for count of other species ISTA (for comparison only)
	Grams	Grams	Number	Number	Grams	Grams
<i>Allium porrum</i> L. leek	6	60	395	11,225	7	70
<i>Rheum x hybridum</i> Murray rhubarb	42	420	60	1,700	45	450
<i>Salvia officinalis</i> L. sage	21	210	120	3,435	20	--
<i>Satureja hortensis</i> L. summer savory	1.5	15	1,750	49,700	2	20
<i>Solanum melongena</i> L. eggplant	11	110	230	6,465	15	150
<i>Tragopogon porrifolius</i> L. salsify	38	380	65	1,870	40	400

HARMONIZATION STATEMENT: In all cases stated above the working sample weights for the noxious weed seed examination under the Federal Seed Act are the same as in the current AOSA Rules. The ISTA Rules do not have a noxious weed seed examination, however, the other species examination in the ISTA Rules has a similar size working weight, generally ten times the amount of the purity analysis working weight. Currently, for the species listed above, AOSA and ISTA do not have comparable working weights. All proposed weights for AOSA are based on the published number of seeds per gram found in Table 1. ISTA does not publish the numbers of seeds per gram upon which ISTA working weights are based. FSA does publish the number of seeds per gram, however, apparently does not utilize the information for calculating the working weights for noxious weed seed examinations. Of the proposed pairs of working weights for the species listed above, five are less than ISTA. The proposed purity analysis working weight for *Salvia officinalis* is one gram more than that stated in the ISTA Rules, and no weight is given in ISTA for the other species exam.

SUPPORTING EVIDENCE: Section 2.3 states that purity analysis working sample weights in Table 1 are based on the approximate weight of 2,500 pure seed units. Within the AOSA Rules the general trend is for the noxious weed seed examination working sample weight to be ten times the weight of the purity analysis working weight, representing approximately 25,000 seed units. Although this is not specifically stated in section 2.3 or 3.1, it is stated in Appendix 4 for kinds not listed in Table 1 and in 2.13.g for pelleted, coated or encrusted seed. It is also the general trend in the AOSA Rules, as stated in footnote "a" of Table 1, not to exceed 500 grams for the purity analysis or noxious weed seed exam.

For the species listed above the purity analysis working weights, as stated in Table 1, do not represent 2,500 seed units, and the noxious weed seed examination sample working weights do not represent 25,000 seed units. This has been determined based on the numbers of seeds per grams stated in Table 1 for each species listed above. In all but one species stated above, the purity analysis working weights represent greater than 2,500 seed units. Based on the numbers

of seeds per gram state in Table 1, the proposed purity analysis working weights have been adjusted to represent approximately 2,500 seed units. In all but one species stated above the noxious weed seed working sample weights represent less than the 25,000 seed units. Based on the numbers of seeds per gram stated in Table 1, the proposed noxious weed seed working weights have been adjusted to represent approximately 25,000 seed units.

SUBMITTED BY: Deborah J. Meyer, Purity Subcommittee Chair, CDFA Plant Pest Diagnostics Center, 3294 Meadowview Road, CA 95832-1448, (916) 262-1137, dmeyer@cdfa.ca.gov

DATE SUBMITTED: October 15, 2005

SCST Voting Procedures on AOSA Rule Proposals

Rules are voted on by one affiliate member from each Official Laboratory of the Association and by individual voting members of the Society of Commercial Seed Technologists (SCST) in attendance at their respective annual business meetings. Votes in favor and those opposed are converted to percentages based on the total number of votes cast within each respective organization. The percentage designation is then dropped and the tally from each organization is added together for a cumulative total based on 200. A two-thirds majority of the cumulative tally is required to adopt a Rule proposal. To pass with a two-thirds majority vote, a cumulative tally of 134 in favor out of 200 total combined points would be required. Those individuals with dual membership may vote as individual members with the Society of Commercial Seed Technologists and, if designated by their Official Laboratory, cast a vote for their laboratory. Rule(s) changes or additions approved by the joint membership at the annual meeting shall have an effective date of October 1 in the year they are approved, unless otherwise specified. The Rules Committee is responsible for preparing the final version of the approved rule(s) changes for publication.

SCST members who are eligible to vote on rule proposals include: RST, CVT, CPT, RGT, CGT, and Research Members in good standing. The vote, on ballots provided by the SCST Rules Chair, will be by secret ballot taken during the annual business meeting. The ballot will allow for a: "Yes", "No", "Abstain" for each proposal. Absentee voting will not be allowed on the rule proposals. SCST members are strongly encouraged to attend the open rules committee meeting where all proposals are discussed and modifications may be made in the proposals. No changes can be made in any Rule Proposal after the open rules meeting. The rule proposals, with any changes, will be reviewed at the annual business meeting, prior to the vote, by the Rules Chair or an individual appointed by the Chair.

The SCST Rules Committee Representative and appointed assistants will count the votes. If a member does not feel knowledgeable or qualified to vote on a proposal they are encouraged to abstain from voting on that proposal. An abstention on a proposal will not count as a vote and therefore not affect the voting percentage on that proposal. The number of "YES" or "NO" votes cast for each proposal will be converted into a percentage and reported to the SCST board. The SCST board will report the results to the AOSA board.

Industry Needs Trained Seed Analysts

Loren Weisner

Recently the Association of Official Seed Analysts and the Society of Commercial Seed Analysts and Seedquest.com website ran a survey of their memberships to determine the need for seed analyst training programs at the collegiate level. Based on this survey, approximately ten analysts per year will be needed to meet the needs of State, Federal, private and seed company laboratories. Eighty-three percent of the respondents agreed that there is a shortage of seed analysts. These are very interesting figures when you realize that many of the University seed programs are being terminated. Recent figures compiled by Dr. Dennis TeKrony, University of Kentucky, indicated that only thirteen Universities still have active seed programs. Other Universities such as Cornell, Mississippi State, Washington State, Montana State and Michigan State have terminated their seed programs or greatly reduced their effort in seed related education.

The respondents to this survey were from seed analysts, private laboratory owners/managers and seed company owners/managers. The responses were equally divided among these three groups giving greater validity to the results. The area of greatest need for seed analysts training includes grasses, vegetable, flower and herb seed. Comments received from respondents suggest several reasons why there is a shortage of seed analysts: lack of training opportunity, degree of training necessary to become a certified or registered seed analyst, low salaries that do not reflect the degree to training necessary to become a professional seed analyst and lack of emphasis by high school councilors for agricultural careers.

This survey indicated that there is a shortage of seed analysts and that we need to develop a training program for analysts. Today most of the analysts are trained on-the-job requiring that trained analysts do the training and reduces the time they have to do seed analysis work. Ninety-three percent of the respondents recommended some type of formal training at the collegiate level that includes classroom training, distance education courses and apprenticeships. Workshops were also suggested as another way to broaden the education opportunities.

Respondents were asked about the specific subjects for training and suggested that students have basic science courses such as biology, genetics and seed physiology. In addition to the basic science courses some specific topic were suggested; seed identification, and tetrazolium, germination and purity testing.

Colorado State University is now developing a certificate program in seed technology. This would be a two year program with subject matter courses being taught in the first year of enrollment and internship work experience in an approved seed laboratory the second year of the program. This program would greatly help prepare prospective seed analysts for taking the certification or registration tests of the Association of Official Seed Analysts and the Society of Commercial Seed Analysts.

Emergence Response of Warm Season Grass Seed to Talc-Based Seed Coatings

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To investigate if emergence could be increased, a study was designed to determine if applying a seed coating to warm season native grass seed would increase first year emergence over raw (uncoated) seed. By increasing the weight of the seed unit, seed placement (planting ballistics) may be improved, surface area increased and the hydrophilic nature of the coating material may improve water uptake, resulting in a better first year stand. Switchgrass *Panicum virgatum* and Indiangrass *Sorghastrum nutans* had significantly higher emergence within the 300% coating build-up treatment than for 100% and uncoated seeds. Side-oats grama *Bouteloua curtipendula* and big bluestem *Andropogon gerardii* had no significant differences for the July 12 count. The second count for the big bluestem did show a significantly lower emergence for the 100% and 300% coated seed than for the uncoated seed. Coated seed flowability was dramatically increased compared to uncoated seed. The study results suggest that additional studies on native grass seed coating are warranted and seed coating may have a significant impact on emergence when conditions are less than ideal.

Historically native grass seed has demonstrated slow stand emergence during the establishment year (Henning, 1999). To investigate if emergence could be increased, a study was designed to determine if applying a seed coating to warm season native grass seed would increase first year emergence over raw (uncoated) seed. By increasing the weight of the seed unit, seed placement (planting ballistics) may be improved, surface area increased and the hydrophilic nature of the coating material may improve water uptake, resulting in a better first year stand. To investigate this hypothesis, Mid-West Seed Services, Inc., ETS (Seed Systems Inc.), and the Eastern South Dakota Soil and Water Research Farm collaborated to conduct this study.

Four warm season grasses: Sunburst switchgrass (*Panicum virgatum*), Pierre side-oats grama (*Bouteloua curtipendula*), Bison big bluestem (*Andropogon gerardii*), and Tomahawk Indiangrass (*Schizachyrium scoparium*), supplied by Hansmeier and Sons, Bristol, SD, were coated with three build-ups percentage: 0, 100, 200 or 300. The coating increased the seed weight by the stated percentage. Four replicates of twelve treatments were randomized in a complete block design with each plot measuring 20 ft x 5ft. On June 6, 2001, a 5-foot Truax no-till drill was utilized to plant all seed types.



Figure 1. Truax no-till drill seed boxes: left, rear (flowable grasses), center (chaffy grasses), and right, front (flowable small seeds).

Switchgrass was planted using the front (flowable small seeds) seed box, big bluestem and Indiangrass in the center agitation box and side-oats grama in the rear (flowable grasses) seed box. Pounds per acre of seed planted was determined by turning the wheel twelve revolutions (80 feet of travel), weighing the sample in grams and multiplying the weight by 0.5. The number of seeds per square foot (Table 1) was determined by counting the number of seeds per gram from eight replicates. The average seed per gram was then used to calculate the number of seeds planted per square foot. Four random emergence counts were performed in each plot on July 12 and 31, 2001. Each 100 sq. ft. plot was divided into one-foot squares; each was assigned a number 1 through 100. A computer generated random number sheet was used to determine which square would be counted on each counting date. A PVC (Polyvinyl chloride) one-foot square was placed over the section to be counted; all plants emerging within the square for that species were counted. Percentage emergence per sq. ft. was tabulated; an ANOV and least significant differences were calculated.

Emergence count means made on July 31 were consistently lower than those made on July 12. Counts for each treatment were taken at sixteen random and different locations on each date, this may account for the difference in number of seedlings counted. The trend of lower values on July 31 may have resulted from seeding mortality due to the lack of confirmed rain events and increased heat during mid-late July.

Switchgrass and Indiangrass had significantly higher emergence within the 300% coating build-up treatment than for 100% and uncoated seeds. Side-oats grama and big bluestem had no significant differences for the July 12 count. The second count for the big bluestem did show a significantly lower emergence for the 100% and 300% coated seed than for the uncoated seed (Table 1).

An important observation made during planting was that the coated seed flowability dramatically increased compared to uncoated seed. This increased flowability would allow planting of chaffy seed types in the rear (flowable grasses) seed box of the Truax drill.

Table 1

Sample #	Species	Treatment	Seeds/sq ft	Mean # % Emergence				Mean # % Emergence			
				7/12	7/12	NSF	LSD	7/31	7/31	NSF	LSD
1	Sunburst Switchgrass	0	20	7	34	AB		4	20	A	
2	Sunburst Switchgrass	100	12	3	27	A		3	26	A	
3	Sunburst Switchgrass	300	7	5	77	B	42.2	4	55	B	14.1
4	Pierre Side-oats Grama	0	20	5	27	AB		4	19	A	
5	Pierre Side-oats Grama	100	22	7	33	B		4	19	A	
6	Pierre Side-oats Grama	200	23	4	18	A	12.6	4	17	A	7.4
7	Bison Big Bluestem	0	30	12	42	A		8	28	B	
8	Bison Big Bluestem	100	31	11	35	A		6	20	A	
9	Bison Big Bluestem	300	29	13	45	A	11.2	6	20	A	6.5
10	Tomahawk Indiangrass	0	45	5	10	A		3	7	A	
11	Tomahawk Indiangrass	100	50	6	11	A		4	8	A	
12	Tomahawk Indiangrass	300	47	26	55	B	13.4	13	28	B	8.9

This increased flowability may also have resulted in an increased number of seed units/sq. ft. during planting. It is not clear if the seed coating increased water uptake by seed units since immediately (within an hour) after planting, a rainfall event occurred. It must be

noted that this planting site, seedbed conditions and rainfall after planting were nearly ideal for the establishment of warm season grasses. The study results suggest that additional studies on native grass seed coating are warranted and may have a significant impact on emergence when conditions are less than ideal.

Henning, Jimmy C. 1999. Big Bluestem, Indiangrass and Switchgrass. University Extension, University of Missouri-Columbia Agricultural publication # G4673.

Sweet Corn Method Comparison

Beth Malsom and Tim Gutormson

Mid-West Seed Services, Inc.

Brookings, South Dakota

September 1, 2005

Introduction

When sweet corn samples arrive at Mid-West Seed Services, Inc. for germination testing, close attention is paid to which set of testing rules are to be applied since germination media, temperature and evaluation methods vary between seed association rules. Current sweet corn methods listed in the Association of Official Seed Analysts (AOSA) *Rules for Testing Seed* are between blotters (B), paper toweling (T), sand (S), on top of creped cellulose paper without a blotter (TC), or on top of creped cellulose paper without a blotter and covered with ½ to ¾ inch layer of sand (TCS). Seed is germinated at 20-30°C or 25°C and evaluated at seven days with an optional first count at four days. AOSA rules state normal seedlings are to be record at the conclusion of testing. International Seed Testing Association (ISTA) sweet corn testing rules include between paper (BP) and sand (S). Seed is germinated at 20-30°C, 25°C or 20°C with a first count at four days and final count at seven days. ISTA rules state all normal, abnormal and dead seedlings must be accounted for and recorded. Canadian Methods and Procedures for Testing Seed rules include sand (S) and rolled towels (RT) at 25°C with a count at seven days. To facilitate testing rule method standardization, Mid-West Seed Services, Inc. conducted a comparison study on sweet corn germination methods.

Materials and Methods

After evaluating similarities and differences between the three testing rules, a study comparing four seed lots and ten methods was designed. Ten germination methods were utilized: 1) Rolled Towel at 20-30°C, 2) Rolled Towel at 25°C, 3) Rolled Towel at 20°C, 4) Sand at 20-30°C, 5) Sand at 25°C, 6) Sand at 20°C, 7) TC (on top of creped cellulose paper without a blotter) at 20-30°C, 8) TC (on top of creped cellulose paper without a blotter) at 25°C, 9) TCS (on top of creped cellulose paper without a blotter and covered with ½ to ¾ inch layer of sand) at 20-30°C and 10) TCS at 25°C.

Rolled towel germinations were performed on 38#, 12 x 24 inch (30.5 x 61.0 cm) towels with eight replicates of 50 seeds; percentage germination was evaluated at four and seven days. Sand germination methods were conducted on 16 x 24 inch (40.6 x 61.0 cm) trays and covered with ½ to ¾ inch (1.27 to 1.91 cm) of sand with four replicates of 100 seeds; germination was evaluated at four and seven days. TC and TCS methods were conducted on 14 ply, 16 x 24 inch (40.6 x 61.0 cm) creped cellulose paper; ½ to ¾ inch (1.27-1.91 cm) of sand covered the TCS method with four replicates of 100 seeds; germination was evaluated at four and seven days.. Since ISTA rules state to evaluate seedlings at both four and seven days, all samples were evaluated at four and seven days for consistency.

Table 1. Mean germination responses of ten media/temperature methods averaged across four sweet corn seed lots.

#	Testing Rules	Method	Germination %		LSD set	Abn %	Dead %
			4d	7d			
1	AOSA	TCS 25°C	80.6	87.9	D	4.1	8.0
2	AOSA/ISTA/Canada	Sand 25°C	79.3	87.1	DC	4.1	8.9
3	AOSA/ISTA	Sand 20-30°C	55.0	86.8	DBC	4.1	9.1
4	AOSA	TCS 20-30°C	58.9	86.6	DBC	5.4	8.0
5	AOSA/ISTA/Canada	Rolled Towel 20-30°C	62.9	86.5	DBC	4.8	8.7
6	AOSA/ISTA/Canada	Rolled Towel 25°C	66.7	86.3	DBC	5.1	8.6
7	ISTA	Sand 20°C	63.3	84.5	BC	5.2	10.3
8	AOSA	TC 25°C	62.4	83.9	ABC	2.9	13.1
9	AOSA	TC 20-30°C	46.8	83.8	AB	3.4	12.8
10	ISTA	Rolled Towel 20°C	58.3	80.9	A	9.6	9.6
	LSD(0.05)		5.87	2.01		1.09	1.81

Results and Discussion

Data in Table 1 is sorted in descending order by highest normal germination percentage at seven days. The TCS method with a germination temperature of 25°C had significantly higher mean germination results than the methods seven through ten (Table 1). The ISTA rolled towel mean germination was 7% lower than TCS at 25°C. Methods one through six were not significantly different from each other. Methods one through four all included sand as part of the test method. The ISTA rolled towel method is more time consuming to plant and evaluate than the crepe cellulose methods. For all methods tested, insufficient roots were the most abundant abnormal seedlings and all seed lots displayed traces of *Fusarium spp.* and *Rhizopus spp.* Sand germination methods are performed to simulate field conditions and can help suppress fungus infection (secondary) of normally developing seedlings.

Mid-West Seed Services, Inc. continues to use TCS at 25°C when AOSA methods are requested and sand at 25°C when ISTA methods are requested.

Mid-West Seed Services, Inc. is currently in discussion with the ISTA germination committee to see if the TC and TCS methods can be adopted as methods in the ISTA rules.

Standard Germination Comparison to Tetrazolium Testing of *Digitaria ciliaris* (Retz) Koeler (Red River crabgrass)

S.A. Buchholz, A.L. Patin and T.J. Gutormson

The objective of this study was to determine a suitable germination method and to create guidelines for tetrazolium testing procedures. Providing a germination protocol for Red River Crabgrass will help standardize test methods among laboratories. Results indicate a temperature of 20-30°C, using 0.2% KNO₃ for moisture and pre-chilling 14d will lead to highest viability of Red River Crabgrass seed lots.

Currently the Association of Official Seed Analysts (AOSA) 2005 rules for testing seeds, International Seed Testing Association (ISTA) germination rules and Canadian Testing Methods do not contain germination testing methods for *Digitaria ciliaris* (Retz) Koeler (Red River Crabgrass). Red River Crabgrass, discovered growing wild in the Red River Valley in Oklahoma (Dalrymple, 2001) is an annual warm season grass. It is the first crabgrass variety which is used for forage; naturally reseeding, it is both nutritious and palatable (1999). Two *Digitaria ciliaris* samples were utilized, one lot harvested in 2002 and the other harvested in September 2003. A purity was performed on each lot to obtain pure seed for planting and tetrazolium testing. An initial tetrazolium test was performed to determine maximum seed lot viability. Four replicates of 100 seeds were bisected with a sharp razor blade through the embryo. The sample was placed in 0.1% tetrazolium solution and incubated at 35°C, then evaluated approximately three to four hours later.

Four replicates of 100 additional seeds were planted on blue blotter and subjected to a prechill period for 0, 7 and 14d in 10°C. Water and 0.2% KNO₃ moistening agents were compared. After the prechill period, samples were placed in one of two temperature regimes, 20-30°C and 15-30°C. Samples were evaluated 7 and 14d after prechill. Analysis of variance was conducted with pre-chill, moistening agents and temperature as main factorials. Following germination, the un-germinated seed was evaluated with tetrazolium staining to determine dormancy and to determine overall viability.

Standard germination results vary across each sample, dependent upon temperature and prechill regime used (Table 1 and 2). Table 1 shows results of overall germination percentage of two seed lots, across methods. These results indicate a temperature of 20-30°C, using 0.2% KNO₃ for moisture and pre-chilling 14d will lead to highest viability of the seed lot. Table 2 shows total viability (after a post-tetrazolium test plus germination percent). These results demonstrate a temperature of 15-30°C, utilizing 0.2% KNO₃ and 7d pre-chill leads to maximum viability of a seed lot. Comparing Table 1 to Table 2 indicates maximum viability is similar between samples given the two temperature trials. Tetrazolium testing before germination revealed a higher viable percentage than germination percentage plus post germination tetrazolium (Table 3).

Table 1.

Mean germination percentages for two Red River Crabgrass seed lots

Moisture	Normal	Sig Fig
Water	30	A
KNO3	36	B

LSD 2.486

PreChill	Normal	Sig Fig
0 days	22	A
7 days	36	B
14 days	42	C

LSD 3.045

Temp Trial	Normal	Sig Fig
Sample 1 20-30	47	C
Sample 1 15-30	45	C
Sample 2 20-30	27	B
Sample 2 15-30	14	A

LSD 3.516

Table 2. Overall viability at end of testing period (Results based on adding normals plus TZ of remaining ungerminated seeds)

Moisture	Total Viable	Sig Fig
Water	67	A
KNO3	72	B

LSD 2.486

PreChill	Total Viable	Sig Fig
0 days	67	A
7 days	73	B
14 days	68	A

LSD 3.045

Temp Trial	Total Viable	Sig Fig
Sample 1 20-30	54	A
Sample 1 15-30	54	A
Sample 2 20-30	84	B
Sample 2 15-30	85	B

LSD 3.516

Table 3. Mean percentage of tetrazolium test results

Sample	Pre-TZ	Germination	Germ + Post TZ
1	75	46	54
2	94	21	85

Currently, germination methods for Red River Crabgrass vary from laboratory to laboratory with no standard or suggested procedure published. Developing a germination method for Red River Crabgrass which addresses both fresh and aged seed is necessary. With an increase in planted acres of Red River crabgrass (Dalrymple, 2001), uniform testing is becoming more important.

The seed was donated by R.L Dalrymple of Elstel Farm and Seeds, Ardmore, OK

References

- 1) Dalrymple, R.L. (2001). Registration of 'Red River' Crabgrass. *Crop Science*, **41**: 1998-1999.
- 2) <http://www.kelloggseedservice.com/whatwedo/redcrab.html>
- 3) Elstel Farm & Seeds Red River Crabgrass Variety. Fact Sheet, 1999.
<http://crabgrass.hypermart.net/factsheets/rr1999.html>

Germination and tetrazolium test comparison of various pre-treatments of Bermudagrass , *Cynodon dactylon* (L.) Pers.

S.A. Buchholz, A.L. Patin and T.J. Gutormson

The objective of this study was to compare germination and tetrazolium staining as estimates of bermudagrass seed lot viability. Bermudagrass seeds are typically hulled (lemma and palea removed) and processed as a naked caryopsis. The application of seed coatings and colorants to naked caryopsis is used as marketing and germination improvement processes. The Association of Official Seed Analysts, *Rules for Testing Seeds* list bermudagrass germination methods and under additional directions list KNO₃ as a moistening agent (MA). In this study, tap water and 0.2% potassium nitrate were evaluated as moistening agents across raw, hulled and coated bermudagrass seed lots to determine MA affect on seed viability. Seed germination regime was 21d at 20-35°C. A pre-germination tetrazolium test (TZ) was performed to determine maximum seed lot viability. Moistening agent studies showed KNO₃ produced significantly (P=0.05) higher germination across seed lots than tap water. No significant differences in germination were found between caryopses, naked caryopses or coating treatment. Viability determined by TZ testing was significantly lower than germination tests. Based on these results, TZ testing underestimated viability compared to standard germination tests.

Cynodon dactylon (L.) Pers. (bermudagrass) is a tropical warm season turf grass which is used in lawns in the southern states and for sporting event fields. Bermudagrass can be established from seed or sprigs and can also be utilized as livestock forage. Bermudagrass is an aggressive grass and requires little lawn maintenance. Once planted seed quickly germinates and seedlings spread rapidly in various soil types (www.bermudagrass.com). It has deep roots and is easy to grow when fertilized and works well as a forage grass for cattle in the more drought prone south (<http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7453.html> and <http://aggie-horticulture.tamu.edu/plantanswers/turf/publications/bermuda.html>).

Four treatments of 2003 harvest bermudagrass were utilized for this study, hulled/coated, unhulled/raw, unhulled/coated, and hulled/raw. Each treatment was placed on 15.24 cm x 22.86 cm blue blotters soaked in 40 ml and 50 ml of H₂O and 0.2% KNO₃ each. Four replicates of 100 seeds were planted. The AOSA Rules (2005) recommended duration and temperature was followed, 21d at 20-35°C. A tetrazolium test (TZ) was performed on each treatment prior to germination to determine potential maximum viability. Four replicates of 100 seeds of each treatment was imbibed overnight prior to cutting. Seed coating material was removed by rubbing gently with fingers. The seeds were cut through the distal end with a razor blade. Cut seeds were placed in a 1% TZ solution. Evaluation of the stained embryos was performed approximately 5 hours after placing into TZ solution, at 33°C.

Forty and 50ml of KNO₃ produced significantly higher germination, 90 and 92% respectively, than water alone as a moistening agent (Table 1). Unhulled/raw seed germination percentage (85%) was lower than the other three seed treatments (89, 88 and 92%) (Table 1). Seed lots that were coated showed the highest percentage throughout this study, independent from hulls present or unhulled (Table 1). Tetrazolium testing of bermudagrass is difficult due to the size of the seed, and is complicated by the various treatments applied. The variation in seed types for this study led to inconsistencies in cutting and evaluation (Table 2). The coating, although mostly washed off, was still present at the time of cutting and evaluation. Determining the distal end of the seed was challenging on some replicates. Cutting must be performed under a microscope due to tiny seed size (approximately 1.5mm length and 0.5mm width). Table 2 shows hulled/raw seed treatment had the highest tetrazolium percentage and the unhulled/coated seed had the highest germination percentage.

Table 1. Bermudagrass germination results

Moistening Agent	%Mean	Sig Fig
50mL H ₂ O	87	B
40mL H ₂ O	86	B
50mL KNO ₃	92	C
40mL KNO ₃	90	C
TZ Test	81	A

LSD 3.31

Sample	%Mean	Sig Fig
Hulled/Coated	89	BC
Unhulled/Raw	88	AB
Unhulled/Coated	92	C
Hulled/Raw	85	A
		LSD 3.34

Table 2. Bermudagrass germination and TZ result comparison

Sample	%Mean		Sig Fig
	Normal (TZ)	Normal (Germ)	
Hulled/Coated	81	90	A
Unhulled/Raw	81	89	A
Unhulled/Coated	80	93	A
Hulled/Raw	83	91	A
Mean	81.06 (A)	90.88 (B)	LSD = 4.046
	LSD = 2.861		

Acknowledgements

Thank you to CelPril in Manteca, CA for donating the seed used in this study.

References

www.bermudagrass.com

How to Manage Pests in Landscapes and Gardens Bermudagrass
<http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7453.html>

Bermudagrass "The Sports Turf of the South" Richard L. Duble, Turfgrass Specialist Texas Cooperative Extension <http://aggie-horticulture.tamu.edu/plantanswers/turf/publications/bermuda.html>

Roundup® Herbicide Update for Seed Analysts

Submitted by Doug Miller, RGT
Illinois Crop Improvement Association

This year we ran out of our favorite glyphosate product and discovered, to our dismay, that the product had been discontinued. We have successfully replaced the obsolete product by comparing different formulations and equivalent rates in our post-emergence and seed soak tests. We also wanted to take the opportunity to share with you how to make simple conversions, how nominal label values impact calculations, how acid equivalents are determined and the development of an enhanced trait in soybeans.

The best piece of advice we can share when looking to replace an obsolete glyphosate product is to “avoid other salts.” Glyphosate is an acid that is formulated as a salt to enhance absorption into the plant. Once the acid-salt molecule is taken up by the plant, the salt portion is cleaved off. The acid portion then goes to work on the EPSPS pathway. Only the acid portion of the molecule is considered physiologically active in the plant.

The term “acid equivalent” (a.e.) is used to convey the amount of acid in the active ingredient (a.i.). The product label lists the a.i. as “Glyphosate N-(phosphonomethyl)glycine, in the form of its...” isopropylamine, potassium, diammonium, monoammonium or trimesium salt. It is important to understand the difference between active ingredient and acid equivalent. If you stick with the same salt you can make a simple conversion to a new concentration. Note in the following table how the product name does not indicate the actual salt.

Product		Manufacturer	Salt	lbs. a.i./gal*	lbs. a.e./gal*	grams a.i./liter*	grams a.e./liter*
Roundup Original	41.0%	Monsanto	Isopropylamine	4	3	480	356
Roundup Original II	41.0%	Monsanto	Isopropylamine	4	3	480	356
Roundup Original Max	48.7%	Monsanto	Potassium	5.5	4.5	660	540
Roundup Pro Concentrate	50.2%	Monsanto	Isopropylamine	5	4	600	480
Roundup UltraMax	50.2%	Monsanto	Isopropylamine	5	3.68	600	441
Roundup UltraMax II	48.8%	Monsanto	Potassium	5.5	4.5	660	540
Roundup Weathermax	48.8%	Monsanto	Potassium	5.5	4.5	660	540
FS Glyphosate Plus	41.0%	Growmark	Isopropylamine	4	3	480	356
Touchdown HiTech	52.3%	Syngenta	Potassium	6.16	5	738	599
Touchdown Total	36.5%	Syngenta	Potassium	5.14	4.17	616	500
Touchdown	28.3%	Syngenta	Diammonium	3.7	3	443	360
Durango	53.6%	Dow AgroSci.	Isopropylamine	5.4	4	647	479
Glyphomax, Plus, XRT	41.0%	Dow AgroSci.	Isopropylamine	4	3	479	360

*Always obtain the a.i. and a.e. from the product label. Note that some home owner or ready to use formulations can contain diquat or pelargonic acid. Always check the label.

SIMPLE CONVERSIONS

I would bet that most of you exclusively use Monsanto's isopropylamine glyphosate agricultural or home owner products. If you stick with the same salt life is relatively simple. To convert to a new isopropylamine product you simply need to know the amount of active ingredient (a.i.). This is typically given on the label as pounds a.i. per gallon but is also listed as grams a.i. per liter. To convert from one concentration of the same salt to another simply use the following procedure.

$$\text{Conversion Factor} = \frac{\text{old concentration (a.i.)}}{\text{new concentration (a.i.)}}$$

Example: Old concentration 480g per liter a.i.

New concentration 600g per liter a.i. of the same salt

$$\text{Conversion Factor} = \frac{480 \text{ g a.i. per liter}}{600 \text{ g a.i. per liter}} = 0.80$$

The conversion factor is 0.80, i.e. you will need about 80 percent of the new formulation compared to the amount you used with the old formulation. With the conversion factor the equivalent amount of new product can be determined as follows.

$$\text{New Volume} = \text{old volume} \times \text{conversion factor}$$

Example: Old working solution 5ml old product in 500 ml water

$$\text{New Volume} = 5 \text{ ml} \times 0.80 = 4.0 \text{ ml new product in 500 ml water}$$

NOMINAL VALUES

Now that we have gone through a simple conversion, we will demonstrate how you can get different answers from the same herbicide label. Pounds a.i. from the label yields the same conversion factor determined earlier (5 pounds a.i. / 4 pounds a.i. = 0.80). However, calculating a conversion factor from the percent a.i. listed on the same labels yields a slightly different answer.

$$\text{Conversion Factor} = \frac{41\% \text{ a.i.}}{50.2\% \text{ a.i.}} = 0.82 \quad \text{Compare to 0.80 calculated above.}$$

If you work in ppm you will see the same situation. If you desire a 959 ppm solution with a final volume of 500 milliliters, calculations based on “percent a.i.” and “grams a.i. per liter” results in 1.0 and 1.17 milliliters of product respectively. It is important to realize that the herbicide label provides nominal values, often rounded to whole numbers. The actual a.i. will vary across production runs. It is therefore prudent to conduct trial runs with any new batch or formulation prior to running out of your current stock.

DETERMINING ACID EQUIVALENTS

If you must change salts, the acid equivalent of the active ingredient becomes important. As I indicated earlier most of you only have access to one salt formulation that basically varies in the amount of active ingredient. However, if you work with glyphosate you may be called upon to explain what an acid equivalent is or why you are not proudly using your company’s glyphosate product for testing seed.

To deliver the same amount of glyphosate acid regardless of its salt you must know the acid equivalent of the products. The acid equivalent (a.e.) is determined from the molecular weights of the acid and salt as follows.

Molecular weight of Glyphosate = 169

Molecular weight of isopropylamine salt = 59

Molecular weight of Glyphosate in the form of its isopropylamine salt = 228

$$\text{Acid Equivalent} = \frac{\text{molecular weight of the acid} - 1}{\text{molecular weight of the acid and salt or ester}} \times 100$$

$$\text{Acid Equivalent} = \frac{169 - 1}{228} \times 100 = 74\%$$

74% Acid Equivalent (0.74) × 600 grams active ingredient per liter = 444 grams of acid per liter

DISCUSSION

Reagent grade glyphosate (HO)₂P(O)CH₂NHCH₂CO₂H is available from Sigma-Aldrich (CAS number 1071-83-6). This is the glyphosate acid delivered in a liquid or powder form without an associated salt. I am not aware of anyone using an “acid only” product for seed testing, but would be interested in talking to anyone who is. My questions would include plant/seed uptake of the acid with and without the salt and germination results with and without the salt. Monsanto has also suggested that Roundup products have a fungicidal quality. We have never seen any dramatic differences, nor would we expect them at typical bioassay concentrations. Warm germination results and bioassay germination rates generally vary, as expected, with the quality of the seed lot. Regardless, we make it clear to our customers that herbicide bioassays are not germination tests and should never be used for labeling purposes.

If you look at the table of glyphosate products, you can see how acid equivalents allow us to determine the amount of physiologically active material present. Note how the use of a potassium salt allows chemists to produce a much more “compact” product. As much as an additional 189 grams of acid per liter can be achieved with a potassium salt formulation compared to the isopropylamine. Despite this efficiency our extension weed scientist assures us that one salt will not totally displace another from the market. For post emergence greenhouse bioassays the evolution of the product is academic. Post emergence tests can always rely on the current field rate of the current product. However, the impact of different formulations of glyphosate on seed soak bioassays may some day be an issue.

Monsanto has also announced an enhanced Roundup Ready trait for soybeans that should be available at the turn of the decade. The new product will allow higher rates of application, later in the season. This may also allow them to develop a product for soybean rust in Roundup Ready soybeans. Differentiating these two traits may be similar to differentiating Roundup Ready traits in cotton. We may also be working with a very different Roundup product for routine trait confirmation.

ASK THE EXPERT

'Ask the Expert' is a forum to ask and answer questions of a general or technical nature in relation to seed testing. Please submit questions to the editors (anonymity will be maintained).

If you feel you have experience in relation to the following questions, please contact the editors with information to be published in the next edition.

Procedures for germination and evaluation of aquatic species

ANNOUNCEMENTS

SCST 2006 Long Range Planning Meeting

Preliminary Agenda
Indianapolis, IN

The executive board is soliciting topics for the 2006 long range planning meeting. The following topics have been received from members or proposed by the executive board. Please review this preliminary agenda and submit additional subtopics to existing categories, or new discussion items. Agenda items must be received by April 15th, 2006.

- I. Review Strategic Planning Objectives
 - II. Update from Constitution and By-Laws review committee
 - III. Code of Ethics
 - IV. Proficiency Testing
 - V. Other Submitted Topics and Open Discussion
-

Annual Meeting Update 2006

INDIANA SEED CONFERENCE
AOSA / AOSCA / SCST
June 2-8, 2006

Indianapolis is the location and June 2006 is the month for the "Indiana Seed Conference" which will join three international seed organizations under one roof for interaction, networking, and

information sharing. The plans are set and arrangements made for hosting the 96th annual meeting of the Association of Official Seed Analysts (AOSA), the 88th annual meeting of the Association of Official Seed Certifying Agencies (AOSCA), and the 83rd annual meeting of the Society of Commercial Seed Technologists (SCST) in Indianapolis, June 2-8, 2006. This is only the third time that these organizations have come together for their meetings and it promises to be a very large and well-attended event.

Indianapolis provides us with a fantastic venue to host our meetings this year. Its location in the heart of the Midwest places the city within a day's drive of half the nation's population. Indianapolis International Airport offers travel on dozens of airlines with hundreds of departures and flights to over 37 destinations. Named one of the top "ultimate sports cities" in North America by ESPN The Magazine, the city has long been known for its passion for auto racing and host of the "greatest spectacle in auto racing", the Indianapolis 500. Each year it hosts the two largest single-day sporting events in the world for spectator attendance, the Indianapolis 500 and NASCAR's Allstate 400 at the Brickyard. The downtown area adjacent to the hotel offers many entertainment venues and dining choices that are easily accessible to guests at the hotel.



The new Marriott Hotel in downtown Indy will be the location for all events and meetings and it is within walking distance to many points of interest, including the Indiana State Capitol, Indiana State Museum, Circle Centre Mall, NCAA Hall of Champions, and more. In fact, the NCAA Hall of Champions will be the location of our "Welcome to Indiana" reception and we plan to make this an event you won't soon forget! Additional optional tours are planned, including the Indy 500 Raceway and museum and Conner Prairie pioneer settlement.



Our hospitality suite will be available throughout the event on the top floor of the hotel, with a grand view of the city. A "cyber café" will be available to attendees to allow you access to the internet while you are visiting Indiana. This will be located adjacent to the meeting rooms in the hotel and will provide free access to those registered for the meetings.

Workshops will be offered again this year before the main convention dates. A Vigor Symposium will take place Friday, June 2nd, and two workshops on Saturday will include the "SCST Genetics Technology Workshop" and "STRF Moisture Testing Workshop". The agendas for these workshops will be available for viewing on the meeting website in the near future as they become available.

Early June is a great time to be in central Indiana. Not too cool, not too warm, but just right. Make plans to attend this year's meetings of these three great organizations, and plan to enjoy what Indianapolis has to offer.

Larry Nees, Indiana State Seed Laboratory

Workshop Information

Vigor Workshop & Symposium

Vigor Testing Relationship to Plant Performance
June 2, 2006
Indianapolis, IN

The morning session will feature speakers from agricultural, vegetable and ornamental divisions of the seed industry. The afternoon session will offer rotating stations. Participants will be able to select from stations to gain knowledge in small groups (6-8 person) in 20-30 minute sessions.

Genetic Technology Workshop

GMO Proficiency Testing and Impacts of Biotech on Breeding Programs
June 3, 2006
Indianapolis, IN


The Genetic Technology workshop will focus on GMO proficiency testing and laboratory quality system and validation in the morning and impacts of biotechnology on breeding programs in the afternoon. Topics will be the USDA-GIPSA GMO Proficiency program, ISTA GMO Proficiency program, ISO 17025 overview, and single laboratory validation of methods with a panel discussion following the speaker's presentations. In the Impacts of Biotech on Breeding Programs, breeders working with corn, sunflower, and cotton will give their perspective on incorporating biotech, backcrossing basics for their crop, and testing strategies on biotech material. There will be a presentation on testing strategies for biotech material from a laboratory perspective and a panel discussion of these speakers. Proceeds from the workshop will go towards the Seed Testing Research Foundation. All interested people are invited to attend; you need not be actively testing biotech traits.

Seed Moisture Workshop

June 3, 2006
Indianapolis, IN

Instructors: Joanne Hinke, CFIA, Tim Gutormson, MWSS & Jette Nydem, Danish Plant Directorate.

The moisture workshop will provide participants with information on: basic seed moisture relationships, moisture equilibrium curve, Karl Fisher titrations, calculating fresh and dry weights, oven moisture testing methods, electronic moisture testing in the lecture portion of the workshops. Hands-on activities will include a station session to gain further knowledge on moisture testing and use of electronic moisture testing equipment.



2006 Call for Research Papers and Posters
AOSA/SCST/CSAAC Annual Meeting
Indianapolis, IN
June 2nd-8th, 2006

Individuals who have conducted research on germination, purity, cultivar identification, molecular techniques, statistical techniques, bioassays, vigor testing methods or other aspects of seed physiology are encouraged to present a short paper or poster at the AOSA/AOSCA/SCST Annual Meeting in Indianapolis, IN. It is important that association members hear about new scientific approaches to seed quality evaluation and other seed related topics.

Please prepare an abstract using the guidelines below and send to Bryan Savoy, SCST Research Committee Chair, no later than March 15, 2006. Indicate if the presentation is oral or poster. Abstracts received by this date will be published (as submitted) in the May 2006, Seed Technologist Newsletter. Remember that a good, informative abstract presents the complete paper in miniature, and it should stand alone.

Abstract guidelines:

- State rationale for the study and objectives or hypotheses in one or two sentences
- Provide a brief description of materials and methods, key results, and their applications or conclusions
- Give the complete scientific name for plants and crops when first mentioned in the abstract.
- Provide common names and trade names of chemicals as appropriate, or other details that help explain the results
- Limit use of abbreviations, and define abbreviations that are used
- Do not cite figures, tables or references in the abstract
- Write in a single paragraph, and limit the abstract to 400 words or less
- Use Arial 12 point font size

Please include the author(s) name, address, institution or company. In the case of multiple authors for oral presentations, please indicate the corresponding author, their phone number and e-mail address and the individual who will be giving the presentation.

It is preferred that abstracts are submitted by e-mail as either a Word document, or as a text file to: bryan.savoy@monsanto.com

Or, mail a hard copy to:

Bryan R. Savoy, Ph.D.
Cotton Seed Technology Lead
Monsanto Company
800 North Lindbergh Blvd.

Phone (314) 694-2137
Fax (314) 694-8330
Cell (314) 308-2778
bryan.savoy@monsanto.com

2006 Call for Seed Forum Applications
AOSA/SCST/CSAAC Annual Meeting
Indianapolis, IN
June 6, 2006

The Seed Forum will be held for its second year at the AOSA/SCST/CSAAC Annual Meeting in Indianapolis IN on June 6, 2006. The AOSA and SCST Teaching and Training Committees are accepting applications for participants. Members of AOSA and SCST as well as seed researchers and members of the seed industry may participate. The only criterion established is that participation must have something to do with seed analysis. Please submit your request to be a part of the Seed Forum to Gil Waibel by March 1, 2006 at gwaibel@uwyo.edu or by phone at 307-754-4750.

AOSA and SCST Solicit Research Proposals to Study Seed Germination, Dormancy and Purity

The Association of Official Seed Analysts (AOSA) and the Society of Commercial Seed Technologists (SCST) are soliciting research proposals by May 1, 2006, to support investigations of seed germination, dormancy, and purity. The primary reason for this research funding is to improve seed testing by the promotion of uniform laboratory methods and practices through seed research. The AOSA/SCST has identified Seed Germination, Dormancy, and Purity as the principle areas of concern for this funding cycle. Specific crop and plant species which have been identified as high priority include: native species, rangelgrasses, field grasses, soybean, corn. Proposals relating directly to seed germination, dormancy, or purity of these species or other crop or plant species commonly tested in seed laboratories in North America will be accepted.

Research proposals will be accepted for investigations which cover a one to three year period, however funding will only be approved on an annual basis (July 1 to June 30). Present funding limits the annual financial support for these proposals to \$3,000 to \$5,000 per year. Ten copies of all proposals (5 pages maximum) must be submitted by May 1, 2006, to:

Nancy J. Vivrette and Steve McGuire Co- Chairmen
AOSA/SCST Seed Testing Standardization Research Funding Committee
Ransom Seed Laboratory
P. O. Box 300
Carpinteria, CA 93014-0300

Specific guidelines to be followed when developing proposals are listed below. If you have questions pertaining to this request for proposals do not hesitate to contact:

Nancy J. Vivrette
Phone: (805) 684-3427
FAX: (805) 684-4157
E mail: RansomSL@silcom.com

GUIDELINES FOR AOSA/SCST SEED RESEARCH PROPOSAL

- A. Title Page
 1. Concise descriptive title (100 characters or less)
 2. Name of the organization submitting the proposal
 3. Name, title, full mailing address and telephone number of the principal investigator and/or investigators
 4. Proposed project starting date, duration and total cost
- B. Overall Aim and Specific Objectives - This should be a concise statement of what you will actually do and why. It should not exceed one paragraph. Leave more detailed, context-setting to the "Background" section.
- C. Relevance to Seed Testing/Technology - Discuss the relevance of this work to seed testing/technology. What differences will it make? How does it relate to the established research priorities? Discuss the potential for effective utilization of the results for the benefit of seed testing.
- D. Innovative Aspects - Provide a brief statement describing the innovations of the proposed research, how it may improve an existing situation, how it relates to the state-of-the-art or develops new technology. Comparisons of methods among laboratories are generally not acceptable since these can generally be handled through the referee format.
- E. Background and Rationale - Provide a substantive rationale for the proposed research. Explain the existing problem, the status of previous efforts to solve it, and the logic behind your new approach. Spell out your assumptions, theories, and research hypotheses; address the likelihood of success. Include a brief but complete literature review if appropriate. If you must cite unpublished work, please enclose copies.
- F. Technical Work Plan - Describe in detail your experimental design (including any statistical issues) and research protocols (including any special techniques). Provide an estimated time schedule for meeting the research objectives.
- G. Staff and Resources - List all investigators essential to the project and describe the institutional facilities and resources available for the proposed research.
- H. Budget Information - Provide a full, detailed, justified budget for each year of the proposed project plus appropriate totals. Travel and training must be directly related to the research. No overhead is allowed.

Itemize:

1. salaries
2. equipment
3. materials and supplies
4. training (purpose, duration, when, where)
5. consultation (topic, amount, rate)
6. travel (purpose, duration, when, where)
7. other costs

I. Submission of Proposals (Not to exceed 5 pages)

1. Submit one (1) original and ten (10) copies to

Nancy J. Vivrette and Steve McGuire Co- Chairmen
AOSA/SCST Seed Testing Standardization Research Funding Committee
Ransom Seed Laboratory
P.O. Box 300
Carpinteria, CA 93014-0300

2. The deadline for receiving grant proposals is May 1, 2006, and investigators awarded grants will be notified before July 1, 2006. Grants will be funded on a fiscal year basis from July 1 to June 30.

J. Selection of Proposals for Funding

The proposals will be evaluated utilizing the following criteria:

- a. Scientific and technical quality of the proposal
- b. Scientific validity and quality of research approach
- c. Relevance of proposed research to seed germination, dormancy, or purity
- d. Feasibility of attaining objectives during proposed time period
- e. Adequacy of professional training or research experience of investigators

K. Reporting Requirements

1. Progress Reporting - A reporting schedule for major progress reviews will be developed based on the projected time requirements indicated in the original research proposal and the major developmental stages of the research. Additionally, an annual progress report form will be made available to be completed two (2) months prior to the annual AOSA meeting in June.
2. Final Report - The general format of the final report will be established at the project's beginning. The format and approach will depend upon the nature of the project. The final report shall be prepared in a publication format to document the entire effort. Reports shall be published for the AOSA/SCST membership in either the AOSA/SCST Newsletter or the Journal of Seed Technology. When handbooks or other reference materials logically result from research projects, this will not preclude a report in the AOSA/SCST Newsletter even if this report simply states that such material is being developed.

Idaho Seed Analyst Association Spring Workshop with Ken Allison

April 24-26, 2006

The Idaho Seed Analyst Association will be holding a two and a half day workshop, on April 24, 25, 26, 2006 at the State Department of Agriculture. Our main guest instructor will be Ken Allison from CFIA Canada. For registration questions please contact Brenda Watts (208-337-4693 or brwatts@dairylandseed.com).

**Idaho Seed Analyst Association
Spring Workshop with Ken Allison
April 24, 25, 26, 2006**

Dept. of Ag. Old Penitentiary Rd Boise, Idaho

Ken Allison from Canada will be instructing the majority of this 2 1/2 day workshop. Workshop will cover: Seed development, Seed structure, Taxonomy, Dicotomous keys, Seed ID, Seed separations in the family or species of: Asteraceae, Apiaceae, Brassicaceae, Bromus spp., Centaurea spp., Galium spp. Physalis spp., Rumex spp., Silene spp., Lychnis spp., and Solanum spp.

Cost: **\$150** for 2 1/2 days includes a BBQ Monday evening and lunches on Monday and Tuesday. BBQ guests \$10 each.

Name: _____

Company: _____

Address: _____

Phone: _____

e-mail: _____

BBQ
guest(s): _____

Make checks payable
to:

Idaho Seed Analyst Association
P. O. Box 551
Homedale, ID 83628

Contact for questions or
reservations:

Brenda Watts
208 337-4693

fax 208 337-4168

brwatts@dairylandseed.com Please bring forceps, hand lens, microscopes, and extra lights.

Motel:

AmeriTel Inn - Boise
Spectrum
7499 W. Overland
Boise, ID 83709
800 600-6001

Airport shuttle.
Full breakfast included.
Request ISAA block of rooms **Cut off date 4.10.06**

**ISAA Spring Workshop
Boise, Idaho
April 24-26,2006**

8:00 - 8:25 a.m. Registration downstairs lobby, Department of Agriculture

<p>April 24,25 8:30-3:00 Monday Tuesday</p>	<p>Instructor Ken Allison</p>	<p>Subjects Seed development ,Seed structure, Taxonomy Dycotomous key, Seed ID, Seed separations Family/Species: Asteraceae, Apiaceae,Brassicaceae, Bromus spp.,Centauria spp.,Galium spp. Physalis spp., Rumex spp., Silene spp. Lychnis spp., Solanum spp.</p>
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<p>3:15-5:00 Monday</p>	<p>State Lab Staff</p>	<p>Germination/TZ lecture, Prepare TZ</p>
<p>Tuesday</p>	<p>State Lab Staff</p>	<p>Germination/TZ comparison on Cereals and Cucumber</p>

<p>April 26,2006 8:30-12:00 Wednesday</p>	<p>Robert Pedersen Lisa Bada Ken Allison</p>	<p>Germination Pathology Germination Carrots and Watermelon Open question and answer time</p>
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<p>12:00-1:00 Monday Tuesday</p>	<p>Lunch Lunch</p>	<p>Included Included</p>
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<p>6:00 p.m. Monday</p>	<p>BBQ</p>	<p>Included</p>
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2005 AOSA Publications and CD Update

All AOSA Publications are available through the AOSA Office, including the updated Rules for Testing Seeds. Order forms and other pertinent information is updated frequently on our website: www.aosaseed.com.

AOSA is disseminating a REVISED 2005 AOSA CD due to a few pages printing out of sequence in the Seedling Evaluation Handbook on the initial CD. AOSA has attempted to contact everyone who purchased the CD to provide a pdf file to use to re-print replacements sheets or sent hard copy replacements to those who had purchased a printed copy of the handbook. If you have printed copies of any of the other handbooks from the first CD you will not have to reprint those.

For details, contact Janice Osburn, AOSA Executive Assistant at aosaoffice@earthlink.net

2006 Northeast Seed Analyst Workshop

Date: September 20-21, 2006

Hosts: Ellen M. Chirco, Retired (315-536-9951)
Joe Garvey, PA Dept. Agriculture (717-787-5609)

Location: PA Department of Agriculture
2301 North Cameron Street, Harrisburg, PA 17110-9408

Registration: \$15.00 Registration forms are online at www.aosaseed.com

The Northeast Seed Analyst Workshop will again be held in Harrisburg, PA. The Workshop will be a full day on Wednesday the 20th and the morning of Thursday the 21st. The workshop will be designed to have 50% hands-on training so that AOSA and SCST Certificates can be issued.

PRODUCT AND SUPPLY VENDORS

Agaroses
AMRESKO Inc. 800-448-4422

Antibiotics
AMRESKO Inc. 800-448-4422

Buffers
AMRESKO Inc. 800-448-4422

Chemicals
AMRESKO Inc. 800-448-4422

Balances
Hoffman Manufacturing, Inc.
www.Hoffmanmfg.com

Beakers
Hoffman Manufacturing, Inc.
www.Hoffmanmfg.com

Carts
Hoffman Manufacturing, Inc.
www.Hoffmanmfg.com

Chemicals
Hoffman Manufacturing, Inc.
www.Hoffmanmfg.com

DNA
AMRESKO Inc. 800-448-4422

Electrophoresis
AMRESKO Inc. 800-448-4422

Gels
AMRESKO Inc. 800-448-4422

Incubators
Hoffman Manufacturing, Inc.
www.Hoffmanmfg.com

Lamps
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CALENDAR

2006

February

21-22 Native Seed Quality Workshop. Mid West Seed Services. Omaha, Nebraska. Information: <http://www.mwseed.com>.

23-24 Automation and Mechanization in Seed Testing, Oregon State University Workshop. Information: Seedlab@oscs.oregonstate.edu or 541-737-4464

March

2-3 Automation and Mechanization in Seed Testing, Oregon State University Workshop. Information: Seedlab@oscs.oregonstate.edu or 541-737-4464

April

24-26 Idaho Seed Analysts Association Spring Workshop with Ken Allison, Idaho Dept. of Ag., Boise, ID. Information: brwatts@dairylandseed.com

24-27 Purity Shortcourse for Seed Analysts. Iowa State Seed Testing Lab. Ames, Iowa Information: <http://www.seeds.iastate.edu/seedtest>

May

1-4 Germination Shortcourse for Seed Analysts. Iowa State Seed Testing Lab. Ames, Iowa Information: <http://www.seeds.iastate.edu/seedtest>

9-10 Seed Sampling Workshop. Mid West Seed Services. Yuma, AZ. Information: <http://www.mwseed.com>.

15-19 Seed Tech Training. Mid West Seed Services. Brookings, SD. Information: <http://www.mwseed.com>.

June

2 Vigor Testing Relationship to Plant Performance. Vigor Workshop & Symposium. Indianapolis, IN. Information: www.aosaseed.com

3 GMO Proficiency Testing and Impacts of Biotech on Breeding Programs. Genetic Technology Workshop. Indianapolis, IN. Information: www.aosaseed.com

3 Seed Moisture Workshop. Indianapolis, IN. Information: www.aosaseed.com

3-8 AOSA/SCST Annual Meeting, Indianapolis, IN. Information: www.aosaseed.com.

6-9 Master Class on Seed Technology. Wageningen Seed Centre, Wageningen, Netherlands. Information: www.seedcentre.nl

26-29 ISTA Ordinary Meeting, Zurich Switzerland. Information: www.seedtest.org.

September

20-21 Northeast Seed Analyst Workshop. Harrisburg, PA. Information: www.aosaseed.com or Joe Garvey 717-787-5609.