CANADIAN SEED INSTITUTE

WORKSHOP ON HARMONIZATION OF SEED TESTING RULES (M&P AND AOSA)

SEPTEMBER 22, 2008
OTTAWA, ONTARIO

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1. WORKSHOP OVERVIEW

The Canadian Seed Institute organized a one-day workshop on September 22, 2008 in Ottawa, Ontario to explore opportunities for harmonizing seedling evaluation methods and working sample sizes between Canada's Methods and Procedures and the AOSA Rules for Testing Seed, and to identify the next steps in moving forward on harmonization.

There were 10 participants at the workshop including government and industry experts representing the Canadian Food Inspection Agency (CFIA), the Canadian Seed Institute (CSI), the Commercial Seed Analysts Association of Canada (CSAAC), the Association of Official Seed Analysts (AOSA), and the Society of Commercial Seed Technologists (SCST).

This report summarizes the discussions that took place during the workshop and will be used by all participants in moving this initiative forward.

2. BACKGROUND AND CONTEXT

Willy Drost, from the Canadian Food Inspection Agency, set the context for the workshop by explaining the purpose for harmonizing Canada's Methods and Procedures (M&P) and the AOSA Rules for Seed Testing (AOSA Rules). She began by sharing a brief history about the development of these rules and explained some of the drivers leading to the organization of this workshop. A copy of her presentation is available separately.

In response to a question, Willy explained that seedling evaluation and working sample sizes for purity analysis were identified as potential candidates for harmonization between the M&P and the AOSA Rules because greater impact could potentially be achieved by harmonizing in these areas versus other areas. Harmonization of seedling evaluation differences may be simple and straight-forward and could potentially progress in a short time frame. It was explained that harmonizing seedling evaluation methods would also help address current issues across seed testing laboratories in Canada where different results for the same seed lot have been issued by different labs. By harmonizing the rules, seed trade and the movement of seed across the Canada-US border would be facilitated.

3. SEEDLING EVALUATION

Overview of the Differences in Seedling Evaluation

In preparation for the workshop, Joanne Hinke, from the CFIA's Seed Science and Technology Section at the CFIA Saskatoon Laboratory, compared the M&P and the AOSA Rules with respect to seedling evaluation. Her presentation highlighted some of the similarities between the two sets of rules and differences for lettuce, the mustard and goosefoot families, pumpkin and squash, legumes (Phaseolus, Vigna, soybean, lupine, peas, beans, vetches, and small seed legumes), asparagus, okra, cereals, and corn.

On balance, the descriptions for the seedling evaluations in the M&P and the AOSA Rules are very similar; this is in part because the current M&P descriptions were copied from the AOSA Seedling Evaluation Handbook (which is part of the AOSA Rules) in 1992. The differences are

generally in the notes accompanying the descriptions and in how the descriptions are interpreted.

Processes to Change the M&P and AOSA Rules

Brent Turnipseed, president of AOSA, explained that the AOSA Rules are amended through a rigorous proposal process. When members of AOSA or SCST want to propose changes to the rules, they must present a proposal supported by scientific research; the proposal is voted on by AOSA and SCST members at the annual meeting. In the US, seed testing results are used for labelling seed with those results and compliance is determined through truth in labelling.

Canada's system to review and amend the M&P is based on a combination of practical and scientific considerations and is not dependent on a vote. Proposals are brought to the CFIA's attention, generally by seed analysts, and are reviewed by the 'amendment proposal committee'. The CFIA and CSAAC discuss the proposals at the CSAAC annual meeting but the final decision regarding approval of the proposed amendment is made by the CFIA. In Canada, seed testing results are used to assign a grade name to the seed lot; the grade name is an assurance that the minimum quality standards for that grade have been met.

Benefits of Harmonizing Seedling Evaluation Methods

Participants noted that uniformity in seedling evaluation methods would provide the following benefits:

- Facilitate the movement of seed across the border as both American and Canadian analysts would obtain the same results if they conducted their evaluations the same way. Currently, seed sellers are not always aware of where their seed will be sold (US or Canada), so they may not always have their seed tested using the appropriate rules.
- Uniformity of seed testing and of seed testing results.
- Reduce the cost and the time required to obtain appropriate test results that are mutually accepted by both Canada and the US (as no further testing would be required in the importing country). Currently, an additional germination test may delay the availability of seed for sale by up to four weeks (depending on the crop kind in question).
- Improve the strength of the M&P and AOSA Rules which would benefit both countries.

Concerns with Harmonizing Seedling Evaluation Methods

The following were identified as potential concerns for harmonizing seedling evaluation methods:

- Loss of country-specific methods or requirements which are specific to the country's markets/environment. For example:
    - The Soybean Evaluation addendum was developed to address the different environmental conditions in Canada vs the US and is based on a lot of research conducted in Canada.
    - Canada has higher standards for lettuce necrosis.
- If the rules become stricter, it will likely require more time for an analyst to evaluate and report on the results.
- Although differences in seed testing present technical barriers to trade, some people do benefit (e.g. labs carrying out the subsequent testing are paid to do so).

On balance, participants felt that the benefits outweighed the concerns and that it would be important to resolve the technical differences between the M&P and AOSA Rules that are causing barriers to trade. This would be beneficial to the consumers of seed and the industry.

Criteria to Determine which Methods to Harmonize

The following criteria were suggested to guide the harmonization process.

- Base decisions on scientific research
- Provides benefits to the industry
- Ensure that proposals are supported by the key stakeholders who would be directly impacted by the changes (e.g. corn experts should be consulted when making changes to corn seedling evaluation, and their input might be weighted differently)
- Balance the needs of the industry between the buyers and sellers (e.g. protection of consumers and economic benefits for the seller)
- Focus the purpose on establishing a minimum baseline for the germination quality for the seed lot; companies may decide to have higher in-house standards

It was noted that there may be differences in how to approach harmonization for minor crop kinds versus major crop kinds (based on how important they are to the agricultural market of the country). Canada currently imports significant proportions of seed for some crop kinds and Canada may be more inclined to focus on kinds for which seed is actually grown in Canada rather than on kinds for which much of the seed is imported. In addition, seed standards also differ with respect to the purpose of their propagation (commercial purposes or for home gardens).

Suggested Priority Areas for Harmonization of Seedling Evaluation Methods

The following criteria were used to identify which crop kinds could be priority areas for harmonization of seedling evaluation methods:

- Impact on consumers
- Impact on seed production
- Impact on trade

Based on these criteria, the following were identified as priority crop kinds.

1. Corn
2. Cereals
3. Brassicaceae, Mustard Family
4. Soybeans
5. Consideration of hard seeds in large seeded legumes

In addition to these areas, it was suggested that many administrative changes could be made to match the language across the M&P and the AOSA Rules, including the AOSA Handbook for Seed Evaluation (e.g. “must”, “shall” and “should” need to be defined and used properly in all documentation). A working group could be established to identify these changes. Joanne Hinke’s powerpoint presentation highlights these “administrative” differences and could be a starting point. More details regarding this process are described in the following section.

Next Steps to Move this Forward
The following were proposed as next steps to move forward on harmonizing seedling evaluation methods related to the priority crop kinds identified above.

Harmonization of the Priority Areas

Tasks	Who?	By when?
1. Validate the priority areas with the seed trade and analysts	Harmonization Steering Committee	Fall 2008
2. Consult with the industry and propose the establishment of working groups to address each priority area separately	SCST-AOSA CFIA-CSAAC	Fall 2008
3. Establish working groups for each priority area by nominating the appropriate persons to be engaged or alternatively use the AOSA Germination Committee	Harmonization Steering Committee	Early 2009
4. Draft proposals to be presented to CFIA and AOSA • This work includes conducting literature review and obtaining the scientific evidence to support the proposal. • Seed labs could provide some support for research activities. • Funding might be required to support referee work. • The working groups would be expected to come up with the amendment proposals and other recommendations and carry out the next steps to realize them.	Working Groups	Winter, Spring, Summer 2009
5. Present recommendations to the Harmonization Steering Committee	Working Groups	October 2009
6. Present proposals to AOSA/SCST for changes specific to the AOSA Rules for Seed Testing and Handbook for Seedling Evaluation	Working Groups	October 2009
7. Present proposals to CFIA/CSAAC for changes specific to the M&P.	Working Groups	March 2010

* Note: The harmonization steering committee includes all the participants from this workshop.

Administrative Changes

Tasks	Who?	By when?
1. Establish a working group or committee to work through the administrative changes required to the M&P and AOSA documents. The working group should be composed of at least 4 people (AOSA, SCST, CFIA and CSAAC)	AOSA SCST CFIA CSAAC	Fall 2008
2. Present proposal to AOSA/SCST	Working Group	October 2009
3. Present proposal to CFIA/CSAAC	Working Group	March 2010

Participants discussed the importance of keeping two sets of rules or combining the M&P and AOSA Rules for Seed Testing. At this point, they felt it would be best to keep both sets of rules and simply harmonize areas where it makes sense to do so. Ideally in the future, the intent might be to move towards one set of rules for North America and becoming more closely harmonized with ISTA Rules.

4. WORKING SAMPLE SIZES

Overview of the Differences in Working Sample Sizes

Doug Ashton presented an overview of the differences in samples sizes between the M&P and AOSA rules. He explained that this presentation focused on the working sample sizes used to determine the numbers of impurities per unit weight (and not those used for germination tests).

Note that in the discussion that follows, the M&P definition of 'Purity' is assumed.

- Definitions for 'Purity'.
    - AOSA 'Purity' is equivalent to the M&P 'Pure Seed Test'
    - M&P defines 'Purity' as the determination of numbers of impurities (weed, crop, ergot, etc) per unit weight (which is closer to the AOSA 'Noxious and Bulk Exam')

The major difference in working samples sizes between the M&P and the AOSA Rules is:

- The Basis for working samples sizes
    - AOSA works with 25,000 seeds/sample and has a maximum of 500g/sample.
    - For M&P, sample sizes were historically based on multiples or fractions of imperial weight measures (pound or ounce); M&P sample sizes also facilitate sequential analysis for purity testing.

Benefits of Harmonizing Working Sample Sizes

Participants noted that uniformity in seed sample sizes would provide the following benefits:

- Reduce duplicate testing; therefore decrease the costs for industry
- Reduce delays associated with resampling, resubmission, and retesting of a sample
- Reduce trade barriers

Concerns with Harmonizing Working Sample Sizes

The following were identified as potential concerns for harmonizing working sample sizes:

- If the sample sizes were increased, it would result in higher costs for customers because a larger sample would need to be tested. This could be particularly problematic for high value seed (e.g. vegetables).
- Changing the sizes would have impacts on the weights and checking limits used for sequential analysis.
- Additional testing may still be required because each country requires examination for different noxious weeds.

Criteria to Determine which Sample Sizes to Harmonize
Sample sizes could be considered for harmonization in the following situations:

- Crop kinds for which seed imported into Canada requires larger sample sizes to carry out the M&P analysis than to carry out the AOSA analysis (i.e. these would have to be retested prior to sale in Canada).
- Changes to align with ISTA Rules (in some cases, joint (US and Canada) ISTA proposals to amend (reduce) ISTA working sample sizes may be appropriate)
- Seed of crop kinds where AOSA and M&P sample sizes are higher than 25,000 seeds.

In some cases, M&P sample sizes might be increased, while in other cases, AOSA could reduce its sample sizes.

Suggested Priority Areas for Harmonization of Seed Sampling Sizes
Participants identified the following as crop kinds that would be priority areas for harmonizing seed sample sizes.

1. Cereals and in particular oats, rye, triticale, and buckwheat (they are all > 25,000 seeds in the M&P)
2. Beans, corns, peas, safflower, soybeans, sunflower (M&P sample size is larger than AOSA). Note that these large seeded crop kinds are easier to clean and therefore, smaller sample sizes would be appropriate to conduct purity tests)
3. Black mustard, brown oriental mustard, and oilseed B. juncea (M&P samples size > 25,000 seeds)
4. Lespedeza (M&P sample size >25,000)
5. Small clovers (M&P sample size >25,000)
6. Timothy (M&P sample size >25,000)
7. Fine leaved and hard Fescues (M&P sample size >25,000)
8. Blue grasses, bent grasses, and redtop (M&P sample size >25,000)
9. Reduce sample size for species where AOSA and the M&P require more than 25,000 seeds to be examined.

Next Steps to Move this Forward
The following were proposed as next steps to move forward on harmonizing the seed sampling sizes related to the crop kinds identified above.

Tasks	Who?	By when?
1. Examine CFIA and USDA compliance data for imported seed and forward to all participants who attended this workshop.	Brent Turnipseed and Joanne Hinke	Fall 2008
2. Obtain feedback from industry, AOSA board, SCST board and CSAAC board regarding proposed path forward.	Harmonization Steering Committee members	Fall 2008

3. Establish working groups for various crop kinds.	Anita Hall and Willy Drost	Early 2009
4. Carry out scientific reviews and/or research to address issue of interest.	Working Groups	Early 2009
5. Present proposals to CFIA for changes specific to the M&P.	Working Groups	March 2009 and March 2010
6. Present proposal to AOSA for changes specific to the AOSA Rules.	Working Groups	October 2009
7. Send joint proposal to ISTA regarding ISTA sample sizes that are larger than 25,000 seeds.	Harmonization Steering Committee	Later

* Note: The harmonization steering committee includes all the participants of this workshop.

5. OTHER OPPORTUNITIES TO HARMONIZE

Other than seedling evaluation and working sample sizes, participants identified other opportunities to harmonize M&P and AOSA Rules. The following summarizes the key discussion points.

- **Reporting Two Decimals:** ISTA and CFIA require reporting of results to one decimal while AOSA requires reporting to two decimals. Additional research is required to determine the rationale for the differences. Joanne Hinke noted that she may have access to documentation which provides the rationale for CFIA using one decimal. Brent Turnipseed will look for similar documents within AOSA.

- **Kinds requiring separation may need to be reviewed:** This was not seen as a major issue. Analysts using the M&P need to be aware that procedures for separation of crop kinds in mixtures are different for fescues listed in the grade tables than those that are not listed in the grade tables.

- **Handling of coated seed:** There are issues in Canada and the United States with how coated seeds are handled for evaluation. An AOSA/SCST referee is underway to obtain clarity on how different analysts are handling coated/encrusted seed. Canadian labs will be invited to participate. The referee will run this fall and a resulting proposal could be presented to AOSA/SCST in October 2009. It was suggested that CFIA should wait for these results before making a decision on this issue. In the case of mixtures of coated/encrusted seeds the suggestion was made that it might be best to regulate the process and not the end product.

- **Tetrazolium Testing:** There are no details in the M&P related to how Tetrazolium(TZ) Testing can be used. It was noted that TZ is not a valid test for germination and that analysts should be evaluated for their competencies to conduct such test.

- **AOSA Pure Seed Definitions:** There are differences in pure seed definitions between AOSA and M&P.

- **Blowing Procedures:** There are differences in blowing procedures and the crop kinds for which blowing procedures should be used.

- **Seed Testing Methods for Germination:** There are differences between the number of days for the germination test for the large seed legumes.

- **Seed Health Testing:** The only seed health test required for grading purposes is that for True Loose Smut in barley. There are many other seed health test methods carried out but regulatory standards do not exist for those other seed borne diseases. Industry is making claims on their products and CFIA's mandate does not currently include validating those claims as regulatory standards do not exist for those seed borne diseases. AOSA has a there is a Seed Health committee (Stephan Briere from CFIA represents Canada on this committee). Seed Health Testing is becoming a barrier to trade.

- **Sample sizes for germination testing (item raised earlier in the day):** Apparently a study was carried out to compare germination results of 400 vs 200 seeds planted in germination tests and the results showed very little difference between the two. Betty Girard could contact Dorothy at Accutest to obtain more information on this study.

It was suggested that those who were interested in moving forward on a particular issue should take the lead to address it and present their findings during the next meeting. At this point, given the action plan suggested to address harmonization of seedling evaluation methods and working sample sizes, participants felt that there were sufficient priorities to address without trying to increase the scope of this initiative at this time.

6. NEXT STEPS

To move this initiative forward, Willy Drost from CFIA and Anita Hall from SCST were identified as the leads for the Harmonization Steering Committee. Following this meeting, they will be responsible for:

- Developing an overview document or proposal highlighting the key messages from this workshop
- Developing terms of references for the working groups
- Ensuring that the working groups are formed and have initiated their work by January 2009
- Scheduling another Harmonization Steering Committee by December 2009 or early 2009

All participants were invited to communicate the results of this workshop during their next respective board meetings.

Overall, participants felt that this workshop was productive and that good actions plans were put forward. This is a first step in moving towards full harmonization between Canada and the United States with respect to seed testing. Additional discussions will be required to establish a broader scope and ensure that in the long run both countries continue to align their rules and regulations to ensure more harmonization across North America.

7. WORKSHOP PARTICIPANTS

The following individuals attended this workshop.

Society of Commercial Seed Technologists
Anita Hall, Executive Director
Phone: 607-256-3313 Email: scst@twcny.rr.com

Association of Official Seed Analysts
Dr. Brent Turnipseed, President
Phone: 605-688-4589 Email: brent.turnipseed@sdstate.edu

Canadian Seed Institute
Jim McCullagh, Executive Director
Phone: (613) 236-6451 E-mail: jmccullagh@csi-ics.com

Commercial Seed Analysts Association of Canada
Doug Ashton, Executive Director
Phone: 613-256-7411 Email: csaac@rogers.com

Cathy Breadner, Canadian Seed Laboratories Ltd.
Phone: 705-328-1648 Email: breadner@cdnseedlab.ca

Betty Girard, McKenzie Seeds
Phone: 204-571-7557 Email: BGirard@mckenzieseeds.com

Seed Section, Field Crops Division, Canadian Food Inspection Agency
Michael Scheffel, National Manager
Phone: 613-221-7518 Email: mscheffel@inspection.gc.ca

Willy Drost, A/Chief, Seed Standards Unit
Phone: 613-221-7538 Email: drostw@inspection.gc.ca

Fuyou Deng, Seed Standards Officer
Phone: 613-221-7542 Email: dengf@inspection.gc.ca

CFIA Saskatoon Laboratory – Seed Science &Technology Section
Joanne Hinke, Supervisor, Purity Laboratory
Phone: 306-975-6518 Email: jhinke@inspection.gc.ca