AOSA Rules Committee Report 1990-91

David F. Svik, Chairman

Eighteen proposals for changes in the AOSA Rules for Testing Seeds were received, evaluated, and approved by the Committee for consideration by the AOSA membership. These proposals will be discussed at the open Rules meeting on Thursday, June 13th at 8 A.M. and voted on by the membership during the afternoon business meeting.

The Committee Chairman also accepted the resignation of Jeff Ruprecht of Asgrow Seed Company on April 29, 1991. Mark Miller of Funk Seeds Int. was nominated as the SCST representative by President Jenanyan.

In other business, members of the Committee assisted the Chairman of the Editorial Committee in preparing and proofing the 1990 Rules for publication. I would especially like to thank Jim Effenberger and Deborah Meyer for their help on this project. Due to a very short time period between the proposal deadline and the Newsletter deadline in January, the Committee decided to move up the proposal submission deadline to October 15th of each year.

All eighteen proposals were adopted by the AOSA membership during the June 13th annual business meeting. Some of the proposals also had some amendments which are listed here. Please refer to the February 1991 Newsletter for the complete proposals as written.

AOSA Rules Changes for 1991

Proposal No. 1: approved as written.
Proposal No. 2: approved as written.
Proposal No. 3: approved as written.
Proposal No. 4: approved with amendment; change 2.6 (4) to 2.6 b.(4)
Proposal No. 5: approved with amendment; change sec. 4.8 j. presoak to moisten
Proposal No. 6: approved; (complete rule change published in this issue)
Proposal No. 7: approved; (complete rule change published in this issue)
Proposal No. 8: approved; (complete rule change published in this issue)
Proposal No. 9: approved with amendments shown in this issue.
Proposal No. 10: approved as written.
Proposal No. 11: approved as written.
Proposal No. 12: approved as written.
Proposal No. 13: approved as written.
Proposal No. 14: approved with amendments shown in this issue.
Proposal No. 15: approved as written.
Proposal No. 16: approved with amendment; change final count from 14 to 10 days.
Proposal No. 17: approved as written.
Proposal No. 18: approved with amendments shown in this issue.

Rule: No. 6

KIND OF SEED:

Lolium X hybridium, Haussknecht, intermediate ryegrass

RULE:

1) Include in Table 1 (Weights for working samples, Agricultural Seeds) the following:

Kind of seed	Min.wt.for purity anal, (g)	Min.wt.for noxious-weed seed exam. (g)	Approx. no. seeds/gram	Approx. no. seeds/oz.
Lolium x hybridum Haussknecht intermediate ryegrass	8	80	338	9580

2) Include in Table 3 (Methods of testing for laboratory germination, Agricultural Seeds) the following:

Kind of seed	Subs.	°C Temp.	First count days	Final count days	Spec. req.	Fresh and dormant seed
Lolium x hybridum Haussknecht intermediate ryegrass	P,TB	15-25	7	14	Light	KNO3 and prechill at 5°C or 10°C for 5 days and test at 15-25°C; if necessary re-chill for 3 days and continue test at 15-25°C an additional 4 days.

RULE No. 7.

3.5 Fluorescence test of ryegrass.--A fluorescence test shall be made on all samples of ryegrass for which the [proportion] percentage of perennial ryegrass (Lolium perenne) [and] and/or annual [or Italian] ryegrass (L. multiflorum) is to be [determined] reported. The seedlings shall be grown on filter paper and the number of fluorescent seedlings determined under ultraviolet light at the end of the germination period. [a] Fluorescence results are to be reported as test fluorescence (T Fl) to two decimal places [determined] as follows:

$$\frac{\text{Number of normal fluorescent seedlings}}{\text{Total number of normal seedlings}} \times 100 = \text{T Fl}$$

The percentage of test fluorescence shall be modified by the fluorescence level of the variety being tested (V Fl) and then applied to the percentage of pure ryegrass from the purity test in Formula 1.[or], 2. or 3. below, depending on the kind of ryegrass being tested.[a]

A list of fluorescence level descriptions for perennial ryegrass varieties which are more than zero percent fluorescent and annual ryegrass varieties which are less than 100 percent fluorescent is maintained and published by the Grass Variety Review Board of the Association of Official Seed Certifying Agencies. If the variety being tested is not stated or has not been described, [V Fl in the perennial formula and VN Fl in the annual formula] the fluorescence level shall be considered to be zero for perennial ryegrass and one hundred for annual ryegrass. [In blended mixtures] For blends the [factor] fluorescence level shall be interpolated according to the portion of each variety [in the blend] claimed to be present. (the flourescence level)

Example: Label - Variety A Perennial Ryegrass 58.63%
Variety B Perennial Ryegrass 39.42%

Total perennial ryegrass labeled is 98.05%
Variety A is not included in the description list and so is considered to be 0% fluorescent.
Variety B is described as 2.50% fluorescent.

$\frac{58.63}{98.05} \times 0$ plus $\frac{39.42}{98.05} \times 2.50 = 1.01\%$ fluorescence level

a. Formula 1. --Perennial Ryegrass:

$$\frac{\%\ \text{T Fl} - \%\ \text{V Fl}}{100} \times \%\ \text{pure ryegrass} = \%\ \text{annual ryegrass}$$

% pure ryegrass - annual ryegrass = % perennial ryegrass

Example (a): test. Fluorescence = 1.88%
Variety not described (flourescence)
Pure ryegrass = 98.56%

Substituting: $\frac{1.88\% - 0.00\%}{100}$ x 98.56% = 1.85% annual ryegrass

98.56% - 1.85% = 96.71% perennial ryegrass

Example (b): Test Fluorescence = 1.88%
Varietal Fluorescence description = 1.50%
Pure ryegrass = 98.56%

Substituting: $\frac{1.88\% - 1.50\%}{100}$ x 98.56% = 0.37% annual ryegrass
98.56% - 0.37% = 98.19% perennial ryegrass

If the test Fluorescence result is less than the level described for the variety, it is not necessary to apply the formula. All pure ryegrass shall be considered to be perennial.

b. Formula 2.--Annual Ryegrass

$\frac{\%\ T\ Fl + \%\ VN\ Fl}{100}$ x % pure ryegrass = % annual ryegrass

% pure ryegrass - % annual ryegrass = % perennial ryegrass

VN Fl = 100 - V Fl

Example (a): Test Fluorescence = 96.06%
Varietal Fluorescence description = 100%
VN Fl = 0.00% Pure ryegrass = 99.23%

Substituting: $\frac{96.06\% + 0.00\%}{100}$ x 99.23% = 95.32% annual ryegrass

99.23 - 95.32% = 3.91% perennial ryegrass

Example (b): Test Fluorescence = 84.72%
Varietal Fluorescence description = 90%
VN Fl = 10%
Pure ryegrass = 98.41%

Substituting: $\frac{84.72\% + 10.00\%}{100}$ x 98.41% = 93.21% annual ryegrass

98.41% - 93.21% = 5.20% perennial ryegrass

If the test Fluorescence result is greater than the level described for the variety, it is not necessary to apply the formula. All pure ryegrass shall be considered to be annual.

c. Formula 3.--Labeled Ryegrass Mixtures

$$\frac{\%\ T\ Fl - \%\ Perennial\ V\ Fl}{\%\ Annual\ V\ Fl - \%\ Perennial\ V\ Fl} \times \%\ pure\ ryegrass = \%\ annual\ ryegrass$$

Example (a): Label - Variety A Annual Ryegrass 88.76%
Variety B Perennial Ryegrass 9.93%

T Fl = 81.43%
Annual V Fl = 90%
Perennial V Fl = 4%
Pure Ryegrass = 98.51%

Substituting: $\frac{81.43 - 4.00\%}{90.00 - 4.00} \times 98.51\% = 88.69\%$ annual ryegrass

98.51% - 88.69% = 9.82% perennial ryegrass

Example (b): Label - Annual Ryegrass (variety not stated) 58.41%
Creeping Red Fescue 18.63%
Variety A Perennial Ryegrass 9.78%
Variety B Perennial Ryegrass 9.56%

T Fl = 81.91%
Annual V Fl = 100%
Variety A Perennial V Fl = 0.00%
Variety B Perennial V Fl = 2.50%
Pure Ryegrass = 78.06%

Interpolate Perennial V Fl:
Total perennial ryegrass labeled is 19.34%

$$\text{Perennial V Fl} = \frac{9.78}{19.34} \times 0 \text{ plus } \frac{9.56}{19.34} \times 2.50 = 1.24\%$$

Substituting: $\frac{81.91 - 1.24\%}{100.00 - 1.24\} \times 78.06\% = 63.76\%$ annual ryegrass

78.06% - 63.76% = 14.30% perennial ryegrass

[a]For description of method and apparatus for determining fluorescence in ryegrass see the article in the AOSA Newsletter 37 (3) :20-27, 1963. The formula appearing above is to be used instead of the one given in the article cited.

RULE NUMBER 8.

Table 11. Tolerances for 400 - 1000 seed tests.

Examples--

a. Fluorescence test of ryegrass (chaffy grass)

(1) Test results: Pure ryegrass = 98.40%; Test Fluorescence = 10% in a 400 seed test. Fluorescence level of variety being tested = 0.

(2) Calculation of tolerance

Tolerance for Test Fluorescence test result of 10% ($\frac{400}{400}$column) = 4.6%

½ pure seed tolerance (Table 6, Column D) for 98.40% = 0.45%

Total Tolerance 5.05%

(3) Application of tolerance

$\frac{10 - 0}{100}$ x 98.40 = 9.84% annual ryegrass

98.40 - 9.84 = 88.56% perennial ryegrass

The tolerance is applied to 88.56% or 9.84% as the case may be.

9. Add drawings of normal and abnormal seedlings to the seedling descriptions of Chapter 4 of the Seedling Evaluation Handbook.

ADOPTED PROPOSAL, as amended from original. The following amendments were adopted (page numbers refer to the AOSA Newsletter 65(1), February 1991):

- Delete seedling age from Fig. 1 of all species groups (e.g. page 42, delete from caption "5-day seedling"). Pages 42, 44, 46, 48, 50, 52, 55, 60, 64, 68, 71, 74, 76, 78, 80, 82, 86, 89, 93, 95 and 98.
- Page 43. Add to caption for Fig. 2: "(for classification, read captions.)"
- Page 43. Add to figure 2a: "(+)"
- Page 43. Caption to Fig 2a: delete "at 8 days".
- Page 43. Caption to Fig 2b: Change "Multiple seedlings at 5 days" to "Multiple seedlings at early stage of development".
- Page 44. Erase collar at base of cotyledons.
- Page 47. Fig. 4b: Delete classification (i.e. delete "(-)").
- Page 47. Caption to Fig. 4b: Change "Small weak seedling" to "Seedling too small to evaluate; extend test (see Sec. 3.5.1.b)".
- Page 49. Fig. 2c: Delete classification (i.e. delete "(-)").
- Page 49. Caption to Fig. 2c: Change "Small weak seedling" to "Seedling too small to evaluate; extend test (see Sec. 3.5.1.b)".
- Page 51. Delete Fig. 3b and caption to Fig. 3b.
- Page 52. Label upper roots as adventitious.
- Page 56. Captions to Figs. 2a,b,c,d: Change "Leaf" to "Leaves".
- Page 58. Caption to Fig. 7d: Change "Cotyledons decayed" to "More than 50% of total cotyledon tissue decayed (this does not include firm, sound discolored tissue.)".
- Page 59. Fig. 8d: Delete classification (i.e. delete "(+)").
- Page 59. Caption to Fig. 8d: Add "(retest using calcium nitrate, Rule 4.8.j)".
- Page 61. Delete Fig. 2d and caption to Fig. 2d.
- Page 62. Change "(roots have been artificially shortened)" to "(full length of roots not shown)".
- Page 64. Delete scale bar below Fig. 1a.
- Page 66. Fig. 3c: Alter drawing of cotyledons to more clearly show greater than 50% decay.
- Page 66. Caption to Fig. 3c: Change "Primary infection more than half of cotyledons" to "More than 50% of total cotyledon tissue decayed (this does not include firm, sound, discolored tissue.)".
- Page 66. Fig. 3d: Erase hypocotyl decay and delete (-) classification.
- Page 66. Caption to Fig. 3d: Delete "deep infection into hypocotyl tissue. Seedling abnormal."
- Page 66. Delete scale bar below Fig. 3c.
- Page 69. Fig. 2c: Delete classification (i.e. delete "(+)").

- Page 69. Caption to Fig. 2c: Delete and replace with "Seedling too small to evaluate; extend test (see Sec. 3.5.1.b)."
- Page 70. Caption to Fig. 3c: Change "Hypocotyl collar rot" to "Collapse of hypocotyl tissue (nutrient deficiency)."
- Page 73. Fig. 4b: Delete classification (i.e. delete "(-)").
- Page 73. Caption to Fig. 4b: Change "Small weak seedling" to "Seedling too small to evaluate; extend test (see Sec. 3.5.1.b)."
- Page 77. Fig. 2a: Re-draw with stronger 'knee'.
- Page 77. Fig. 3a: Re-draw with longer root.
- Page 79. Delete Fig. 4a and caption to Fig. 4a.
- Page 82. Delete scale bar.
- Page 83. Caption to Fig. 2a: Delete and replace with "Two strong seminal roots."
- Page 83. Caption to Fig. 2c: Delete and replace with "Less than one strong seminal root."
- Page 83. Re-draw Figs. 2a, 2c and 2d, using shoot of Figure 2b on all, and shortening root of 2c and center root of 2d.
- Page 83. Caption to Fig. 3c: Delete and replace with "Shoot not developing".
- Page 83. Fig. 4a: Change classification from "(+)" to "(-)".
- Page 85. Delete scale bar below Fig. 6b.
- Page 86. Re-draw roots.
- Page 87. Fig. 2d: Re-draw root/shoot junction.
- Page 88. Fig. 3b: Change classification from "(-)" to "(+)".
- Page 88. Caption to Fig. 3b: Add "with sufficient seminal roots."
- Page 88. Caption to Fig. 3c: Add "with insufficient seminal roots."
- Page 90. Fig. 2a: Re-draw to more accurately reflect a small but normal seedling.
- Page 91. Delete Fig. 4e and caption to Fig. 4e.
- Page 91. Caption to Fig. 4d: Change "Damaged shoot" to "Damaged coleoptile with shredded leaf."
- Page 91. Caption to Fig. 4f: Delete "in proportion to root."
- Page 92. Caption to Fig. 5a: Delete "from being trapped in confined space such as towel or closely planted seeds."
- Page 92. Caption to Fig. 5d: Delete and replace with "decay at point of attachment to scutellum."
- Page 94. Fig. 2c: Delete classification (i.e. delete "(-)").
- Page 94. Caption to Fig. 2c: Change "Small weak seedling" to "Seedling too small to evaluate; extend test (see Sec. 3.5.1.b)."
- Page 97. Fig. 4a: Change classification from "(+)" to "(-)".

14. Split the tree and shrub seedling descriptions of the Seedling Evaluation Handbook into three sections: 1) Gymnosperms; 2) Angiosperms with hypogeal germination; and 3) Angiosperms with epigeal germination. On adoption, Handbook section 4.12 would be removed and the remaining sections would be renumbered.

ADOPTED PROPOSAL, as amended from original. The following amendments were adopted (page numbers refer to the AOSA Newsletter 65(1), February 1991):

- Page 110. Section 1.1.a, Shoot system: Delete last sentence "No elongation of the hypocotyl occurs in *Pinus palustris*." and replace with "For *Pinus palustris* see Note 1.

  In section 1.1, add Section c: " Notes. 1. In a typical seedling of *Pinus palustris*, the hypocotyl is 5 mm or less in length. When planting in soil, the seed must be left exposed, otherwise the hypocotyl will not elongate sufficiently to raise the cotyledons above the soil and the accuracy of the test will be impaired."

- Page 110. Section 1.1.b, Cotyledons: Add "- less than half of the original cotyledon tissue remaining attached" and "- less than half of the original cotyledon tissue free of necrosis or decay".

- Page 111. Section 1.1.b, Hypocotyl:

  Add "- deep open cracks extending into the conducting tissue".

  Change "endosperm" to the correct term.

  Change "- in *Pinus palustris*, hypocotyl elongation" to "for *Pinus palustris* see Note 1."

  Move "- watery - translucent in appearance" to the "Seedling" description below.

- Page 112. Section 1.2.b, Epicotyl: Delete two statements: "- severely damaged...scale leaf" and "- two weak epicotyls", and replace with "-terminal bud missing or damaged (seedling is classified as abnormal even if axillary shoots have developed)."

- Page 112. Section 1.2.b, Root: Add "- growing upward - negative geotropism."

- Page 112. section 1.2.b, Seedling: Add "- fused embryos", "- weak or broken", and "- watery".

- Page 113. Section 1.3.b, Cotyledons: Add "- emerging before radicle"

- Page 113. Section 1.3.b, Hypocotyl: Move "- watery - translucent in appearance" to the "Seedling" description below.

- Page 113. Section 1.3.b, Root: Add "- growing upward - negative geotropism."

- Page 113. Section 1.3.b, Seedling: Add "- weak or broken" and "- fused embryos".

18. Add text describing the gymnosperms to chapters 2 and 3 and the glossary of the Seedling Evaluation Handbook.

ADOPTED PROPOSAL, with the provision that the Seedling Evaluation Committee will make some editorial changes to the wording as presented in the proposal.

1991 AOSA Seedling Evaluation Committee Report
Doug Ashton, Chairman

Work of the Committee in 1990-91 concentrated on completion of the drawings to illustrate the Seedling Evaluation Handbook (the text for the Handbook was adopted following presentation as Rules proposal no. 14 in 1989). More than 230 individual drawings are included in this year's Rules change proposal no. 9. These were prepared by a scientific illustrator, Susan Laurie-Bourque of Ottawa, under the direction of Doug Ashton. All drawings were reviewed by the Committee, and most were reviewed during an open Committee meeting in Annapolis in 1990. The illustrator's fees to date of $2793.58 (U.S.) have been paid by the AOSA. An additional six proposals relating to the text of the Handbook were prepared. All proposals were published in AOSA Newsletter 65(1), February, 1991.

Following publication of the proposals, several comments were received. Some of the concerns related to the wording of the descriptions which were adopted in 1989 (e.g. cotyledon decay in garden beans and peas, mesocotyl lesions in corn), while others related to details of the drawings themselves. All concerns will be discussed during open meetings of the Seedling Evaluation and Rules Committees at the June meetings in Lexington.

The Committee was informed that there are insufficient funds available to print the Handbook in 1991. While this will mean a further delay in completing the Handbook, it will allow more time for final editorial fine tuning, and if necessary, incorporation of proposals submitted in 1992.

Committee members during the past year were: Doug Ashton, Agriculture Canada, Ottawa; Barbara Atkins, Seed Testing of America, Longmont, Colorado; Ellen Chirco, New York State Lab, Geneva; Dr. Wayne Guerke, Georgia State Lab, Tifton; Bob Karrfalt, National Tree Seed Laboratory, Macon, Georgia; Susan Maxon, Federal Seed Lab, Beltsville, Maryland; Paul Peterson, California State Lab, Sacramento; Jeff Ruprecht, Asgrow Seed Co., Twin Falls, Idaho; Coralie Wilson, Northrup King Co., Tangent, Oregon. Jeff Ruprecht resigned from the Committee in April, 1991, to pursue other interests. We thank Jeff for his many years of dedication to the development of the Handbook.