AOSA RULES COMMITTEE
Stephen J. Hurst, Chairman

Eleven proposals were adopted and one proposal was rejected by the AOSA membership at the 1986 annual business meeting in Minneapolis, Minnesota. Original proposals with supporting evidence for changes in or additions to the Rules appear in the SCST Seed Technologist News 60(2):32-55 and 60(3):17-18. Several of these proposals have been amended or slightly modified. Please note that all the adopted proposals that follow become official rules on October 1, 1986.

1. Change in seedling descriptions of Section 7a. in APPENDIX 1:

Adopted Proposal as amended from original (dashed underlining shows words added or changed)--

Normal seedling

Epicotyl — One or two primary leaves proportional in size to the rest of the seedling and an intact terminal bud.

Abnormal seedling

Epicotyl — (c) No primary leaves, but terminal bud present and axillary buds in one or both axils of the cotyledons.
(d) Primary leaves too small in proportion to the rest of the seedling, usually associated with visible defects of, or damage to, the main axis of the epicotyl.

2. Addition of Astragalus cicer--cicer milkvetch to the Rules:

Adopted Proposal--

1) Include in Table 1 (Weights for working samples, AGRICULTURAL SEEDS) the following:

Kind of seed	Minimum weight for purity analysis	Minimum weight for noxious-weed seed examination	Approximate number of seeds per gram	Approximate number of seeds per ounce
	Grams	Grams	Number	Number
Astragalus cicer L. cicer milkvetch	9	90	270	7660

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

Kind of seed	Substrata (See Sec. 4.9-a-b)	Temperature °C (See Sec. 4.9-c)	First count days (See Sec. 4.9-d)	Final count days
Astragalus cicer cicer milkvetch	B, TB, T	15-25	10	21[e]

[e]Hard seeds often present. See section 4.9k(6).

3) Include Astragalus cicer in the list of species under Section 7d. (Small-seeded legumes) of APPENDIX 1. Seedling Descriptions for normal-abnormal classifications.

3. Addition of Atriplex canescens--fourwing saltbush to the Rules:

Adopted Proposal as amended from original (items 4, 5 and 6 were added)--
1) Include in Table 1 (Weights for working samples, TREE and SHRUB SEEDS) the following:

Kind of seed	Minimum weight for purity analysis	Approximate number of seeds per gram	Approximate number of seeds per ounce
	Grams	Number	Number
Atriplex canescens (Pursh) Nuttall fourwing saltbush	19	146	4150

2) Include in Table 5 (Methods of testing for laboratory germination, TREE and SHRUB SEEDS) the following:

Kind of seed	Substrata	Temperature °C	Test duration days	Additional Directions
Atriplex canescens fourwing saltbush	B	15	21	See footnote b.

[b]T.Z. tetrazolium: See section 4.9k(2).

3) Section 12. Tree and Shrubs of APPENDIX 1. Seedling Descriptions shall be used for normal-abnormal classifications.

4) Section 2.6g under Seed unit shall be amended to read (dashed underlining shows words added for clarification):
"Seed balls" or portions thereof in multigerm beets (Beta vulgaris), and fruits with accessory structures such as occur in the Chenopodiaceae and New Zealand spinach (Tetragonia tetragonioides). Refer to Section 2.7i and 2.10a(9).

5) Section 2.7i under Kind or cultivar considered pure seed shall be amended to read (dashed underlining shows words added for clarification):
Seed units of beets (Beta vulgaris) and other Chenopodiaceae, and New Zealand spinach (Tetragonia tetragonioides). Refer to Section 2.10a(9).

6) Section 2.10a(9) under Inert matter shall be amended to read (dashed underlining shows words added for clarification):
Broken seed units of Chenopodiaceae and fruit portions or fragments of monogerm beets (Beta vulgaris), New Zealand spinach (Tetragonia tetragonioides), buffalograss (Buchloe dactyloides) and families in which the seed unit may be a dry, indehiscent one-seeded fruit which visibly do not contain a seed. Refer to Sections 2.6g, 2.7f, 2.7g(1), and 2.7i.

4. Addition of Ceratoides lanata--winterfat to the Rules:

Adopted Proposal--
1) Include in Table 1 (Weights for working samples, TREE and SHRUB SEEDS) the following:

Kind of seed	Minimum weight for purity analysis	Approximate number of seeds per gram	Approximate number of seeds per ounce
	Grams	Number	Number
Ceratoides lanata (Pursh) J.T. Howell winterfat	12	213	6040

2) Include in Table 5 (Methods of testing for laboratory germination, TREE and SHRUB SEEDS) the following:

Kind of seed	Substrata	Temperature °C	Test duration days	Additional Directions
Ceratoides lanata winterfat	P, T	15	14	For fresh lots, Prechill 14 days at 5°C and see footnote b.

[b]T.Z. tetrazolium: See section 4.9k(2).

3) Section 12. Tree and Shrubs of APPENDIX 1. Seedling Descriptions shall be used for normal-abnormal classifications.

5. Addition of Elymus cinereus--basin wildrye to the Rules:

Adopted Proposal as amended from original (item 4 was added)--
1) Include in Table 1 (Weights for working samples, AGRICULTURAL SEEDS) the following:

Kind of seed	Minimum weight for purity analysis	Minimum weight for noxious-weed seed examination	Approximate number of seeds per gram	Approximate number of seeds per ounce
	Grams	Grams	Number	Number
Elymus cinereus Scribner & Merrill basin wildrye	8	80	317	9000

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

Kind of seed	Substrata (See Sec. 4.9-a-b)	Tempera-ture °C (See Sec. 4.9-c)	First count days (See Sec. 4.9-d)	Final count days
Elymus cinereus basin wildrye	P	15-25	10	21[d]

[d]Determine viability of ungerminated seeds; see section 4.2e and 4.9k.

3) Section 6e (Other grasses) of APPENDIX 1. Seedling Descriptions shall be used for normal and abnormal classifications.

4) Uniform Classification of Weed and Crop Seeds (AOSA Handbook No. 25) shall be amended to include this species and consider it as classification 3.

6. Addition of Kochia prostrata--forage kochia to the Rules:

Adopted Proposal as amended from original (dashed underlining shows words added, items 6 and 7 were added, and footnote d was transferred from Additional Directions to Final count days)--

1) Under Section 2.7 (Kind or cultivar considered pure seed), the following shall be added as pure seed:

j. Seeds of Kochia prostrata which are retained on a 1mm opening square-holed sieve, when shaken for 30 seconds.

2) Under Section 2.10a (Inert matter), the following shall be added as inert matter:

(10) Seeds of Kochia prostrata which pass through a 1mm opening square-holed sieve, when shaken for 30 seconds.

3) Include in Table 1 (Weights for working samples, AGRICULTURAL SEEDS) the following:

Kind of seed	Minimum weight for purity analysis	Minimum weight for noxious-weed seed examination	Approximate number of seeds per gram	Approximate number of seeds per ounce
	Grams	Grams	Number	Number
Kochia prostrata L. forage kochia	2	20	1070	30,300

4) Include in Table 3 (Methods of testing for laboratory germination, AGRICULTURAL SEEDS) the following:

Kind of seed	Substrata (See Sec. 4.9-a-b)	Tempera-ture °C.(See Sec. 4.9-c)	First count days (See Sec. 4.9-d)	Final count days
Kochia prostrata forage kochia	P	20	4	14d

[d]Determine viability of ungerminated seeds; see section 4.2e and 4.9k.

5) Include Kochia prostrata in the list of species under Section 1. Chenopodiaceae, Goosefoot family of APPENDIX 1. Seedling Descriptions for normal-abnormal classifications.

6) Section 2.6g under Seed unit shall be amended to contain the following statement for clarification after the last sentence [Refer to section 2.7i and 2.10a(9)]: Refer to 2.7j and 2.10a(10) for Kochia prostrata.

7) Uniform Classification of Weed and Crop Seeds (AOSA Handbook No. 25) shall be amended to include this species and consider it as classification 3. Also include footnote 1/ prior to the scientific name.

7. Addition of Purshia tridentata--antelope bitterbrush to the Rules:

Adopted Proposal as amended from original (changes made under Additional Directions)--

1) Add the following to the end of the last sentence of f in section 2.7 (Kind or cultivar considered pure seed):

and to section 2.10a(11) for classification of the pericarp (fruit wall) in Purshia tridentata.

2) Add the following under section 2.10a (Inert matter):

(11) The thin pericarp (fruit wall), if present on seeds of Purshia tridentata.

3) Include in Table 1 (Weights for working samples, TREE and SHRUB SEEDS) the following:

Kind of seed	Minimum weight for purity analysis	Approximate number of seeds per gram	Approximate number of seeds per ounce
	Grams	Number	Number
Purshia tridentata (Pursh) DeCandolle antelope bitterbrush	70	37	1050

4) Include in Table 5 (Methods of testing for laboratory germination, TREE and SHRUB SEEDS) the following:

Kind of seed	Substrata	Temperature °C	Test duration days	Additional Directions
Purshia tridentata antelope bitterbrush	B	15	7	Presoak for 24 hours at 20-22°C followed by a 4 week prechill at 2-5°C, or use TZ[b].

[b]T.Z. Tetrazolium: See section 4.9k(2).

5) Section 12. Tree and Shrubs of APPENDIX 1. Seedling Descriptions shall be used for normal-abnormal classifications.

8. Change in definition of other crop seed in Section 2.8:

Adopted Proposal--

2.8 Other crop seed.- Seeds of plants grown as crops (other than the kind(s) and cultivar(s) included in the pure seed) shall be considered other crop seeds, unless recognized as weed seeds by laws, regulations, or by general usage. Refer to the current edition of AOSA Contribution No. 25 to the Handbook on Seed Testing: Uniform Classification of Weed and Crop Seeds. All interpretations and definitions for pure seed in section 2.7 shall also apply in determining whether seeds are other crop or inert matter with the following two exceptions which may be applied as acceptable alternatives:

a. Uniform Blowing Procedure in section 2.11 for kinds listed in section 2.7g(2) may be disregarded. If disregarded, all seed units (as defined in section 2.6) for these kinds found in the working sample shall be manually separated into pure seed and inert matter. Only units containing at least one caryopsis with some degree of endosperm development which can be detected either by slight pressure or by examination over light are considered other crop.

b. Multiple Unit procedures in section 2.12 for kinds listed in section 2.7g(3) may be disregarded. If disregarded, all multiple units and single units (as defined in 2.12) for these kinds found in the working sample shall be manually separated into single florets. Each floret containing a caryopsis with some degree of endosperm development, which can be detected either by slight pressure or examination over light, is considered other crop. Empty florets and glumes, if present, are considered inert matter. Refer to section 2.10a(4).

9. Addition of Paspalum to section 2.6b(3) of the Rules:

Adopted Proposal--

2.6 Seed unit.-

b. (3) Entire spikelets in Agrostis, Panicum, Paspalum, and Setaria. Entire spikelets which may have attached rachis segments, pedicels and sterile spikelets in Andropogon, Bothriochloa ischaemum, Schizachyrium scoparium, Sorghastrum, and Sorghum;

10. Calculation of number of seeds in the sample.

This proposal was rejected by the membership.

11. Rules for Testing Coated Seeds.

Adopted Proposal--

2.13 Coated seed purity procedures

a. Definition: Coated seed is a seed unit covered with any substance which changes the size, shape, or weight of the original seed. Seeds coated with ingredients such as, but not limited to, rhizobia, dyes, and pesticides are excluded.

b. Sampling:

(1) Size of submitted sample: The minimum size for samples of coated units to be submitted for a purity analysis shall be that of 7500 units. The minimum size for samples of coated units to be submitted for noxious-weed seed examination shall be that of 30,000 units. When only a germination test is requested, a minimum of 1000 units shall be submitted.

(2) Forwarding and receipt of official samples: Samples of coated seed shall be forwarded in firmly packed crush-proof and moisture-proof containers.

c. Size of working sample:

(1) Single kinds: Due to variation in weight of coating materials, the size or weight of the working sample shall be determined separately for each lot. The weight of the working sample shall be determined by weighing 100 completely coated units and calculating the weight of 2500 coated units for the purity analysis and 25,000 coated units for the noxious-weed seed examination.

(2) Mixtures: The working weight shall be determined in the following manner:

(a) Calculate the weight of the working sample to be used for the mixture under consideration as though the sample were not coated by following sections 2.3d(1) or (2).

(b) Determine the amount of coating material on 100 coated units by weighing the coated units. Then use methods described in section 2.13 f. (3) and (4) to remove coating material. Calculate the percentage of coating material using the following formulas:

Wt. of coating material = Wt. of 100 coated units - Wt. of 100 de-coated units.

% of coating material = Wt. of coating material $\div$ Wt. of 100 coated units x 100%.

(c) The weight of the working sample shall be the product of the weight calculated in (a) multiplied by 100%, divided by 100% minus the percentage of coating material calculated in (b).
Example:
Where the weight calculated in (a) = 5 grams and the percentage of coating material calculated in (b) = 30%:

$$\frac{5 \text{ grams} \times 100\%}{(100\% - 30\%)} =$$

$$\frac{5 \text{ grams} \times 100\%}{70\%} =$$

$$\frac{5}{0.7} =$$

7.1 grams

Methods described in Section 2.2 shall be used, with the following precautions: Mechanical dividers may be used only if the distance of fall is less than 25 cm. and does not damage the coated units.

e. The purity analysis of coated seed:
   (1) Separation of component parts: The working sample shall be weighed in grams to four significant figures and shall be separated into four parts:
      i. pure coated units
      ii. uncoated crop seed (including the kind under consideration)
      iii. inert matter
      iv. uncoated weed seed
   (2) Pure coated units shall include:
      i. entire coated units regardless of whether or not they contain a seed
      ii. broken and damaged coated units in which more than half the surface of the seed is covered by coating material, except when it can be seen that, either the seed is not of the species stated by the sender, or there is no seed present.
   (3) Uncoated crop seed shall include:
      i. free seeds of any crop species; refer to sections 2.7 and 2.8
      ii. broken coated units containing a crop seed that is recognizably not of the species stated by the sender
      iii. broken coated units of the species stated when the coating material covers half or less of the surface of the seed.
   (4) Inert matter shall include:
      i. loose coating material
      ii. broken coated units in which it is obvious there is no seed
      iii. any other material defined as inert matter in section 2.10
   (5) Uncoated weed seed shall include:
      i. free seeds of any weed species; refer to section 2.9
      ii. broken coated units containing a weed seed

f. The purity analysis on de-coated seed, to be performed upon request or if necessary because the sample is a mixture:
   (1) Obtain the working sample as in sections 2.13c.(1) and (2), and weigh in grams to four significant figures.
   (2) Any loose coating material shall be sieved, weighed, and included with the inert matter component.
   (3) Remove the coating material from the seed by washing with water or other solvents such as, but not limited to, dilute sodium hydroxide. Use of fine mesh sieves are recommended for this procedure, and stirring or shaking the coated units may be necessary to obtain de-coated seed.
   (4) Spread on blotters or filter paper in a shallow container. Air dry overnight at room temperature.
   (5) Separation of component parts:
      i. kind or cultivar considered pure seed
      ii. other crop seed
      iii. inert matter
      iv. weed seed
      v. coating material

   The de-coated seed shall be separated into the first four components in accordance with Sections 2.7 through 2.10. Sections 2.11 and 2.12 shall not be followed. The weight of the coating material component is determined by subtracting the sum of the weights of the other four components from the original weight of the working sample. Calculate percentages of all five components based on the original weight of the working sample.

g. Noxious weed seeds:
A noxious-weed seed examination shall be made by examining approximately 25,000 units which have been de-coated.

h. Identification and cultivar determination:
Verification of kind of seed under consideration shall be made on 100 coated units taken from the pure coated unit component of the purity separation. Before examination, the coating material shall be removed by washing or other appropriate method. The name and number of each kind found shall be reported. For cultivar determination, a minimum of 400 coated units shall be examined as above.

4.8 Special procedures and alternate methods for germination

k. Coated Seed:

(1) Germination tests on coated seed units and on de-coated seed shall be conducted in accordance with methods in section 4.10. Kinds for which soaking or washing is specified in Section 4.8 shall not be soaked or washed in the case of coated seed.

(a) Coated seed units shall be placed on the substratum in the condition in which they are received without rinsing, soaking, or any other pretreatment.

(b) Coated seed units in mixtures which are color coded or can otherwise be separated by kinds shall be germinated as separate kinds without removing the coating material.

(c) Coated seed units in mixtures which cannot be separated by kinds without removing the coating material shall have the coating removed in a manner that will not affect the germination capacity of the seeds. The de-coated seeds shall be planted as separate kinds on the same day the coating material is removed.

(d) On request or as a comparison, germination may be made on de-coated seed. Remove the coating material in a manner that will not affect the germination of the seeds and plant the same day.

(2) The moisture level of the substratum is important. It may depend on the water-absorbing capacity of the coating material. A retest may be necessary before satisfactory germination of the sample is achieved.

(3) Phytotoxic symptoms may be evident when germinating coated seeds in paper substrata. In such cases a comparative test or retest in sand or soil may be necessary.

12. Change in seedling descriptions of Section 4 in APPENDIX 1:

Adopted Proposal as amended from original (wording changed to conform with statements used for cotyledons of garden beans in Section 7 of APPENDIX 1)--

Normal seedling
Cotyledons — At least one complete cotyledon free of injury or decay, or two broken cotyledons with half or more of the original cotyledon tissue remaining attached to the seedling.

Abnormal seedling
Cotyledons — Part of one cotyledon or two broken cotyledons with less than half of the original cotyledon tissue remaining attached.