Purpose: to clarify when verification of kind or cultivar of coated/pelleted seed units must be performed and to clarify which method to use when determination of the percentage of coating material is necessary for seed lot labeling or regulatory label compliance testing.

Present and Proposed Rule: (proposed changes indicated in red text)

Rules Vol. 1

3.8 Pelleted, coated or encrusted seed purity procedures.
a. Where reference is made to coated units, the rules apply to pelleted, coated and encrusted seed. Refer to section 2.1 d.

b. Size of working sample: refer to section 2.3 b (5).

c. Obtaining the working sample: Methods described in section 2.2 shall be used.

d. Purity analysis of coated units (this section does not apply to seed samples that are single component seed samples of Poaceae, or any mixtures of kinds). Refer to section 3.8g for verification of kind or cultivar of seed under consideration. When the percentage of coating material must be determined for purposes of labeling or regulatory label compliance testing use the method in section 3.8 e. The method under 3.8 e must be followed for all mixtures of kinds, single component seed samples of Poaceae, or upon customer request.

(1) Separation of component parts: The working sample shall be weighed in grams to the appropriate number of decimal places (refer to section 2.3) and shall be separated into four parts:
   a) Pure coated units as defined in section 3.8 d (2).
   b) Uncoated crop seed as defined in section 3.8 d (3) (including the kind under consideration).
   c) Inert matter as defined in section 3.8 d (4).
   d) Uncoated weed seed as defined in section 3.8 d (5).

(2) Pure coated units shall include:
   a) Entire coated units regardless of whether or not they contain a seed.
   b) 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:
   a) Free seeds of any crop species; refer to sections 3.2 and 3.3.
   b) Broken coated units containing a crop seed that is recognizably not of the species stated by the sender.
   c) 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:
   a) Loose coating material.
   b) Broken coated units in which it is obvious there is no seed.
   c) Any other material defined as inert matter in section 3.5.

(5) Uncoated weed seed shall include:
(a) Free seeds of any weed species; refer to section 3.4.
(b) Broken coated units containing a weed seed.

e. **Purity analysis of de-coated units** (This section shall apply to all mixtures of kinds, single component seed samples of Poaceae, or upon request for other kinds):

   (1) Determine the working sample size as in section 2.3 b (5), and weigh the working sample in grams to the appropriate number of decimal places (refer to section 2.3 a).

   (2) 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 is recommended for this procedure, and stirring or shaking the coated units may be necessary to obtain de-coated seed.

   (3) Spread on blotters or filter paper in a shallow container. Air dry overnight at room temperature.

   (4) Separation of component parts:

      (a) Kind or cultivar considered pure seed as defined in section 3.2 and Table 3A.
      (b) Other crop seed.
      (c) Inert matter.
      (d) Weed seed.
      (e) Coating material.

   The de-coated working sample shall be separated into the first four components in accordance with sections 3.2 through 3.5. Sections 3.6 and 3.7 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.

f. **Noxious-weed seed examination or bulk examination:** The working sample size shall be approximately 25,000 coated units or a maximum of 1,000 grams of kinds listed in Table 2A for which the working sample weight of raw seed is 500 grams. A noxious-weed seed examination shall be made by examining the working sample after it has been de-coated.

g. **Identification and cultivar determination when method under 3.8 d is applied:** 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 under other determinations on the report of analysis. If requested, for for cultivar determination, a minimum of 400 coated units shall be examined as above and results reported under other determinations on the report of analysis.

**Harmonization Statement:** Under the Federal Seed Act Regulations (FSA), coating material is required to be removed during the purity analysis of agricultural seeds and included with the inert matter. This requirement can also be found in the Recommended Uniform State Seed Law (RUSSL) published by the Association of American Seed Control Officials (AASCO). According to the Canadian Methods and Procedures (M&P), the grading of seed must occur prior to coating of seed. If information regarding the percentage of coating material is needed, the M&P refers to the AOSA Rules for general testing procedure for coated seed. Under the ISTA Rules (Chapter 11) there are two methods for testing coated seed: (1) purity analysis where the pure seed consists of the coated seed unit; (2) purity analysis where the coating material is washed off and the percentage of the components parts (pure seed, other seeds, inert matter) is determined based on their total weight, ignoring the coating material.

**Supporting Evidence:**
Questions have been raised regarding the testing samples of coated seed kind that are not from the grass family. Currently the AOSA allow for the coating material to remain as part of the seed unit during the purity analysis for all kinds of seed other than grasses (Poaceae). This can create a problem if state seed laws require a statement of the amount of coating material appear on the seed lot label or when seed lots are shipped in interstate commerce because the FSA requires the coating material to be remove and classified as inert matter for all seed kinds. This proposal will clarify when it is appropriate to use the methods for purity analysis of coated seed units (sec. 3.8.d) and purity analysis of de-coated seed units (sec. 3.8.e). The proposal also clarifies when to apply sec. 3.8.g for identification and cultivar determination and how to report these test results.

In the summer of 2018 a survey of AOSA and SCST members was conducted to determine if labs are testing samples of coated non-Poaceae kinds for regulatory enforcement and/or labeling purposes. Also asked on the survey was whether labs are removing the coating from such samples during the purity analysis, and if not, how do they account for the coating material when reporting the results of the purity analysis and how do they compare their results to the label. There were 22 respondents to the survey. When asked whether the lab performs purity analyses on coated non-Poaceae kinds for regulatory purposes, 73% indicated yes and 27% said no. For the question of whether the lab performs purity analyses on coated non-Poaceae kinds for labeling purposes, 77% indicated yes and 23% said no. When asked whether the lab removes the coating material when conducting purity analyses on coated non-Poaceae kinds the response was 100% yes. Since there were no negative responses to this question the next two survey questions were of no consequence. Please refer to Appendix 1 for the full SurveyMonkey results.

Submitted By: Nishit Patel and Johnny Zook, Pennsylvania Department of Agriculture Seed Lab; David Johnston, Louisiana Department of Agriculture Seed Lab; Deborah Meyer, Purity Subcommittee AOSA Co-chair (deborah.meyer@cdfa.ca.gov); and Gil Waibel, Purity Subcommittee SCST Co-chair (waibel@indianacrop.org).

Date Submitted: October 15, 2018, revised February 26, 2019.

Appendix 1

Background and results of the survey conducted by AOSA/SCST on testing samples of coated single non-Poaceae seed kinds are given below. The survey was conducted by Nishit Patel, Pennsylvania State Seed Lab.

BACKGROUND

The need for determining percent of coating material on coated single seed kinds that are non-Poaceae for regulatory analysis is key in comparing what is given on the label to what the lab analysis finds. If the coating material on the label is given to be 50% coating how do labs that test regulatory samples check if this is accurate without first decoating the purity portion? Currently in the AOSA Rules for Testing Seeds, a coated single seed kind that are non-Poaceae, does not need the purity portion decoated and is separated into four parts:

a. Pure coated units as defined in section 3.8 d (2)
b. Uncoated crop seed as defined in section 3.8 d (3)
c. Inert matter as defined in section 3.8 d (4)
d. Uncoated weed seed as defined in section 3.8 d (5)

Noxious weed portion is the only portion that is decoated in both single kind and mixtures. What if when doing a noxious weed exam on a coated single seed kind, non-Poaceae sample you find a high number of crop and weed seeds that weren’t visible in the purity portion, because they were coated, would you then go back and re-do the purity portion by decoating it?
The ultimate purpose of making the test is to determine the value of the seed for planting. If a lab that tests regulatory samples who do not decoat the single seed kind, non Poaceae sample for the purity portion is not determining the true “value” of the seed. From a regulatory viewpoint seed testing is truth in labeling, and without decoating every purity portion we cannot truly gauge the “truth” in labeling as we cannot definitively compare “pure seed units” to labeled pure seed and coating percentages.

This was brought up as a concern at the 2018 AASCO annual meeting in July. This is strictly a regulatory concern and is only regarding regulatory samples.

Survey Questions

Q1
Does your lab perform purity tests on coated single seed kind, non-Poaceae samples for regulatory analysis?

Answered: 22  Skipped: 0

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<td>27.27%</td>
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Q2
Does your lab perform purity tests on coated single seed kind, non-Poaceae samples for seed labeling purposes?

Answered: 22  Skipped: 0

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<td>77.27%</td>
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<tr>
<td>No</td>
<td>22.73%</td>
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<tr>
<td>TOTAL</td>
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Q4
If your answer to the previous question (Question #3) was NO, how does your lab check the purity analysis of a coated single seed kind, non-Poaceae seed sample against what’s given on the label?

4 respondents answered = N/A  
18 respondents skipped this question

Q5
If your answer to the previous question (Question #3) was NO, how do you report purity results for a coated single seed kind, non-Poaceae seed sample for labeling?

4 respondents answered = N/A  
18 respondents skipped this question

Q6
Please indicate what laboratory you test at. Answered: 22

7 responses from private seed labs = 32%  
2 responses from crop improvement labs = 9%  
13 responses from state seed testing labs = 59%