

## Rule Change Proposal - 7

**Purpose:** To modify the pure seed unit definition for species of *Allium* in order to avoid damaging adhering seed pairs during purity analyses. Seedling evaluation of these occasional multiple seed units are also addressed.

**Present rule:**

**Table 3A. Pure seed unit definitions**

PSU Number	Description of Pure Seed Unit
1	Seed, with or without seed coat. Piece of broken seed, with or without seed coat, larger than one-half the original size. Special considerations: <ul style="list-style-type: none"> <li>• Seeds of Cucurbitaceae and Solanaceae whether or not they are filled.</li> </ul>

### 6.5 Evaluation of seedlings

- c. **Multiple seed units.** – Spinach, New Zealand spinach, Beta spp., schizocarps (double fruits) of Apiaceae, multiple seeds of little burnet, seed units of grasses consisting of multiple florets, and tree and shrub seed with multiple seed units shall be regarded as having germinated if they produce one or more normal seedlings. A total seedling count by replicating a 400 seed test may be conducted on tree and shrub seed with multiple seed units to determine the total number of seedlings. For the total seedling count, the seed units shall remain on the substrate until the end of the germination test, and all seedlings shall be counted. The result from the germination test shall be reported as percentage germination, and the result of the total seedling count shall be reported as the number of seedlings per 100 seed units.

**Proposed Rule:**

**Table 3A. Pure seed unit definitions**

PSU Number	Description of Pure Seed Unit
1	Seed, with or without seed coat. Piece of broken seed, with or without seed coat, larger than one-half the original size. Special considerations: <ul style="list-style-type: none"> <li>• Seeds of Cucurbitaceae and Solanaceae whether or not they are filled.</li> <li>• <a href="#">Pairs of <i>Allium</i> spp. seeds adhering together need not be separated. Refer to sec. 6.5.c.</a></li> </ul>

### 6.5 Evaluation of seedlings

- c. **Multiple seed units.** – Spinach, New Zealand spinach, Beta spp., schizocarps (double fruits) of Apiaceae, [adhering pairs of \*Allium\* seeds](#), multiple seeds of little burnet, seed

units of grasses consisting of multiple florets, and tree and shrub seed with multiple seed units shall be regarded as having germinated if they produce one or more normal seedlings. A total seedling count by replicating a 400 seed test may be conducted on tree and shrub seed with multiple seed units to determine the total number of seedlings. For the total seedling count, the seed units shall remain on the substrate until the end of the germination test, and all seedlings shall be counted. The result from the germination test shall be reported as percentage germination, and the result of the total seedling count shall be reported as the number of seedlings per 100 seed units.

## Volume 4: Seedling Evaluation

### LILIACEAE, LILY FAMILY II – Onion, leek and chives

#### NOTES

- [3. Multiple seed units \(adhering pairs of seeds\) are sometimes present in \*Allium\* spp. A multiple seed unit producing at least one normal seedling is classified as normal; only one normal seedling per pair is to be counted. Care should be taken at the beginning of the germination test to identify the multiple seed units because the adhering pairs of seeds may separate during the germination process.](#)

**Supporting evidence:** The fruit of *Allium* is a dry dehiscent capsule containing three chambers, usually with two ovules per chamber. At maturity the pairs of seeds in each chamber may adhere together. While most *Allium* seed pairs separate naturally during seed conditioning, some do not. Whether these seed pairs are required to be separated is not clearly stated in the AOSA Rules. Separating the adhering seeds during a purity analysis may cause damage to the seed coat and possibly damage to the internal structures of the seed. This type of damage may create inert matter and may have an effect on the germination potential of the damaged seed. Since the natural seed units commonly include single seeds and adhering seed pairs (in onion sometimes as much as 40% of a purity working sample may be adhering seed pairs – Ransom Seed Lab, personal communication), the common sense solution to this problem in a purity analysis is to leave the seed pairs intact. In the germination test only one normal seedling will be counted in the event two are produced.

**Harmonization and impact statement:** According to the Federal Seed Act Regulations (FSA) sec. 201.47a, a seed unit is the structure usually regarded as a seed in planting practices and in commercial channels. The seed unit may consist of one or more of the following structures: (a) True seeds... According to the CFIA, Methods and Procedures sec. 3.2.1, a seed, in laboratory practice, is defined as “a structure which contains at least one ripened ovule with or without accessory parts.” According to the ISTA Rules for Seed Testing (ISTA Rules) sec. 3.8, “the detailed pure seed definitions as listed in table 3B Part 2. The structures described in the definitions in Part 2 are to be classed as pure seed. Appendages are not to be classed as pure seed, unless specifically referenced to in Table 3B Part 2.” In this table the pure seed unit for *Allium*

is described as seed. Since the discussion pertains only to seeds of *Allium* adhering together and no appendages are involved, it appears that two adhering seeds will not conflict with any of these three seed unit definitions.

Under germination test interpretation (sec. 201.56, FSA) seed units containing more than one seed or embryo shall be tested as a single seed and shall be regarded as having germinated if they produce one or more normal seedlings. Examples of kinds cited under this section include New Zealand spinach seed, *Beta* seed, double fruits of the carrot family, multiple seeds of burnet, and seed units of the grasses consisting of multiple florets. These examples are preceded by the phrase “such as” that may be interpreted to mean the instructions may also apply to other kinds of seeds. Under the CFIA M&P sec. 4.12.6.a, multiple seeded units are listed as New Zealand spinach, *Beta* spp., schizocarps of the Apiaceae, multiple seeds of burnet, and seed units of grasses (*Dactylis glomerata*, *Poa* spp., oats, etc.) consisting of multiple florets. These kinds are regarded as having germinated if they produce one or more normal seedlings. Only one seedling per multiple unit is to be counted. According to the ISTA Rules sec. 5.26, examples of multigerm seed units containing more than one true seed include multiple seed units in *Dactylis*, *Festuca xFestulolium* and *Lolium*, unseparated schizocarps of Apiaceae; clusters of *Beta vulgaris*, and fruits of *Tectona grandis*). Although the wording of the section under the CFIA M&P appears to be more limiting than that in the FSA or the ISTA Rules, in any case only one seedling from a multiple unit is counted; therefore, there should be no substantial difference in the final test results among the three sets of testing procedures and the proposed seedling evaluation.

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