July 27, 2007

Oregon State University Seed Laboratory

Update on *Glyceria* (Mannagrass) Identification at the OSU Seed Laboratory

Background

The following *Glyceria* species can not be distinguished by seed morphology: *Glyceria declinata* (diploid), *G. occidentalis* (tetraploid), *G. fluitans* (tetraploid) and *G. leptostachia* (tetraploid). For this reason, *Glyceria* seeds found in any sample, if considered to be one of the four species listed above, can only be reported as "*Glyceria sp.* complex". Last year we learned that this information does not satisfy all countries.

The OSU Seed Laboratory has performed extensive research to explore additional methods to identify *Glyceria* species to provide more specific information to our customers. The lab made **grow outs** on seeds found in samples from around the surrounding Willamette valley, on plants collected from various sites in the valley, and *Glyceria* seeds that were provided by individuals. All seeds/plants originated in the Willamette valley. Based on the morphology of the seed heads and the florets, all plants evaluated in the grow outs were identified as *Glyceria declinata*. Given that *G. declinata* is a diploid species and the other three species in the "*Glyceria sp.* complex" are tetraploid, the '**Ploidy by Cytometery**' method has been used as a supplementary tool in the identification process.

Based on the background information, the OSU Seed Laboratory is planning to use the following stepwise procedure to identify *Glyceria* seeds in seed samples:

- *Glyceria* seeds found in any sample, if considered to be one of the four species listed above, will be reported as "*Glyceria* sp. complex". This satisfies some markets but not others.
- On customer request,for samples needing additional identification (i.e. Australian destination), the following additional tests will be offered to further identify the *Glyceria* species:
  - **Ploidy Test**: The *Glyceria* seeds will be germinated to determine the ploidy level on leaf tissue. This test requires about 10 days in order to have sufficient leaf tissue. A known *G. declinata* will be used as a control check. If the ploidy level is similar to the *G. declinata* check, a preliminary report can be issued indicating "*Glyceria* seeds found in the sample shows similar ploidy level as *G. declinata* check".

Although the ploidy result is highly valuable, it can not be used as a definitive proof of species because there are other *Glyceria* species that are diploid and may or may not be present in the Valley.

  - **Grow-out Test**: Since the ploidy test uses only a small part of leaf tissue, the same seedlings used in the ploidy test will be transplanted to the greenhouse for a grow-out test. This test takes about 30-40 days. Final and definitive report will be issued based on seed head and floret morphology. Seed heads will be collected and kept with file sample for future reference.

This method is not fast or simple as one would wish, however, it is objective and verifiable and can be trusted. The Lab will make this service available for all customers starting July, 2007.

We hope this information is of value for all interested parties.

Sincerely,

Adriel Garay, Lab manager