

## Leafy Vegetable Crop Germplasm Committee (LVCGC) Meeting – MINUTES

ASHS Annual Conference  
September 20, 2017, Hilton Village, Waikoloa, Hawaii

Attendees – Carlos Avila, Peter Bretting, Jim Correll, Barbara Hellier, Jinguo Hu, Alfred Huo, Maria Jenderek, Larry Knerr, Joanne Labate, Guodong Liu, Mary Ruth McDonald, Beiquan Mou (Chair), Kathy Reitsma, Ainong Shi, Jonathan Sinclair.

The meeting was called to order by Beiquan Mou. Following self-introductions, the minutes of the 2016 meeting in Atlanta, Georgia were approved.

### Crop Reports:

**Celery** – Joanne Labate gave a report on the *Apium* germplasm collection at Geneva, New York. Now there are 243 accessions at Geneva (173 PIs and 70 Geneva numbered lines), and 64 accessions at Ft. Collins, Colorado that are not held at Geneva. Most (238) of the 243 accessions are *Apium graveolens*. Of the 243 accessions, 159 are available for distribution and 88 are backed up at PAGRP in Ft. Collins. No new regenerations have been started since 2012 due to lack of facility and personnel (farm manager). Approximately half of the accessions still need to be regenerated to provide sufficient seeds for distribution and backup. In addition, the 64 Ft. Collins accessions (received by NPGS from 1961 -1992) have to be regenerated and transferred to the collection at Geneva. Recent tests showed that 30 of the 64 Ft. Collins accessions had 0% germination. The committee is concerned about the loss of viability in the accessions, and new regenerations are badly needed. There were 9 orders of seeds in 2016 for 96 samples from 76 accessions. This year, 182 samples from 162 accessions have been distributed to fill 7 orders through September 6, including a large order of 155 samples from South Korea. The seeds of *Apium* are stored at -20 °C with distribution samples stored at 4 °C.

**Chicory & Endive** – Kathy Reitsma reported that the *Cichorium* collection at Ames, Iowa remains at 279 accessions (168 *C. intybus*, 108 *C. endivia*, 2 *C. calvum*, and 1 *C. pumilum*), of which 215 (77%) are available for distribution and 244 (87%) are backed up at Ft. Collins. Regeneration in 2016 focused on accessions with low viability in distribution seed lots stored at 4 °C. Original seeds are stored at -18°C. Six accessions being regenerated had high numbers of non-bolted plants. These plants were dug from the field, re-vernalized through the winter in the greenhouse, and transplanted to field cages in 2017. In 2016, 25 seed samples (25 accessions) were distributed to 5 recipients to fill 5 orders. So far in 2017, 302 samples (132 accessions) for six domestic requests and two foreign orders have been distributed for varietal development and chemical analysis for bioactive compounds.

**Spinach** – David Brenner provided a written report on the collection status of 413 accessions held at Ames, of which 402 (97%) are available and 399 (97%) are backed up at Ft. Collins. Jonathan C. Spero donated seeds of the spinach cultivar ‘Monnopa’ (Ames

32890) that is said to have a high frequency of monoecious plants. Its monoecious frequency was 28.9% in a 2017 regeneration planting. Two accessions of wild spinach (Ames 32865 and PI 647860) were regenerated in greenhouses in 2017 in Ames, and one cultivated accession (Ames 32890) was regenerated in the field. In 2016, 1,986 seed samples from 404 accessions (98%) were distributed to 20 orders (16 recipients).

**Lettuce** – Barbara Hellier reported that there are currently 2,313 accessions of 24 species in the *Lactuca* collection at Pullman, Washington, of which 1,533 are available for distribution and 1,558 are backed up at PAGRP. The collection now has 1,542 accessions of *L. sativa* with 1,350 available and 1,405 backed up. The *L. serriola* collection has 419 accessions with 115 available and 118 backed up. The 356 accessions of the remaining species have only 24 accessions available and 36 backed up. This year 71 accessions of *L. sativa* are being regenerated in the field and greenhouse, among which eight accessions were tested positive (ranging from 1/30 to 2/30 or 3-7%) for LMV by ELISA. LMV-positive plants were rogued. Cages are being used in the field regeneration to prevent cross pollination by insects and seed mixing. There are also 15 accessions of wild *Lactuca* accessions (5 *L. saligna* and 10 *L. serriola*) increased in the greenhouse. Currently all crisphead accessions need to be grown in the greenhouse, as most crisphead varieties do not bolt in the field in Pullman due to a short growing season. Trials of two crisphead accessions were conducted in Parlier, CA to see if virus-free crisphead lettuce seeds can be produced there. The trial yielded excellent quantity and quality of seeds, and no LMV was detected from tests of 100 seedlings of each regenerated accession. During the past year, 1,082 seed samples were distributed in 206 orders to 186 requestors, a decrease of 562 samples from the previous year but an increase of 23 orders. In addition, 49 accessions of *L. sativa* were sent to PAGRP for back-up, and no accessions were shipped to the Svalbard Global Seed Vault. In the past year, there were no new accessions added to the collection either. Of the 680 accessions tested, 443 had 80-100% germination, 64 had 50-79% germination, and 173 (67 accessions of older seeds from 16 to 25 years old; 79 *L. serriola* accessions increased in 2004, 2009, and 2010; 24 newer seed increases in the field and greenhouse; 3 varieties recently released from PVP program) had less than 49% germination. Those with low germination % are being regenerated. Since many newer seed increases had low viability, effort is being made to improve the regeneration protocol.

### **Other Reports:**

#### **Germplasm Evaluation Funding Report:**

Ainong Shi of University of Arkansas gave a progress report on the proposal funded (\$12,621) in FY2016 (with Jim Correll). The projects involved evaluation and association analysis of white rust resistance for the USDA spinach germplasm. Four hundred USDA germplasm accessions were evaluated for white rust resistance during the 2016-17 winter at the Del Monte White Rust Nursery in Crystal City, TX. However, the disease pressure was not high enough for adequate scoring of white rust resistance, despite two sprays of the white rust pathogen at the seedling stage. The 400 accessions were also planted at the University of Arkansas Vegetable Research Station in Kibler, AR in the spring 2017, but no white rust disease was observed. The white rust evaluation trials will be repeated in

2017-18. A total of 1,009 spinach genotypes including 400 USDA germplasm accessions were studied with next generation sequencing using GBS and ddRADseq and more than one million SNPs were discovered. Genetic diversity was analyzed in 268 USDA spinach germplasm accessions originally collected from 30 countries.

### **National Plant Germplasm System Report**

Peter Bretting provided the National Plant Germplasm System (NPGS) report. NPGS collections steadily increased to over 570,000 accessions in 2016. Demands for germplasm remained strong with about 250,000 samples distributed during 2016. Funding for NPGS has been flat at about \$44 million in 2016, which is about 20% lower than 10 years ago excluding inflation. Some key challenges for the NPGS include managing and expanding capacity and infrastructure to meet the increasing demand for germplasm and associated information; recent and upcoming personnel retirements; developing and applying cryopreservation and/or in vitro conservation methods for clonal germplasm; BMPs and procedures to manage accessions and breeding stocks with GE traits and the occurrence of adventitious presence (AP); and acquiring and conserving additional germplasm, especially of crop wild relatives. Melanie Schori was hired in January this year to curate GRIN-Taxonomy, as John Wiersema will retire at the end of 2017. NP 301 (Plant Genetic Resources, Genomics and Genetic Improvement) received excellent reviews in 2016.

Gary Kinard sent the National Germplasm Resources Lab report, which were distributed to LVCGC members electronically.

### **Other Discussions:**

#### **Germplasm Evaluation Funding.**

The proposal by A. Shi and J. Correll for FY2017 “Evaluation and association analysis of white rust resistance for USDA spinach germplasm” was funded at \$29,868. Funding for FY2018 is expected to be available later this fiscal year. Since our CGC was funded twice the normal amount of funding in FY2017, funding for FY2018 will mainly be given to those CGC not funded in FY2017. However, excellent proposals from those CGC funded in FY2017 will still be considered for FY2018 funding.

#### **Germplasm Exploration & Exchange.**

Jim Correll would like to submit a germplasm collection and exchange proposal “Expedition in Caucasus region (Armenia, Georgia, and Turkmenistan) to exchange spinach germplasm for crop improvement” to the Plant Exchange Office for FY2018 or FY2019.

#### **Upcoming Meetings Related to Leafy Vegetables.**

Other meetings of interest to LVCGC members were mentioned including:

- International Spinach Conference and Field Day, February 14-15, 2018, Murcia, Spain
- ASHS Annual Conference, July 31 – August 3, 2018, Washington, DC

-XXX. International Horticultural Congress, August 12-16, 2018, Istanbul, Turkey

**Next LVC GC Meeting.**

It was decided that the next LVC GC meeting will be held at the annual conference of the American Society for Horticultural Science, Washington, DC, July 31 – August 3, 2018.

**Other Issues of Interest.**

It was suggested to distribute the current Crop Vulnerability Statement (CVS) ahead of the next LVC GC meeting and spend 15 minutes at the meeting to update the CVS.

Prepared by Beiquan Mou.