Leafy Vegetable Crop Germplasm Committee (LVCGC) Meeting – MINUTES

ASHS Annual Conference

July 28, 2014, Rosen Plaza Hotel, Orlando, Florida

Attendees – Peter Bretting, Barbara Hellier, Jinguo Hu, Larry Knerr, Joanne Labate, Beiquan Mou (Chair), Kathy Reitsma, Larry Robertson, German Sandoya, Ainong Shi, Gail Wisler.

The meeting was called to order by Beiquan Mou. Following self-introductions, the minutes of the 2013 meeting in Palm Desert, California were approved.

**Crop Reports**:

**Celery –** Larry Robertson gave a report on the *Apium* germplasm collection at Geneva, New York. Now there are 242 accessions at Geneva (172 PIs and 70 Geneva numbered lines), and 87 accessions at Ft. Collins, Colorado that are not held at Geneva. Most (237) of the 242 accessions are *Apium graveolens*. No new regenerations have been started since 2012. About half of the accessions still need to be regenerated to provide sufficient seeds for backup at NCGRP in Ft. Collins. In addition, the 87 Ft. Collins accessions have to be regenerated and transferred to the collection at Geneva. The *Apium* regenerations have to wait until regenerations for Brassica species and the onion collection are finished. There were 18 orders of seed in 2013 for 107 samples from 60 accessions. This year, 54 samples from 52 accessions have been distributed to fill 5 orders through July 1. The seeds of *Apium* are stored at -20 oC and are mostly available for distribution.

**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 212 (76%) are available for distribution and 244 (87%) are backed up at Ft. Collins. No *Cichorium* accessions have been regenerated since 2009, and regeneration is not expected until 2015 due to budget constraints. In 2013, 503 seed samples (217 accessions) were distributed to 11 recipients to fill 11 orders. So far in 2014, two samples (two accessions) for two domestic requests and 69 samples (69 accessions) for one foreign order have been distributed for breeding, molecular science, and pollinator research.

**Spinach –** Kathy Reitsma (for David Brenner) reported on the collection status of 410 accessions held at Ames, of which 399 (97%) are available and 396 (97%) are backed up at Ft. Collins. In cooperation with Sakata Seed and USDA-ARS in Salinas, California, 30 accessions were regenerated during the 2013-14 seasons. Seven additional accessions were regenerated in Ames. The first *Cycloloma atriplicifolium* accession (Ames 31625) in a genera related to spinach was also regenerated and is available for distribution. In 2013, 592 seed samples from 401 accessions (98%) were distributed to 16 orders. So far this year, 918 seed samples have been distributed. These include an order with 388 accessions to Carlos A. Avila of the Texas A&M Agrilife Research and Extension Center in Weslaco, Texas to start a new spinach breeding program for South and Southwest Texas. Zhaofa Sun of the Qingdao Academy of Agricultural Science in China provided 346 observations on five traits including monoecious frequency and leaf shape from 69 spinach accessions, which were loaded in GRIN.

**Lettuce –** Barbara Hellier reported that there are currently 2,479 accessions of 22 species in the *Lactuca* collection at Pullman, Washington, of which 1,514 are available for distribution and 1,501 are backed up at NCGRP. The collection now has 1,792 accessions of *L. sativa* with 1,338 available and 1,307 backed up. The *L. serriola* collection has 347 accessions with 159 available and 124 backed up. The 339 accessions of the remaining species have only 16 accessions available and 26 backed up. This year 60 accessions of *L. sativa* are being regenerated in the field and greenhouse, and six plants from three of these accessions were tested positive for LMV by ELISA and were removed. Cages are being used in the field regeneration to prevent cross pollination by insects and seed mixing. There are also 22 accessions of wild *Lactuca* accessions increased in the greenhouse. During the past year, 3,348seed samples were distributed in 280 orders to 270 requestors*.* In addition, 35 accessions of *L. sativa* were sent to the Svalbard Global Seed Vault. In the past year, 65 wild *Lactuca* accessions collected in Kyrgyzstan, Uzbekistan, and Georgia and two accessions from the PVP program (Bud 71-3 and Liberator) were added to the collection. Of the 161 accessions tested from the 4 oC storage, 73% had 90-100% germination, 8% had 50-89% germination, and 16% had less than 49% germination. Those accessions with less than 50% germination are being regenerated using the -18 oC samples.

**Other Reports:**

**Germplasm Evaluation Funding Report:**

German Sandoya provided a progress report on the proposals funded in FY2004-2014 (with K. Subbarao and R. Hayes). All of these projects involved screening of lettuce germplasm for resistance to wilt cause by *Verticillium dahliae*. They have identified two races of *V. dahliae* through field and greenhouse testing as well as pathogen diversity studies. A single resistant gene was identified in a cultivar La Brillante that was used to develop and release three Race 1 resistant iceberg breeding lines (deposited into the Pullman lettuce collection). Complete resistance to Race 2 has not been identified yet. To date, partial resistance against Race 2 (significantly lower disease incidence than ‘Salinas’) has been found in five accessions (PI 169511, 171674, 204707, 226641, and 358038) after screening 850 *L. sativa* and *L. serriola* accessions. A potentially resistant *L. serriola* accession collected from Armenia in 2009 appears to have similar level of resistance. Greenhouse and field experiment results suggest that some of these accessions possess a gene or genes conferring partial resistance against both pathogen races. Research is being conducted to determine if intercrossing these accessions will result in progeny with greater levels of resistance. Research was also carried out to identify five iceberg PIs with reduced or delayed foliar symptoms past market maturity. Several major genes and QTL that control bolting are being evaluated to determine if late bolting genotypes have delayed symptom expression.

**National Programs (NP) 301 Report:**

Peter Bretting gave the 2014 Office of National Programs Report for the U.S. National Plant Germplasm System (NPGS). Accessions preserved in NPGS steadily increased over the years to over 550,000 in 2013. NPGS web pages are accessed more than 1.7 million times a year. About 250,000 seed samples were distributed from NPGS in 2013. The NPGS budget for FY2014 is about $44 millions, less than the funding level 10 years ago excluding inflation. There was no loss of germplasm during the furlough in October 2013, although there were delayed harvests and shipments to winter nurseries. The seed industry advocates the US ratification of FAO International Treaty on Plant Genetic Resources for Food and Agriculture. NPGS has developed stronger and more extensive international partnerships with Consultative Group on International Agricultural Research (CGIAR), Global Crop Diversity Trust, and national genebanks in P.R. China, S. Korea, Canada, Mexico, and Colombia through meetings, project development, and trainings at NPGS.

**Other Discussions:**

**Germplasm Evaluation Funding.**

The proposal by K. Subbarao, G. Sandoya, and R. Hayes for FY2014 “Screening of lettuce germplasm for resistance to wilt caused by *Verticillium dahliae*” was funded at $12,000. Funding for FY2015 is expected to be available later this fiscal year.

**Germplasm Exploration & Exchange.**

Germplasm collection and exchange proposals to the Plant Exchange Office for FY 2015 were due July 25, 2014. No proposal from LVCGC has been submitted yet.

**Crop Vulnerability Statements.**

Crop vulnerability statements (CVS) communicate periodic assessments of the challenges that crops face, particularly from reduced genetic diversity resulting from genetic erosion.

CVS will be reviewed as part of the periodic CGC meetings and updated yearly. CGCs should conduct a more comprehensive assessment of current conditions every five or so years. LVCGC last updated CVS in 2004. Beiquan Mou drafted an updated CVS and sent to LVCGC members for corrections and comments this year.

**Non Research Requests (NRR).**

NRR continue to make up a significant portion of the germplasm requests in NPGS. The NPGS provides germplasm to support research and education objectives. Due to the intensive effort and resources required to ensure availability of germplasm for this purpose, a new policy was implemented in May 2013 to not distribute germplasm resources for home gardening use or for other purposes that can utilize readily available commercial varieties. The new policy replaces the previous one-time distribution policy for NRRs. Educational requests need institutional letters.

**Upcoming Meetings Related to Leafy Vegetables.**

Other meetings of interest to LVCGC members were mentioned including:

* 29th International Horticultural Congress, Brisbane, Australia, August 17-22, 2014.
* International Spinach Conference, Yuma, Arizona, February 24-25, 2015.
* EUCARPIA Leafy Vegetable Conference, Spain, 2015.

**Next LVCGC Meeting.**

Due to cost considerations, it was decided that the next LVCGC meeting will be held at the annual conference of the American Society for Horticultural Science, New Orleans, Louisiana, August 4-7, 2015.

Prepared by Beiquan Mou.