STATE OF NEVADA

Annual Report for Calendar Year 2020 to the W-6 Technical Committee

Compiled by Melinda Yerka

Summary: Table 1 summarizes NV use of the NPGS in 2020. Fourteen (10 in 2017, 15 in 2018, 13 in 2019) individuals from Nevada placed 26 orders (17 in 2017, 39 in 2018, 30 in 2019) and received 331 (91 in 2017, 2138 in 2018, 193 in 2019) accessions from the NPGS in 2020. Researchers at UNR continue to be the primary institutional users (215 accessions of 331, 65%). All users were contacted via email and 4 out of 14 responded. Users reported three manuscripts published in total.

Table 1. Summary statistics for NV in 2020.

	Pathology	Genetics	Chemistry	Variety Devo	Education Teaching	Taxonomy	Other
# accessions used for each purpose	15	158	25	84	41	2	6
% accessions used for each purpose	4.5	47.7	7.6	25.4	12.4	0.6	1.8

NPGS USER REQUESTS AND RESPONSES IN NEVADA: (4 of 14 replied)

UNIVERSITY OF NEVADA SYSTEM AFFILIATES (Total of 6)

1. **Dylan Kosma**, UNR Dept. of Biochemistry & Molecular Biology. Research use notes: To study tuber wound healing; To develop a transient system for the study of gene function related to plant cuticle biosynthesis.

Solanum tuberosum – 1 accession
Nicotiana glauca – 4 accessions

2. **Patricia Ferreira Dos Santos**, UNR Dept. of Biochemistry & Molecular Biology. Research use notes: To set up a celery transient transformation system to study the role of polyacetylenes in the disease response of carrots to the fungus *Sclerotinia sclerotiorum*.

Apium graveolens – 1 accession
Apium graveolens var. dulce – 3 accessions

3. Sandy Lee, UNR Dept. of Biochemistry & Molecular Biology. Research use notes: Objective is to study infection of necrotrophic and hemibiotrophic pathogens on different carrot cultivars to better understand the role of falcarins in carrot plant defense.

Daucus carota – 1 accession
Daucus carota var. sativus – 1 accession

4. **Won Yim**, UNR Dept. of Biochemistry & Molecular Biology. Research use notes: We are working on heat and drought stress related traits resulting from homeologous chromosome exchange.

Brassica carinata - 71 accessions
Brassica nigra - 85 accessions
Brassica rapa - 1 accession

5. **Elizabeth Leger**, UNR Dept. of Biology. Plant Pathological Investigations. Research use notes: Compare genetic diversity before and after sites burned; half of these sites have burned and we are interested in whether that affects genetic diversity; we are pairing these comparisons with field collections.

Elymus elymoides
Sphaeralcea grossulariifolia
Pseudoroegneria spicata – 2 accessions
Sphaeralcea grossulariifolia
Elymus elymoides
Lomatium dissectum
Monardella odoratissima - 2 accessions

6. **Melinda Yerka**, UNR Dept. of Agriculture, Veterinary & Rangeland Sciences. Research use notes – Varietal development and genetics studies.

Sorghum bicolor subsp. *bicolor* - 11 accessions

Responses to the four standardized email questions (for all Yerka Lab members):

- What was the quality of the plant materials you received?
  - Excellent.

- Did you release any plant material(s) to the public in 2020 that was partially or fully derived from any NPGS germplasm(s) that you received in 2020 or any time previously? If yes, please provide as much information as possible about the released plant material(s).
  - No.

- If you published an article in 2020 that includes NPGS germplasm that you received in 2020 or earlier, please provide the publication citation (authors, title, journal, etc.).
  - One publication; included below.

- Do you have any suggestions or feedback for the improvement of the NPGS system?
  - No.

7. **Anil Kunapareddy**, UNR Dept. of Cellular & Molecular Biology (Ph.D. student in Dr.

Melinda Yerka's lab). Research use notes – Varietal development and genetics.

Sorghum bicolor subsp. *bicolor* - 19 accessions

Responses to the four standardized email questions: See replies for Melinda Yerka (above)

8. Jeffery Chen, UNLV School of Life Sciences. Research use notes: To study the roles of transcription factors on seed germination and drought stress response.

Oryza sativa - 1 accession

Responses to the four standardized email questions:

- What was the quality of the plant materials you received?
    - Excellent. But I hope that we can order fresh seeds (See my response to Q4 too).

- Did you release any plant material(s) to the public in 2020 that was partially or fully derived from any NPGS germplasm(s) that you received in 2020 or any time previously? If yes, please provide as much information as possible about the released plant material(s).
    - No

- If you published an article in 2020 that includes NPGS germplasm that you received in 2019 or earlier, please provide the publication citation (authors, title, journal, etc.).
    - No

- Do you have any suggestions or feedback for the improvement of the NPGS system? UNLV has very limited greenhouse space for growing rice.
    - It would be fantastic if we could order fresh (<1 year old) seeds for transformation.

9. Denise Stoesser, University of Nevada Cooperative Extension (UNCE). Breeding use notes: I am a Horticulturist with the University of Nevada Cooperative Extension. I'm hoping to find vegetable varieties that grow well in this region, specifically NE Nevada.

Cucumis melo subsp. *melo* – 23 accessions
Amaranthus cruentus – 16 accessions
Amaranthus hypochondriacus – 9 accessions
Phaseolus vulgaris – 15 accessions
Phaseolus acutifolius var. acutifolius – 1 accession
Citrullus lanatus - 1 accession

NON-UNIVERSITY OF NEVADA AFFILIATES (Total of 6)

10. Ailsa Cocanower, No affiliation listed. Research use notes:

Humulus lupulus var. neomexicanus – 1 accession
Humulus lupulus var. lupulus – 1 accession

Responses to the three standardized email questions: SEED REQUEST DENIED

11. **Nancy Collins**, Rolling Rock Ranches. Use notes: I have been doing research since 2016 in Carson Valley, NV 89821.

Papaver bracteatum – 1 accession
Fragaria vesca subsp. *vesca* – 1 accession
Fragaria vesca – 2 accessions
Fragaria x ananassa – 1 accession

12. **Ella Dooley**, Homeschool parent. Use notes: I am a homeschooler and I plan to use these plants to study and apply experiments.

Fragaria x ananassa – 1 accession
Vaccinium corymbosum – 1 accession

13. **Penny Skelly**, Creative Kids Learning Center. Use notes: Preschool garden.

Mentha x piperita – 1 accession
Fragaria x ananassa – 1 accession

PUBLICATIONS:

1. Grimes, L; Busta, L; Malyszka, K; Wahrenburg, Z; Lowe, C; Kosma, D; Yim, WC; Cahoon, EB; Santos, P. 2019. The role of polyacetylenic lipids during the interaction between Daucus carota and the necrotrophic fungus Sclerotinia sclerotiorum. PHYTOPATHOLOGY 109(10): 160-161.

2. Baggett, John P.; Tillett, Richard L.; Cooper, Elizabeth A.; Yerka, M. 2021. *De novo* identification and targeted sequencing of SSRs efficiently fingerprints *Sorghum bicolor* sub-population identity. PLOS ONE 16(3): e0248213.

3. Wahrenburg, Z; Benesch, E; Lowe, C; Jimenez, J; Vulavala, VKR; Lu, SY; Hammerschmidt, R; Douches, D; Yim, WC; Santos, P; Kosma, DK. 2021. Transcriptional regulation of wound suberin deposition in potato cultivars with differential wound healing capacity PLANT JOURNAL. Early access: MAY 2021. DOI: 10.1111/tpj.15275