

State of Montana
Annual Report for Calendar Year 2020
to the W-6 Technical Committee
Compiled by Mike Giroux

Twenty-three recipients received a total of 693 plant germplasm accessions in Montana during the last year. The biggest users were the Montana State University wheat and pulse breeding programs. The biggest use by far was for varietal development and for testing to MT growing conditions.

NPGS

Site	Sent	Species	Primary Purposes
COR	13	Apple, blackberry, blueberry, raspberry, strawberry	Adaptation to MT
DLEG	3	Centrosema, Lupine	Adaptation to MT, Seed ID
NC7	63	Corn, squash, sunflower	Adaptation to MT, Seed ID
NE9	8	Tomatoes	Teaching and adaptation to MT
NSGC	508	Barley, wheat	Wheat stem sawfly resistance breeding and adaptation to MT
PARL	2	Physaria	Novel hydroxy fatty acid genes
S9	69	Bean, sorghum, watermelon	Adaptation to MT, Seed ID
W6	29	Beans, bunchgrass, chickpea, dandelion, lentil, pea	Pulse breeding program, MT adaptation
Total	693		

User type	#	Primary uses
Homeowner/unknown	25	Fruit, corn, watermelon, lettuce production
Private company	58	MT adaptation, breeding, barley, corn, beans, quinoa, lupines..
MSU	578	Screening for resistance, varietal development, wheat, oats, pulses
USDA	32	Barley and wheat adaptation to MT conditions.

Individual orders

Site	Recipient
COR	Isabelle Johnson received 1 strawberry and one blackberry accession
COR	Melanie Jutzi received 1 strawberry, 1 raspberry, and 1 blackberry accession
COR	Stephanie Lamarr received 4 Malus accessions
COR	Adan Nielsen received 1 strawberry accession
COR	Kelly Recendez received 1 blueberry, 1 raspberry, and 1 blackberry for MT adaptation.
NC7	Bill Goold received 3 corn accessions
NC7	Ed Schultz received 1 corn
S9	Jane Stewart 3 watermelon for MT adaptation.

W6 Nicholas Rovetti received 1 lettuce accession for MT adaptation.

S9 M.J. Walton received 4 sorghums for MT adaptation.

DLEG Bridget Westfall (MSU) 1 centrosema for seed id purposes.

NC7 Alice Pilgeram (MSU) received 1 camelina

NC7 Bridget Westfall (MSU) 1 Apera, 1 Cichorium, 1 Echinochloa seed id purposes.
Nancy Blake (MSU) received 369 Triticum durum
accessions to screen for wheat stem sawfly resistance. 322140

NSGC Alan Dyer (MSU) received one hexaploid wheat accession that is resistant to RLN
Paul Lorenzo (MSU) received 1 hexaploid wheat accession for wheat curl mite
resistance gene studies.

NSGC Alice Pilgeram (MSU) received 37 oats for an oat breeding program focused on yield
and protein content.

NSGC Alice Pilgeram (MSU) received 5 oats

NSGC Alice Pilgeram (MSU) received 21 oats

NSGC Alice Pilgeram (MSU) received 21 oats
Chaofu Lu (MSU) received 2 Physaria accessions to isolate genes related to hydroxy
fatty acid accumulation and hopes to sequence the Physaria genome

PARL Perry Miller (MSU) requested 50 sorghum accessions to test for adaptation to MT
conditions.

S9 Qasim Khan (MSU) received 6 faba bean accessions to test for MT adaptation

S9 Bridget Westfall (MSU) 1 Urochloa for seed id purposes.

W6 Kevin McPhee (MSU) received 3 Cicer for testing in his breeding program.

W6 Kevin McPhee (MSU) received 1 Pea for testing in his breeding program.

W6 Amanda Shine (MSU) received 12 bunchgrasses
Kendra Teague (MSU) 1 squash for testing in MT conditions for MSU-indigenous foods
program

NC7 Kendra Teague (MSU) 1 bean for testing in MT conditions for MSU-indigenous foods
program.

W6 Allison Rognlie (MSU) received 21 corn for testing in MT conditions for MSU-
indigenous foods program

NC7 Allison Rognlie (MSU) received 6 sunflower for testing in MT conditions for MSU-
indigenous foods program.

NC7 Jennifer Weiss (MSU) received 6 pumpkins, teaching, fruit size and quality.

NE9 Jennifer Weiss (MSU) received 8 tomatoes, teaching, fruit size and quality.

DLEG Joseph Kibiwott (MSU and a private company) received 2 Lupinus accessions

NC7 Duane Johnson (private company) received 12 corn for MT adaptation testing.
Duane Johnson (private company) 1 Blitum and 8 Chenopodium for MT adaptation
testing.

NSGC Duane Johnson (private company) received 3 barley for MT adaptation testing.

NSGC Duane Johnson (private company) received 16 barley for MT adaptation testing.
Dave Christensen (private company) received 5 Vigna unguiculata accessions and
hopes to develop new varieties

S9

W6 Duane Johnson (private company) received 11 Taraxacum for MT adaptation testing.

Pat Hensleigh (USDA) received 32 barley and wheat accessions for testing for NSGC adaptation in MT.

Publications:

- AshtariMahini, R. A., Kumar, A., Elias, E. M., Fiedler, J., Porter, L., McPhee, K. E. (2020) Analysis and identification of QTL for resistance to *Sclerotinia sclerotiorum* in pea (*Pisum sativum* L.). no. *Frontiers in Genetics*: v. 11 p. 14
- Bandillo, N., Stefaniak, T., Worrall, H., Franck, W., Chen, C., Kalil, A., Wunsch, M., Pasche, J., Forster, S., McPhee, K. E. (2020) Registration of ND Crown Chickpea. *Journal of Plant Registrations*.
- Bandillo, N., Stefaniak, T., Worrall, H., Jain, S., Ostlie, M., Schatz, B., Rickertsen, J., Wahlstrom, C., Miller, M., ... McPhee, K. E. (accepted November 2020) Registration of 'ND Dawn' large yellow pea. *Journal of Plant Registrations*. *Journal of Plant Registrations*
- Cook, J. P., Acharya, R. K., Martin, J., Blake, N. K., Khan, I. J., Heo, H., Kephart, K., Eckhoff, J., Talbert, L., Sherman, J. (2021) Genetic Analysis of Stay-Green, Yield and Agronomic traits in Spring Wheat. *Crop Science/Crop Science Society of America*: v. 61 i. 1 p. 383-395
- Fordyce, S., Jones, C., Dahlhausen, S., Lachowiec, J. A., Eberly, J., Sherman, J., McPhee, K. E., Carr, P. (2020) A simple cultivar suitability index for low-pH agricultural soils. *Agricultural & Environmental Letters*
- McPhee, K. E., Smykal, P. (2020) Legume genetics and biology: from Mendel's pea to legume genomics.. No. *International Journal of Molecular Sciences*: v. 21 p. 5
- Moparthy, S., Burrows, M., McPhee, K. E. (2020) Moparthy S., M. Burrows, and K. McPhee. 2020. Identification of diverse chickpea pathogens in Montana State. 41th Annual Meeting of the Plant Pathology Society of Alberta. Online. 4-5 November. Poster..
- Ramstein, G. P., Larsson, S. J., Cook, J. P., Edwards, J. W., Ersoz, E. S., Flint-Garcia, S., Gardner, C. A., Holland, J. B., Lorenz, A. J., ... Romy, C. M. (2020) Dominance Effects and Functional Enrichments Improve Prediction of Agronomic Traits in Hybrid Maize. *Genetics*: v. 215 i. 1 p. 215-230
- Vetch, J. M., Walling, J. G., Sherman, J. D., Martin, J. M., Giroux, M. (2020) Mutations in the HvMKK3 and HvAlaAT1 genes are associated with barley pre- and post-harvest dormancy variation. *Crop Science*: v. 60 p. 1897-1906