

State of Montana
Annual Report for Calendar Year 2017
to the W-6 Technical Committee
Compiled by Mike Giroux

Thirty-three recipients received 1941 plant germplasm accessions in Montana during 2016. Twenty of the recipients responded to inquiry. About 1/3 of the accessions were for *Triticum* species (bread or durum wheat), 1/3 for *Hordeum* species (barley) and 1/3 for pulse crop accessions. The biggest increase over previous years was for barley and pulse crop accessions which reflects the fact that Montana State hired a pulse crop breeder (Kevin McPhee) who began work at Montana State in January 2017 and several years ago hired a new barley breeder (Jamie Sherman) who is screening barley accessions for traits of interest. We also continue to have a number of individuals requesting accessions of various species including tree fruit to screen for those that may tolerate MT winters.

Hikmet Budak (Montana State endowed chair of wheat genomics) had several people in his lab group request accessions (Burcu Alptekin, Fernando Guillen-Portal, Eylul Kaya, Julianne Zickovich). The uses for these wheat accessions ranged from testing for callus formation, to studies on micronutrients, salt stress and development of near isogenic lines varying in traits of economic importance.

Kim Beadin of Beadin Big Sky Ranch requested seeds of native grasses to determine why winter harder they were in high desert Montana environments.

Jim Berg who works at Montana State in the winter wheat breeding program requested seed of the winter wheat variety Norwin to use as a control line in a historical demonstration nursery.

Nancy Blake also of Montana State but with the spring wheat breeding program requested seed of *Triticum* accessions that carry specific high molecular weight glutenin alleles for use in identifying which high molecular weight glutenin alleles are present in new varieties.

Carl Camper of the Chateau Stripmine requested grass accessions that may have greater cold tolerance.

Chris Carlson of Missoula, MT requested several chickpea accessions to see if they were suitable for varietal release.

Chengci Chen of Montana State University requested legume accessions to screen for agronomic traits of interest.

Jason Cook of Montana State University requested wheat accessions as a source of Aluminum tolerance.

Frankie Crutcher of Montana State University requested wheat accessions that were resistant to *Fusarium* head blight to use as controls in her experiments.

Lindsay Elmore of the Montana State University barley breeding program requested some winter barley accessions for use in the development of a winter barley breeding program.

Cassie Favero of Billings MT requested seed for testing how well different species grow on different soil types to be used as demonstrations for students.

John Gaskin of the USDA, Sidney, MT requested seed of a weed to determine the mode of reproduction (self or outcrosser).

Mike Giroux of Montana State University requested Triticum accessions for various genetic studies including seed lysine content, seed color, and alpha amylase.

Tom Hash of Bozeman, MT requested sorghum varieties to determine whether any are cold tolerant enough to be grown in MT.

Pat Hensleigh of the USDA, Bozeman, MT requested grass accessions to determine whether they were adapted to MT.

Shannon Johnson of a daycare in Kalispell, MT requested accessions of some common garden species as a demonstration for the students in her daycare.

Stephanie Lamarr of Butte, MT requested 4 accessions but I have no information on the purpose.

Kevin McPhee requested ~550 pulse crop accessions to aid in building his breeding program at Montana State University.

Ryan Pfeifle of Farm Power Malt in Great Falls MT requested barley accessions to use in malting.

Bob Quinn of Big Sandy, MT requested tetraploid Triticum accessions to look for winter hardy lines.

Nar Ranabhat of Montana State University requested pinto bean accessions to screen for disease resistance.

Scott Redlin of Bozeman, MT requested 20 accessions no information available.

Luke Robinson of Blue Sky Stewardship in Missoula, MT requested fruit and nut tree varieties to identify those that will tolerate MT winter temperatures.

Brent Sarchet of Montana State Extension received apple accessions and they are working on a project to identify the cultivars present in MT orchards.

Bill Schlegel of Blue Meadow Botanical in Ronan, MT requested 27 accessions to measure germination under different conditions and see whether variation in germination is heritable.

Jamie Sherman of Montana State requested ~700 barley accessions for use in her breeding program.

Bryan Tomlinson requested 15 pear accessions to see if any would survive a MT winter.

Bridget Westfall of Montana State requested 5 accessions of different species for use as demonstration controls and for use as standards in seed identification.

Publications:

Sherman, JD. et al. 2018. Effect of a Gene for High Dough Strength on Whole Wheat Baking Parameters of Hard White Spring Wheat. Cereal Chemistry. doi.org/10.1002/cche.10042

Blake, N. et al. 2018. Relationship between Maturity Traits and Quality Traits in Hard Red Spring Wheat. Crop Sci. **Submitted**

Melissa Meredith, Belgrade, MT received 8 accessions. These included *Malus*, *Vaccinium*, *Rubus*, and *Fragaria* species. The short report indicated the one that survived was the red raspberry.

Jacob Cowgill, Power, MT is a wheat grower in north central Montana. He received 494 wheat (*Triticum aestivum*) accessions. He planted 126 landrace accessions of winter wheat last fall and this spring he planted 126 landrace accessions of spring wheat. His goal is to identify unique genotypes for his small bakery. His plans are to identify individual accessions that are unique to his environment, use these to create mixtures (blends) of accessions, and to make specific crosses among good accessions. The website to his business is: www.PrairieHeritageFarm.com.

Cory Simpson is a farmer from Lewistown, MT. He is interested in doing some armature plant breeding. He received 5 wheat (*Triticum aestivum*) and 6 barley (*Hordeum vulgare*) for his project. They were planted in the field for evaluation. He did not get a good evaluation because of severe hail damage.

Jim Jorgenson, Broadview, MT received one *Triticum aestivum* accession, the historically important variety Yogo. He reports they planted it last Fall. Their interest is to compare it to current varieties for their own interest.

Jason Mustain, a private individual from Great Falls, MT received 5 *Pisum sativum* accessions. He reported he is growing them for his own use.

Publications:

Berg, J.E., P. F. Lamb, J. H. Miller, D. M. Wichman, K. D. Kephart, R. N. Stougaard, G. P. Pradhan, D. L. Nash, W. E. Grey, D. Gettel, S. Gale, Y. Jin, J. A. Kolmer, X. Chen, G. Bai, T. D. Murray and P. L. Bruckner. 2016. Registration of 'Northern' Hard Red Winter Wheat. J. Plant Reg. 10:135-138. doi:10.3198/jpr2015.10.0062crc

Heo, H.-Y., S. P. Lanning, P. F. Lamb, D. Nash, D. M. Wichman, K. D. Kephart, R. N. Stougaard, J. Miller, G.V.P. Reddy, C. Chen, J. L. Eckhoff, W. E. Grey, N. K. Blake and L. E. Talbert. 2016. Registration of 'Lanning' Hard Red Spring Wheat. J. Plant Reg. 10:287-290. doi:10.3198/jpr2016.03.0016crc

Hystad, S.M., M.J. Giroux, and J.M. Martin. 2016. Impact of null polyphenol oxidase alleles on white salted noodles. Cereal Chem. 93:255-262.