STATE OF UTAH
Annual Report for Calendar Year 2016
to the W-6 Technical Committee
Compiled by Kevin B. Jensen

Germplasm Activities of Amy Davis - Order # 284075 – *Malus sieversii*

No report submitted

Germplasm Activities of Bryan Dayton - Order # 285676 – *Pistacia spp.*

No report submitted

Germplasm Activities of Catherine Cort - Order # 276194 – *Vulpia octoflora, Aristida purpurea, Cordylanthus wrightii, Plantago patagonica, Eriogonum inflatum, Grindelia squarrosa, Phacelia crenulata var. ambigua, and Baileya multiradiata*; **Order # 276293 -** *Helianthus petiolaris subsp. Fallax, Helianthus annuus, Chenopodium fremontii var. pringlei, Argemone munita*; **Order # 285903 -** *Argemone munita, Argemone munita*

Entomological investigations. Research use notes - We are conducting a research project in conjunction with the Colorado Plateau Native Plant Program (CPNPP) on pollinator visitation of target species identified through the BLM Seeds of Success program. We will grow out seedlings from the provided seeds and set up field monitoring equipment to obtain data that will add to the limited body of knowledge on pollinator diversity of the Colorado Plateau, as well as inform future SOS target species designations.

Entomological investigations. Research use notes - We plan to use these accessions of A. munita for germination and propagation experiments at Red Butte Garden, with the ultimate goal of enhancing habitat and resources available for pollinators in southern Utah.

Germplasm Activities of David Gedges - Order # 275927 – *Pistacia vera*

No report submitted

Germplasm Activities of David Gibby - Order # 275930 – *Prunus persica*; Order # 276159 - *Malus domestica, Malus hybr., Malus domestica, and Triticum aestivum subsp. aestivum.*

No report submitted

Germplasm Activities of David Hole - Order # 280475 – *Triticum aestivum subsp. aestivum*

Plant materials were used for phenotypic evaluation for dwarf bunt resistance and evaluation for true to type behavior. These are Promontory and one of the parents of Promontory. Study will be evaluated this summer.

Germplasm Activities of Eerik Elias - **Order # 277064** – *Zea mays subsp. Mays*

Development of a synthetic specialty corn with high tolerance to abiotic stressors found in the intermountain west. Inbreds developed from the synthetic with be used for hybrids with improved yields under irrigated organic production. Improve the genetic base for a specialty corn; develop inbreds that retain the high grain quality of the original variety with improved agronomic characteristics: resistance to stalk and root lodging, drought tolerance, and improved yield.

PI 564684 Zea mays subsp. mays
Description: BS28 temperate Tuxpeno composite. **Germination:** 89%. **Purpose:** Evaluation of Tuxpeno heterotic group for yield under organic cultivation in the intermountain west. **Results:** Flowering time comparable to Iowa Stiff Stalk heterotic group, flint kernels required longer drying time, and yield did not exceed benchmark.

PI 608599 Zea mays subsp. mays
Description: Western Colorado Bloody Butcher landrace strain. **Germination:** 92%. **Purpose:** Evaluation of arid climate Bloody Butcher strain for flavor and yield under organic cultivation in the intermountain west**. Results:** Flowering time 3 days earlier than Iowa Stiff Stalk heterotic group, quick drying time, yield and flavor under taste test exceeded benchmark.

PI 608776 Zea mays subsp. mays
Description: BS20(S)C2 Iowa Late Rootworm Synthetic. **Germination:** 99%. **Purpose:** Evaluation of rootmass and yield under organic cultivation in the intermountain west. **Results:** Rootmass was almost twice the benchmark with equal yield, more susceptible to corn earworm. Future evaluation of combining ability with Bloody Butcher strains planned.

Germplasm Activities of Jeremy Webb - **Order # 285029** – *Fragaria x ananassa notho subsp. Ananassa*; **Order # 285050** - *Avena sativa*

Public education, demonstrations. Research use notes - The germplasms will be used to educate others on the different varieties of plants that can be grown in the local environment.

Germplasm Activities of Joseph Smyly - **Order # 277066** - *Allium sativum*; **Order # 277950** – *Brassica oleracea var. capitate, Cucurbita maxima, and Solanum lycopersicum*; **Order # 278261** - *Citrullus lanatus*

Class instruction. Research use notes - Show varieties of produce from China that could possibly be grown in our area (zone 4). Students will research agricultural practices of the regions where the seeds originated.

I used these seeds in my junior high classes. The Brassica (cabbages) were mixed up by the students so I cannot give a report as to each accession - but overall around 50% of the seeds germinated. After thinning and some die-out, we had 12 good strong cabbage plants that grew quite leafy.

About 50% of the Citrullus (watermelon) seeds germinated but none developed true leaves and quickly died. This also happened to the Solanum (tomato) plants - although a few of the tomato plants started to develop true leaves before they died. I think that the tomato seeds may have had mold.

The Cucurbita (pumpkin) and Allium (garlic) had very poor germination and none survived. I had high hopes for the pumpkins!

FYI: I am currently growing three types of garlic from China. The few of the cloves survived ad the seven that did are struggling. I am going to China on Wednesday so hopefully the local kid that I hired to water will keep them alive.

I love this program and I hope that my poor performance will not prevent me from obtaining more seeds. I have a great interest in Chinese horticulture and this is the only place where I can get Chinese varieties. I am building a greenhouse this year and will be better able to grow plants. I would like to introduce Chinese varieties to the local economy.

Germplasm Activities of Karin Kettenring – **Order # 281268** – *Phalaris arundinacea*

No report submitted

Germplasm Activities of Lisbeth Louderback – **Order # 280574, 282673, 285887, 286784** - *Solanum jamesii* and *Solanum* spp.

No report submitted - Anthropology

Germplasm Activities of Mark Anderson – **Order # 276476** - *Malus domestica*, Malus zumi, *Malus* hybr.

No report submitted

Germplasm Activities of Nicholas Read – **Order # 283159** – *Triticum, Aegilops spp., Hordeum vulgare*; **Order # 283161** – *Humulus lupulus*; **Order # 283180** - *Zea diploperennis, Abies balsamea, Betula nigra, Linum usitatissimum, Betula lenta, Zea perennis, Hypericum perforatum, Zea nicaraguensis, Foeniculum vulgare*, and *Pimpinella anisum*; **Order # 283194** - Glycyrrhiza glabra, Apocynum cannabinum, Trigonella foenum-graecum, Marrubium vulgare; **Order # 283416** - *Chrysopogon zizanioides, Indigofera tinctoria, Cymbopogon citratus*; **Order # 283463** - *Solanum cheesmaniae, S. galapagense, S. pimpinellifolium*; **Order # 283607** - *Sphaeralcea coccinea, Dieteria bigelovii var. bigelovii, Eriogonum inflatum, Penstemon palmeri, Eriogonum corymbosum var. corymbosum, Artemisia filifolia, Atriplex canescens,*

Pleuraphis jamesii, Solidago velutina, Cercocarpus montanus, A. confertifolia, Rhus aromatica var. trilobata, Aquilegia flavescens, Holodiscus dumosus, Ericameria nauseosa, Achillea millefolium, Physocarpus malvaceus, Eriogonum umbellatum, Solidago Canadensis, Eriogonum racemosum, E. heracleoides, Cercocarpus ledifolius, E. alatum, Mentzelia albicaulis, Mirabilis multiflora, Salvia dorrii, Mentzelia laevicaulis, M. multiflora, Sambucus nigra subsp. cerulean, Eriogonum bicolor, E. shockleyi; **Order # 283613 -** *Linum perenne, Symphoricarpos oreophilus, Betula occidentalis, Chamaebatiaria millefolium, B. occidentalis*; **Order # 283702 -** *Sassafras albidum, Broussonetia papyrifera*; **Order # 283903 -** *Schizachyrium scoparium, Bouteloua curtipendula, B. gracilis*; **Order # 283974 -** *Amelanchier alnifolia, Rosa woodsia, Malus sieversii*.

Class instruction. Research use notes - The plant material that I am requesting will be utilized as specimens in our plant collection and in the classroom. Several classes in the Biology and Botany majors use plant specimens as examples for taxonomy, ethnobotanical use, plant anatomy, plant physiology, evolution, and ecology. The plants will be housed in the Science Building (SB) greenhouse at Utah Valley University and used as necessary in a formal classroom setting.

Germplasm Activities of Pamela Goguen – **Order # 279860** – *Beta vulgaris subsp. Vulgaris*

No report submitted - Home Gardening

Germplasm Activities of Peilin Chen – **Order # 286265** – *Dactylis glomerata*

Botanical/taxonomic investigations. Research use notes - to do the genome wide association studies about orchard grass, and to find out the species those have strong drought resistance.

Germplasm Activities of Richard Clark – **Order # 281989** – Zea mays subsp. *mays*.

Entomological investigations. Research use notes - We have previously obtained Z. mays line B96 from GRIN and have recently shown that it is resistant to some (but not all) spider mites that are pests of maize and other grasses. The requested lines are a mix of germplasm derived from B96, or alternatively reported in other studies as spider mite resistant. Our plans are to assess which of these lines has the highest level of resistance, and to use that line (or lines) for studies to understand maize plant defense responses associated with resistance.

Germplasm Activities of Silvana Martini – **Order # 286359** – *Unident* spp.

Last year I received cocoa pods from USDA in Puerto Rico. The cocoa pods were used in the class NDFS1010: Chocolate: Science, History, and Society. We did not plant the seeds. The cocoa pods and the seeds were used to demonstrate the class where chocolate comes from. We opened the pods and we tasted the seeds. This material was used for teaching purposes only.

Germplasm Activities of Stephen Monsen – **Order # 283664** – *Sanguisorba minor*

Genetic studies. Research use notes - Selection drought tolerant forbs for rangeland sites in the Intermountain region.

I did receive samples of the six source of *Sanguisorba minor* from the Plant Center in 2016. Germination tests have not been conducted of the different sources. However, our intent is to conduct DNA tests with seedlings of these sources and compare results with individual plants that have survived a series of tests over an extended period of time. I am attempting to determine if the origin of the plants from our field planting trials may be related to any of the six sources received from the Plant Center. The studies are currently underway and no definitive results are available. The seed we received appeared healthy and capable of germination.

Germplasm Activities of Steve Ripple – **Order # 278051** – *Vicia faba*; **Order # 279695** – *Capsicum chinense*.

Class instruction. Research use notes - Nicotianna attenuata is to be used in a the Utah Native Plant Propagation Workshop, a workshop where people learn how to propagate native plants and to conserve water in the process. The other species will be tested for suitability for growth in the climate here by the USU Master Gardeners Program. These two species are ones we are currently working with to find more suitable cultivars for our climate. These are part of ongoing Master Gardener Education and research work.

Germplasm Activities of Terry Tolbert – **Order # 280319** – *Solanum jamesii*.

No report submitted - Home Gardening

Germplasm Activities of Teryl Roper – **Order # 286486** – *Pistacia atlantica.*

Varietal Development. Research use notes - Rootstock for P. vera selections in Box Elder County, Utah

Germplasm Activities of William Behling – **Order # 286211** - *Zea mays*.

Cydonia oblonga ascensions will be used to evaluate the the ability for quince to produce a viable consistent crop in our area. The Zea mays ascension will be used to develop new varieties of corn with tunicate genes.. Research use notes - Cydonia oblonga ascensions will be used to evaluate the the ability for quince to produce a viable consistent crop in our area. The Zea mays ascension will be used to develop new varieties of corn with tunicate genes.

<u>Germplasm Activities of Zachariah Gompert</u> – Order # 286404 – *Medicago truncatula*.

No report submitted