**State of New Mexico**

Annual Report for Calendar Year 2017
to the W-6 Technical Committee

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Twenty-five individuals from New Mexico placed 52 orders and received 945 accessions from the NPGS in 2017. In general, these materials were utilized for agronomy, botany, genetics, physiology, taxonomy, and plant pathology research (51%); educational and demonstration programs (29%), varietal development (10%), and undeclared use (10%).

The first section of this report highlights germplasm quality problems encountered by these users, where the specific accessions and nature of the problems are identified. The second section of the report provides details concerning the use of all plant materials by scientists, farmers, and the general public in New Mexico.

## Problems Encountered with NPGS Germplasm:

Dr. Chris Cramer reported that the following accessions had zero germination or seedlings were extremely weak and died shortly after germination: W6 50771; W6 47957; W6 47569; W6 29952; PI 654397 and PI 654396.

Dr. Paul Bosland reported that the following accessions had zero germination: PI 273419.

## NPGS Germplasm Use in New Mexico: Users requesting >20 accessions highlighted in bold

Agent, Purchasing, New Mexico Consortium, Los Alamos, NM: received 1 accession for conducting plant pathogen assays.

Alldredge, Jimmy; Alldredge Drilling, Los Lunas, NM: received 4 accessions for public education and demonstrations about how to build a community garden and how to grow a multitude of different foods in a semi desert environment.

Aponte, Elisa; general public, Albuquerque, NM: received 3 NPGS accessions to use for public education and demonstrations on how the growth rate of different plants is influenced by light.

Bosland, Paul; New Mexico State University, Las Cruces, NM: received 3 pepper accessions for plant pathological investigations on Verticillium dahlia resistance. "Using an isolate of the fungus from New Mexico, we scored PI 321387 as susceptible, and PI 224426 is considered resistant. Unfortunately, PI 273419 did not germinate."

**Cramer, Chris**; New Mexico State University, Las Cruces, NM: received 163 accession for botanical/taxonomic investigations. “The plant material requested was used as part of a course taught this past spring semester - HORT 300, Special Topics - Herbaceous Ornamental Plants. Students in the course planted the seeds and raised plants of the different accessions. Plant material of these accessions is still growing. The material will be used in the future to evaluate ornamental plant species for their adaptability to growing in southern New Mexico, their ornamental value, their attractiveness to plant pollinators and beneficial insects, their potential to produce high value seed, and their potential to produce plant compounds that have medicinal and antimicrobial properties.”

Daitz, Ian; Sweet Tree Farm Research, Corrales, NM: received 17 NPGS accessions to evaluate for developing varieties adapted to high desert fruit and cover crop farming systems on heavy clay, salty soil. Mr Daitz stated the following: “I am a heartfelt supporter of the [NPGS] program and am deep in gratitude for the satisfaction I have had propagating from the several genera obtained by the efforts of those associated with these repositories. I received several species of Glycyrrhiza: lepidota, glabra and uralensis. My intention and interest with this genus [Glycyrrhiza] is cover cropping with a halophytic legume and for its medicinal uses. I received seeds of Palliurus spina cristi from the Arnold Arboretum. I am curious to try it and the Mespilus germanica accession for thorny hedge plants. This year my efforts continue with the grafting of quince from the Corvalis repository: twelve varieties onto quince rootstock, Medlar on quince and pear on quince as well as a bit of apple breeding of some of the interesting apples that I had flower this spring. One, Muz Alma, is the plant that explorer Frank Meyer claimed should be of interest because it withstands drought, alkali and neglect and another, Kingston Black, that is claimed to have a perfect flavor profile for a cider apple. The accessions that I am working with here from GRIN are offering material for numerous studies by virtue of their varying responses to local conditions such as, resistance to insects, phenological responses and growth habits.”

Dhakal, Ramesh; New Mexico State University, Clovis, NM: received 1 accession which will be used to develop a genetic mapping population for research studies.

Facette, Michelle; University of New Mexico, Albuquerque, NM: received 9 corn accessions for genetic research. “I will compare the stomatal morphology and, pending those results, stomatal response of the inbreds. The seeds were used to assess differences in responses to darkness (and how this relates to water loss) across different varieties of corn. They were also used for developmental biology experiments to investigate cell division in plants. We determined that some varieties of corn are much more rapid in responding to darkness, which leads to more immediate water loss. We are further investigating to see if this relates to more general waterloss.”

Gill, Arsdeep Singh; New Mexico State University, Las Cruces, NM: received 3 alfalfa accessions for use as controls in conducting pathogen resistance research in alfalfa.

**Hurst, Leann**; general public, Albuquerque, NM: received 255 NPGS accessions to use for public education and demonstrations about how different plant species should be planted or propagated by cuttings in her area. She will also share these materials with other gardeners in her area to evaluate how these materials perform in different parts of her city/county. They will save and trade seeds and cuttings, share instruction, crossbreed, and gather information that is zone-specific to be published on shared social media blogs.

Koger, Ken; Road's End Farm/NM Fruit Growers, Albuquerque, NM: received 13 NPGS accessions to evaluate for varietal development. They will cross these materials with diverse varieties to develop low growing types suitable for NM climatic conditions in very high density plantings.

**Lykins, Richard**; general public, Rio Rancho, NM: received 70 NPGS accessions which will be evaluated for their suitability to thrive in New Mexico climates. Superior materials will used for varietal development.

Mascarenas, Manuel; general public, Albuquerque, NM: received 1 NPGS accession for public education and demonstrations of the impact of different cultural methods on plant growth and productivity.

Montgomery, Randall; New Mexico State University, Las Cruces, NM: received 5 Zea mays accessions for varietal development research. Specifically, he is studying variation among and within different accessions of the heirloom variety 'Mexican June'. This corn variety may be particularly productive in organic systems. He is also evaluating these populations for heat, drought, and salt tolerance for southern New Mexico.

**Puppala, Naveen;** New Mexico State University, Clovis, NM: received 52 peanut accessions for variety development research. Specifically, these materials were evaluated for resistance to Sclerotinia blight by artificial inoculation of the fungus in the greenhouse.

Sisneros, Stephen; Picuris Pueblo, NM: received 18 accessions. These materials will be used for "building butterhead seed stock and lettuce seed stock for testing growth on the Picuris Pueblo. Seed stock will be used for community gardens, indoor greenhouse production, and seed production. Fragaria will be grown outdoors in a hothouse and indoors in a sunroom. Research will also be conducted to determine if Lactuca sativas is able to grow in northern New Mexico environment. (USDA Zone 5a and 5b). I will be using these seeds for breeding, seeding community gardens, and starter plants for seniors that cannot visit community gardens.... The purpose is to determine which varieties thrive in what conditions (greenhouse and field) and which germplasms will provide a solid crop for future farm to table outreach through Picuris."

Urbina, Natividad; general public, Silver City, NM: received 3 NPGS accessions for use in public education and demonstration gardens.

**Vigil, Albert**; Permaculture Gardens, Albuquerque, NM: received 37 accessions for conducting bioremediation research including the affects of biodiversity on soil properties and soil stabilization.

Woodward, Dallas; general public, Mesquite, NM: received 6 accessions for class instruction and research projects to teach students about farming and how it impacts the environment, how to grow different vegetables and their varying growth rates and yield.

Young, Joanna; general public, Ramah, NM: received 4 NPGS accessions which will be used for historical, cultural and anthropological research, including adaptability of these materials for high altitude greenhouse gardening.

**The following individuals provided no information about the intended use, or outcomes obtained, from the accessions that were ordered in 2017:**

Hynek, Eric; general public, Veguita, NM: received 15 NPGS accessions.

**Lombard, Kevin**; New Mexico State University, Farmington, NM: received 135 accessions.

**Martinez, Ronald**; general public, Albuquerque, NM: received 36 NPGS accessions.

Pratt, Richard; New Mexico State University, Las Cruces, NM: received 4 accessions.

**Simcox, Joseph**; The Rare Vegetable Seed Consortium, Belen, NM: received 87 accessions.

**PUBLICATIONS:**
No NM recipients of NPGS germplasm in 2017 provided information about published research reports resulting from the evaluation of the materials that they received.