Alaska State Report - 2014

Annual W6 State Technical Advisory Summary

Dave Stout, Meg Gollnick, USDA-ARS-WRPIS; Pullman, WA

In 2014, germplasm of plant species from the National Plant Germplasm System (NPGS) was requested and used by various Alaska State agencies, farmers, nurseries, hobbyists and researchers in disciplines such as genetics, horticulture, botany, plant pathology and agronomy. The following is a summary of information regarding the performance of the germplasm material Alaska State groups have requested from the NPGS.

Summary

An email was sent out on May 25, 2015 to the four groups in Alaska State that requested germplasm from the NPGS in 2014. The request asked for information regarding the performance of the 41 different accessions received, i.e. germination success or percent germinated, grafting success, propagation success, publications etc. We received no responses to our request. There were a total of 21 different taxa that were requested; *Allium ampeloprasum, Allium cepa, Allium cepa var. aggregatum, Allium cernuum, Allium fistulosum, Allium oschaninii, Allium schoenoprasum, Allium scorodoprasum, Allium splendens, Allium thunbergii, Asparagus brachyphyllus, Asparagus officinalis, Brassica oleracea, Chenopodium album, Chenopodium giganteum, Chenopodium pallidicaule, Crambe maritime, Glycine max, Lathyrus tuberosus, Malus sieversii, Scorzonera hispanica* .

There are no publications at this time for any of the germplasm requested.

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In 2014, germplasm of plant species from the National Plant Germplasm System (NPGS) were requested and used by various Arizona State agencies, farmers, nurseries, hobbyists and researchers in disciplines such as genetics, horticulture, botany, plant pathology and agronomy. The following is a summary of information regarding the performance of the germplasm material Arizona State groups have requested from the NPGS.

Summary

An email was sent out on May 25, 2015 to the 54 groups in Arizona State that requested germplasm from the NPGS in 2014. The request asked for information regarding the performance of the 196 different accessions received, i.e. germination success or percent germinated, grafting success, propagation success, publications etc. We received 13 responses to our request; seven from the University of Arizona, one from Northern Arizona University, three from private companies; Corps Gardening, Bridgstone Americas, Inc, San Xavier Cooperative Association and two from home gardeners. Among the responses, a total of 20 different taxa were requested; *Arachis hypogaea, Cajanus cajan, Elymus elymoides subsp. elymoides, Ficus carica, Hordeum vulgare subsp. vulgare, Medicago truncatula, Morus alba, Parthenium argentatum, Prunus domestica, Prunus spinosa, Punica granatum, Pyrus communis, Pyrus communis subsp. pyraster, Pyrus hondoensis, Pyrus pyrifolia, Pyrus x bretschneideri, Solanum spp., Vitis arizonica, Vitis vinifera subsp. vinifera, Zea mays subsp. mays* . Utilization of samples included rubber content evaluation (David Dierig), viability studies in desert climates (Scout Green), propogation of adapted varieties (Norris Phelps), field and greenhouse trials (Paul Dijkstra), alternative growing areas for potato (Humberto Hernandez), climate studies and edible urban forests (Rafael de Grenade), establishment of local/regional cider production (Kanin Routson), gene regulatory networks regulating early endosperm/kernel development and their

relation to seed size (Ramin Yadegari), hands-on outdoor experiential learning for science education (Michelle Coe), genetic transformation studies for aflatoxin (Blake Joyce), and PTSD therapy. The requestors received their material in good condition and all germinated well.

There are no publications at this time for any of the germplasm requested.

Table 1. Summary of Responses

David Dierig Ely, Arizona ***(Parthenium argentatum)***	We planted the lines out last fall for evaluation but they are too young to sample for rubber content and rubber yield. There won't be any publications from these, Hope they hire a good curator there! Thanks.
Scout Green Yuma, Arizona ***(Prunus domestica, Prunus spinosa)***	1. Both species were used for viability in desert climates. 2. No, the grafting was not successful. Most in part due to lack of experience.

	3. I wish there were going to be publications; however, it would be a very short article. 4. I would still enjoy utilizing the germplasm.
Manuel Simoes Tucson, Arizona ***(Ficus carica)***	I am happy to report that my white Ischia cutting is doing very well. It is now three feet tall and has four figs about a penny size. For me it is fun in my new developed hobby, I have PD. I am also a Vietnam era vet. I had joined the Fig4Fun forum over two years ago. This hobby has given me great joy and motivation to get up and make the rounds checking my fig collection every morning and during the day. I have approximately 18 varieties. I also enjoy eating figs and used to eat figs as a child in my native Portugal. It has brought back fond memories of my childhood. There are no plans for publication at this time. I also became aware of a few people who have at least one fig tree in Tucson, Arizona and the heirloom garden replicating the ones started by the Spanish Missionaries. Thank you, UC Davis and NPGS for sending me this cutting.
Norris Phelps Mesa, Arizona ***(Punica granatum, Vitis arizonica*, *Vitis vinifera subsp. vinifera)***	I received late last month the requests for grape cuttings *Vitus vinifera* that I had requested 25 May 2013. As you can imagine our 105 degree temperatures make it a bit difficult to maintain them though I am happy to say that 11 of the cuttings are growing steadily. I am using raised beds, pots, and an indoor planter to see which of the three

	methods will be most successful and welcome your input. It would be very helpful if I could receive future orders in February or March. . . . . .I believe that I would have much greater success. The *Persicaria maculosa* was ordered by mistake. The pomegranate and walnut cuttings did not arrive. I assume that *Chernaya rosa* is also a grape cultivar. This year I have coordinated a **Provident Gardeners** group to promote Ag/Horticulture education amongst interested gardeners. (see attachment below) I had Claud Cluff, who works in the Mesa Community College Ag Department, demonstrate budding of citrus and would like to have had the grape cuttings in time for him to demonstrate those as well. I welcome your input how to receive material earlier. I thought I had used GRIN to place additional orders but received none of the other orders (see below). I note that I made several mistakes so I will try to be more skilled as I try again this year. Local vendors of grapes, berries, etc. (like Harper's Nursery, Moon Valley Nursery, Home Depot, Whitfield Nursery) seem to not have varieties well-adapted for our area. Most of the Thompson seedless grapes I have purchased have had severe mildew. Others have produced badly. Perhaps it will be necessary for **Provident Gardeners** and like-minded groups to help select and maintain a gene pool of adapted cultivars we can count on.

	In answer to your questions: The grape cuttings arrived in great shape! Thanks. About 50% are growing well. The buds of *Black Manukka, Chernaya rosa, and Seedless Emperor* all seemed to be killed by the mildew of nearby Thompson seedless plants before they could open. Even the early-applied Copper Fungicide (Modern Bordeaux replacement) did not seem to help at all. I have provided mid-day shade to give some relief to those still growing (still get 11+ hours of sunlight). There is good drainage and adequate moisture in the developing root zone. I believe that the cuttings will be helpful (1) in propagating adapted varieties that are mildew resistant and (2) in providing material I can use to educate college students and/or **Provident Gardeners**. At present I do not plan to make any crosses. I am not oriented towards publication though I might be able to arrange through colleagues publicity as with last Saturday's Urban renewal project in downtown Phoenix. Jeff Zimmerman and associates have asked that I assist them in testing and selecting beans adapted to arid conditions of Arizona: http://www.phoenixnewtimes.com/slideshow/harvesting-native-arizona-wheat-with-hayden-flour-mills-41334459/ I am the one working the 60+year-old threshing machine and wearing the Tilley hat.
Paul Dijkstra Northern Arizona University ***(Elymus elymoides subsp. elymoides)***	We were very grateful for these seeds and will be planting them soon for a field and greenhouse trial.

Humberto Hernandez, University of Arizona ***(Solanum sp.)***	The NPGS potato seedlings were planted in the Yuma Agricultural Center to determine if Yuma could be an alternative growing area during the winter months. Tunnels and irrigation applications were two factors to be tested as frost protection measures. The project started well, seedlings responded remarkably well until a strong freeze occurred. Plants started showing frost damage symptoms and eventually plants were deceased, determining the project unsuccessful. Thanks.
Rafael de Grenade, University of Arizona ***(Punica granatum)***	We are very impressed by the pomegranate germplasm that was sent to us. We have a 100% success rate with the 29 varieties, though we have lost individuals. The pomegranates are still in pots, though they all have metal tags, and will be planted in the ground next year. We have no papers published yet, though we are working with a project called Linking Edible Urban Forests, which seeks to enhance the edible trees in urban landscapes across Arizona. These pomegranates will be used as outreach tools, as well as in climate studies to match varieties to different locations in the state. I can send an update next year.
Kanin Routson, University of Arizona ***(Pyrus communis, Pyrus communis subsp. pyraster, Pyrus hondoensis, Pyrus pyrifolia, Pyrus x bretschneideri)***	We had good take on the grafts this season, and we believe we still have all of the pear varieties. We are testing cider/perry varieties for the Southwest region (SW Colorado and NW Arizona), in hopes of establishing local/regional cider production. All of the grafts are either from this season or last season on semi-dwarf and standard trees, so it is a long term project with unknown results at

	this time. We do not currently have plans for a publication, though this is certainly possible, and I will update NPGS of any publications.
Ramin Yadegari, University of Arizona ***(Zea mays subsp. mays)***	We ordered two divergently selected populations KLS30 and KSS30, and their immediate base population KC0 in October 2014. They are currently being used to understand the gene regulatory networks regulating early endosperm/Kernel development and their relationship to seed size The germination for all three lines is good. The project is currently still in progress. Once we publish the results of the work using these materials, we will be happy to inform you.
Michelle Coe, University of Arizona ***(Medicago truncatula)***	The *Medicago truncatula* seeds were used in a program I am involved in at Manzo Elementary in Tucson, Arizona. The program is a partnership among Biosphere 2, the University of Arizona and Manzo elementary to create hands-on outdoor experiential learning unit for climate science education. Biosphere 2 in Oracle, Arizona currently has an ongoing research project called the Landscape Evolution Observatory (LEO). LEO holds three large-scale landscapes that are used to measure how carbon, water, and biological systems move through landscapes and evolve over time. Manzo Elementary has created a scaled down version of LEO to use in their greenhouse and garden area. One of Manzo's experiments involved planting *Medicago truncatula* and tracking its germination and movements across sloped landscapes

	throughout the school year. The seeds germinated and lasted the entire school year (August-May) and were used for many variations of science projects. The seeds arrived quickly and were a great success! Although no publications have been produced, the students and teachers learned a lot during this program. I really appreciate the assistance of NPGS and thank you very much!
Mike Ottman, University of Arizona ***(Hordeum vulgare subsp. vulgare)***	The germplasm was used in a study for a graduate student. It was successful, the seed germinated and emerged and we were able to select seed form the population which was the original goal. There will be publications, hopefully. Thank you for the seed.
Blake Joyce, University of Arizona ***(Arachis hypogaea)***	The germplasm was used in genetic transformation (biolistics/agrobacterium) studies for aflatoxin. The germplasm germinated and was top quality, but we failed to get it to genetically transform. I have since left this lab and so doubt that it's going to be involved in a publication (regrettably).
Bob Sotomayor, San Xavier Cooperative Association ***(Cajanus cajan, Ficus carica, Morus alba, Punica granatum)***	The *Ficus*, *Morus*, and *Punica* cuttings were put in our greenhouse for the winter and it was anticipated that as rooted cuttings they would become mother plants for us to source cuttings for establishing a small orchard. On a very cold night they all froze because the tribal utility responsible for delivery of liquid propane did not deliver as requested. We tried

	saving the plants using kerosene heaters the very next day when we discovered the tank was still empty, but we lost everything. The three *Cajanus cajan* accessions are part of our Summer 2015 gow-outs. Please stay tuned, we are hoping they will do well. Thank you very much for what you do!