

## SAES-422

### California – Donald J. Merhaut

#### Accomplishments:

The main highlight of our research with native plants this year can be broken down into two programs: the evaluation of ornamental native groundcovers for their performance in drought induced landscapes and 2) the yearly nutrient requirements of winter-growing vs. summer-growing succulents, identifying if nitrogen use in these different crops during their production cycles.

In the first objective, the primary driving force for the research has been the California drought. California has been in a drought for several years and some areas of the state have been under severe water restrictions. Therefore, in our field trial of groundcovers, which has been established for five years, we ceased irrigation completely, since this reflects the conditions of some landscapes in various parts of the state. Many California native plants are drought tolerant. However, very little information is available regarding the degree of drought tolerance and how aesthetically acceptable these plants are in a given drought condition. In our field trials we are evaluating two California native plant species, *Salvia* 'Gracias' and *Corethrogyne filaginifolia*. The outcomes of the summer trial have indicated total loss of *Corethrogyne filaginifolia*. However, *Salvia* 'Gracias' continues to thrive.

In the second program, we are evaluating the nitrogen requirements of winter-growing vs. summer growing succulents native to different deserts of the world. Commercial production of succulents and the use of drought-tolerant succulents have rapidly increased due to consumer interest in 'water-wise' plants. We are studying succulents native to all warm coastal and inland deserts of the world, this includes plants native to deserts of the US, primarily the Mohave and Sonoran Deserts. The objective of the study is to understand the fertility requirements of the crop, primarily nitrogen, since this element is the essential nutrient with the greatest requirement and most use in crop production.

**Short-term Outcomes:** The information gained evaluating the drought tolerance of the groundcovers has proven to be quite popular, given current water restrictions. The evaluation of *Salvia* 'Gracias' and *Corethrogyne filaginifolia* has been done for the past five years. However, *Corethrogyne filaginifolia* did senesce in the trial. *Salvia* 'Gracias' has proven to be quite adaptable, aesthetically acceptable, and actually thriving with no summer irrigation. We did experience two rare significant rain events in the summer of 2015: remnants of two Pacific hurricanes that trekked inland to coastal and inland California. Overall this trial has been part of the 'Turf and Landscape Field Day' at our Agricultural Experiment Station in Riverside, CA. which usually has an attendance of over 200 people from the professions of landscape management, commercial plant production, water agencies, and universities.

In the project of the temporal aspects of nutrient uptake of winter-growing vs. summer-growing succulents, we have met with regional propagators and growers of different plant species to evaluate current growing conditions, fertilizer practices, and other horticultural programs of the different desert species that are produced. The short-term outcome of this process has been creating a working relationship with growers. It is our hope to develop and extend knowledge from this study to the expanding industry of succulent growers. More specifically, we hope our research will improve fertilization practices so that crop production and landscape use of desert native is optimized while mitigating the potential for fertilizer runoff into our environments.

**Outputs:** The major output of our program has been to show people how to use native plants in landscapes and how to commercially grow native plants with minimal impact to the environment. Hands-on demonstrations and field days have been an important and essential part of these extension programs.

**Activities:** Our research activities involve determining which native plants to determine the degree of drought tolerance of native plants which is aesthetically acceptable to the public. The extension activities associated with these programs are conducting hands-on displays and field demonstrations for the public and agricultural sectors. In addition, activities include visiting commercial growers, sharing the information we have gained with them.

**Milestones:** We have successfully demonstrated the use of two native groundcovers in landscapes and have shown how these plants can be successfully used in the typical landscape situation. We have also developed a working relationship with growers of native plants, relaying information on success or failure of native plant species in our trials.

**Impact Statements:** We have two long-term impacts. The most notable, is the use of select native species with no irrigation, once these plants have been established in the landscape. We have introduced the use of native plants to the landscape industry so that they have an understanding of the performance expectations and management of native plants in landscapes. Secondly, we are developing a trusting, working relationship with commercial producers of native plants, evolving a more sustainable program to grow and incorporate native plants into our landscape environments.

**Publications:**

Donald Merhaut, D. Pittenger and J. Baird. 2015. Evaluation of groundcovers with no supplemental summer irrigation for water conserving landscapes. UC Riverside, Turf and Landscape Field Day. Pg. 16-17.

Participant Report October 2014 – September 2015  
WERA-1013, Intermountain Native Plants  
17 October 2015  
Karen Panter, University of Wyoming

Participant: Panter, Karen L., [kpanter@uwyo.edu](mailto:kpanter@uwyo.edu), Department of Plant Sciences, University of Wyoming

Accomplishments: We successfully completed the fourth season of our All-America Display Garden on the University of Wyoming campus. Several perennial plants bred from natives were again featured including *Echinacea purpurea* 'Powwow Wild Berry' (2010 official AAS winner), *Echinacea hybrida* 'Cheyenne Spirit' (2013 AAS winner), *Gaillardia aristata* 'Arizona Apricot' (2011 winner), and *Gaillardia* 'Mesa Yellow' (2010 winner), *Gaura lindheimeri* 'Sparkle White' (2014 winner), and *Penstemon hartwegii* 'Arabesque' (2014 winner). 'Powwow Wild Berry' has proven to be very hardy, most of the plants having survived through three winters. About half of the 'Cheyenne Spirit' did not survive the winter of 2014-2015. Both *Gaillardia* cultivars have shown excellent winter hardiness as well as summer bloom. As expected and reported last year, 'Sparkle White' gaura and 'Arabesque' penstemon did not survive the 2014-2015 winter. They are both rated to USDA Hardiness Zone 6; Laramie is 4 (AAS makes the plant selections each year, we do not get to choose).

The WERA1013 Intermountain Native Plants web site is still hosted by the University of Wyoming. Our webmaster, Ann Tanaka, has revamped the site and we continue to add and update material as needed. The site can be found at <http://www.wyoextension.org/westernnativeplants/>.

Short-term Outcomes: Since the AAS garden is in an open area, there is virtually no way to track the number of visitors in 2015. A conservative estimate would easily be 2,000 individuals. It is in a heavily-used corner of campus on the west side of the UW administration building, Old Main. Short-term impacts include increasing the awareness of those who study the display garden during the summer growing season. Clientele, including private citizens as well as growers and retailers, have learned about the AAS program in general, our location in particular, and the new cultivars of perennial native plants available specifically. They also learned how many of these perform in Laramie's high altitude growing season.

The web site garnered 10,843 pageviews during FY 2015, which was double the number from FY 2014 (5,328). Of that number 8,903 were unique pageviews, up from 4,276 during FY 2014. The Plant List page was visited most (9% of the total) with *Penstemon pinifolius* the specific plant getting the most hits (6%). The same plant was top in FY 2014 as well.

Outputs: We continue to update and add to the web site for this project (<http://www.wyoextension.org/westernnativeplants/>).

Activities: The AAS Display Garden was discussed at the Laramie Research and Extension Center Field Day on August 27.

Milestones: The next milestone for the AAS Display Garden is planning and carrying out the 2016 version. At least one undergraduate student will be hired to assist in seeding and transplanting duties, as well as general care during the growing season.

Impact Statements: Over the next few growing seasons we will be monitoring views on blogs, the web site, and those who attend the garden talks and walks for their perceptions of the

AAS plant material. We will continue participation in the AAS program as an official Display Garden. As citizens and growers continue to provide input on the cultivars displayed in our garden, growers will increase their production of these cultivars and the general public will increase their purchase and use of these materials in their own landscapes. The web site will be a source of useful information for many years to come.

#### Publications:

Native Plants for the Intermountain West, <http://www.wyoextension.org/westernnativeplants/>. Accessed 17 October 2015.

## SAES-422

### Idaho – Stephen L. Love

**Accomplishments:** The objective of the Idaho native plant research project is to develop and distribute new native plant products for use by the Idaho nursery industry. The research process is to collect native species *in situ*, evaluate plants for horticultural value in common gardens at the Aberdeen R & E Center, select seed from superior plant accessions, increase seed for distribution to industry, and assist industry in marketing activities. Approximately 3,040 plant collections, comprising 1,110 species have been collected and brought to the Aberdeen R & E Center for testing. In 2015, on-going native plant domestication and commercialization activities were supported by a \$14,000 grant from the Idaho State Department of Agriculture.

An extensive plant collection excursion was completed in July and August of 2015, involving multiple destinations in the Cabinet Mountains in Montana, Scotchman Peaks in Idaho, and the northern Cascades in Washington. Supported by the University of Idaho Stillinger Herbarium, the foray included collection of both live plants and dried, pressed specimens for the herbarium. Sixty-eight new accessions, in the form of cuttings and seeds, were obtained for the native plant domestication project.

For purposes of outreach and education, demonstration gardens showing the potential of native plants for landscape use were established and/or maintained at locations around Idaho. New gardens were initiated at the College of Southern Idaho in Twin Falls, Ross Park Zoo and Pocatello Charter School in Pocatello, Idaho State University in Pocatello, and Tautphaus Park Zoon in Idaho Falls. Species additions were made to gardens located at Sawtooth Botanical Garden in Hailey, Idaho Botanical Garden in Boise, University of Idaho Arboretum in Moscow, and Harriman State Park in Island Park. Additionally, detailed descriptions for 10 native plant species were published in the WERA-1013 web site. Weekly project activities were published for public distribution using Facebook. Tours of research plots and demonstration gardens at the Aberdeen R & E Center and the Native Roots, LLC (industry partner) seed production plots were conducted for students and the general public.

**Short-term Outcomes:** The single major projected outcome for the Idaho native plant research/education project is the identification of native plant products for potential use by the Idaho nursery industry. To date, one-hundred ninety-six accessions with commercial potential have been identified and established in seed increase blocks. One hundred-ten of these accessions have been transferred to Native Roots, LLC for commercial-scale seed production and sale. Thirty-six plant products are now in commerce. Native Roots, LLC has created partnerships with production, wholesale, and retail nurseries in several Rocky Mountain states.

Public education has been a second emphasis of the program. As a result to educational programming, information delivered through web sites, workshops, and conferences, citizens of Idaho have a greater awareness of the need to conserve water and information on the use of drought tolerant plants to accomplish this need.

**Outputs:** The most significant output is the development of drought tolerant plant materials, distributed via a partnership agreement with the Native Roots, LLC. Other outputs include extension programming, including a web presence and personal contributions to workshops and conferences, aimed at education on topics related to water-conserving landscape practices.

**Activities:** Research activities involve native plant domestication using methods developed specifically for this purpose: collection from wild populations, field establishment, evaluation, selection, and

improvement using bulk selection. Extension activities include instruction for professionals and the general public on topics related to native plant landscaping and water-conserving design.

**Milestones:** 1) In the spring of 2015, 36 native plant products developed through the native plant domestication project were transferred to an industry partner. 2) Public outreach for delivering native plant utilization information now includes annual field days, demonstration gardens, instructional publications, workshops and conferences, and a web presence (including detailed native plant descriptions posted on the WERA-1013 web site).

**Impact Statements:** The long-term impacts of the Idaho native plant program will be two-fold, 1) to enhance the profitability of marketing native plants, thereby making a larger palette of high quality plants available for use by consumers, and 2) increase public awareness of native plants and increase the ability and willingness to landscape using water-conserving designs. The single greatest impact will be water conservation for the arid west and conservation of other resources through the use of sustainable landscaping practices.

**Publications:**

Love SL. 2014 Penstemon spotlight – Penstemon gormanii. 2014. Bulletin of the American Penstemon Society 73:2-7.

Love SL, T McCammon, A Debolt, B Corbin, D Mansfield and J Findley. 2014. Penstemons and geology in Idaho: Report of the 2013 annual meeting. Bulletin of the American Penstemon Society 73:8-27.

McCammon T and SL Love. 2014. Creation of a penstemon demonstration garden in Twin Falls, Idaho. Bulletin of the American Penstemon Society 73:64-67.

Love SL. 2013. The genus Penstemon: Taxonomy as related to performance in landscape applications. Report of the Intermountain Native Plants Cooperative 5:13-29.

## **WERA-1013      Kratsch, Heidi 2015**

### **Accomplishments:**

- Focused on educating master gardeners, green industry trainees, university students and the general public in appropriate use of native plants for conserving landscape water and reducing wildfire threat to homes.
- Generated interest and excitement about native plant landscaping by local nurseries and the general public.
- Plan in 2016 to incorporate educational information on replacement of potentially invasive exotic plant species with native species to mitigate the potential for horticultural plant invasions.

### **Short-term Outcomes:**

- Four of the five nurseries in the Reno area are now selling a variety of native species due to public demand.
- We have expanded our native plant educational efforts to include the Lake Tahoe Basin residential area.

### **Outputs:**

- Collected cultural information from *Shepherdia x utahensis* planted in our demonstration garden. We observed that this hybrid of *Shepherdia rotundifolia* and *Shepherdia argentea* does not tolerate excessive root-zone moisture as evidenced by shortened stature and increased susceptibility to disease pressure with increasing soil-moisture levels.

### **Activities:**

- Taught master gardeners propagation techniques for growing a variety of native plants from seed.
- Featured and sold five different native plant species (~400 plants) at our annual master gardener plant sale.
- Updated the native plant grower list at our WERA 1013 website <http://www.wyoextension.org/westernnativeplants/>

### **Milestones:**

### **Impact Statements:**

- Interest in native plant landscaping is growing in western Nevada as the effects of the drought are being felt by the community. Conversion of large lawn areas to small lawns with native perennial plantings will help the community become more resilient to the effects of drought. Further education of the nursery industry will improve local availability of native plants to consumers.

- Educating the industry and consumers about the role native plants can play in preventing future horticultural plant invasions when used as alternatives to exotic species will help raise awareness about the ecology of horticultural plant invasions.

**Publications:**

Kratsch, H. and W.H. Mazet. 2015. Planting trees in northern Nevada landscapes. UNCE Fact Sheet-15-02.



## WERA 1013 -Station Report from Texas

Members: Genhua Niu and Mengmeng Gu

### **Accomplishments:**

Preference of 22 crapemyrtle cultivars by crapemyrtle bark scale in landscape was evaluated and a poster titled “Discovery and spread of *Eriococcus lagerstroemiae* Kuwana (Hemiptera: Eriococcidae), a new invasive pest of crape myrtle, *Lagerstroemia* spp. ” was presented at Entomology Society of America annual conference.

Continued research project on salt tolerance for a number of ornamental species. These species are butterfly blue (*Scabiosa columbaria* ‘Butterfly Blue’), cardinal flower (*Lobelia cardinalis*), eastern red columbine (*Aquilegia canadensis*), mexican false heather (*Cuphea hyssopifolia*), mexican hummingbird bush (*Dicliptera suberecta*), rock rose (*Pavonia lasiopetala*), ‘Dark knight’ bluebeard (*Caryopteris* × *clandonensis* ‘Dark Knight’), flame acanthus (*Anisacanthus quadrifidus* var. *Wrightii*), and orange peel jessamine (*Cestrum* ‘Orange Peel’). Results showed that orange peel jessamine and mexican hummingbird bush were the most salt-tolerant, followed by flame acanthus, rock rose, and ‘Dark knight’ bluebeard. Butterfly blue, mexican false heather, and cardinal flower were moderately salt sensitive, while eastern red columbine was the most salt sensitive among the species investigated.

### **Short-term Outcomes:**

-Professional landscape providers and homeowners who attended online webinars and presentations are more aware of the value sustainable landscaping.

### **Outputs:**

### **Activities:**

The following webinars were hosted by Gu:

1. Thur. Oct. 1, 2015. Ground-level Ozone in Texas: Initiative, Status, and Policy Updates
2. Wed, Sept. 30, 2015. Rainwater Harvest for Commercial Landscapes
3. Tue., July 14, 2015. Rainwater Harvest for Greenhouses
4. Wed. July 8, 2015. The Impact, Biology and Control of Oak Wilt in Texas
5. Wed, May 27, 2015. Emerald Ash Borer (EAB)
6. May 19, 2015. Landscape Weed Management in Texas
7. Wed, Apr. 8, 2015. Houston Plant Trial
8. March 24, 2015. Landscape Weed ID in the South
9. Feb 18, 2015. Honeybees and neonicotinoids II

10. Feb 11, 2015. Honeybees and neonicotinoids I

#### **Presentations by Gu**

1. 01/29/2015. High tunnel production of organic vegetables. Texas Organic Farmers and Gardeners Association, San Antonio, TX
2. 6/16/2015. Crapemyrtle bark scale update. Texas Nursery& Landscape Association Region V meeting, Ft. Worth, TX
3. 6/17/2015. Use raised bed to grower vegetable. One Health Nicaragua (TAMU), College Station, TX
4. 06/26/2015. Plant Gems from China. SFA Wild About Woodies Field Day, Nacogdoches, TX
5. 08/13/2015. Crapemyrtle bark scale update. Texas Nursery& Landscape Association EXPO, Dallas, TX
6. 08/18/2015. Comparison of ornamental industry between China and the US. Chinese Society for Horticultural Sciences-Ornamental Annual Conference, Xiamen, China
7. 08/24/2015. Using biochar as container substrate. Jiangsu Academy of Agricultural Sciences, Nanjing, China
8. 11/06/2015. Crapemyrtle bark scale update. International Plant Propagators Society-North America Southern Region, Tampa, FL

#### **Other presentations at scientific meetings**

1. Wu, Shasha, Youping Sun, Genhua Niu, James Altland, Raul Cabrera. Salt tolerance of ten perennial plants in Asteraceae. Annual Conference of ASHS, August 3 to 7, New Orleans, LA, 2015.
2. Sun, Youping, Genhua Niu, Jaime Iglesias, James Altland, Raul Cabrera. Salt tolerance of 22 pomegranate cultivars. Annual Conference of ASHS, August 3 to 7, New Orleans, LA, 2015.

#### **Impact Statements:**

Native plants continue to be popular among Texas homeowner and landscapers. Using these native plants will certainly conserve water and be more tolerant to drought and salinity.

#### **Publications:**

1. Sun, Y., **G. Niu**, and C. Perez. **2015**. Relative salt tolerance of seven Texas Superstar® perennials. HortScience 50:1562-1566.

2. Sun, Y., G. Niu, and D. Zhang. 2015. Effect of volumetric water content on the growth of *Nandina domestica*. Proceedings of Southern Nursery Association 60:45-51.
3. Greyvenstein, O., T. Starman, D. Byrne, B. Pemberton and **G. Niu. 2015.** Mean daily maximum temperature for 8 - 14 days before harvest as a good predictor of change in garden rose flower dry weight. Acta Horticulturae 1064:67-72.

Accomplishments: Several experiments were conducted including:

1. Research

- a. Propagation of serviceberry by layering. Layers were established early in 2015 by mounding wood shavings around stock plants to encourage blanching of stems. On 6 July 2015, serviceberry shoots were treated with 4000 ppm IBA and 2000 ppm NAA as Dip 'N Grow in 25% ethanol. The shavings were kept moist throughout the summer. Layers were harvested on 20 November 2015. There was no difference between treated and untreated shoots, and overall rooting across treatments was only 8%. Separate work has shown that this selection of serviceberry can be propagated much more efficiently by collecting etiolated suckers from rhizomes in early June and rooting as softwood cuttings.
- b. Propagation of chokecherry by layering. Layers were established and evaluated as with serviceberry on a selection of chokecherry, except cable tie girdles were also applied to treated stems. While some chokecherry has proven to layer easily, this selection showed no differences between treated and untreated shoots, and overall rooting across treatments was only 18%.
- c. Propagation of Gambel oak by layering. Layers were established and evaluated on 14 seedling Gambel oak plants which were established in the layer bed in 2011. Results indicated that 53% of untreated and 59% of treated shoots rooted, though the differences are not significant. Overall 56% of all shoots rooted. It is interesting to note the annual percentage of rooted shoots in this bed has been 10, 31, 37, 59% over the last four years respectively. While rooting of various seedlings is variable, it appears that some selections are genetically prone to rooting (average of 56% rooting over four seasons) and some are recalcitrant (average of 8% rooting over four season).
- d. Propagation of wild singleleaf ash by budding. A preliminary experiment was done on August 14 & 15, 2013 by return-budding 30 buds from two trees back into their initial location (half as chip buds and half as T-buds). In May of 2014, the buds were evaluated and 87% of chip buds were successful and 60% of T-buds were successful. On June 26-27 a variable number of buds from each of 13 different accessions collected from Wayne and Emery Counties in Utah were grafted onto three stock plants using chip buds. Budding success was evaluated on May 4, 2015. The results were difficult to analyze due to the variation in number of buds per accession, damage by deer, and failure of the labeling system. From the data that was collected we found that overall 51% of the buds were successful with rates as high as 5/5 or low as 0/3 or 1/5 being found. It is apparent that singleleaf ash can be easily propagated by budding.
- e. Propagation of Gambel oak by budding. On July 31, 2015 a total of 85 buds were return budded onto 28 different nursery-grown seedling oaks by three different budders. Budding success was determined on May 14, 2015. Results indicated that overall 28% of bud shields were successfully grafted and 11% of the buds leafed out. The results indicate that budding can be successful with Gambel oak,

but that it is difficult and extra care should be given to preventing damage to the bud itself.

- f. Comparison of soilless substrates for growing rooted bigtooth maple layers. Due to a continuing problem with root rots and other failures of rooted bigtooth maple layers, an experiment was designed to compare growth in a 2:1 perlite:peat mix as compared to ProMix Bark 20 Biofungicide and Mycorrhizae. On March 21, 2015 rooted layers of bigtooth maple accessions USU-ACGR-1005, 1009, and 1002 were selected for uniformity and then paired by uniform size before randomly assigning to one of the two different soils (2:1 perlite:peat substrate or the ProMix Bark 20). The plants were placed in the greenhouse in a randomized block design and all plants were watered at each irrigation event. The plants were evaluated on July 23, 2015. The results indicated that only one tree had collar rot. The presence of leaf scorch was higher in the ProMix substrate and the growth in cm was lower, but not significantly so in either case. Evaluation of budbreak and wilting after two weeks showed no significant differences between the two substrates. There did not appear to be a visible difference between the two substrates in either collar rot resistance or plant growth rate.

## 2. Presentations

- a. Snowden, C. and L.A. Rupp. 2015. Plant propagation with leaf wetness sensors. WERA-1013 Meeting, Boise, Idaho.
- b. Rupp, L.A. 2015. Propagating singleleaf ash (*Fraxinus anomala*): A Proof of Concept. WERA-1013 Meeting, Boise, Idaho.
- c. Rupp, L.A. 2015. Plant propagation. Master Gardener courses in Iron, Kane, Washington, Summit, Wasatch, and Tooele Counties, Utah.
- d. Rupp, L.A., W.A. Varga, and M. Maynes. 2015. Alternative crop research at Utah State University. Utah Small Farms Urban Ag Conference. SLC, UT.
- e. Rupp, L.A. 2015. Tours of native plant propagation for Brigham Young University – Idaho. Kaysville, Utah.
- f. Rupp, L.A. et al. 2015. Presentation on Extension water conservation initiative for the Five County Association of Governments, Six County Association of Governments, Bear River Association of Governments, Utah League of Cities and Towns, and the Utah Association of Counties. We have also presented our information at the Utah Association of Conservation Districts.
- g. Rupp, L.A. et al. 2015. Are Utah Landscapes Worth the Water? Salt Lake County Watershed Conference.

Short-term Outcomes: The research and presentations continue to raise awareness of native plants for as an alternative for low-water landscaping. We are seeing requests from consumers for native plant material that is not available in the nursery trade.

Outputs: We are in the process of releasing two selections of native plant material. Accession USU-ACGR-1005 will be released as *Acer grandidentatum* 'Alice' or bigtooth maple 'Alice'. It is distinguished by red fall color (though somewhat inconsistent) and a slower, tighter growing habit that distinguishes it from some of the faster, ranker growing native maple selections. Its' ideal application will be as a small urban patio tree. Accession USU-CELE-1003 will be

released as *Cercocarpus ledifolius* ‘Hoodoo’ or littleleaf mountain mahogany ‘Hoodoo’. It is distinguished by small leaf size and columnar form. Its’ ideal application will be as a water conserving broadleaf evergreen specimen with a strong vertical orientation.

#### Activities:

1. We are currently editing a new publication entitled “Combinations for Conservation” that will provide information about combinations of native and other plant material for attractive, water-wise landscapes that are compatible with each other.
2. Worked on a special project with a Masters student on controlling intermittent mist propagation for native plant production.
3. Continuing collaboration with the USU Botanical Center to identify, propagate, and release native plants for use in the landscape industry.
4. Recertified the Northern Utah Qualified Water Efficient Landscaper certification program and continued with workshops on a periodic basis.

#### Milestones:

1. We initiated the Utah Public Garden Network as a cooperative group of public gardens in Utah to provide mutual support, further exposure to the public, and help insure that all gardens provide uniform messages on issues such as landscape water conservation.  
See: <http://www.utahpublicgardens.org/>

#### Impact Statements:

We are getting invitations to speak about water conservation and the use of native plants, but it is difficult to determine or measure quantitatively our impact. We have not yet seen our plant materials adapted and grown by the industry.

#### Publications:

1. Rupp, L.A. and A. Wheaton. Combinations for Conservation. Planting Combinations for Landscape Water Conservation. In manuscript.
2. Frandsen, K. and L.A. Rupp. 2015. Cost free landscape water conservation ideas. Utah State University  
Extension. [http://extension.usu.edu/files/publications/publication/Horticulture\\_Landscaping\\_2015-01pr.pdf](http://extension.usu.edu/files/publications/publication/Horticulture_Landscaping_2015-01pr.pdf)
3. Frandsen, K. and L.A. Rupp. 2015. Water-wise landscaping: Ideas for landscape water conservation without changing your landscape design. Utah State University  
Extension. [http://extension.usu.edu/files/publications/publication/Horticulture\\_Landscaping\\_2015-02pr.pdf](http://extension.usu.edu/files/publications/publication/Horticulture_Landscaping_2015-02pr.pdf)
4. Buhler, M.R. and L.A. Rupp. 2015. Propagation of native woody plants in Utah using Nearing frames. Report of the Intermountain Native Plants Cooperative. 6:5-9.
5. Wheaton, A. and L.A. Rupp. 2015. Nurturing native plants: A guide to vegetative propagation of native woody plants in Utah. Report of the Intermountain Native Plants Cooperative. 6:39-42.

Colorado State James E. Klett, Professor

### Accomplishments

Plant Select® is a program with the goal to create smart plant choices for a New American Landscape inspired by the Rocky Mountain Region. It is the country's leading source of plants designed to thrive in high plains and intermountain region. It is a non-profit collaboration of Colorado State University, Denver Botanic Gardens and horticulturists from around the world.

In 2015, Plant Select® introduced three new plants and recommended four. Also, three plants were recommended in the Plant Select® Petite program. The three introductions included a hybrid penstemon – *Penstemon* x 'Coral Baby' (Coral Baby penstemon); a hybrid salvia – *Salvia darcyi* x *Salvia microphylla* called Windwalker® royal red salvia and a big bluestem grass called *Andropogon gerardii* 'PWIN01S' - Windwalker® big bluestem.

Numerous seeds were collected on Plant Select® sponsored trips to Kazakhstan in 2010. In 2015 19 were planted in our evaluation plots. In 2014-15, 17 taxa were evaluated by industry and professionals and a few have been chosen for introduction into Plant Select® program in 2016 and 2017.

Numerous presentations and poster papers concerning Plant Select® plants were given throughout 2015 at National Science meetings, industry groups throughout the nation and especially in the Rocky Mountain Region. The presentations included references to WERA 1013 and discussed other WERA 1013 members.

### Short Term Goals

In 2015, more than 2.4 million Plant Select® plants were sold and all grown from grower members of Plant Select®. Most of these growers are located in the Rocky Mountain and Intermountain Region of the United States. The plants were purchased by garden centers, landscape contractors and landscape management personnel along with homeowners and gardening public. This resulted in the gardening public and professionals being more successful in creating landscapes that are more sustainable and many more satisfied gardeners. There are also Plant Select® demonstration gardens in Colorado, Idaho, Montana, Utah and Wyoming reporting back to Plant Select® on their performance in many different areas.

Public education continued to be a major emphasis in 2015 along with promoting the new Plant Select® brand – "Plant Select® - Plant Smarter". Tours of Plant Select® demonstration gardens were held throughout the 2015 growing season.

### Outputs

We are recommending and producing many drought tolerant plants. Many of these plants are native to the Rocky Mountain and Inter Mountain Region. Other inputs include our web presence which was greatly enhanced and expanded in 2015 to be more user friendly. Additional YouTube videos were also produced about more native Plant Select® plants along with additional marketing on various social media.

## Activities

Presentations about more adaptable and xeric native plants were given at ProGreen Conference & Expo in Denver in 2015. Also, presentations about Plant Select® in Idaho, Cultivate 15, Garden Writers of America and American Society for Horticultural Science annual conference.

## Milestones

In 2015, we launched our major branding and marketing about Plant Select® to the gardening public. There was a major launch in the gardening press and on social media. We are also working on a new book to be published in 2017 to mark our 20<sup>th</sup> anniversary. A lot of the dollars for the new marketing campaign have been made available through several Specialty Crop Grants.

## Impact Statement

The new branding and marketing process has shown considerable growth in the program including increase in sales of plants and more growers desiring to become members to grow and sell Plant Select® plants. However, the greatest impact is the education about water conservation by planting these plants and the practice of more sustainable landscaping utilizing Plant Select® plants.

## References

Klett, James E., 2014. CSU Research Update, Announcing Plant Select® 2015. CNGA Looseleaf 32(6) 20-21.

Klett, James E. and Sam Hagopian, 2015 CSU Research Update, Water Research with Ornamental Grasses, CNGA Looseleaf 33(1) 20-21.

Klett, James E. 2015. CSU Research Update, Why Tree Diversity, CNGA Looseleaf 33(2) 20-21.

Klett, James E. 2015. CSU Research Update, 2015 Cool Season Trial Winners, CNGA Looseleaf 33(3) 20-21.

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