**WERA1013**

**Intermountain Regional Evaluation and Introduction of Native Plants**

**Period the Report Covers: 10/2013 to 09/2014**

**Date of Annual Report: 12/09/2014**

**Annual Meeting Dates: 10/09/14 to 10/11/14**

**Participants:**

University faculty

Dougher, Tracy ([tracyaod@montana.edu](mailto:tracyaod@montana.edu)), Montana State University

Brad Geary ([brad\_geary@byu.edu](mailto:brad_geary@byu.edu)), Brigham Young University

Graves, Bill ([graves@iastate.edu](mailto:graves@iastate.edu)), Iowa State University

Hess, Bret ([BretHess@uwyo.edu](mailto:BretHess@uwyo.edu)), University of Wyoming (administrative advisor)

Klett, Jim ([Jim.Klett@ColoState.edu](mailto:Jim.Klett@ColoState.edu)), Colorado State University

Kratsch, Heidi ([kratschh@unce.unr.edu](mailto:kratschh@unce.unr.edu)), University of Nevada, Reno

Panter, Karen ([kpanter@uwyo.edu](mailto:kpanter@uwyo.edu)), University of Wyoming

Rupp, Larry ([larry.rupp@usu.edu](mailto:larry.rupp@usu.edu)), Utah State University

Stevens, Mikel ([mikel\_stevens@byu.edu](mailto:mikel_stevens@byu.edu)), Brigham Young University

University students

Bujak, Charissa (Cstree6@yahoo.com), Montana State University

Buhler, Megan ([megrazzy@msn.com](mailto:megrazzy@msn.com)), Utah State University

Wheaton, Adrea ([adrea.wheaton@usu.edu](mailto:adrea.wheaton@usu.edu)), Utah State University

Speakers, tour hosts, and others

Chris Bullock ([chris@highmtnnursery.com](mailto:chris@highmtnnursery.com)), High Mountain Nursery

Michelle Cook ([michelle.cook@redbutte.utah.edu](mailto:michelle.cook@redbutte.utah.edu)), Red Butte Gardens

Jerry Goodspeed ([jerry.goodspeed@usu.edu](mailto:jerry.goodspeed@usu.edu)), Utah State University Botanical Center

Tom Monaco ([Tom.Monaco@ars.usda.gov](mailto:Tom.Monaco@ars.usda.gov)), USDA ARS Forage and Range Research Laboratory

Janet Simonich ([janet@progressiveplants.com](mailto:janet@progressiveplants.com)), Progressive Plants Nursery

Alison Strate ([AStrate@PWEuro.com](mailto:AStrate@PWEuro.com)), EuroAmerican Propagators Proven Winners Nursery

Vera Curie

Edie Trimmer

**Brief Summary of Minutes of Annual Meeting:**

Minutes of the 2013 meeting were reviewed and unanimously approved. Bret Hess was given time to go over the administrative aspects of the working group. Details on the approved project can be found at <http://lgu.umd.edu>. Next year the project will be subject to a mid-term review.

The meeting was conducted by Larry Rupp, current chair, with minutes generously taken by Tracy Dougher. Chair-elect, Genhua Niu, was unable to attend 2014. Research and Extension project presentations were made by Tracy Dougher, Charissa Bujak, Karen Panter, Jim Klett, Bill Graves, Larry Rupp, Megan Buhler, Adrea Wheaton, Heidi Kratsch, and Mikel Stephens. Special guest Tom Monaco spoke on invasive plant ecology and management in the Great Basin.

A business meeting was held at 11:00 AM and continued at about 8:00 PM of the same day. Subjects discussed included:

* Annual report requirements
* Review of manuscript requirements for posting of publications to the Proceedings of the Intermountain Native Plants Cooperative.
* Discussion on recommendations of the Western Directors on the Project Renewal Proposal. It was agreed that we need to take a more in-depth look at the role of native plants in the whole issue of invasive plant control. The big question is whether a native plant can even be considered an invasive? If not, how far out of its native range does it have to be to be considered non-native and potentially invasive? Tom Monaco expressed an interest in collaborating on a white paper on what is and isn’t native and invasive in the landscape. Heidi Kratsch agreed to take the lead with participation by all.
* Subcommittee discussions
  + Website
  + Education
  + The need for evaluation standards for releasing native plants was discussed. Jim Klett will provide the standards used by Plant Select. Discussion on partnering with industry on evaluations and plant trials
  + The need for a Speakers Bureau was reiterated. Heidi will spearhead developing a list that can be posted on the website.
  + Potential funding
    - WSARE is too focused on food crops to fit our needs.
    - WSARE PDP may be an option for training landscape architects. Karen will check it out with Jim Freeburn.
* Importance of collaboration between states was discussed and encouraged.
* Need to document native plant sales in annual report.
* Consider adding firewise landscaping to our efforts with native plants in a complementary fashion.
* Addition ideas that were presented include:
  + Stan Hokanson, Minnesota, is looking at drought tolerant rootstocks.
  + Using WERA to highlight successful native landscapes in the west
  + Using a Texas “Earth Kind” program
* Elections
  + 2015 & 2016 – Chair Genhua Niu, Chair-elect Bill Graves
  + 2017 & 2018 – Chair Bill Graves
* Future meetings
  + 2015 Aberdeen, Idaho
  + 2016, Iowa
  + 2017, Montana
  + 2018, Montana

**Accomplishments and Impacts:**

Colorado

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 regions; a nonprofit collaboration of Colorado State University, Denver Botanic Gardens and horticulturists from around the world. In 2014, Plant Select® recommended four plants and introduced three. Two of the introductions are penstemon hybrids between Mexican and American wild penstemons. Another introduction is a selection of native prairie zinnia. A Los Lunas selection of native sumac was also recommended through Plant Select® in 2014.

Numerous seeds were collected on a Plant Select® sponsored trip to Kazakhstan in 2010. In 2014, 19 taxa were planted in our evaluation plots. Between 2012 and 2014, 67 additional taxa were planted and several have been chosen for introduction into the Plant Select® program in 2015.

Numerous presentations concerning these plants were given throughout 2014 to many industry personnel throughout the Rocky Mountain Region which included references to WERA-1013 and discussed other WERA-1013 members.

Idaho

The objective of the Idaho native plant research project is to develop and distribute new native plant products for use by the Idaho and Intermountain West nursery industries. Research methods include: collection of native species from their natural habitats, evaluation of plants for horticultural value in common gardens at the Aberdeen R & E Center, selection of seed from superior plant accessions, increasing seed for distribution to industry, and assistance with industry marketing activities. To date, over 4,000 plant collections, representing approximately 1,200 species have been imported to the Aberdeen R & E Center for testing. In 2013, this research was supported by Hatch funding, small grants from plant societies, and a $12,036 from the Idaho State Department of Agriculture.

In July of 2014, a concentrated effort was made to access dwarf forms of Penstemon species for evaluation and commercial exploitation. A week-long collection expedition was completed, comprising visits to 9 Idaho, Oregon, Nevada, and Utah mountain ranges. Target sites were exposed, harsh ridges at elevations above 9,000 feet. A total of 66 new collections, both of penstemons and associated species, were collected as cuttings and established in the greenhouse at the Aberdeen R & E Center.

In addition to research activities, in 2014, extension activities were programmed specifically to enhance public knowledge of water-conserving landscape practices. Demonstration native plant gardens were established or maintained at sites in Boise, Moscow, Hailey, Mountain Home, Shoshone, Pocatello, Idaho Falls, Blackfoot, and Island Park. New native plant species descriptions were developed for the WERA-1013 web site. A Facebook page was launched as part of efforts to increase public awareness of the native plant project and its implication for water conservation. University of Idaho web sites were utilized for distribution of materials outlining methodologies for using native plants in landscapes. Workshops on native plant gardening were held in Boise, Idaho Falls, Salmon, Twin Falls, and St. Anthony, and Pocatello. Tours of research plots and demonstration gardens at the Aberdeen R & E Center were held for students and groups representing the general public.

Montana

Organized Master Gardener volunteer hours to help with maintenance, data and seed collection, and seed cleaning of the native perennial research/demonstration garden. Master Gardeners were educated on the plants in the garden. Gave a summer tour on the native perennial garden and native fine fescues mowing height study to the Bozeman City Planners, Engineers, and Maintenance Crew. Received JP Murdoch Trust, Partners in Science Grant “Protocol Development for Production of Montana Native Plants.”

Texas

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 crapemyrtle, *Lagerstroemia* spp.” was presented at Entomology Society of America annual conference. Continued research on salt tolerance for Texas Superstar® and Earth Kind® Roses. Results are being disseminated and published in journal papers and extension magazine.

Wyoming

Successfully completed the third season of our All-America Display Garden on the University of Wyoming campus. Several perennial plants bred from natives were featured this year. These included *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 two winters. ‘Cheyenne Spirit’ did not fare as well this season. About half of the plants survived from 2013 and few bloomed. Both Gaillardia cultivars have shown excellent winter hardiness as well as summer bloom. The two new introductions for 2014, ‘Sparkle White’ gaura and ‘Arabesque’ penstemon, are not expected to survive the coming cold as 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 garden as a whole showcased 23 new cultivars of flowering annuals, plus the six above-mentioned perennials in 2014. We initially had 17 cultivars of vegetables as well, but they all succumbed to a late freeze June 8; only the radishes (‘Rivoli’) survived. 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/>

Utah

Research was conducted on the use of Nearing frames as an alternative, less expensive means of propagation of native woody plants in Utah than greenhouses. Results indicate that Nearing frames can be effective with shade tolerant plants, such as creeping Oregon grape, but not full sun requiring plants such as mountain mahogany or buffaloberry. Research examining the use of mound layering as a sustainable method of native woody plant propagation also continues. It appears to be effective for chokecherry and some selections of bigtooth maple. It is not effective for little-leaf or curl-leaf mountain mahogany under our conditions. A number of presentations were given on propagation of native plants and use of native woody plants as alternatives for water conserving landscapes. These include presentations at the International Plant Propagators Society Western Region meetings, master gardener classes, and trade conferences in Utah and Nevada.

Iowa

Research was conducted on the use of *Dirca* spp. (leatherwoods) and *Nyssa biflora* (swamp tupelo), two desirable plant species that are not commonly used in the nursery trade. The research has focused on propagation, environmental requirements, stress tolerance, and genetics. Additional research is being done on the development of bioplastics for use in horticultural production to replace conventional plastics made from fossil fuels. The nursery and greenhouse industries are major consumers of conventional plastics, which are not sustainable and rarely can be recycled or reused. Heidi Kratsch is a co-investigator on this projected, which is funded via NIFA.

Nevada

Increased focus in green industry and master gardener trainings on use of native plants for water conservation. Generated interest and excitement about native plant landscaping by local nurseries and the general public.

**Short-term Outcomes (by objectives):**

1. Enhance interstate cooperation in marketing new native plant materials and cultivars, especially plants that facilitate water conservation and fire-safe landscapes.
   * Received JP Murdoch Trust, Partners in Science Grant “Protocol Development for Production of Montana Native Plants.”
   * In 2014, more than 2.185 million Plant Select® plants were sold and all grown from grower members of Plant Select® and many in Rocky Mountain and Intermountain Region. The plants were purchased by many garden centers, landscape contractors, landscape management personnel throughout the WERA-1013 region and homeowners resulting in more satisfied gardeners. There are also Plant Select® demonstration gardens in Colorado, Idaho, Montana, Utah and Wyoming reporting back to Plant Select® on performance of these plants in many different areas.
   * In 2011, the University of Idaho signed an agreement with Conservation Seeding and Restoration (CSR) of Kimberly, Idaho to increase, market, and distribute plants developed as a part of the domestication research. CSR spun off a small subsidiary company called Native Roots, LLC to handle their native plant landscaping nursery business. To date, 110 native plant products have been transferred to Native roots and about half of those established at their seed farm in Filer, Idaho. Native Roots is now actively marketing 30 of these plant products through partnerships, as well as wholesale, and retail channels.
   * The Utah State University Botanical Center has released two native perennials form commercial production that are currently being produced and sold.
   * At least one nursery in Reno is advertising and selling penstemons to decrease landscape water use.
   * There is an increase in the numbers of people inquiring at the Reno Extension office about converting their landscapes to native plants.
2. Coordinate regional efforts to provide education to both the public and industry professionals on native plant propagation/production, water conservation benefits and use in ornamental landscapes, and maintenance of native-plant-dominated ornamental landscapes for efficiency of water use.
   * Montana master gardener programs with research and demonstration on native plants resulted in additional exposure to natives.
   * A tour of native plant research for Bozeman City personnel resulted in their considering the use of native plants for parks, right-of-ways, and median strips to save water.
   * Public education continued to be a major emphasis in 2014 along with launching a new marketing and branding program for Plant Select® - Plant Smarter. Numerous tours of the demonstration gardens were held at many sites in 2014 along with educational programs.
   * Educational programming and information delivery through a variety of venues, including web sites, workshops, and conferences, has created greater awareness of the role of native plants in water conservation in Idaho.
   * Feedback from the Laramie Garden Club indicated that demonstration gardens were valuable and effective.
   * The public was able to view the AAS demonstration garden at the University of Wyoming and how these plants function in high altitudes.
   * The Intermountain Native Plants website had 5,328 views in 2014, with most interest being on the plant list page.
   * The Center for Water Efficient Landscapes at Utah State University received the Western Extension Directors’ Award of Excellence for 2014. In collaboration with USU Extension, CWEL also received one-time funding of $500,000 from the state legislature for water conservation programs.
   * The website for CWEL has been revised and improved to provide additional information on water conservation and the use of native plants to the public.
   * Plans are in place to develop a native plant demonstration garden on the UNR campus to teach students and the public about use of native plants to attract pollinators and conserve water.

**Outputs (by goals):**

1. Increase knowledge about the reliability and regional adaptability of native plant materials targeted for use in water-conserving and fire-safe landscapes. Project outcomes include:
   * Montana master gardeners completed data and seed collection on the native perennial garden.

* We are recommending and producing many drought tolerant plants of which most are native to the region and adaptable to Rocky Mountain and Intermountain Region and beyond. Other outputs include our web presence which expanded greatly in 2014 along with producing YouTube videos on native Plant Select® plants and how to successfully grow them in landscapes. Our updated marketing program explains that Plant Select® helps you plant smarter and is a smart collaborative model, has a smart 7-point selection process, features beautiful, adaptable, water wise plants and results in less work, less impact and more stunning, successful gardens.
* The most significant output from Idaho is drought tolerant plant materials. These are being distributed via a partnership agreement with the company 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.
* Negotiations are on-going with the Utah State University commercialization office on the release of an additional perennial flower and several woody plants.

1. Coordinate regional efforts to provide education to both the public and industry professionals on native plant propagation/production, water conservation benefits and use in ornamental landscapes, and maintenance of native-plant-dominated ornamental landscapes for efficiency of water use.
   * Outputs for Idaho 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.
   * A blog about the AAS display garden is available at http://karenpanter.wordpress.com/category/all-america-selections-gardens/ and is an easy way to deliver information to interested clientele. Posts are also announced using my Twitter feed @wyohort.
   * The publication *Nurturing Native Plants: A Guide to Vegetative Propagation of Native Woody Plants in Utah* has been accepted for publication by USU Extension.
   * Survey data from the penstemon demonstration garden at the UNR Extension offices has been compiled and analyzed.

**Activities (by goals):**

1. Enhance interstate cooperation in marketing new native plant materials and cultivars, especially plants that facilitate water conservation and fire-safe landscapes.
   * Advised graduate student research on enhancing seed production and collection in *Phacelia hastata*
   * Advised graduate student research on addressing the demand for cost-effective production of Montana native plants. Continued a collaborative study with Stephen Love at the University of Idaho on the water requirements and survivability of native plants from Idaho.
   * Surveyed Montana residents on their preferences for fine fescue cultivar and mowing height
   * Research activities in Idaho involve native plant domestication using unique and effective methods developed specifically for this purpose: collection from wild populations, field establishment, evaluation, selection, and improvement using bulk selection.
   * The AAS Display Garden was discussed at the Laramie Research and Extension Center Field Day on August 28.
   * Research at USU continues on selection and propagation of unique woody plants for use on water conserving landscaping. Specifically, new selections of a glossy-leaf *Mahonia repens* and a dwarf *Cercocarpus montanus* have been established in the research nursery at Logan, Utah.
   * A survey on public perception of the penstemon demonstration garden at UNR Extension was administered to identify key preferred characteristics and buying habits for garden plants.
2. Coordinate regional efforts to provide education to both the public and industry professionals on native plant propagation/production, water conservation benefits and use in ornamental landscapes, and maintenance of native-plant-dominated ornamental landscapes for efficiency of water use.
   * Worked with the Montana Master Gardener program to educate volunteers on the use of native plants.
   * Presentations about more adaptable and xeric native plants were given at ProGreen Conference in Denver in 2014 along with presentations about Plant Select® in Montana, Idaho, Cultivate 14 and American Society of Horticultural Science annual meetings.
   * Presentations about native and sustainable landscaping were given at the Third International Salinity Forum, Southern Region ASHS. In addition, information on ‘Earth-Kind Landscaping’ was presented to seven audiences in Texas.
   * Extension activities in Idaho include instruction for professionals and the general public on topics related to native plant landscaping and water-conserving design.
   * A class was taught on native plant landscaping for University of Nevada’s Forest and Range Plant Identification class for Environmental Science majors.
   * A group of master gardeners was organized to adopt the UNR native penstemon demonstration garden and to provide maintenance services.

**Milestones:**

* In 2014, Plant Select® undertook a major branding and marketing exercise. A refresh logo and brand was launched and a new marketing campaign introduced to industry cooperators and will be introduced to public in 2015. The results of more than a year of analysis and research, this new brand will be formally introduced at ProGreen Expo in Denver, CO in January 2015. A lot of this new branding and marketing has been made available through several specialty crop grants.
* Milestones in Idaho include:
  + In 2015, an additional 5 native plant products will be added to the palette marketed through Native Roots, LLC.
  + In late 2014 into 2015, launch of a Facebook page will increase public exposure to water conservation issues and the native plant solutions as developed by WERA-1013 workers.
  + Additional educational programming will be completed, including addition of 10 new native plant descriptions to be posted to the WERA-1013 web site.
* The Wyoming AAS Display Garden has already contracted with an undergraduate student to grow and maintain the garden.
* Publication of *Nurturing Native Plants: A Guide to Vegetative Propagation of Native Woody Plants in Utah* as a resource for intermountain growers.
* Representatives of the public gardens in Utah came together to form a garden network that should facilitate education in all aspects of landscape horticulture in Utah, including use of native plants in water conserving landscapes.

**Impact Statements:**

* Two graduate student are being funded through grants and Teaching Assistantships to cooperate with Dr. Tracy Dougher on the limitations and ranges of native plants in the built landscape.
* One high school science teacher is collaborating over 2 summers on research
* Native plants are more and more popular among Texas homeowner and landscapers. Cooperating with these groups in developing a common message has increased understanding of native plant conservation and has improved attitudes about native plants and their value.
* The new branding and marketing process completed in 2014 has given a new energy to Plant Select® program and new processes to promote these generally more xeric and many native plants in the Rocky Mountain Region and Intermountain West. However, overall the greatest impact is the water conservation by planting these plants and the practice of more sustainable landscaping utilizing Plant Select® plants.
* 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.
* As citizens and growers continue to provide input on the cultivars displayed in the Wyoming AAS 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. <http://www.wyoextension.org/westernnativeplants/>
* In Utah, the current drought situation is driving increased interest in the use of native plants for water conserving landscapes. As a result we are receiving more inquiries about our native plant program and what can offer to landscape architects and managers. This interest is verified by the Center for Water-Efficient Landscaping receiving the Western Extension Directors’ Award of Excellence and increased funding from the Utah legislature for water conservation programming.
* 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.

**Publications:**

Extension publications:

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* Klett, James E. 2013. CSU Update - Superior Perennials. CNGA Looseleaf 31(6) 20-21.
* Klett, James E. 2014. CSU Update – Announcing Plant Select® for 2014. CNGA Looseleaf 32(1) 18-19.
* Koski, Ronda and Klett, James E. 2014. CSU Update - Weed Control Product Study. CNGA Looseleaf 32(2) 18-19.
* Klett, James E. 2014. CSU Update – Dependable Landscape Trees. CNGA Looseleaf 32(3) 18-19.
* Klett, James E. 2014. CSU Update – Beyond the Ash Tree – Tree Options for Colorado. CNGA Looseleaf 32(4) 18-19.
* Klett, James E. 2014. CSU Update – 2014 Superior Annuals from CSU Trials. CNGA Looseleaf 32(5) 20-21.
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* Klett, James E. 2014. CSU Research Update – Consider These Time-Proven Shrubs for Colorado Landscape. Colorado Green 30(2) 18-19.
* Klett, James E. 2014. CSU Research Update – Consider These Unusual Woody Landscape Plants. Colorado Green 30(3) 14-15.
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* Kratsch, H. 2013. Penstemons are for Great Basin Gardens. University of Nevada Cooperative Extension Fact Sheet 13-35.
* Kratsch, H. 2013. Flowers at the Border: Plant native flowers around your yard to attract pollinators and other beneficial insects. University of Nevada Cooperative Extension Special Publication 14-07.
* Kratsch, H. 2014. Penstemon species may help Nevadans conserve water. Bulletin of the American Penstemon Society Vol. 73: 37-42.
* Love SL. 2014 Penstemon spotlight – *Penstemon gormanii*. 2014. Bulletin of the American Penstemon Society 73:2-7.
* 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.
* Ong, K. and M. Gu. 2014. Basil Downy Mildew. EPLP-011. Texas A&M AgriLife Extension Service.
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* Panter, K. Native Plants for the Intermountain West, http://www.wyoextension.org/westernnativeplants/. Accessed 17 October 2014.
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* Shaub, Sarah and Klett, James E. 2014. Dependable Landscape Trees from the Colorado State University Arboretum Bulletin XCM-150. 249p.

Research publications:

* Cai, X., Y. Sun, T. Starman, C. Hall, and G. Niu. 2014. Response of 18 Earth-Kind® rose cultivars to salt stress. HortScience 49(5):544–549.
* Cai, X., T. Starman, G. Niu, and C. Hall. 2014. The effect of substrate moisture content on growth and physiological responses of two landscape roses (*Rosa* x *hybrid* L.). HortScience 49(6):741–745.
* Grewell, D., G. Srinivasan, J. Schrader, W. Graves, and M. Kessler. 2014. Sustainable materials for horticultural application. Plastics Engineering 70(3): 44-52.
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* Hong Lu, S.A. Madbouly, J.A. Schrader, G. Srinivasan, K.G. McCabe, D. Grewell, M.R. Kessler, and W.R. Graves. 2014. Biodegradation Behavior of Poly (lactic acid) (PLA)/Distiller’s Dried Grains with Soluble (DDGS) Composites. ACS Sustainable Chemistry & Engineering 2: 2699-2706.
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* Love SL, RR Tripepi, and T Salaiz. 2014. Influence of harvest timing and storage interval on rabbitbrush seed germination, emergence, and viability. Native Plants J 15:98-108.
* 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.
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* Peterson, B.J. and W.R. Graves. 2013. Responses to root-zone water content of shrub congeners from eastern North America and Mediterranean California. HortScience 48: 715-719.
* Schrader, J.A., G. Srinivasan, D. Grewell, K.G. McCabe, and W.R. Graves. 2013. Fertilizer effects of soy-plastic containers during crop production and transplant establishment. HortScience 48:724-731.
* Smith, Jason F. and Klett, James E. 2013 Responses of Four Common Shrubs Species to Different Irrigation Regimes. J. Environ. Hort. 31(4) 211-220.
* Sriladda, C., R. Kjelgren, H. Kratsch, T. Monaco, S. Larsen and F.A. Shen. 2014. Ecological adaptation of the endemic *Shepherdia rotundifolia* to conditions in its Colorado Plateau range. Western North American Naturalist 74(1): 79-91.
* Yang, S., S.A. Madbouly, J.A. Schrader, G. Srinivasan, D. Grewell, K.G. McCabe, M.R. Kessler, and W.R. Graves. 2014. Characterization and biodegradation behavior of bio-based poly(lactic acid) and soy protein blends for sustainable horticultural applications. Green Chemistry: in press.