

## SAES-422 Annual Report

### Participants (\*presenter, \*\* graduate student):

- \* Esther McGinnis (esther.mcginis@ndsu.edu) - North Dakota State University, Fargo, ND
- \* Heidi Kratsch (kratschh@unce.unr.edu) – University of Nevada, Reno, NV
- \* James E. Klett (jim.klett@colostate.edu) – Colorado State University, Fort Collins, CO
- \*, \*\* Ji-Jhong Chen (jijhong1227@aggiemail.usu.edu) – Utah State University, Logan, UT
- \* Karen Panter (kpanter@uwyo.edu) – University of Wyoming, Laramie, WY
- \* Orville Baldos (obaldos@hawaii.edu) – University of Hawaii, Manoa, HI
- \* Stephen Love (slope@uidaho.edu) – University of Idaho, Aberdeen, ID

\*\* Alejandra Feliciano (alejandra.feliciano@wsu.edu) – Washington State University, WA  
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Youping Sun (youping.sun@usu.edu) – Utah State University, Logan, UT

### Brief Summary of Business Minutes:

September 18, 2020 @12:00-4:00 MST – Zoom

--- Tracy Dougher (Administrative Advisor) briefly introduced the history, mission, and project objectives of WERA-1013 (Intermountain Regional Evaluation and Introduction of Native Plants).

*“WERA-1013 is an officially recognized Western Education/Extension and Research Activity designed to enhance the introduction and evaluation of native plants and to provide education concerning their use and propagation. The people involved make up a working group of western US university and nursery professionals who wish to advance the use of native plants in landscaping and gardening.”*

*“Objectives: 1) Establish a regional system for the development, evaluation, and introduction of new native plant materials; 2) Coordinate regional efforts to provide education to both public and industry professionals on native plant use, propagation, and production.”*

--- All participants gave brief introductions.

--- Approved 2019 annual business minutes unanimously.

--- Discussion about strategies to reach out to new members:

- Mengmeng Gu: email to colleagues working on native plants through ASHS platform.
- Genhua Niu: also target those who work on adapted plants.
- Heidi Kratsch: personally invite colleagues working on native plants.

--- Updates on collaborative research, education and grant activities:

- Orville Baldos and Kristina Hufford took the lead in discussion on educational outreach and promotion: native plant promotion, landscape use and proper maintenance, e.g. horticultural application of native lagoon plants, poisonous native plants, low-toxicity native plants.
- Mengmeng Gu led the discussion on selection and breeding native plants (e.g. pollinator health, water-wise, fire-wise, plants for drought-prone area) as well as potential grant applications to USDA Multi-State Specialty Crops and/or Specialty Crop Research Initiative.
- Further discussion will be conducted online to make collaborative efforts on native plants and prepare proposals whenever interstate grant opportunities are open.

--- WERA-1013 Website (<https://wyoextension.org/westernnativeplants>):

- Marketing Team at the College of Agriculture and Applied Sciences, Utah State University (USU) declined the request to host the website at the Center for Water-Efficient Landscaping (CWEL).
- A request was submitted to USU IT team, and Youping will follow up with that.

--- Youping led the discussion on 2021 annual meeting:

- A survey is needed to decide when is the best time for the next annual meeting. Three options are: June-July meeting, Joint with American Society for Horticultural Science (ASHS) Annual Conference (August), and October meeting. In addition, hybrid, virtual, or in-person meeting should be included in the survey.
- James Klett is willing to help if next meeting is held at Colorado State University and coordinate the tour (e.g. Denver Botanical Garden, local nursery).

--- Nomination and election of incoming Chair-elect and Secretary:

- Chair: Bill Graves, Iowa State University.
- Chair-elect and Secretary: Orville Baldos, University of Hawaii at Manoa (nominated by Stephen Love, seconded by Youping Sun, approved unanimously from all participants).

--- SAES-422 Annual Report is due on November 18, 2020. All station reports must be submitted to youping ([youping.sun@usu.edu](mailto:youping.sun@usu.edu)) by October 18, 2020. Youping Sun and Bill Graves will compile and submit. Tracy Dougher emailed a SAES-422 template to participants.

--- Regional publication collaboration: Heidi Kratsch suggested again to publish the presentations as Conference Proceedings. Stephen Love is willing to help. A survey is needed to see how many members are interested in the proceedings before further action.

--- Seven research reports and project reviews were given.

--- Meeting adjourned @ 3: 57 pm MST.

## Accomplishments

--- Members of WERA-1013 worked and continue to work towards moving the WERA-1013 Intermountain Native Plants web site from the University of Wyoming to Utah State University. Currently, Ann Tanaka, webmaster at the University of Wyoming, continues to maintain the site, add and update material as needed. For example, two entries (*Arctostaphylos patula* and *Arctostaphylos uva-ursi*) at Oregon State University were added to the WERA-1013 Intermountain Native Plants web site. The site can be found at <http://www.wyoextension.org/westernnativeplants/index.php>.

--- Members of WERA-1013 from participant universities continued to develop, evaluate, and introduce new native plant materials through an established regional system and to release those newly developed plant materials to their industry partners. For example, Colorado State University continued to evaluate two *Cerocarpus* introductions received in 2016-17 from Utah State University. Six new native plant products were released for commercial production by the University of Idaho and their Native Roots, LLC marketing partner. Four new releases produced at Utah State University are under preparation for Cache Valley Nursery, Hyrum, UT, to propagate, grow, sell, and distribute them in the United States and Canada.

--- Members of WERA-1013 from participant universities continued to coordinate regional efforts to develop educational materials and provide education to both public and industry professionals on native plant use, propagation, and production. For example, a promotional brochure introducing the 2020 Plant Select® plants was produced for growers in the Rocky Mountain and Intermountain Region. The WERA-1013 web site continued to provide information for enhanced production of various native plants in the intermountain west. Utah State University has delivered presentations and published conference abstracts and peer-reviewed papers on Native Plants Journal or HortScience, jointly with the University of Idaho or the University of Nevada.

In addition, Members of WERA-1013 continued to enhance the introduction and evaluation of native plants. The details are listed as below. Joint efforts were also made to coordinate the regional evaluations of newly selected native plants and to seek additional funding to support the continued success in native plants' research and education programs.

----- At Colorado State University, plant Select® program introduced four plants (*Dracocephalum ruyschiana* (indigo blue dragonhead), *Artemisia abrotanum* 'Leprechaun' (leprechaun southernwood), and two forms of *Stachys lavandulifolia* (silver form and green form)), and promoted additional three plants (*Amorpha nana* (dwarf lead plant), *Clematis hexapetala* (mongolian snowflakes), and *Thermopsis lupinoides* (golden candles)). Several new plant explorations have been conducted in Argentina. Seeds collected on these trips have been germinated and will be evaluated around the State of Colorado for Plant Select® program. Greenhouse experiments continued to evaluate two Plant Select® taxa (*Pterocephalus depressus*, and *Scutellaria* x 'Pat Hayward') in two growing media and three fertilizers at two rates as well as plant growth regulators. In addition, propagation studies continued looking at various Plant Select® taxa with various hormone levels and bottom heat temperatures. Photoperiod studies were initiated to determine photoperiod response for *Zauschneria garrettii* 'Orange Carpet' and

*Scutellaria scordifolia* ‘Pat Haywood’. Seven woody plants were planted at two of our research sites throughout Colorado including *Prunus besseyi* ‘Blonde Bessey’, *Caragana maximowicziana*, *Thuja plicata*, *Physocarpus monogynus* ‘Grey Rock’, *Prunus* x ‘Sun Valley’ and *Euonymus fortunei*; ‘Loveland’.

----- At Oregon State University (OSU), native perennial plants are included at the OSU Demonstration Garden in Redmond, OR and at the Hollinshead Water-wise Garden in Bend, OR. Native annuals including *Cuphea* ‘FloriGlory Diana’, *Nasturtium* ‘Baby Rose’, *Tagetes* ‘Super Hero Spry’, *Tagetes* ‘Big Duck Gold’, ‘*Zinnia* ‘Holi Scarlet’, *Zinnia* ‘Profusion Red’, *Zinnia* ‘Queeny Lime’, and native perennial *Rudbeckia* x American Gold Rush were grown in the All-America Display Garden, OSU Demonstration Garden, Redmond, OR in 2020.

----- At the University of Hawaii at Manoa, to meet the demand for native Hawaiian plants, a native ornamental research program was established. The objectives of the program are to collect, select and evaluate non-endangered and underutilized species for use as a landscape plant, potted plant, or an indoor plant. Six accessions of *Jacquemontia sandwicensis* (Pā‘ūohi‘iaka) were collected from the islands of Hawaii, Maui and Oahu (Ahihi-Kinau, Lyon Arboretum, Shidler College, McGregor Point, Puhala Bay and Southpoint). These accessions were propagated and characterized. Qualitative and quantitative characteristics of each accession were recorded and then analyzed using the Principal Components Analysis. Results identified Puhala Bay, Lyon Arboretum and South Point as potential accessions for hanging baskets. These accessions responded well to pruning and had shorter internodes as well as high number of lateral branches. Two accessions (Puhala Bay and Lyon Arboretum) have been distributed to interested growers and landscapers and is slate for release soon. *Peperomia mauiensis* (‘Ala ‘ala wai nui) is undergoing indoor light trials. As of September 2020 (4 months after installation), *P. mauiensis* also appears to tolerate low light levels. Distribution and market testing of this species is ongoing.

----- At the University of Idaho, nineteen species accessions were collected as seeds or stem cuttings from eastern Utah, southeastern Idaho, and the Pioneer Mountains of central Idaho during traveling on personal business. Cuttings were propagated at the Aberdeen R & E Center. Evaluation and selection of native plant accessions continued in a 3-acre field on the Aberdeen R & E Center. Seeds harvested from increase blocks were distributed to the University of Idaho’s Native Roots, LLC industry partner. Began to transplant accessions from the increase field back into the evaluation field to simplify plot maintenance procedures during the summer of 2020 and will be completed in the spring of 2021. In the spring of 2020, 13 native plant accessions expressing superior market potential were legally transferred to Native Roots, LLC for establishment within their commercial-scale seed increase field. These plant accessions include *Astragalus bisulcatus* (two-grooved milkvetch), *Penstemon ambiguus* (phlox-flower penstemon), *Oenothera organensis* (organ Mountain evening primrose), *Potentilla hippiana* (wooly cinquefoil), *Asclepias latifolia* (broadleaf milkweed), *Lepidium montanum* (mountain pepperweed), *Phlox austromontana* var. *jonesii* (zion phlox), *Phlox kelseyi* (Kelsey’s phlox), *Antennaria corybosa* (flattop pussytoes), *Viola adunca* (hooked spur violet), *Fragaria virginiana* (virginia strawberry), *Philadelphus microphyllus* (littleleaf mockorange), and *Acer glabrum* (Rocky Mountain maple). Six new native plant products (*Penstemon rupicola* x *newberryi* (mountain pride penstemon), *Aquilegia barnebyi* (Oil shale columbine), *Penstemon barbatus*

(Scarlet bugler), *Stachys coccinea* (Texas betony), *Festuca arizonica* (Arizona fescue), and *Heuchera pulchella* (Sandia Mountain coral bells)) were released for commercial production by the University of Idaho and their Native Roots, LLC marketing partner in the spring of 2020.

----- At the University of Nevada, 121 arborists in the Great Basin region of the Intermountain West were surveyed to determine their opinions about the best trees for drought tolerance and adaptability in USDA cold hardiness range 4-7. Survey asked: list top 10 trees for drought tolerance. Rank factors used when making tree selection decisions. Data showed that a large number of native trees made the list. Being native to the region was ranked 7 out of 13 environmental decision-making factors overall, with the highest rankings from arborists in eastern Washington, eastern California, and Colorado. The top native trees listed included: common hackberry, ponderosa pine, Rocky Mountain juniper, pinyon pine, blue spruce, limber pine, Douglas-fir, white fir, bristlecone pine, gambel oak, and bigtooth maple.

----- At the University of Wyoming, initially planned as a class project for Plant Propagation during spring semester of 2020, this became an independent summer experiment instead after classes all went online due to the COVID virus. Using a mix of wildflowers in both seed and embedded seed mat form, a raised bed was sown with both in June 2020. A 4 x 6-foot rectangular raised bed was used. The raised bed was filled with a topsoil/compost mix (70/30 by volume). A “Bee Feed Mix” was sown in seed form and impregnated-paper form on June 16, in eight 2 x 2-foot square plots, four plots for seeds and four plots for paper mat. Data were collected on date of emergence for each of the eight plots along with identification of any plants flowering at the end of the growing season. Twelve of the species in the mixes are native to the U.S., such as *Eschscholzia californica* (California poppy), red-flowered *Papaver rhoeas* (corn poppy), and white-flowered *Lobularia maritima* (tall white sweet alyssum).

----- At Utah State University, eight ornamental grasses were evaluated for salinity tolerance in a greenhouse study. Two species native to the western United States were included: *Sporobolus heterolepis* (prairie dropseed) and *Festuca glauca* ‘Elijah Blue’ (blue fescue). *Penstemon barbatus* (golden-beard penstemon) and *Penstemon strictus* (Rocky Mountain beardtongue) were evaluated for salinity tolerance using a near-continuous gradient dosing (NCGD) system. Cutting propagation were conducted for *Cercocarpus montanus* (alder-leaf mountain mahogany) and *Ceanothus velutinus* (snowbrush ceanothus), two species native to the western United States.

----- At Washington State University, a project uses ecological theory, specifically a combination of coexistence theory, community assembly filters, and CSR functional classification, to design a wildflower seed mix with the intent of promoting long-term diversity. Site functional vectors were estimated, and plants were selected based on both their fundamental niche suitability and their functional vector compatibility to promote niche stabilization while maximizing coexistence. Three seed mixes and one control mix were sown onto twenty-four trial plots representative of urban planting conditions during Spring of 2019. Both taxonomic and functional abundance data are being recorded over a period of two seasons, with the second season ending in Spring of 2021.

## **Activities**

--- In 2020, Plant Select® celebrated its 23<sup>rd</sup> anniversary and held a virtual annual meeting in August 2020 due to the pandemic with many of our new members and cooperators, demonstration garden personnel and industry participating virtually. Theme was more on Plant Select® plants that could be used in all the different regions of Colorado and Intermountain West.

--- Presentations were also given at 2020 ProGreen Conference in February 2020 and 2019 Rocky Mountain Turf Conference in Denver, Colorado and at Colorado Garden and HomeShow about Plant Select®. Many other conferences were cancelled due to the Pandemic or talks given virtually.

--- Research activities involve native plant domestication using methods developed specifically for this purpose: collection from wild populations, field establishment, evaluation, selection, and improvement using a modified mass selection procedure.

--- Extension activities include demonstration of native plant efficacy in public gardens and instruction for professionals and the general public on topics related to native plant landscaping and water-conserving landscape design.

--- A webinar was presented to 617 arborists across the U.S. to share our results.

--- Evaluated *Sporobolus heterolepis* (prairie dropseed), *Festuca glauca* 'Elijah Blue' (blue fescue), *Penstemon barbatus* (golden-beard penstemon), and *Penstemon strictus* (beardtongue) for salinity tolerance.

--- Evaluated the timing for cutting collection, different rooting hormones, types of cuttings (terminal and stem cuttings) for cutting propagation of *Cercocarpus montanus* (alder-leaf mountain mahogany) and *Ceanothus velutinus* (snowbrush ceanothus).

### **Short-term Outcomes**

--- In 2020, more than 2,071,182 Plant Select® plants were sold and grown from grower members of Plant Select® with many growers in the Rocky Mountain and Intermountain Region. This shows a continued growth over an eight-year period from 1.7 million in 2012. These plants were purchased by many garden centers, landscape contractors throughout Colorado and used by many landscape contractors and landscape management personnel throughout the WERA-1013 Region. Many homeowners and centers have planted these plants and are more satisfied gardeners. There are also Plant Select® demonstration gardens throughout Colorado and in many parts of Idaho, Montana, Utah, and Wyoming which report back to Plant Select® on plant performance of these plants.

--- Public education continued some in fall of 2019 and to some extent in 2020. The pandemic curtailed some programs but our annual meeting and Plant Forward programs went virtual with good participation. All these programs included education about more adaptable native plants from Plant Select® to the industry and gardening public.

--- Sixteen selected/domesticated accessions were delivered to Native Roots, LLC in spring of 2020, bringing the total number of product transfers to 201. Native Roots, LLC continues to create partnerships with production, wholesale, and retail nurseries in several Rocky Mountain states to expand the market for these products.

--- Educational information delivered through web sites, workshops, and conferences led to a greater awareness of the value of drought-tolerant native plants among citizens of Idaho and the greater western U.S.

--- Education on the value of native plants for pollinator protection and landscape water efficiency was provide to Master Gardeners, Nursery Workers, Landscapers, and Landscape Architects.

--- Seedlings emerged from the seed mix on June 25, June 28 (two plots), and July 2. All four of the paper mats' seedlings emerged on July 2. At the end of the growing season we were able to identify three of the 19 species in the mix: *Eschscholzia californica* (California poppy), *Papaver rhoeas* (corn poppy), and *Lobularia maritima* (tall white sweet alyssum). The plots will overwinter in the raised bed and any additional plants will be identified in the summer of 2021.

--- According to Google Analytics, activity on the native plants web site was 4,301 pageviews, in FY20, down from 5,284 pageviews in FY19. The highest recorded so far was in 2014 with 5,328 pageviews. Unique pageviews for FY20 were 3,157. The page with the most views was the plantlist (784 or 18.2%), with the plant page *Zinnia grandiflora* receiving the most views (141 or 3.3%).

--- The web site continued to provide information for enhanced production of various native plants in the intermountain west, which resulted in reduced losses and costs for commercial growers and increased success in producing these plants, increased knowledge of native plants available and their general care requirements.

--- Research results and publications increased knowledge about whole plant responses to water stresses, the reliability and adaptability of native plants in water-efficient landscapes, and propagation techniques of native plants.

--- This data will be used to track community assembly dynamics over this growth period, and to build statistical models to investigate future niche stabilization projections. These analyses will help gauge the effectiveness of such a novel plant selection method in promoting long-term diversity.

## **Outputs**

--- Besides a continual introduction and recommendation of some native and drought Plant Select® plants which are quite adaptable to Rocky Mountain and Intermountain Region and beyond, a promotional brochure introducing the 2020 Plant Select® plants was produced.

--- Other outputs include our increased web presence, our monthly newsletter with over 5,735 readers along with including YouTube videos each month from our cooperators with the newsletter. Our marketing program explains how Plant Select® helps one plant smarter and is a collaborative model.

--- Six new releases were made during 2020, via a partnership with the Native Roots, LLC.

--- Extension programming, including a web presence and personal contributions to workshops and conferences aimed at education on topics related to water-conserving landscape practices.

--- Native plant demonstration gardens are currently being used as an onsite adjunct to education regarding native plant benefits.

--- A new native plant garden in Washoe County was installed this fall.

--- A short University of Wyoming Extension bulletin will be produced in the summer of 2021 on the Bee Feed seeds and paper mat project.

--- Peer-reviewed papers, conference abstracts (presentations), extension publications, and trade news have been published on HortScience, HortTechnology, Native Plants Journal, Bulletin of the American Penstemon Society, and trade magazine.

--- Four new releases are under preparation for Cache Valley Nursery (Hyrum, UT) to propagate, grow, sell, and distribute them in the United States and Canada.





## **Milestones**

- In 2020 due to the pandemic we were able to hold a successful annual meeting with 174 in attendance virtually mainly discussing Plant Select® plants for all the regions in the Intermountain West. We were also able to hold a second Plant It Forward about Plant Select® plants for Landscape Architects and Designers virtually at no cost to attendees due to several sponsors for the event. Over 174 were in attendance.
- Delivery of potentially valuable and publicly acceptable plant products, a step enhanced by product transfer and releases in 2020.
- Effective delivery of native plant utilization information through annual field days, demonstration gardens, instructional publications, workshops and conferences, and a web presence (including detailed native plant descriptions posted on the WERA-1013 website).
- Identifying additional species that emerge from the wildflower mixes in the summer of 2021.
- We will also move the website to Utah State University.
- A USU Extension Grant and Utah Department of Agriculture and Food (UDAF) Specialty Crop Block Grant have been awarded to develop single-needle and double-needle pinyon pine for nut production on marginal lands.
- A J. Frank Schmidt Family Charitable Foundation Grant has been awarded to develop a unique *Acer grandidentatum* (bigtooth maple) for landscape use.

## **Impact Statements**

- In 2020, we continued a lot of planning and actual events to introduce Plant Select® plants to more city planners for median plantings and homeowner associations. These events showed how this style of gardening can save water and still create beautiful and functional gardens. The greatest impact is the water conservation by planting these native and Plant Select® plants.
- Sustainable landscaping utilizing Plant Select® plants can have on creating beautiful but sustainable landscapes.
- The ultimate impact of the Idaho native plant domestication project will be water conservation through public acceptance of adapted, drought-tolerant plants and water-conserving landscape practices.
- Increasing stakeholders' knowledge of which native plant species can thrive, and attract and/or support a diversity of pollinators and other beneficial insects will contribute to conservation of pollinator habitat, facilitate pollination of dependent crops, and add to the tools available for effective management of plant pests, while minimizing overuse of chemical pesticides.
- User of wildflower seed mixes and seed-impregnated paper mats will be able to use the results of this small study to determine their interest in using such mixes. The website will be a source of useful information for many years to come.
- 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.
- Increasing the knowledge about whole plant responses to water stress and improving vegetative propagation of native plants will allow us to promote the use of stress tolerant plants for water conservation and native plants for water-efficient landscaping.
- Gardening with Native Plants of the Pacific Northwest will serve as an educational tool for home gardeners, but for public garden curators, restoration ecologists, nursery owners, and landscape designers, architects, and managers as well.

## Publications

1. Brown, Shana G. and James E. Klett 2020. Impacts of Growth Substrate and Container Size on Cutting Production from 'Snow Angel' Coral Bells Stock Plants. Hort Technology 30 (2) 185-192.
2. Chen, J., H. Kratsch, J. Norton, and Y. Sun. 2020. Nodulation of *Shepherdia ×utahensis* 'Torrey' topdressed with controlled-release fertilizer. HortScience 55(9): S187-188.
3. Chen, J., S. Zhen, and Y. Sun. 2020. Using NDVI sensors to determine the chlorophyll content of *Shepherdia ×utahensis* 'Torrey'. HortScience 55(9): S340.
4. Chen, J., H. Kratsch, J. Norton, Y. Sun, and L.A. Rupp. 2020. Nodulation and plant growth of *Shepherdia ×utahensis* 'Torrey' topdressed with controlled-release fertilizer. HortScience 55(11): 1-7.
5. Hammond, Eric, James Klett, and Alison O'Connor 2020. Columnar and Fastigate Trees for Colorado Landscapes. Fact Sheet 7.427 Colorado State University Extension.
6. Hershkowitz, J., H. Xing, A. Paudel, J. Chen, and Y. Sun. 2020. Salinity tolerance of six ornamental grass species. HortScience 55(9): S113-114.
7. Klett, James E. 2020. Top Annuals from CSU Annual Trials. CNGA Looseleaf Oct. 2, 2020
8. Klett, James E. 2020. Multi-Site Plant Evaluation Update CNGA Looseleaf July 29, 2020
9. Klett, James E. 2020. Hellebores for Colorado CNGA Looseleaf June 1, 2020
10. Koski, Ronda and James E. Klett 2020. Green Roof Weed Management April 1, 2020
11. Klett, James E. 2020. Industry Picks from 2019 Annual Trial Garden Feb. 1, 2020
12. Klett, James E. 2020. 2019-20 Cool Season Trials Yields Top Picks for off season color. Colorado Green Sept/Oct. 2020 36(5) 42-43.
13. Klett, James E. 2020. Landscape pros: Why aren't you using these recommended trees? Colorado Green July/August 2020 36(4) 42-43.
14. Klett, James E. 2020. More deciduous trees that may work in Colorado. Colorado Green May/June 36(3) 46-47.
15. Klett, James E. 2020. 2019 Top Performing perennials. Colorado Green Mar/April 36 (2) 42-43
16. Klett, James E. and Emma Smith 2020. More tough perennials for Colorado Gardens. Colorado Green. Jan/Feb 36 (1) 44-45
17. Klett, James E. and Sean Markovic 2019. Industry pros rate top picks at CSU Annual; Flower Trials. Colorado Green Nov/Dec. 35 (6) 42-43.
18. Klett, James E. and Laauryn Schriener 2019. Tough and proven perennials for Colorado. Colorado Green Sept/Oct. 35 (5) 50-51.
19. Love, SL, Akins, CJ. Fourth summary of the native seed germination studies of Norman C. Deno: species with names beginning with letters C through E. 2020. Native Plants Journal 21(1):83-111.
20. Love, SL, Akins, CJ. Fifth summary of the native seed germination studies of Norman C. Deno: species with names beginning with letters R through Z. 2020. Native Plants Journal 21(2):150-187.
21. Love SL and Stevens M. 2020. *Penstemon jonesii*. Bulletin of the American Penstemon Society 79:2-8.
22. Markovic, Sean J., Shana G. Brown and James E. Klett 2020. Effects of Growth Substrate and Container Size on Cutting Production from Mojave Sage Stock Plants. Hort Technology 30 (4) 528-531.

23. Markovic, Sean J. and James E. Klett 2020. Influencing stock production of Mojave sage and cape daisy with the application of plant growth regulators. Hort Technology (Accepted for publication).
24. Native Plants for the Intermountain West, <http://www.wyoextension.org/westernnativeplants/>. Accessed 12 October 2020.
25. Paudel, A., J. Chen, and Y. Sun, 2020. Determining the salt tolerance of two penstemons using a near-continuous gradient dosing system. HortScience 55(9): S339-340.
26. Paudel, A. and Y. Sun. 2020. Asexual propagation of *ceanothus velutinus*. HortScience 55(9): S34.
27. Paudel, A., Y. Sun, L.A. Rupp, J. Carman, and S.L. Love. 2020. Overcoming seed dormancy in *Ceanothus velutinus* and *Cercocarpus montanus*. HortScience 55(9): S132-133.
28. Paudel, A., Y. Sun, L.A. Rupp, J. Carman, and S. Love. 2020. Overcoming seed dormancy in two rocky mountain native shrubs: *Ceanothus velutinus* and *Cercocarpus montanus*. Native Plants Journal 21(3):359-364.
29. Paudel, A., Y. Sun, L.A. Rupp, and R. Anderson. 2020. *Cercocarpus montanus* 'Coy': a new Sego Supreme™ plant. HortScience 55(11):1871-1875. <https://doi.org/10.21273/HORTSCI15343-20>
30. Stevens M, Love SL, McCammon T. 2020. The Heart of Penstemon Country: A natural history of penstemons in the Utah region. Farcountry Press, Helena, MT.