

# 2013 National Native Seed Conference

*Native Plant Materials Development, Production & Use in Habitat Restoration*



## Program & Schedule of Activities

Santa Fe, New Mexico  
April 8 - 11, 2013



# 2013 National Native Seed Conference Schedule At-a-Glance

ALL MEETINGS ARE HELD AT THE ELDORADO HOTEL, SANTA FE

**MONDAY 4/8**

Field trip: Fire management and fire rehabilitation in the Jemez Mountains

Field trip: Plant materials production and riparian restoration

**TUESDAY 4/9**

ANASAZI  
SOUTH

ZIA

ANASAZI  
NORTH

7-8am registration & breakfast

8-10am Opening Plenary

break

10am-12pm Programs genetics workshop seed production workshop

lunch

1-3pm Partnerships genetics workshop seed cleaning equipment workshop

break

3-5pm climate change arid lands international

5-7pm posters & exhibits

**WEDNESDAY 4/10**

ANASAZI  
SOUTH

ZIA

ANASAZI  
NORTH

7-8am registration & breakfast

8-10am pure live seed seed production planning & species selection

break

10am-12pm genetic identity and purity plant materials collection

lunch

1-3pm smart seed procurement establishment techniques seed biology

break

3-5pm procurement Great Basin Panel establishment techniques seed cleaning equipment workshop

**THURSDAY 4/11**

ANASAZI  
SOUTH

ZIA

ANASAZI  
NORTH

7-8am registration & breakfast

8-10am native winners Oil & Gas Reclamation seed cleaning equipment workshop

break

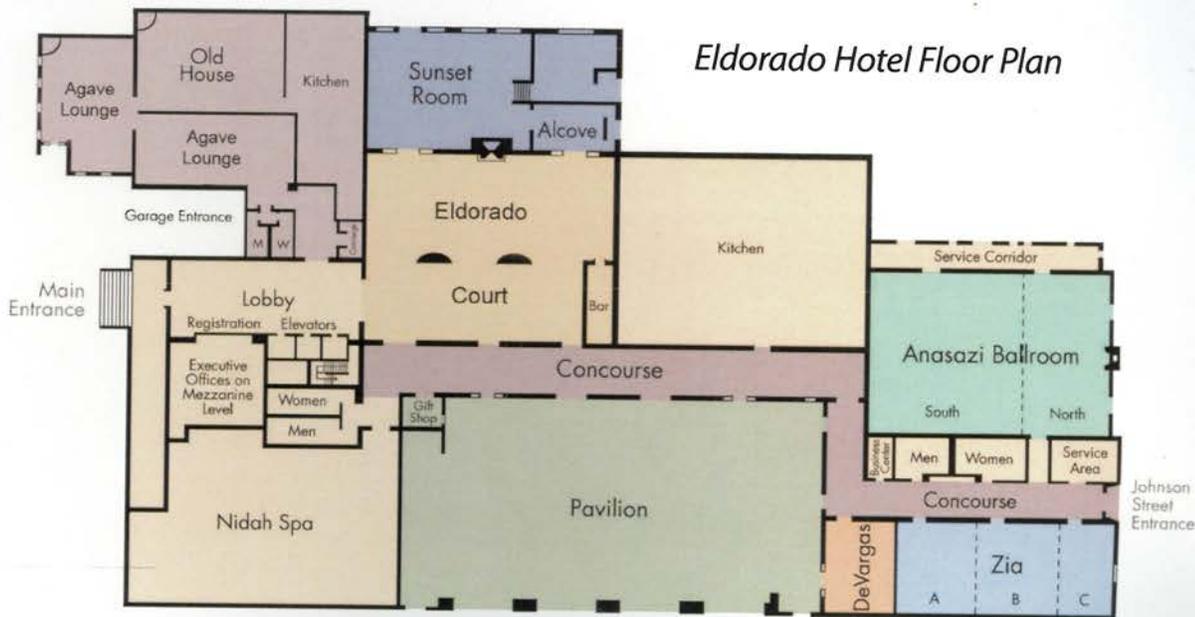
10am-12pm seed zones establishment techniques Seeds of Success Training

lunch

1-3pm seed zones volunteers & partnerships

break

3-5pm Closing Plenary & Reception



## PHOTOS



Dr. Shaun Bushman presentation



Dr. Tom Jones presentation

## ABSTRACTS

### Improving Seedling Germination and Emergence of Legumes Native to the Semi-Arid Western USA

B. Shaun Bushman<sup>1\*</sup>, Douglas A. Johnson<sup>1</sup>, Matt E. Horning<sup>2</sup>, Clinton B. Shock<sup>3</sup>, Kevin B. Connors<sup>1</sup>, Thomas A. Jones<sup>1</sup>

<sup>1</sup>USDA Agricultural Research Service, Forage and Range Research Lab, Logan, Utah

<sup>2</sup>USDA Forest Service, Pacific Northwest Research Station, Bend, Oregon

<sup>3</sup>Oregon State University, Malheur Experiment Station, Ontario, Oregon

\*Corresponding author email: shaun.bushman@ars.usda.gov

Basalt milkvetch (*Astragalus filipes*), western prairie clover (*Dalea ornata*), and Searl's prairie clover (*Dalea searlsiae*) are non-toxic to wildlife, have high forage quality, are adapted to climates with low rainfall (200-350mm), and have potential for agronomic seed production. However, these three legume species also exhibit challenging traits for seed production such as seed dormancy and indeterminate flowering. To improve their establishment on seed production farms and rangeland sites, we evaluated recent germplasm releases of these species (or soon-to-be released materials of Searl's prairie clover) for germination and emergence in greenhouse and field settings. Basalt milkvetch had maximum germination and emergence in dormant fall seedings, with slight improvements obtained with scarification. The two prairie clover species' germination responded to a greater extent to scarification, and maximum emergence occurred from scarified seed when planted in early spring. Soil type played a role in germination and emergence success and should be considered along with climate and moisture.

### Using DNA markers to distinguish among species and populations in seed lots

B. Shaun Bushman, Steven R. Larson, Ivan E. Mott

<sup>1</sup>USDA Agricultural Research Service, Forage and Range Research Lab, Logan, Utah

\*Corresponding author email: shaun.bushman@ars.usda.gov

Sometimes visual measurements are insufficient to distinguish seed contaminants in a seed lot, or native vs. introduced species of taxa that have overlapping morphological characters. Often visual measurements are insufficient to distinguish among different populations of a species. In each of these instances molecular markers can be used with great efficacy to distinguish between targeted plants. Molecular fingerprinting can target and utilize markers from chloroplast regions, expressed nuclear genes, or random genomic fragments. When developing markers for identity uses in a species, obtaining a set of unique markers is affected by the breeding system of plants and the use of appropriate checks or known standards. Chloroplast DNA markers have been used to differentiate native from exotic managrasses (*Glyceria* spp.) and proved that exotic and invasive species were inadvertently being used for revegetation of vernal pools. Markers from expressed genes have been used in numerous species to differentiate between cultivars and populations for identification purposes. We will show how molecular markers have been crucial in some plant identification situations, how they can be successfully used, and what their pragmatic limitations are.

## Evaluation of regionally-collected sideoats grama and big galleta grass for wildfire revegetation in the Eastern Upper Mojave Desert

Jack E. Staub, Matthew D. Robbins, and Blair L. Waldron

USDA ARS Forage and Range Research Laboratory, Logan, UT

Increased wildfires in the western U.S. are due to the cyclic accumulation and burning of invasive annual plants such as cheatgrass (*Bromus tectorum*) and red brome (*B. rubens*), which reduces native rangeland species and results in severe economic losses and land degradation. Fire was not prevalent in the Upper Mojave Desert prior to the invasion of red brome, but recent fires have had substantial environmental, economic, and social impacts. Rangeland plants need to be developed that compete with the invasive weeds to break the fire cycles and establish sustainable and diverse ecosystems. Two factors affecting persistence after wildfires are seed predation and regrowth after burns. A program was established to develop big galleta (*Pleuraphis rigida*) and sideoats grama (*Bouteloua curtipendula*) that will establish, persist, compete with weeds, and revegetate after fires. These grass species possess tolerance to grazing and drought, creeping ability, large plant stature, and regrowth after fire challenge (data to be presented). No cultivars of big galleta have been released and the current cultivars of sideoats grama were developed for the Great Plains. Thus, these species are being collected from Colorado, Utah, Arizona and Nevada. The Beaver Dam Wash and The Red Cliffs Reserve in Washington County, UT have been selected as sites for evaluation of collected plant material. These evaluations will result in the identification of plant materials for subsequent use in plant improvement to increase sustainability, reduce the impact of wildfires, and contribute to the reclamation of burned lands in the Upper Mojave Desert.