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NRCS Natural Resources Conservation Service Plant Materials Program

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High Altitude Activities

Upper Colorado Environmental Plant Center

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About Us

Upper Colorado Environmental Plant Center (UCEPC) is a non-profit facility owned and operated by two conservation districts in northwest Colorado. The 269-acre center is located at an elevation of 6500 feet with 16 inches of annual precipitation and a 90-day frost free growing season. Our service area includes mountains, deserts, and plateaus of the Rocky Mountain West.

Our Goal

Upper Colorado Environmental Plant Center works to ensure an improved quality of life for people and those affected by human activities. We provide quality plant materials and associated technology to those engaged in natural resource management. Each of us understands the importance of plants in our lives. From a golf course fairway to a forested mountain; a houseplant to an alpine meadow. Plants and their successful management, affect our quality of life. It is our mission to conserve or improve environmental conditions through the wise use of plants.

Natives vs. Invaders

Riparian ecosystems are ideal ecosystems for invasive plant specie infestations. There is an ever constant demand to use native plants for revegetating infested ecosystems. Upper Colorado Environmental Plant Center (UCEPC), United States Department of Agriculture (USDA), The Tamarisk Coalition and the Young Ranch located in Mack, Colorado, are working cooperatively to rehabilitate a known riparian ecosystem where tamarisk *Tamarix* spp. has rigorously invaded and taken over the area.

Terri Blanke with four- year- old silver buffaloberry plants, which were planted along the stream bank of Salt Creek.

In February 2008, the UCEPC staff collected 100 willow whips *Salix* spp. from Horsethief Canyon near Grand Junction, Colorado. Willow whips were placed in cold storage for the winter and were kept in cold storage until spring planting. Most of the willow whips had begun developing roots and sprouts while in cold storage. Nine silver buffaloberry *Shepherdia argentea* were grown over a period of several years in the UCEPC greenhouse.

Planting of the willow whips and silver buffaloberries began May 29, 2008, at Salt Creek. Sites for willows were chosen according to erosion patterns along the creek bank. Approximately ten willows were planted in each site. Willows were planted as deeply as possible, directly into the sand bank or in the creek itself. Of the 100 original willow whips, 50 were cut in half to make 50 additional whips to be inserted into the sand banks. A total of 150 willow whips were planted at the site. August 13, 2008, five potted willows were planted at the site.

Shepherdia argentea planted in a harsh salt soil near the old Salt Creek cutbank.

Two different sites were chosen for the silver buffaloberries. The first site was located 100 yards from Salt Creek in an old washed out area. The area was sprayed with glyphosate, Round-up, for weed control. Holes for the plants were hand dug and filled with water from the creek. Silver buffaloberries varied in age and size.

We are hoping that further evaluations and data collection from the Mack site will give us a better understanding of how well native riparian plants perform in a once infested tamarisk site.

Revegetation of Well Pads in Colorado's Piceance Basin

Rodney Dunham (tractor) and Terri Blanke using the cone seeder to plant the experimental planting.

White River Field Office of the Bureau of Land Management (BLM), Riata Energy Company, Colorado State Conservation Board, Natural Resource Conservation Service (NRCS), White River and Douglas Creek Conservation Districts, and Upper Colorado Environmental Plant Center (UCEPC), have been working cooperatively to establish a field planting on an abandoned natural gas well pad owned currently by Williams Energy. On September 26, 29, and 30, 2008, the planting was installed by UCEPC personnel. Prior to installation a draft plant species list was circulated to the local BLM office, the Meeker NRCS office, and EnCana Energy Company field specialists. A final materials list was created and the materials were assembled by UCEPC personnel.

Materials included in the planting were; basin wildrye *Leymus cinereus*, bluebunch wheatgrass *Pseudoroegneria spicata*, blue wildrye *Elymus glaucus*, bottlebrush squirreltail *Elymus elymoides*, Indian ricegrass *Achnatherum hymenoides*, mountain brome *Bromus marginatus*, muttongrass *Poa fendleriana*, Columbia needlegrass *Achnatherum nelsonii*, green needlegrass *Nassella viridula* , western wheatgrass *Pascopyrum smithii*, prairie Junegrass *Koeleria macrantha*, Salina wildrye *Leymus salinus*, Sandberg's bluegrass *Poa secunda*, slender wheatgrass *Elymus trachycaulus,* and thickspike wheatgrass *Elymus lanceolatus*. Several materials used in the planting included materials that were collected in the Piceance Basin or the surrounding area. There were 52 entries used in the planting. Each plot was replicated four times, five-feet wide by twenty-feet long with four rows per plot. The planting will be monitored annually through 2013.

Promotion of superior performers, new or old, established cultivars or newly released plant materials, will be documented to help increase industry awareness and enhance revegetation and conservation practices. The experimental materials and locally collected plant materials that show promise will be developed further by UCEPC for commercial production and eventual release.

Overview of the finished Piceance Basin planting on Ryan's Ridge, Colorado.

Medicine Bow-Routt National Forest and Upper Colorado Environmental Plant Center Team Up to Enhance the Forest

There is a constant demand for plants that are ideal for revegetation work on critical land sites, mining lands, and forested lands. Upper Colorado Environmental Plant Center (UCEPC) and the Medicine Bow-Routt National Forest are working cooperatively to evaluate if *Elymus glaucus*, blue wildrye, is an ideal grass plant to be used for revegetation in a variety of disturbed land sites.

Forty-two collections of blue wildrye were received from Medicine Bow-Routt National Forest. The collections were cleaned by UCEPC staff in Meeker. It was decided that twenty-seven collections from the forty-two original collections were to be used in the initial evaluation study as well as two plant material collections from the UCEPC. For comparison Blue Wildrye releases Arlington and Elkton from Corvallis, Oregon, and two potential Blue Wildrye releases from Pullman, Washington, were used in the evaluation. A total of thirty-three collections were used in the initial evaluation.

Planting was conducted on August 1 and 2, of 2007. The plots were designed as 16-foot-long rows, three rows per plot, three replications for each entry, 30 seeds per linear foot, 12 foot and six foot spacing's between plantings for alleyways.

In 2008, the three replications of blue wildrye were evaluated twice, during the months of June and July. During the evaluations certain parameters were evaluated and photos were taken. Parameters included plant vigor, height, width, percent stand cover, and seed head maturity. After the second evaluation the plots were swathed to reduce seed contamination within the plots. Evaluations will continue in the 2009 growing season.

Plant Materials to the Rescue

Terri Blanke, Heather Plumb, Rodney Dunham and Pat Davey collecting materials

Conserving what remains of the Greater Sage Grouse populations has and still remains a major challenge for the 11 western states. Sage Grouse inhabit a complex sagebrush ecosystem, which is home to a multitude of plant species. In an effort to aid in this conservation act, Upper Colorado Environmental Plant Center began, in the growing season of 2008, collecting known preferred Sage Grouse plant materials. Plants collected were based off of observed Sage Grouse diet habits and shelter needs. Materials that were concentrated on by the collection team were; blue flax *Linum perenne*, false dandelion *Agoseris glauca*, sego lily *Calochortus nuttallii*, sulfur buckwheat *Eriogonum umbellatum*, wild onion *Allium ascalonicum, bluebunch wheatgrass Pseudoroegneria spicata, Sandberg's bluegrass Poa secunda, and basin wildrye Leymus cinereus*. Efforts are currently being made to establish germination protocols for each of the materials collected so that they can be put into production for future propagation. Sage Grouse materials already in production at UCEPC are; *Penstemon* spp., yarrow *Achillea millefolium, Senecio spp., sulfur buckwheat Eriogonum umbellatum*, Utah sweet-vetch *Hedysarum boreale, bluebunch wheatgrass Pseudoroegneria spicata, Sandberg's bluegrass Poa secunda and western wheatgrass Pascopyrum smithii.* Funding for this two-year project was made possible by a CIG grant (Conservation Innovation Grant) concerning wildlife habitat and grazing land health.

A field tour showing how biological control, spurge beetle, affects leafy spurge *Euphorbia esula*.

A tour of the initial evaluation trial of blue wildrye *Elymus glaucus*, at UCEPC

Plant Materials Training 2008

Upper Colorado Environmental Plant Center (UCEPC) provided a plant materials training to 11 NRCS employees from Colorado and Wyoming. The training was three days and was held at UCEPC in Meeker on June 17 and 18, 2008. The training had an agenda that covered a diversity of topics; purpose and function of the plant materials program, hands-on plant identification, and collection techniques, drill calibration, a riparian restoration tour, seed quality, biological controls, windbreak design, pasture mixes and fertilization application, and a tour of plant materials applications. A handbook with information regarding the topics covered in the agenda, plant materials references, and publications were provided to all attendees.

Head Smut Prevention Trial

During the year 2000, UCEPC released Garnet Germplasm mountain brome as tested class release. Mountain brome, *Bromus marginatus,* is a perennial native grass species widely used for conservation and reclamation planting in Colorado and other western states. Unfortunately, seed producers in Colorado have reported incidence of head smut, *Ustilago bullata,* in Garnet germplasm hindering seed production. This fungal disease can contaminate seed and reduce seed yields by 70 percent. UCEPC has been conducting a trial for the past three years to find a fungicide to alleviate this problem. Average results of the three years of data indicate that application of a fungicide can reduce the incidence of head smut to a minimum as compared to non-treatment with fungicide, even when you start with contaminated seed. A photo, right, of disease-free seed and contaminated seed. For more information on this trial, contact UCEPC.

Mountain Brome Seed: No disease (left) and contaminated seed (right).

Native Shrubs Have Potential for Many Conservation Uses

Upper Colorado Environmental Plant Center has been evaluating native shrubs since it was established in 1975. Recently, a need to plant and establish more native shrub species has emerged. More native shrub species are needed, especially, to restore natural habitats that have been lost or disturbed to keep up with population growth and development. Native shrubs can be used to enhance pollinators' habitat (bees, butterflies, birds, etc.), wildlife habitats (providing food & shelter), as well as to protect soil and water resources.

Cliff fendlerbush *Fendelera rupicola*

With this in mind, the center planted a direct-seeded trial of 16 native shrub species in November of 2006. The study was designed to generate information on the performance of direct seeded shrubs in an agronomic setting. The results of this trial show potential for conservation use from a variety of native shrubs. The information gathered from this type of trial can serve to provide information to shrub growers, entities involved in restoration of native habitats as well as to provide support documentation for the center's shrub releases.
Most of the species in the trial germinated very well and got established.

Common Name	Percent Plant Stand
Antelope Bitterbrush	97
Utah Serviceberry	92
Fringed Sage	90
Squaw Apple	72
Cliff Fendlerbush	55
Golden Currant	43
Silver Sage	42
Silver Buffaloberry	22
Black Chokecherry	12
Basin Big Sagebrush	7
Red Barberry	5
Smith's Buckthorn	2
Apache Plume	0
Littleleaf Mock Orange	0
Rockspirea	0
Wyoming Big Sagebrush	0