

# PLANT MATERIALS TODAY

A newsletter from the USDA-NRCS Montana-Wyoming Plant Materials Program for those Interested in Plants and Conservation



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For more information on Plant Materials or for electronic access to this and other documents, access our web sites, [Montana NRCS](http://www.mt.nrcs.usda.gov) at <http://www.mt.nrcs.usda.gov> or [National Plant Materials Program](http://plant-materials.nrcs.usda.gov/mtpmc/) <http://plant-materials.nrcs.usda.gov/mtpmc/>. Direct inquiries to USDA-NRCS, Plant Materials Center, 98 South River Road, Bridger, MT 59014, phone: 406-662-3579, FAX: 406-662-3428.

## Important Reminders

\*Field Offices – The Montana Plant Materials Committee meeting will be held in Bozeman on December 17-18, 2013.

## Feature Topic

### *The Search for Salt Tolerant Trees and Shrubs*

Establishing trees and shrubs on salt-affected sites is not an easy task. The most salt-tolerant woody plants, with the exception of invasive species, can only tolerate a fraction of the salinity the most salt tolerant grasses can survive. Over the years, many tables and lists of “salt-tolerant trees and shrubs” have been



Saline soils study plot

developed, but few, if any, were based on actual field results. These lists were often based on observational or anecdotal information. Some reports were extrapolated from laboratory studies in sand cultures, whereas others based their findings on established trees, without any information on site history. Other findings were based on plants growing on well drained soil, sometimes in relatively high precipitation zones. Many lists were simply based on other earlier lists. To further complicate the issue, many descriptions of salt tolerance were subjective, without any definition of what is or is not considered salt tolerant.

To address some of these limitations, and to test the plants under “real world” conditions, the BPMC installed a test planting as the Center in 2006. The study included 30 bareroot seedlings each of 18 different woody plant species planted across a salinity gradient. Salinity ranged from <2 decisiemens per meter (dS/m or  $\text{dS m}^{-1}$ ) to over 20 dS/m. The site is typical of many “white spots” across the West, a “seepy” or sub-irrigated site with clay-loam soil. In order to provide a meaningful definition of relative saltiness, we report our findings in terms of the USDA soil salinity classification system described below:

Salinity Class	EC (electrical conductivity) dS m <sup>-1</sup> or mmhos cm <sup>-1</sup>
Non-Saline	<2
Very Slightly Saline	2 to <4
Slightly Saline	4 to <8
Moderately Saline	8 to <16
Strongly Saline	≥16

Some of our findings were quite surprising. Many species described as “moderately salt-tolerant” or even “salt-tolerant” did not perform well. Nearly all of the ponderosa pine died within a year, a species described in some publications as fairly salt tolerant. Similarly, chokecherry, western sandcherry, American plum, Nanking cherry, and Colorado spruce all demonstrated little to no salinity tolerance under our test conditions.

The most salt-tolerant species typically performed satisfactorily to the “Slightly Saline” soil classification (4 to <8 dS m<sup>-1</sup>) and performed well in “Very Slightly Saline” (2 to <4 dS m<sup>-1</sup>)



Trees growing (and dying) on saline study plot

soils. These include silverberry, silver buffaloberry, blueleaf honeysuckle, golden currant, common snowberry, Siberian peashrub, green ash, Siberian elm, and skunkbush sumac. Two of the most salt-tolerant species tested were Russian olive (by far the

most salt tolerant of all tested species) and sea buckthorn (*Hippophae rhamnoides*), both non-natives. Russian olive is categorized as a “noxious weed” in numerous states, sea buckthorn has not yet been tested adequately to determine if it is invasive or not - use caution.

Also of salt-tolerance interest, the BPMC has established forb, grass, and legume salt tolerance studies at the PMC that will hopefully provide useful information on herbaceous species.

**Joe Scianna – BPMC Manager/Horticulturist**

### 🌿 Project Progress 🌿

#### ***New Deer Lodge Valley Conservation District Project Leader Hired for Anaconda Project***

Hi, I'm Joe Lefebvre, the new Project Leader for the DATR (Development of Acid/Heavy Metal Tolerant Releases) project. This project is a cooperative effort between the Deer Lodge



Joe Lefebvre, Project Leader

Valley Conservation District and NRCS. I have spent several days learning about the project goals, past project leader accomplishments, and mapping out a path to accomplish the new project goals. I will continue to work on the continued selection of plant materials that are superior for restoration at the Anaconda Superfund Site.

Most recently I assisted Montana State University graduate student Rosemary Keating on a research project on silverleaf phacelia, one of the plants under consideration for release as a species to use in restoration efforts. Rosemary treated the experimental plants with a variety of growth enhancers, or growth inhibitors in an effort to get the seed-producing stalk to stand



Silverleaf phacelia

taller. A taller standing plant would help in the mechanical harvesting of the phacelia. The results of the study are still not complete, perhaps this winter Rosemary will know if any of the treatments were successful at increasing plant height.

In the upcoming weeks I will continue to harvest the DATR seeds, clean and store the seed, and plan for any plantings that may need to be done this spring. I am excited to have the opportunity to continue with the efforts of previous project leaders to develop plant materials and techniques that could be used at the Anaconda site, as well as potentially other mine sites.

**Joe Lefebvre, Project Leader, DLVCD**

## **Outreach Activities**

### ***BPMC Seeks Outreach Opportunities***

The BPMC has strived for a strong Outreach component to our projects and program, being proactive in our delivery to field staff, organizations, and the general public, and especially, traditionally underserved groups. We are always looking for ways to expand and improve these efforts.

To that end, we realized that the first step in improving delivery is to educate our customers on what we have to offer. The Center provides training and presentations on a variety of subjects; works with the Plant Materials Specialist to install demonstration plantings; increases and tests unique plant materials for new markets; and mentors and trains students, seniors, and special groups.

So if you see or know of an opportunity for Outreach to any traditionally underserved group, please give us a call so we can help.

## **Technician Tip**

### ***Irrigation Socks Reduce Soil Erosion***

Soil erosion is a big consideration at the BPMC, especially under furrow irrigation across significant distances. It takes quite a bit of initial “head” or force to push water down the furrows and across the fields. To help reduce erosion and decrease sedimentation, the Center has used PAM (polyacrylamides) hydrophilic agents for years. Unfortunately, erosion can still occur on steep slopes. Another tool for reducing erosion is irrigation socks. These consist of fabric sheets which are attached to a large metal clip that fastens to the irrigation pipe. These products have been around for years, but

are fairly expensive and older models have proven cumbersome and difficult to attach.



Downward view of soil cut from gated pipe irrigation

New designs fasten easily, and are very effective at dissipating the energy of the water stream and thereby reducing soil erosion.



Downward view of irrigation sock on gated pipe

**Darren Zentner, Ross Oyler, and Robert Fisher -  
BPMC Biological Technicians**

### 🌿 Seasonal Suggestion 🌿

Late summer into fall is an excellent time of year to manage field bindweed. Current recommendations suggest applying herbicides to field bindweed at the time of flowering, as well as after a frost (as long as the foliage remains alive), when translocation to the root system is at its highest level. Suppression of bindweed at the BPMC has improved when treatment occurred at these times and when

numerous, healthy bindweed stems and leaves were treated.

### 🌿 Picture This! 🌿

I recently captured this image on my daughter's bedroom window. The image was so clear my children thought I was pulling a prank on them. As if to verify I was telling them the truth, they found an almost identical image of an owl in a *Ripley's Believe It or Not* book! No carcass on the ground, so we assume the owl survived. Our



plan is to place a sticker on the window and to suspend a shiny compact disk out the window, a technique that works great at keeping away sap suckers and swallows.

**Joe Scianna – BPMC Manager/Horticulturist**

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