View From a Wetland

News and Technology for Riparian and Wetland Management

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"It is impossible to step into the same river twice."
- Heraclitus, Greek philosopher

Introduction

This newsletter is part of the Aberdeen Plant Materials Center's continuing effort to provide technical information to the public on wetland and riparian plants, plant establishment, and their management. This newsletter is the fourteenth issue since 1991 when the Interagency Riparian/Wetland Plant Development Project was established.

Goodbye to Derek Tilley

Derek Tilley came to the PMC about 5 years ago. Since that time he has been a dynamo writing papers, developing research projects, evaluating those projects and analyzing the data. He was responsible for a large portion of the lab research for the Riparian/Wetland Project. The project made great strides in many areas over the years that Derek was with the PMC. Research projects that were significant include; ways to seed wetland plants, which are notoriously difficult to establish from seed and also research on the effects of soaking unrooted cuttings. His latest study findings are included in this newsletter.

Derek has accepted the PMC Manager position at the Lockeford, CA Plant Materials Center. His last day at the Aberdeen PMC was December 17, 2008. We will definitely miss his energy and dedicated work ethic. We wish him all the best in the future in his new position.

Riparian Ecology and Restoration Workshops

Class installing a brush mattress on Nov. 9, 2008 at the Cottonwood Ranch near Jackpot, NV

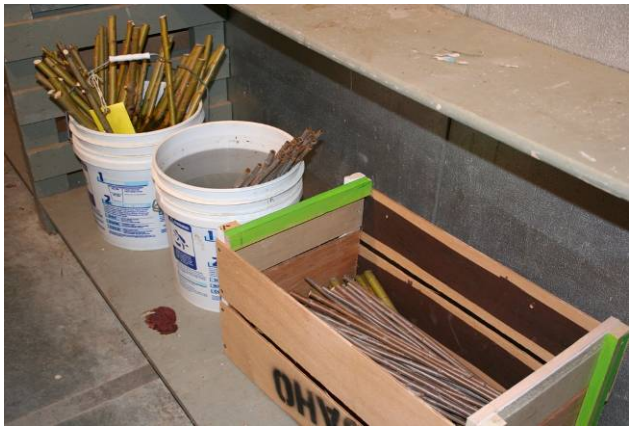
As part of the Project's technology transfer efforts, a three-day Streambank Soil Bioengineering Technical Training Session was developed. The first day of the course is devoted to the classroom where basic riparian dynamics, riparian zone vegetation, plant acquisition, and bioengineering techniques are discussed. The second day of the course is half in the classroom discussing local topics and half in the field where participants classify a riparian site and develop a restoration plan based on resources and problems at the site. On the third day, the participants install a series of bioengineering structures along a nearby eroding section of a stream. Each year workshops are conducted in different parts of the western United States.

Willow Cutting - Fall -Soaking Trial

There are a number of reasons why spring planting of willow cuttings are more prevalent than fall plantings. The most common of which is the fear that fall collected cuttings may have been under stress due to hot summer temperatures, reduced water availability, insects and disease prior to cutting. Another reason is the idea that a cutting left on the shrub or tree over winter should be healthier than a cutting taken off and left in the frozen ground for six months. In addition, most projects are planned during the "down time" over the winter months, and restorationists are eager to get back outside as soon as possible.

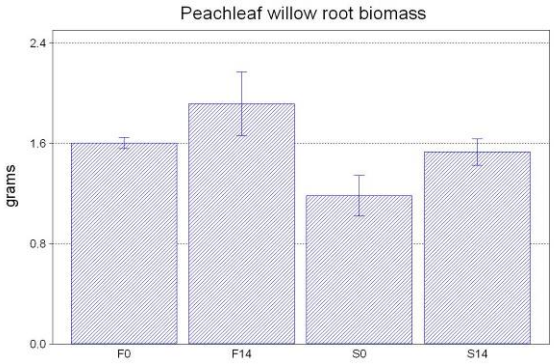
Despite the common opinion that fall plantings are inferior to spring plantings, the Riparian/Wetland Project has commonly recommended and practiced fall planting of dormant hardwood willow cuttings. In an attempt to demonstrate why fall plantings are successful, we decided to conduct evaluations of spring versus fall planted materials. As part of the study, we also evaluated pre-soaking the cuttings prior to planting in both spring and fall plantings.

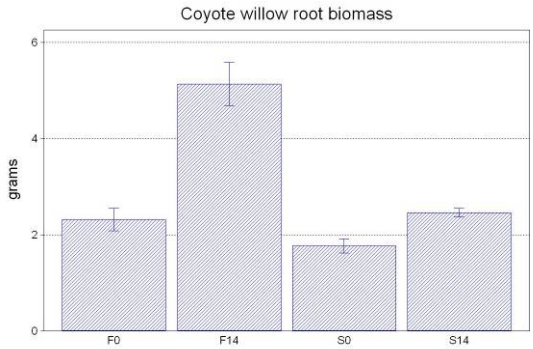
One experiment evaluated four treatments to determine if pre-soaking cuttings collected and planted in the fall provided any establishment benefits over traditional planting methods. We compared cuttings of Peachleaf willow (*Salix amygdaloides*) and Coyote willow (*S. exigua*) planted in the fall following a 14 day pre-soaking treatment (F14), to fall planted with no pre-soaking (F0), spring planted following 14 day pre-soak (S14), and a non-soaked spring planted control (S0).



Dormant willow cuttings soaking (left) and stored without soaking (right) in walk-in cooler at 4ºC prior to fall planting.

What we found in this study was that the greatest root production occurred in cuttings harvested in the fall and soaked for 14 days prior to planting in the fall. The least root production came from spring harvested cuttings that had not been soaked prior to planting. The following graphs display the data for both Peachleaf willow and Coyote willow root biomass resulting from different soaking regimes.





Conclusion

Pre-soaking willow cuttings in the fall, prior to transplanting into cold, dormant conditions appears to give the cutting an added boost to help it maintain moisture levels through the winter and into the spring. The results from our study suggest that this increase in moisture in the fall may be even more beneficial than leaving the cuttings on the tree until spring and then soaking prior to planting. It is possible that willow branches lose a significant amount of water over the winter while on the plant, and by cutting them off while still dormant, these cuttings do not have a chance to attain their earlier water levels and vigor. Soaking cuttings after a spring harvest helps to regain previous stem-water content, but perhaps not as much as soaking the cutting in the fall.

Pre-soaking Unrooted Cuttings

Pre-soaking unrooted cuttings prior to planting hydrates the cuttings and starts the root primordia swelling as the cutting absorbs more and more water. This reduces the time the cutting must sit in the ground trying to absorb enough water to put out the necessary roots that will allow it to establish successfully. It also increases the vigor of the cutting. See the **Willow soaking trial** article in the 2007 newsletter for more information on soaking unrooted cuttings.

If You Dig A Hole, Plant A Pole

Those of you who have attended one of the Streambank Soil Bioengineering Workshops have

heard these words before. The most expensive part of planting a willow or cottonwood is digging the hole and finding the watertable. When working on a stream project where you are installing stream deflectors or root wads, the specs will normally call for digging the key or root into the bank by about 1/3 and down to the scour depth.

Once the hole is dug and before the rock or rootwad is placed into the hole, line the back of the hole with willow cuttings. Make sure you shove them into the trench deep enough to get into the perennial watertable. Once the cutting are in the hole, place the rock or rootwad in the hole and start filling it in. Pack the soil in tightly around the cuttings. This will ensure you have good soil to stem contact. Once the soil is filled in around the cuttings, cut the cuttings off high enough that they will not be covered with water for a long period of time or about 1 ft which ever is longer.

This is a great way to establish tree type woody species that need to be planted in the upper overbank or lower transition zone. It also will help with populating the over bank zone with shrubs.

Clumps of Riparian Woody Species That are Transplanted Take Up to 3 Years to Recover

When clumps of riparian woody plants are transplanted to a new site, it often takes as much as 3 years for them to recover. My friend, John Bair, stated it this way, "transplanted clumps sleep, creep, and leap." This means that the first growing season after transplanting, the clump will try to recover from the transplant shock. It will put out a few branches with leaves, but overall it will look straggly and weak. During the second growing season, the clump will put out a huge amount of adventitious roots to attempt to recover the roots that were lost when it was harvested. This assumes that you did a good job with filling in the soil around the roots and the base of the clump. It will also put out new branches and leaves, but they will not be thick and dense. The third growing season will see the recovery complete. Branches and leaves will leap out the clump. The roots will be widespread and thick.

So, when using the clump planting technique, it is important to remember that just like poles, it takes some time for the plants to recover and start growing. Patience is the rule when working with transplanted clumps.

Additional Information

All publications are now available on the Internet in Adobe Acrobat format. Download each paper below by going to http://www.Plant-Materials.nrcs.usda.gov/idpmc/riparian.html. Idaho PM Tech. Notes can also be downloaded from: http://www.id.nrcs.usda.gov/programs/plant.html.

Major Publications

Field Guide for the Identification and Use of Common Riparian Woody Plants of the Intermountain West and Pacific Northwest Regions

This publication was reported in the 2007 newsletter. Since that time, we obtained enough money from the Bureau Reclamation and NRCS to print a limited number of copies. Contact us if you would like a copy. Supplies are limited.

Bioengineering Information

1) *The Practical Streambank Bioengineering Guide*
2) *Streambank Soil Bioengineering Field Guide for Low Precipitation Areas*

Riparian/Wetland Project Information Series

(Publications in red are new)

- **No. 2** - Selection and Acquisition of Woody Plant Species and Materials for Riparian Corridors and Shorelines.
- **No. 3** - Use of Willow and Cottonwood Cuttings for Vegetating Shorelines and Riparian Areas.
- **No. 6** - Seed and Live Transplant Collection Procedures for 7 Wetland Plant Species.
- **No. 7** - Use of Greenhouse Propagated Wetland Plants Versus Live Transplants to Vegetate Constructed or Created Wetlands.
- **No. 8** - Constructed Wetland System for Water Quality Improvement of Irrigation Wastewater.
- **No. 9** - Design Criteria for Revegetation in Riparian Zones of the Intermountain Area.
- **No. 10** - Perigynium removal and cold-moist stratification improve germination of *Carex nebrascensis* (Nebraska sedge).
- **No. 11** - Getting "Bang for your Buck" on your next Wetland Project.
- **No. 12** - Guidelines for Planting, Establishment, Maintenance of Constructed Wetland Systems.
- **No. 13** – A Reference Guide for the Collection and Use of Ten Common Wetland Plants of the Great Basin and Intermountain West.
- **No. 14** - Harvesting, Propagating and Planting Wetland Plants.
- **No. 15** - Costs and considerations of streambank bioengineering treatments.
- **No. 16 –** Riparian Planting Zones.
- **No. 17 –** Waterjet Stinger: A tool to plant dormant unrooted cuttings of willows, cottonwoods, dogwoods, and other species.
- **No. 18** - Streambank Soil Bioengineering Considerations for Semi-Arid Climates.
- **No. 19** - Simple Identification Key to Common Willows, Cottonwoods, Alder, Birch, and Dogwood of the Intermountain West.
- **No. 21** - Wetland Plants: Their Function, Adaptation and Relationship to Water Levels.
- **No. 22** - How to Manipulate Water in a New, Restored, or Enhanced Wetland to Encourage Wetland Plant Establishment
- **No. 23 -** Streambank Soil Bioengineering: A Proposed Refinement of the Definition
- **No. 24** - Pre-soaking hardwood willow cuttings for fall versus spring dormant planting

Idaho NRCS PM Technical Notes

- **No. 4** - Reading Seed Packaging Labels and Calculating Seed Mixtures.
- **No. 6** - The Stinger, a tool to plant unrooted hardwood cuttings of willow and cottonwood species for riparian or shoreline erosion control or rehabilitation. (Revision)
- **No. 13 -** Harvesting, Propagating and Planting Wetland Plants.
- **No. 22** –Wetland Sodmats
- **No. 21** - Planting Willow and Cottonwood Poles under Rock Riprap.
- **No. 23** - How to Plant Willows and Cottonwoods for Riparian Rehabilitation (Revision).
- **No. 32** – User's Guide to Description, Propagation and Establishment of Native Shrubs and Trees for Riparian Areas of the Intermountain West.
- **No. 38 -** User's Guide to Description, Propagation and Establishment of Wetland Plant Species and Grasses for Riparian Areas in the Intermountain West.
- **No. 39 -** Waterjet Stinger: A tool to plant dormant unrooted cuttings of willows, cottonwoods, dogwoods, and other species.
- **No. 40** - Biology, history and suppression of Reed canarygrass (Phalaris arundinacea L.).
- **No. 42** – Willow Clump Plantings.
- **No. 43** - Tree Planting, Care and Management

For a copy, download or write or call:

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