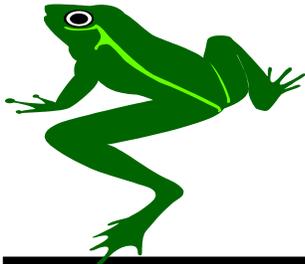


View From a Wetland

News and Technology for Riparian and Wetland Management



Interagency Riparian/Wetland Plant Development Project
Natural Resources Conservation Service
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"Ah willow, willow, would that I always possessed thy good spirits"
- Henry David Thoreau, *Faith in a Seed.*

Introduction

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

Riparian Ecology and Restoration Workshops

As part of our technology transfer program, a three-day Streambank Soil Bioengineering Technical Training Session was developed. The first day of the workshop is devoted to the classroom where basic riparian dynamics, riparian zone vegetation, plant acquisition, and bioengineering techniques are discussed. The second day is spent half in the classroom discussing local topics and half in the field where participants classify the riparian site and develop a plan based on a given scenario. The third day is where the participants actually get in the stream and install a series of bioengineering structures on an eroding section of streambank.

Each year the Project conducts several workshops in different parts of the western United States. If you are interested in attending this course, contact Pat Blaker at the PMC for the next scheduled workshop. If you are interested in having a workshop in your area and you have about 30 people that would like to attend the training, contact Chris Hoag and we will try to schedule a course in your area.

Seed Stripper Profile

Derek Tilley, PMC Range Conservationist

Occasionally we are asked if there is any sort of hand held seed collector suitable for native seed

collections. The answer is "yes." The Hand Held Seed Stripper (HHSS) from Prairie Habitats Inc. of Manitoba, Canada is a modified 2 cycle gasoline powered weed trimmer with a horizontal stripper reel covered with a mesh hood. The stripper reel spins at high speed knocking seed from the plants via nylon strings tipped with metal heads. This spinning action sends the seed into the meshed hood and into a catch-bag mounted behind the hood. The unit weighs 17 lbs and is equipped with a shoulder strap.



We have used the seed stripper in many different situations and have found it very helpful under the right conditions, but it does have some unfortunate limitations. These units are especially useful when collecting seed from plants with a terminal inflorescence that is situated well above the rest of the plant material. For example, we've collected over seven pounds (PLS) of alkali bulrush (*Scirpus maritimus*) seed in under an hour. Species with large amounts of leafy material around the inflorescence, however, tend to bog the unit down. We have also

noticed that the stripper head will “grab” any woody material in its path. Thus the stripper is not well suited for collecting seed of woody species.

It is important to note that the seed stripper does a fairly sloppy job and shatters a lot of seed on the ground. This stripper should be used for wildland seed collections in good dense stands where collecting every ounce of seed is not necessary.

Species that were most effectively collected with the seed stripper include: *Scirpus maritimus*, *Juncus balticus*, *Eleocharis palustris*, *Scirpus pungens* and *Scirpus acutus*.

For more information visit www.prairiehabitats.com.

Seed Cleaning

Derek Tilley, PMC Range Conservationist

In 2003 the Aberdeen PMC acquired several pieces of state-of-the-art small lot seed cleaning equipment. These machines are well suited to cleaning the small lots of seed brought in from wildland collecting. The following is a brief description of the processes used to clean commonly collected wetland species.



***Juncus balticus* seed (right) and chaff (left) separated on a gravity table.**

The first step in cleaning is to hammer-mill the plant materials down and knock the seeds from the inflorescence. There are two different hammer-mills at the PMC, one with a small diameter mill head (about 7”) and one with a large head (about 15”). Both do an adequate job of freeing seeds, but the small headed mill tends to get clogged with leaves and stems. The larger mill, however, breaks down the plant material enough to let it fall through the screen holes. We prefer to use a screen with 1/8” holes and pull off the dust and light material with air-flow.

After the seed is pre-cleaned with the hammer-mill, we use a triple-deck air-screen cleaner to clean off the majority of the chaff. The top screen or screens should have holes large enough for seed to fall

through, but not to permit large pieces of chaff. For wetland seed this is usually from 1.15 to 2.5 mm depending on the species. The final screen is smaller than the desired seed or solid.

After going through the screens the seed is carried to an air column. The air-flow should be set to blow off any dust, chaff or immature seed. For good cleaning, the air-flow should be high enough to take away the lightest of the good seed and leave only the best possible seed behind.

Some species require some finish cleaning to obtain a useable product. Most species can be finished using an indent cleaner set with indents just larger than the desired seed. More difficult species, *Juncus* for example, can be cleaned very well using a gravity table cleaner which separates seed from chaff based on weight, shape and texture.

Soaking *Carex* seed in Sphagnum Moss Tea



Stratification of *Eleocharis palustris* seeds in a sphagnum moss tea

Wetland plant seeds are very difficult to germinate. In nature, they sometimes take as long as 2 years to germinate. For nursery purposes, an accelerated germination program often means stratifying the seed to fool it into thinking it has been in the ground for the 2 year period. Our recommendation for stratifying seed is to very lightly scarify the seeds and then place it in a small container that is sealable. Place an equal amount of sphagnum moss wrapped in cheese cloth in the bottom of the container (wrap the cheese cloth with rubber bands to hold it together). Then fill the container with just enough water to ensure the seed and the moss bundle are completely covered. Too much water will dilute the ‘tea’ concentration. Seal the lid and place the container in a cooler for 30 days at 35-37°F. At the end of the 30 day cold period, bring the seed out

of the cooler and plant the seed in the greenhouse. The greenhouse should be HOT. Seedlings should emerge in about 7-10 days.

Things to consider when planting woody plants

To obtain the best results from a tree planting project, consider the following:

- Select the right species for the site
 - Check hardiness zone
 - Determine soil texture
 - Check soil limiting factors
 - Check soil moisture
 - Check soil drainage
 - Check soil fertility
 - ID existing vegetation
- Properly prepare the site
 - Scalping down to mineral soil removing existing vegetation and organic litter.
 - For large plantings, get rid of existing vegetation by plowing, disking or spraying.
 - Treat a 3 ft circle around the planting hole with herbicides to remove existing competing vegetation.
- Select good nursery stock
 - Bareroot- Nursery grown stock that has no soil around the roots. Inexpensive. It is better to plant larger stock rather than 'conservation grade.'
 - Containerized stock – plants grown in a container and delivered with soil around the roots. High establishment success but more difficult to handle.
- Handle the seedlings correctly
 - Dry Roots – never let the roots dry out before or while planting.
 - Check for swollen or burst buds and mold on the needles or stems. These plants will likely die.
 - Take only enough seedlings to the field that can be planted in one day.
 - Store the seedlings in the shade not in direct sunlight.
 - Keep the seedlings wet before planting, while planting, and after planting.
- Use good planting & handling techniques
 - Don't plant in overly wet or sticky (clayey) soil.
 - Keep seedlings moist and cool at all times.
 - Plant in mineral soil, not the duff or organic materials near the surface.
 - Make the hole deep enough for the whole root system. Take care that roots are not curled or twisted.
 - Make the hole before removing the seedling from the packaging.
 - Remove trees one at a time from planting pouch or container.

- Plant seedlings one inch deeper than they were in the nursery. The crown should be slightly below the surface.
- Plant seedlings upright, not at an angle
- Pack soil firmly. Allow no air pockets around the roots.
- Reduce competing vegetation.
- Watch for and provide follow-up care
 - Prepare a maintenance schedule
 - Have a watering schedule
 - Have a weed control plan

Problems when planting woody plants

Handling Errors

- Roots exposed to wind or direct sun.
- Temporary storage covers blow away exposing seedlings.
- Roots dry out from not planting soon enough.

Planting Errors

- Soil packed too loosely allowing air pockets.
- Planting too deep or shallow.
- J-rooting (hole not deep enough).
- More than one tree per hole.
- Planting in duff rather than mineral soil.

Planning Errors

- Improper spacing (potential long-term problems).
- Failure to control competing vegetation, especially grasses.
- Planting in low spots and frost pockets.
- Incorrect match of species and site.
- Planting at the wrong time of the year.

Bud Break signals dormancy's end – What does this mean to you?

"How late can I harvest dormant unrooted cuttings?" is a question commonly asked. Willows typically don't show their buds during the winter (cottonwoods have large "gummy" buds all winter long). In the spring when the sap starts to flow, the buds will begin to swell and expand in preparation for the leaves to emerge.

Dormancy for willows and cottonwoods is defined as the period of time from when the leaves fall to when the buds swell. The dormant period is the best time to collect unrooted cuttings because they have the highest energy levels which translates into higher rooting rates and better establishment. Cuttings use energy stored in the stem to cause the buds to swell. So, to keep as much energy in the stem for rooting, always try to collect your unrooted cuttings before the buds start to swell. It will translate into a higher establishment rate.

Additional Information

All publications are now available on the Internet in Adobe Acrobat format. You can download each of the papers below by going to <http://www.Plant-Materials.nrcs.usda.gov/idpmc/riparian.html>. Idaho PM Technical Notes can also be downloaded from: <http://www.id.nrcs.usda.gov/programs/plant.html>. If you do not have access to the Internet or would like to receive a hard copy, please contact us.

Bioengineering Information

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

Individual Wetland Plant Fact Sheets –

Description, ecology, collection, propagation, management, and uses of 6 different wetland species.

Riparian/Wetland Project Information Series

- **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.

Idaho NRCS PM Technical Notes

- **No. 6** - The Stinger, a tool to plant unrooted hardwood cuttings of willow and cottonwood species for riparian or shoreline erosion control or rehabilitation.
- **No. 13** - Harvesting, Propagating and Planting Wetland Plants.
- **No. 23** - How to Plant Willows and Cottonwoods for Riparian Rehabilitation.
- **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. 42** – Willow Clump Plantings.

For a copy, write or call:

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