**Options and Cost Breakdown for Direct Seeding Wetlands with Baltic Rush**
**Study Number: IDPMC-T-0604-WE**
**Derek J. Tilley**
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## Introduction

Direct seeding of wetlands species typically results in low establishment rates and is generally not recommended. Because seed from many wetland species are buoyant and also require light for germination, broadcast seeding has been unsuccessful because seed tends to float and wash away from the seeded area after flooding. Small scale direct seeding experiments evaluating other techniques have indicated however, that there may be methods available that could produce better establishment of seeded wetland species.

This trial incorporates greenhouse and small-scale test results obtained from experiments conducted from 2004 through 2007 at the Aberdeen Plant Materials Center (PMC), and tests them in a "real-life" field setting. Four seeding methods were tested: 1) Submerseed™ pellets (Aquablok 2007), 2) broadcasting seed mixed with rice hulls as an inert carrier followed by packing with a lawn roller, 3) a hydroseed application of Fertil Fibers™ hydromulch with tackifier, and 4) a second hydroseed application with the addition of straw mulch at one-half the industry rate used for lawn seedings.

## Materials and Methods

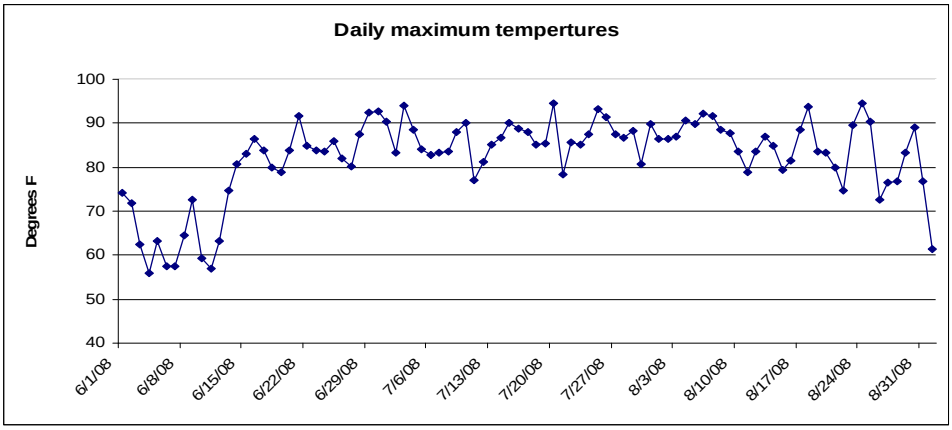
The trial was conducted at a constructed pond at the Plant Materials Center (PMC) home farm in Aberdeen, ID. The pond measured approximately 50 X 60' and was lined with a plastic liner. Weeds were controlled with multiple treatments of Roundup applied in 2007 and 2008. The soil was lightly cultivated and watered to field capacity prior to seeding. Plots were 8' x 10' arranged in a randomized complete block design with four replications.

The trial was planted on July 31, 2008 using Sterling Selection Baltic Rush (*Juncus balticus*). Hydroseed treatments were mixed and applied by Frank McClure of Mountain West Hydroseeding. Hydroseed component rates followed the industry standards (see table) with the exception of the straw mulch which was applied at one-half the normal rate. This was done due to results shown by Tilley (2007) that indicated the industry straw mulch rate was possibly too thick for wetland applications involving *Juncus*. Seed was applied at a target rate of 100 PLS/ft². Rice hulls were mixed according St. John et al. (2005).

| Amounts | /ft² | /plot | /treatment | /ac |
|---|---|---|---|---|
| Submerseed | 20 pellets | 3.75lb | 15lb | 2000lb |
| Fertil Fibers | 20.8g | 3.7lb | 14.6lb | 2000lb |
| Tackifier | 0.03g | 2.5g | 10.0g | 3lb |
| Rice hulls | 1.35g | 0.25lb | 1lb | 130lb |
| Seed (100PLS/ft) | 0.002g | 0.17g | 0.68g | 0.19lb |
| Water | 2gal | 160gal | 640gal | 87120gal |
| Straw mulch | 10.4g | 1.85lb | 7.3lb | 1000lb |

The pond was kept dry for one day following planting to allow for all hydroseed tackifier to dry and adhere to the soil surface. The pond was watered using a perforated irrigation pipe laid at the base of the first replication, so that the water flowed evenly across all four replications. The water was allowed to rise to 0.5 to 1.0 inches above the soil surface and then shut off. The pond was allowed to partially dry to field capacity and then refilled to the previous level to promote germination. This process was completed through out the length of the trial.

Daily temperatures reached the mid-nineties for approximately two weeks following planting providing good conditions for the germination of *Juncus* seedlings. The graph below shows daily maximum temperatures from June 1 through August 31, 2008. Daily high temperatures during the study ranged from 61 to 95º F, but averaged in the mid 80s. In the latter part of the study there were greater variations in daily maximum temperatures.




**Results and Discussion**

The trial was evaluated visually on September 5, 2008 (36 days after planting). No seedlings of *Juncus* were seen in any plot. The reasons for the failure of the trial are unknown. There are a few theories for the lack of success. First, 100 PLS/ft² may not be enough seed to establish *Juncus* and obtain visible stands. Pouring 0.68g of seed into 640 gallons of water in the hydroseeder tank seemed like an extremely small amount of seed compared to that amount of carrier. It is possible that a significant amount of seed remained stuck to the inside of the hydroseeder tank. Second, though the daily temperatures reached the 90's for several days, better establishment may have been achieved with even hotter temperatures. *Juncus* germinates readily at temperatures in excess of 100 degrees. An earlier planting date (early July) may provide more days above 90 degrees and produce germinants.

With these reasons in mind, it may be advisable to re-attempt this study with more seed and earlier in the summer when temperatures are hotter. Another idea is to broadcast the seed by hand and follow with a hydroseed application of tackifier. This would eliminate the risk of losing seed in the hydroseed equipment.

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**Planting images**

*Hydroseed application of Fertil Fibers treatment.*

*Hydroseed application of Fertil Fibers and straw mulch ttreatment.*

*Pressing the rice hull and seed broadcast mix with a lawn roller.*

*Rice hulls and seed pressed into soil with roller.*

*Submerseed pellets partially submerged at time of flooding.*

*Perforated irrigation pipe watering the pond.*

**References**

Aquablok. 2007. Submerseed Composite Seeding Technology. URL: http://www.aquablokinfo.com/ (accessed 20 Nov, 2007).

St. John L., Ogle DG, Tilley DJ, Majerus M, Holzworth L. 2005. Mixing seed with rice hulls. USDA-NRCS, Boise, ID. ID-TN 7. 15p.

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