

FY 2008 RESEARCH PROBLEM STATEMENT

NATIVE GRASS, DWARF GRAIN, and EROSION CONTROL

Submittal via E-mail is preferred: Save the form and give it a new, descriptive name, then send to:
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TITLE

GHE-08-02 Efficacy of fall-sown dwarf cereal grain varieties as a primary erosion control method for successful establishment of native seed applications along Western Oregon Highways.

PROBLEM (Description of need)

Seed mixes containing aggressive, non-native grasses and herbaceous species have been used for decades to control erosion on the Oregon state highway system. Despite their utility in erosion control, these aggressive, non-native plants have spread throughout ODOT right-of-ways and often require greater roadside maintenance than natives. In addition, invasive non-native species degrade environmentally sensitive communities that support state and federally listed species. Invasive species found in erosion control mixes have also increased ODOT maintenance costs. The incompatibility of invasive species for erosion control in native habitats, or in areas where native habitats are desired, is well documented. Unfortunately, there currently are few known native plant seed mixes that can reliably control erosion on ODOT construction, maintenance, and restoration projects. The 1999 Presidential Executive Order 13112, *Invasive Species*, instructs federal agencies to provide leadership on preventing the introduction and spread of invasive species at government facilities and on federally-funded (FHWA) projects. Despite this presidential mandate, FHWA/ODOT routinely uses invasive, non-native plants as its primary source of erosion control causing long-term harm to many native plant communities in western Oregon. Unless native and non-invasive erosion control practices are explored and developed for use along roadsides and on highway projects, native habitat degradation will continue and ODOT's obligation to the *Invasive Species* Executive Order will go unmet. Because native seed often takes longer to establish than non-native seed, use of natives alone does not appear to be an effective method for erosion control. However, a promising technique that will not compromise native communities is to combine native seed with appropriate cereal grain seed that is quick to germinate yet non-persistent. A number of annual dwarf grain varieties have these two important characteristics.

PROPOSED RESEARCH, DEVELOPMENT OR TECHNOLOGY TRANSFER ACTIVITY

We propose experimental field trials (*i.e.*, paired control and experimental plots) to study the efficacy of using non-persistent (annual) dwarf cereal grain varieties (*e.g.*, wheat and barley) in conjunction with native grass seed mixes to control erosion and/or to successfully establish native vegetation on ODOT right-of-ways. The efficacy of the cereal grains for erosion control during native seed establishment can be quantified by comparing characteristics of the native plants between control and experimental plots. Appropriate plant characteristics to measure include, but are not limited to: sprouting date, root growth, percent cover, plant height, senescence date, relative soil-holding capacity, and persistence.

BENEFITS

Results of the proposed study will:

- 1) Address the "Plant Establishment" research priority for Geotechnical, Hydraulics, and Environmental.
- 2) Identify effective and compatible dwarf grain varieties that will not compete with native seed, yet will provide effective erosion control and allow for native plant establishment.
- 3) Offer additional erosion control options for ODOT construction and maintenance to use in sensitive areas containing native or rare plant communities.
- 4) Help FHWA/ODOT comply with Executive Order 13112 and increase habitat values on state lands.
- 5) Serve as valuable baseline data from which to develop a comprehensive strategy for reducing environmental impacts to native plant communities.

- 6) Reduce maintenance costs over time.
- 7) Assist FHWA/ODOT in compliance with its Endangered Species Act mitigation requirements, which mandate the use of native seed/species in project restoration.

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