

# MULCHING AND STABILIZING PLANTINGS

## TECHNICAL GUIDANCE DOCUMENT



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### INTRODUCTION

Stabilizing soils either before or after planting a restoration site is an important consideration in the planning process. Stabilization provides protection and moisture for the planted seeds and also some amount of erosion control, both of which can improve the success of project efforts to establish vegetation in wetland areas. Many wetland seeds will not germinate if covered by more than 0.5 cm of soil. The erosion of soil from upland buffer areas during the establishment phase of a project is a common reason for failure of plantings.



Wet meadow restoration stabilized with a temporary cover crop

The current NPDES General Permit for Minnesota requires that final stabilization of construction areas be done within 14 days after the construction activity has temporarily or permanently ceased. For large projects, compliance may require that stabilization methods such as seeding, mulching, or applying other temporary erosion products occur in several stages. Consider whether other upland soils on a project site need to be stabilized before or after planting. This is likely in agricultural settings that have uplands that were plowed or tilled as part of site preparation.

A variety of equipment and materials are used to stabilize projects including: cover crops, permanent seed mixes, certified weed free grain straw (Mn/DOT Type 3), native grass straw, oat and wheat straw, mulch blowers, crimpers, seed drills, mulch tackifiers, temporary erosion control products, and erosion control blankets.

### APPLICATION

**Seeding for Stabilization** – Temporary cover crops or a combination of temporary and permanent mixes can be used to stabilize uplands prior to wetland planting. As wetlands are often seeded in the fall, upland seeding can be conducted the previous spring or fall to provide enough time for establishment of the buffer area for erosion control. Temporary cover crops such as oats or winter wheat can be harvested in some cases, or are clipped to prevent seed production. In some cases cover crops are disked into the soil.

**Working with Crop/Plant Residue in Upland Soils** – Similar to temporary cover crops, the roots and stems of crops such as corn and soybeans can help stabilize soils. Corn stubble is sometimes harvested before final seedbed preparation but crop residue can be left in place when a no-till drill or broadcast seeder is used for seeding. Soybean thatch following harvest can act as a good mulch, though the amount of thatch present varies depending on how much biomass was present during harvest. When temporary cover crops are not used and there is not sufficient thatch from



Corn stubble left after harvest

crops additional mulch is needed at around one ton per acre for wetland areas and two tons per acre for uplands. A lower rate is used in wetlands to prevent windrowing of mulch if water levels cause it to float.

**Mulching** – Mulching upland buffer areas is recommended when both upland and wetland seeding is completed together. At minimum, a buffer strip 100 to 200 feet wide around each seeded wetland area should be mulched. Greater widths should be considered for areas with steeper slopes or more erosive soils. In some situations, it may be advantageous to mulch the entire site, including the wetland areas. Mulch should be disk anchored to prevent it from blowing away. Be very sure that mulch is not derived from stands of invasive or exotic species such as reed canary grass. Straw from oats, wheat, and native grasses can be used. Certified weed free grain straw (Mn/DOT Type 3) mulch is often recommended for wetland projects. Certified weed free mulch bales should have a tag affixed to each bale indicating that it has been certified to be weed free by the Minnesota Crop Improvement Association (MCIA). Beware of mulch that is described as “marsh hay”, “pasture hay” or “wild hay” as often times it contains substantial amounts of reed canary grass or other undesirable, introduced species such as red top.

**Vegetating Construction Areas** – Seed mixes developed for construction areas such as embankments, borrow, and other excavation areas should include a combination of early- and late-developing grasses with a cover crop for rapid stabilization. Winter wheat is used as a cover species in the fall while oats is most commonly used in the spring and summer. The seed mix should include species suitable for the expected range of moisture conditions. Include wet species along the lower areas of embankments and drier species for the upper edge.



Wetland embankment vegetated with a native construction mix

Mixes for construction areas and embankments are dominated with grasses for their stabilizing characteristics and ability to tolerate periodic mowing. Forb species are sometimes added to compete with Canada thistle and other weeds. Non-native, cool-season grasses have historically been used for construction area plantings but many programs now require the use of warm and cool-season native species to ensure long-term establishment.

Whenever possible, construction and site stabilization work should occur prior to the end of September. For construction work completed later in the fall, a decision must be made to either dormant seed the site or wait until spring. Dormant seedings are completed after mid-October but before the soil freezes.

Seeding construction areas the following spring is generally preferred over dormant seeding in the fall as grasses tend to be most successful with spring seeding. Any erosion that might have occurred during early spring flooding can be corrected when the soils are prepared for a late spring seeding. With a spring seeding, plan to traverse the grading work that was finished in the fall with tracked construction equipment up and down the embankment slopes. This will both compact the soil surface and provide for temporary erosion

protection. Consider requiring other temporary stabilization methods such as mulching or erosion blankets in the fall. Final seeding and stabilization should occur as soon as practicable in the spring.

If the constructed outlet for the project has water level management capabilities, keep the wetland in a drawn-down condition until all embankment slopes and other critical areas are fully established with vegetation. Construction areas can be seeded with broadcast seeders or seed drills. Seed drills cannot be used on slopes steeper than 3:1; broadcast or hydroseeding must be used in these situations. Regardless of the seeding method, most grasses need to be installed 1/8th to 1/4 inch deep and packed or rolled to ensure good establishment. When broadcast or hydroseeding is used, harrow and then roll the seeding area. If harrowing is not possible, rolling may be sufficient to create seed contact with the soil.

Additional site stabilization work may be necessary after seeding. Areas needing additional protection may include slopes steeper than 2:1, areas with wave action, ditches, spillways or outlets where scouring may occur. Alternative stabilization methods may include erosion control blanket, wood or fiber mulch, synthetic fiber mulch, hydromulch, hydroseeding, or any other engineering products for erosion control.

In addition, consider other strategies that will help control and manage sediment from construction and other disturbed areas. Such strategies may include the use of silt fence for perimeter control, temporary ditch checks, cofferdams, diversions, and protection around functioning inlets.

Maintenance requirements vary depending on the type of vegetation being installed. If native grasses are seeded, mowing to six to eight inches two times the first year and once or twice the second year will minimize weed competition and encourage native vegetation. Spot treat invasive species as part of maintenance for all construction areas. Re-seed construction areas as needed.



Prevegetated mats, erosion fabric and straw bales stabilizing a swale

## OTHER CONSIDERATIONS

Mulching uplands can aid the establishment of native species, ultimately suppressing weeds. Mulching uplands also aids the germination of wetlands by preventing wetland seed from being covered with sediment. Upland temporary cover crops can act as mulch, decreasing the need for additional mulching and providing additional time for weed control.

## COSTS

Costs for project stabilization depend on the acres to be stabilized and whether temporary cover crops, straw mulch, or other methods will be used. Cost per acre for installing temporary cover crops tend to be around \$30-50 per acre (including seed) while applying mulch costs from \$50-\$100 per acre.

## ADDITIONAL REFERENCES

Mn/DOT Specification 2575, Controlling Erosion and Establishing Vegetation, [www.dot.state.mn.us/tecsup/spec1](http://www.dot.state.mn.us/tecsup/spec1)