



GUIDELINE 24 – GENERAL NATIVE GRASS SEEDING

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Native grass plantings on solid waste facilities help control erosion and minimize longer term closure costs. Most native grass species develop a strong root system that helps control erosion and contributes to an increase in soil fertility by recycling nutrients while alive and returning vital nutrients to the soil as the roots decompose. Because many native grasses are adapted to survive in almost any soil conditions, they require no fertilizer or irrigation after planting. Thus, over the long-term, planting native grasses (and wildflowers) can reduce maintenance costs. The North Dakota Department of Environmental Quality (Department) recommends facility owners review their reclamation plans with staff and consult with local Natural Resources Conservation Service (NRCS) offices. Because of the specialties of landfill closure and the need to have long-term durable plantings, seeding rates are recommended to be higher than native grassland not impacted by waste management activities. The Department’s guideline on “Evaluating Final Vegetative Cover of Closed Landfill Areas” also can help guide facility owner/operators in this essential element of facility closure.

Suggested Native Grass Mixture

Species	PLS* Pounds/A cre	Percent of Mixture* *	Warm or Cool Season	Bunchgrass or Rhizomatous	Minimum Root Depth
Western Wheatgrass (<i>Pascopyrum smithii</i>)	4	21%	Cool	Rhizomatous	20" +
Green Needlegrass*** (<i>Nassella viridula</i>)	4	21%	Cool	Bunchgrass	14" +
Slender Wheatgrass (<i>Elymus trachycaulus</i>) or Canada Wildrye (<i>Elymus Canadensis</i>)	2 2	10.5% 10.5%	Cool Cool	Bunchgrass Bunchgrass	16" + 16" +
Sideoats Grama*** (<i>Bouteloua curtipendula</i>)	2	10.5%	Warm	Rhizomatous	12" +
Switchgrass (<i>Panicum virgatum</i>)	2	10.5%	Warm	Rhizomatous	12" +
Big Bluestem*** (<i>Andropogon gerardii</i>)	2	10.5%	Warm	Bunchgrass, sometimes with short rhizomes	20" +
Little Bluestem*** (<i>Schizachyrium scoparium</i>)	1.5	8	Warm	Bunchgrass, sometimes with short rhizomes	14" +
Blue Grama***	1.5	8	Warm	Bunchgrass,	16" +

<i>(Bouteloua gracilis)</i>				forming short rhizomes	
Total Seed (min)	19 pounds	100%			

*PLS - Pure Live Seed (based on 50 PLS/sq feet)

**Percent Mixture B Contingent upon soil requirements. Adjust mixture based on NRCS map.

***Chaffy or awned seeds (i.e., bluestems, indiagrass and blue grama) are extremely difficult to plant with a grain drill. It is recommended that a grass drill be used for these types of grasses. Proper agitation is needed to prevent Abridging@ of seed in the seedbox, and the feeder mechanism must be capable of metering a uniform flow of seed at the desired rate. Very few grain drills have this capability. Use of debarbed seeds is strongly recommended when considering seeding chaffy or awned seeds in a grain drill.

1. The seedbed should be firmly packed (footprints left in the soil should be less than 1/2-inch deep).
2. Erosion control and establishing a cover crop.

Upon soil placement on landfill areas, erosion control measures must be incorporated immediately to minimize erosion of soil layers. Applying and incorporating wheat straw at a rate of at least 2,000 pounds per acre is a common practice. Other measures are appropriate, especially in erosion prone areas. Straw mulch should be free of noxious weeds. Bromegrass is not an advisable mulch. Approximately 10 percent of the soil surface should be visible through the mulch. Excessive cover which will smother seedlings should be avoided.

In spring: A cover crop of oats or barley at 10 PLS pounds/acre is recommended for seeding the disturbed area prior to native grass seeding. It is ideal to mow the cover crop to a height of 8 inches when the grain in the head is forming but still immature to produce standing stubble.

In fall: The recommendation would be to seed a cover crop of winter wheat in September/October for an immediate cover crop. In the spring, the cover crop should be chemically killed with Roundup, and then the native grass seeded into the residual cover crop material. Winter wheat is aggressive and will make a good cover; however, because it is so successful in beating back the invasives, it will also tend to out-compete the native grass they try to seed later (hence the Roundup before seeding in the spring).

3. An early spring seeding (before May 24) is preferred and should not extend past June 15 at the latest. A dormant fall seeding (after October 20) is acceptable; however, the mixture should be dominated heavily with cool-season species. If moisture levels and weather conditions are optimal, planting at other times may be considered. At anytime, if the planting is not successful, reseeding must be addressed when appropriate.

4. The native grass seed should be planted through the standing cover stubble during the following growing season at a soil depth of one-half inch, depending on site conditions. Precautions must be taken not to plant the seed too deeply in the soil or poor germination will result. A drill designed specifically for grass seeding will give the best results.
5. Fertilizer should not be applied before the native grass has established.
6. **Use North Dakota certified seed, northern origin cultivars, northern-adapted cultivars, or approved varieties by the NRCS.** Refer to Table 2 of the USDA-NRCS - North Dakota, May 2008, FOTG.

Note: This native grass mixture is a suggestion for general purposes (such as the closure of small inert waste landfills, disturbed waste sites, etc.), where there are not significant soil problems (salinity, wetness, high sand content, etc.) and where climactic factors or slope factors are not significant. Sites that have other factors affecting plant selection, especially in eastern or western North Dakota, steeper slopes, or where alternative covers are used, should consult the Department of Environmental Quality and the local NRCS office to tailor the native seed selection. Sites with slopes exceeding 15 percent should plant at a heavier rate, such as 25-30 PLS pounds/acre. Alternative covers also should ensure a mixture of cool and warm season grasses, with both shallow and deep roots. Larger landfills also should have a seed selection tailored to their facility while addressing the principles outlined in this guideline.

References:

USDA-NRCS - North Dakota, May 2008, FOTG - Section I - Reference Subject - Plant Materials, Herbaceous Vegetation Establishment Guide.

USDA-NRCS - North Dakota, August 2002, FOTG - Section IV - Conservation Practices, Conservation Practice Standard B 342, Critical Area Planting.