

Native Prairie Reconstruction

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Document Purpose – This fact sheet is a companion to BWSR's Native Vegetation Establishment and Enhancement Guidelines and provides detailed considerations for project planning and design with an emphasis on vegetation selection, installation and management.

Introduction – A variety of state programs focus on the reconstruction of native prairie communities. Reconstruction refers to efforts to establish a native plant community in a disturbed site such as an agricultural field. Program goals for native prairie reconstruction can vary widely, from establishing perennial species to stabilizing soil and provide cover for game birds, to establishing high diversity plantings to provide habitat for a variety of wildlife species.



Site Selection – Native prairie reconstruction projects should be located in areas that will have high value to wildlife and/or provide soil stabilization and water quality benefits based on program goals. The “[Minnesota Prairie Conservation Plan](#)” provides guidance for the establishment of prairie habitat complexes across Minnesota by protecting and buffering existing prairie.

General Planning Considerations – Prairie reconstruction projects should consider the site preparation, planting and management strategies that will be needed to result in the successful establishment of plant communities. The composition and diversity of seed mixes is also an important consideration and should be based on the goals of conservation programs and partners.

Structural Design Considerations – For projects that will have wetlands restored in addition to upland prairies, structures such as berms, embankments and water control structures may be incorporated to restore wetland hydrology. These structures require site preparation and seeding with mixes to provide stabilization and other landscapes functions. The [Minnesota Wetland Restoration Guide](#) provides detailed information about planning and vegetating wetland structures.



Plant and Seed Selection – Deep rooted prairie grasses and forbs are often a focus of native prairie reconstruction projects for soil holding, water filtering and infiltration, and year-round wildlife cover. Species from multiple plant guilds (warm season grasses, cool-season grasses, legumes, asters, and other forbs) successional stages, and bloom periods are selected to ensure that complete and functional plant communities are established, and benefits are provided for multiple species. Dry prairie mixes are used for upland sites with sandy or dry soils; mesic prairie mixes are used for uplands with medium soil moisture; and wet prairie mixes are used where the water table is within twelve inches of the soil surface during extended periods, resulting in saturated soils.

The NRCS 643 practice standard “Restoration and Management of Declining Habitats” provides specific seed mix and use specifications for CREP and RIM/WRP projects, as custom mixes are often developed for this program.

State seed mixes have been developed for prairie types in different regions of Minnesota and are another option for prairie restoration projects.

State legislation in 2013 stated that “prairie restorations conducted on state lands or with state funds must include an appropriate diversity of native species selected to provide habitat for pollinators throughout the growing season”. To provide good habitat for pollinators a diversity of flowers providing nectar and pollen though the growing season is needed as well as nearby clean water sources and protection from pesticides. See additional pollinator guidance on this website as well as BWSR’s [Pollinators and Biodiversity webpage](#). Specific plant species beneficial to pollinators may be added to mixes to aid declining pollinator species. Specific pollinator plots/zones of a few acres in size may also be added to projects to maximize pollinator habitat.



Grasses and forbs are the most common plant types in prairie seed mixes, with some low growing shrubs (wild roses, leadplant, etc.), as well as sedges and rushes being present in some prairies. Species should be selected that are native to the area and well adapted to site conditions. The following table lists species commonly included in native prairie reconstruction projects.

Commonly Used Native Species in Prairie Reconstruction

Shrubs:	Wild roses, Leadplant
Grasses:	Big bluestem, Switchgrass, Little bluestem, Indian grass, Slender wheatgrass, Canada wild rye, Sideoats grama, Prairie cord grass, Kalm’s brome, Fringed brome, Western wheatgrass
Forbs:	Yellow coneflower, Butterfly milkweed, Common milkweed, Black-eyed Susan, Smooth aster, Golden alexanders, New-England aster, Maximillian sunflower, Purple prairie clover, Bush clover, Narrow-leaf coneflower, Coreopsis, Spiderwort, Wild bergamot, Mountain mint, Partridge pea, Cup plant, Blazingstars, Showy goldenrod, Stiff goldenrod, Penstemons, Canada milk vetch.

Plant Source Considerations – The source sequence outlined in Section 2 of the Guidelines is recommended for native prairie reconstruction projects to ensure long-term sustainability of projects and to protect remnant prairie communities. The NRCS 643 practice standard can be used along with these guidelines to set specifications and standards for RIM/WRP projects. Ecovars (varieties) that have not been selected for certain traits and meet the source requirements of the program may be used for conservation programs focused on grassland establishment; however, native cultivars and varieties should not be used within a quarter-mile of remnant communities.

Vegetation Establishment – Most prairie reconstructions are conducted on fields that were previously in soybeans or possibly corn, as agricultural production can help ensure that weeds are controlled. Most agencies recommend drill seeding into soybean stubble, though broadcast seeding is conducted for some projects. Many chemicals used in agricultural fields can act as pre-emergents that inhibit the germination of native seed for around two years. If such chemicals have been used it may be beneficial to crop the site for a year without chemicals or to plant a temporary cover for a season to allow time for chemicals to break down

in the soil. Some loosening of the soil with cultipackers or harrows may be needed prior to broadcast seeding if a crust has formed on the soil surface. Fields that are dominated by brome grass, quack grass, Canada thistle and other perennial weeds often need a combination of treatments such as mowing, herbicide application and tilling to prepare for seeding; multiple treatments may be needed.

Operations and Maintenance – Key maintenance steps involve mowing annual and biennial weeds to 5-8 inches during the first couple of years as needed to provide sunlight and to decrease competition for seedlings. After the second year, spot herbicide treatment of perennial weeds is common, while prescribed burning to maintain diversity and to control woody species is common after year three. Conservation grazing, bioenergy harvest and biocontrol of invasive species may also be long-term maintenance strategies, though these management methods often require amendments to conservation plans.

Information Sources

NRCS Practice Standard 643: Restoration of Rare or Declining Natural Communities.

<https://efotg.sc.egov.usda.gov/#/state/MN/documents/section=4&folder=-195>

Minnesota Wetland Restoration Guide: <https://www.bwsr.state.mn.us/mn-wetland-restoration-guide>

Nature Conservancy Prairie Restoration Guides: [Guides to Prairie Restoration in Minnesota | TNC](#)