

Grass Variety Development & Performance Testing (D. Tober and W. Duckwitz)

The USDA-NRCS Plant Materials Center (PMC) located at Bismarck, North Dakota develops and evaluates grass varieties and germplasms (native) for conservation use in the Northern Great Plains and Upper Midwest. Both native and introduced grass species are performance tested in replicated trials and demonstration plots. Twenty-two varieties of 14 different grass species have been cooperatively released for the purpose of improving the forage base for livestock operators.

The PMC has performance tested and summarized data on replicated cool-season plots in North Dakota and South Dakota; and replicated warm-season plots in North Dakota, South Dakota, and Minnesota. Growth patterns, forage characteristics, and wildlife values were reported. The original cool-season study included 101 accessions/varieties of 33 different species from 1990 to 1997 at Hettinger, North Dakota, and Fort Pierre, South Dakota. Twenty of these cool-season grasses were selected for further study led by Dr. Kevin Sedivec at North Dakota State University (NDSU). The grasses were analyzed for nutritional quality and plant growth patterns. Above ground biomass yields were estimated for each variety by sampling approximately every two weeks from April to October in 1995 through 1997. Standing vegetation was clipped from each subplot. Physiological growth stage was recorded. Each of the grass varieties was tested for crude protein, percent acid detergent fiber, pounds of acid detergent fiber, and total digestible nutrient content. Forage production was determined for each of the grass varieties for each clipping period to determine average peak standing biomass and time period. Other data such as emergence, weed competition, stand density, seed production, and overall plant vigor were collected by the PMC. Variety recommendations will be discussed. An 82-page publication is available for distribution (Grasses for the Northern Great Plains, Volume I, Cool-season).

The warm-season grass replicated trials were also cooperative with NDSU and summarized similar performance characteristics at seven trial locations in the three-state area. The original field trials included 33 accessions/varieties of seven different grass species. All species are native to North America. Studies were evaluated at different time periods from 1982 to 2000. Highlights of this information will be presented. Performance and adaptation of native plants are greatly influenced by origin (collection location). Evaluations in the Northern Great Plains and Upper Midwest show that generally warm-season grass species can be moved about 300 miles north or 200 miles south. East and west movement is affected by moisture and elevation. Cool-season species show less response to distance from their origin. A 66-page publication is available for distribution (Grasses for the Northern Great Plains, Volume II, Warm-season).

The PMC also produces foundation seed of released varieties and germplasms of blue grama, sideoats grama, little bluestem, big bluestem, Indiangrass, switchgrass, prairie cordgrass, crested wheatgrass, intermediate/pubescent wheatgrass, Russian wildrye, western wheatgrass, Canada wildrye, and green needlegrass. Seed is sold to commercial growers for seed increase through NDSU Foundation Seedstocks. Release brochures and other publications are available on-line from the Bismarck PMC website <http://plant-materials.nrcs.usda.gov/ndpmc>.