

FIVE MYTHS CONCERNING NATIVE GRASS VARIETIES

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What seed source is better for native grass seedings; local populations, or varieties, or something in-between? One answer that I believe most people would agree with is that it depends on the objective(s) of the planting. Multiple objectives may cloud the issue, but providing clear and definitive objectives generally will lead you to the best answer. For example, germplasm preservation may be a primary objective for planting seed from remnant local populations; and wildlife cover may be a primary objective for planting a variety proven to provide good biomass and a minimum amount of lodging over winter.

Varieties or Natural Germplasms are sometimes not used because of misinformation associated with the development and release of native plant materials. Natural Germplasm is plant materials that has not been manipulated or significantly altered from the original collection. Some of this misinformation is presented in the following five myths regarding native grass releases.

1. Varieties of native grass are too aggressive and do not perform well in mixtures.

Certain species are aggressive on specific sites and can become dominant. For example, Rodan western wheatgrass, planted as part of a mixture, may dominate a clayey site after several years. However, it is the strong adaptation of the species to that site that may be undesirable and not the performance of the variety Rodan. Switchgrass, especially the lowland types, can become overly competitive on some wet sites. This is generally more of a species/site issue rather than a seed source issue. Seeding a balanced mixture of species suited to the site is a good start. Species dynamics over time is highly correlated to environmental conditions and management schemes.

2. Varieties of native grass will not produce seed because they are too competitive and will remain vegetative.

This misunderstanding probably got started years ago when more southern (Nebraska, Kansas) varieties of warm-season grasses were being used in the Dakota's and Minnesota because of the unavailability of more northern sources. These southern sources were late maturing, and often remained vegetative and did not produce seed, especially during dry conditions. Northern source varieties and Natural Germplasms are now available. These northern sources are early maturing and produce excellent seed crops.

3. Varieties of native grass are Genetically Modified Organisms (GMOs).

I am not aware of any native grass varieties that are GMOs. Although the extent of selection varies, all of the native grass releases being produced at the Bismarck PMC originate from natural populations. New releases are more genetically diverse than previously and are no longer called varieties. Native grasses are now generally being released as Natural Germplasms. Itasca Natural Germplasm little bluestem is a regional collection with 72 different sources (site collections) of parent material comprising its genetic background. Bad River Ecotype blue grama originates from native seed harvest and has had no intentional selection or purposeful genetic manipulation.

4. Varieties of native grass do not perform as well as sources from local populations and will not persist.

Proven varieties generally perform better than local populations in terms of ease of establishment, seedling vigor, disease resistance, biomass yield, seed production, and reduced lodging because of initial selection and extensive field testing. These are all very important plant traits which benefit wildlife habitat and conservation cover. Varieties must be field-tested and have their performance documented prior to formal release. Persistence or life span of adapted varieties is no less than sources from local populations.

5. Genetic diversity of the species is decreased when using native grass varieties or Natural Germplasms.

A single variety or Natural Germplasm release will not completely represent the genetic diversity present in the species, but a small population of plants that trace to a single site or a limited number of sites (local populations) may have an extremely narrow gene base and high genetic vulnerability. It is also true that some varieties were developed primarily for forage benefits and may have been selected for a relatively narrow range of traits. However, current procedures used by most PMCs for release of native grasses or other species guard against low genetic diversity. Plants used in a new release are collected over a fairly wide range of environments. New regional releases from the Bismarck PMC contain more genetic diversity than would sources from a limited number of isolated local populations. Release categories for Natural Germplasms that are eligible for seed certification include “source identified”, “selected”, and “tested”. The “selected” category refers to limited phenotypic selection and does not encompass intensive recurrent selection. In nature, plant selection is an ongoing ecological process and whenever seed is harvested from any source, plant selection is occurring. Finally, developed seed sources will occupy only a very small proportion of the total plant population that exists for the species. As such, any outcrossing with plants of the same species that are indigenous to a local area would have low impact on genetic diversity of that species in most instances. Local populations where inbreeding depression is a concern would benefit from outcrossing of these genetically diverse Natural Germplasms.

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