

Considerations for Purchasing Native Seed Mixes

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Abstract

Land managers plant commercial native seed mixes for a variety of reasons. Knowledge about species present in the mix, the source of the seed, seed quality, and how seeds are marketed in the United States is helpful when deciding what and how much to purchase. This article provides a brief overview of these topics and summarizes points land managers should consider when purchasing seed. This paper was presented at the Joint Annual Meeting of the Northeast Forest and Conservation Association, the Southern Forest Nursery Association, and the Intertribal Nursery Council (Walker, MN, July 31–August 3, 2017).

Introduction

Native plant restoration on public and private lands requires a wide range of management activities. Land managers may have specific objectives, such as to control erosion or to provide habitat for a particular species, or they may have a wide range of objectives as part of a larger landscape restoration effort across many acres and geographical boundaries.

Some of the restoration and revegetation objectives for which native seed mixes are sold include:

- Forage
- Biomass
- Mining, gas, utilities, or reclamation
- Landscape architecture
- Ground cover or erosion
- Stormwater management
- Landscaping
- Food plots
- Wildlife or pollinators
- Wetlands, meadows, or prairies
- Postfire

Planting native herbaceous grasses and forbs is one of the activities land managers can use to create the desired future condition of the area. Planting is usually done with seed for these species. Seed mixes containing several species are an effective and economical way to plant a diversity of species. Based on input from land managers, restoration specialists, and others, seed companies create specific seed mixes as a product to accomplish restoration objectives at an affordable cost

Consumer Demand

The demand for native seed has increased in recent years. As a result, production of seed to sell for various programs has increased (figure 1). Government cost-share programs, like the USDA Conservation Reserve Program, may require that native species be planted as part of a private landowner agreement. State and local Government entities (e.g., Departments of Transportation, Boards of Water and Soil, Water Management Districts, and Forest Preserves) may need native plants for public lands. Additionally, energy, utility, agriculture, and other commercial industries use native plants as mandated by Government regulation or because using these species is the most economical and long-term best choice to meet the desired objective. The Federal Government uses native seed mixes on public lands for a wide range of reasons, including wildfire remediation, habitat for many plant and animal species, and erosion control. In 2013, Federal Government agencies and non-Federal partners initiated the National Native Seed Strategy, highlighting the need for seed of native plants for restoration purposes (BLM 2015). *The Pollinator Partnership Action Plan* (The White House Pollinator Health Task Force 2016), developed by Federal agencies in response to the *Presidential Memorandum -- Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators* (The White House Office of the Press Secretary 2014), created a Federal task



Figure 1. Production of purple lovegrass (*Eragrostis spectabilis* [Pursh] Steud.) (top) and pineland threeawn (*Aristida stricta* Michx.) (bottom) seed to be used in seed mixes for a variety of programs and projects. (Photos by Victor Vankus)

force focused on the health of pollinator species. These reasons drive the increased demand for native seed.

Native Seed Mixes

Pure Live Seed

Most native seed mixes are priced and sold on a pure live seed (PLS) basis. PLS is the percent of pure seed multiplied by the germination percent or the percent of total viable seed. For example, if a seed test result for germination is 65 percent and purity is 90 percent, the PLS would be 59 percent ($0.65 \times 0.90 = 0.59$).

PLS can also be determined on the percent of viable seed in a sample. Viable seed from a germination test

will include germinants, dormant seed, and hard seed. Dormant seed are those that did not germinate by the end of the germination test under favorable conditions. Hard seed are also seed that did not germinate during the germination test. Hard seed are impermeable to water meaning that the seed cannot take up water due to the physical structure of the seed coat. Fabaceae (legume species) commonly have hard seed at the end of a germination test. Viability of dormant and hard seed is determined at the end of the germination test using a tetrazolium staining test, as per Association of Official Seed Analysts (AOSA) rules.

Percent total viable seed is calculated by adding germination, dormant seed, and hard seed. For example, if a test had 65 germination and 20 percent dormant, then the viable seed would be 85 percent ($0.65 + 0.20 = 0.85$). With 90 percent purity, the PLS would be 77 percent ($0.85 \times 0.90 = 0.77$).

Some seed mixes are sold by bulk weight rather than PLS. It is important to understand the details in catalogs and websites when considering what and how much to buy. Comparing the price of a bulk seed mix with the price of a mix based on PLS is difficult without knowing purity and germination information of the bulk lot. It is always best to have current seed test results on any seed lot whether it is sold by bulk or on a PLS basis. This information is needed to determine the amount of seed mix needed to meet planting objectives. A basic knowledge of purity and germination testing, seed test reporting, and labeling is helpful in interpreting PLS (Hoag et al. 2002).

Seed Source

Seed source for each species in a seed mix is an important consideration for determining whether or not the seed in the mix is suitable for the planting location (Gallagher and Wagenius 2016, Withrow-Robinson and Johnson 2006). The term “local ecotype” indicates that the source of the seed is from a general area, which could mean one specific source or collections from several sources across a region. Both source types can be appropriate for the seed user depending on the location and characteristics of the site. Seed companies may provide maps that show States where a seed mix is appropriate to plant. These maps can be useful in an initial assessment of whether the mix is suitable for a particular location, but more detailed information is preferred. When purchasing a standard mix, contact

the seller to find out the source of each component species in as much detail as possible. When ordering a custom mix, ask the seed company about available seed sources for species you want to plant to determine which seed lots are best for the mix.

Certification and Labeling

State seed laws require seed mixes that are sold in the open market to be labeled with species, purity, and viability. If seed is sold as source-identified, selected, pre-varietal, etc., the seller should be able to provide documentation from the certifying State crop improvement agency to prove that the product meets the standard's for that class under the State's certifying scheme. Several websites and articles provide information to help consumers understand seed tags and labels (e.g., USDA 2014). The Association of Official Seed Certifying Agencies has a standard for certifying native seed and works with member crop improvement associations to ensure standards for native seed certification are available (AOSCA 2017).

Species in Seed Mixes

Native seed mixes can be made up of just a few species or can contain a couple dozen. Species composition in standard pollinator or restoration mixes commonly change from year to year based on the available seed crop for that year and cost. Some standard seed mixes may not contain all of the species advertised as part of the mix. It is important to determine which species are actually present in a seed mix to be able to determine amounts and proportions of required, undesirable, or less desirable species in the mix. If purchasing a standard stock mix, check with the seed company for a complete list of species present in the mix.

Summary

Summary of points to consider when purchasing native seed mixes—

- Understand PLS and how it is determined for the seed lot under consideration.
- Determine the source of the seed in the mix.
- Ensure the seed being purchased is labeled accurately and contains all pertinent information.
- Determine the species present in the seed mix.

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