

# Seed Mix Establishment Guide

*Establishing a native seed mix is a long-term investment requiring careful planning. Since a variety of site conditions will be encountered, it is very difficult to write a standard procedure for site preparation and planting. The following are general guidelines based on our experience. Don't hesitate to call us with your questions, as a one-on-one conversation may be the best way to get the information you need. We are happy to discuss individual complexities in order to make your planting a success.*



## Seed Mix Selection

### SITE SELECTION

Choose a sunny, open area that will receive at least one half day of full sun, unless you are using our Woodland Edge/Savanna Mix (p.55). If you are planning to use fire as a long term management tool, position the planting to utilize natural fire-breaks such as driveways, sidewalks, lawns, or streams. Keep the planting clear of conifers and other trees that are easily damaged by fire. If natural fire breaks are unavailable, plant a five to ten foot wide No Mow Lawn Mix (p.72) buffer around your planting.

### SOIL TYPE/SOIL MOISTURE DETERMINATION

Native plants will tolerate a variety of soils and moisture levels. It is important, however, to determine the general soil type and soil moisture for each area that you intend to plant, in order to select the plants best adapted to your soil conditions.

Soils can be generally classified as sands, clays, and loams. *Sandy or "light" soils* are comprised of large, loosely packed, soil particles that drain easily and are easy to work. Sandy soils also tend to be low in nutrients and slightly acidic. *Clays or "heavy" soils* consist of small, tightly packed, soil particles that drain poorly and are difficult to work. They can, however, be rich in nutrients and very productive. *Loams or "mesic" soils*, the intermediate soil type between sand and clay, are usually very fertile and are composed of a variety of different sized soil particles. This particle diversity provides good moisture holding capacity and drainage, which is an excellent medium for most prairie plants.

**Determining your soil type.** Rub a small amount of moist soil between your thumb and fingers. A clay soil will be slick and smooth while a sandy soil will be gritty and fall apart easily. A loamy soil will feel gritty, although not as gritty as sand, and stick together easier than sand but not as tenaciously as clay. In addition, as a loamy soil dries, it will have the texture of flour.

**Determining soil moisture.** The soil moisture content varies according to the soil type and location of the soil relative to the groundwater level. *Moist soils* occur relatively close to groundwater levels and dry and medium soils are relatively far from them. Moist soils could be sands, clays, or loams, which hold water throughout the growing season. *Dry soils* include sandy soils, or soils mixed with gravel which rarely accumulate standing water, even after a heavy rain. *Medium or mesic soils* include clays and loams, which, unlike the dry soils, may accumulate standing water following a heavy rain for one to three days depending on the amount and intensity of the rainfall.

## Site Preparation Methods

To prepare your site for planting, you must first remove the existing vegetation. In most cases, the existing vegetation on your site will consist of perennial and annual weeds unless you are fortunate to have a native prairie remnant in your yard! Existing weeds will compete with prairie seeds for nutrients, moisture, and sunlight. Although it is nearly impossible to remove all annual weed seeds from the seedbank (Ragweed, Lamb's Quarters, Pigweed, Velvetleaf), it is crucial to kill and/or remove perennial weeds and rhizomes before planting. Perennial weeds such as Quackgrass, Bromegrass, and Red Clover will inhibit the growth of your prairie. Site preparation options vary according to the vegetation type that you are converting to a prairie planting.

### OPTIONS FOR PREPARING AN EXISTING LAWN SITE

**Smothering.** Cover the site with either black plastic, old carpet, plywood, cardboard, or a thick layer of leaves or newspapers. Leave in place for a full growing season and remove in fall or the following spring. Plant into a prepared bed (see the specifics under "Final Seed and Plant Bed Preparation").

**Sod-Cutting.** Remove the top two to three inches of grass and soil using a sod-cutter. Till the cleared area lightly and plant into a prepared bed.

**Cultivating.** Cultivate the planting site two to three times at one week intervals. If perennial weeds are present, cultivate the full growing season, every two to three weeks and plant into a prepared bed.

**Herbiciding.** Apply a glyphosate herbicide when the lawn is actively growing (in fall or spring). Till lightly when the grass has turned brown and plant into a prepared bed.

### OPTIONS FOR PREPARING AN OLD FIELD SITE

**Cultivating.** Mow and rake or burn the existing vegetation to the ground in late fall or early spring. Cultivate to a depth of four to five inches every two to three weeks from spring through fall. Before planting, make sure all the existing weeds have been killed. Plant in fall or the following spring into a prepared bed.

**Herbiciding.** Mow and rake or burn the existing vegetation to the ground in late fall or early spring. Apply a glyphosate herbicide three times (mid-spring, midsummer, early fall). When all the vegetation is dead, plant into a prepared bed.

## OPTIONS FOR PREPARING EXISTING FIELDS OF CORN, SOYBEANS OR SMALL GRAINS

Before planting, test the soil for agri-chemicals such as Atrazine, which, if present, will kill germinating prairie wildflower seedlings.

**Cultivating.** If perennial weeds are present, cultivate at a depth of four to five inches every two to three weeks from spring through fall. Plant in fall or the following spring into a prepared bed.

**Herbiciding.** Apply a glyphosate herbicide. *In the Spring*, spray once in mid to late spring, wait 10 days and plant into a prepared seedbed. *In the Fall*, spray once after the crop is removed, if weedy vegetation is still actively growing. Wait 10 days and plant into a prepared bed.

## Final Planting Bed Preparation

Just prior to planting, the soil should be prepared according to the type of planting method used. Seeding by hand (hand broadcasting), or mechanically with a Brillion drop seeder, requires a well-tilled finely graded surface. Seeding with a no-till or slit seeders (Truax, Tye, John Deere) requires a smooth level soil surface, but little or no tilling.

**A final pre-planting tip.** If planting in late spring or early summer, you will reduce the weed density by applying a glyphosate herbicide to the site when the majority of the weeds are two to three inches tall. Wait 10 days, till the soil only one inch down (tilling deeper will only bring up more weed seeds) and plant immediately. If you would like to avoid using herbicides, till the soil down one inch five to seven days after the first heavy spring rain (before green-up) and plant immediately. This will kill the weeds after they germinate but before they emerge.

## Seeding

### WHEN TO SEED

**Fall: September 1 through soil freeze-up.** Fall plantings are “dormant seedings” in which the seed over-winters in the soil and germinates the following spring. In general, wildflower seeds have increased germination in spring after a fall planting. Fall planting takes advantage of cold, moist winter conditions, breaking seed dormancies and promoting earlier germination and faster seedling establishment the following spring. This early seedling establishment is especially critical on sand, which heats up and dries out quickly in spring, as well as on clay, which becomes rock-hard when it dries out and restricts root development. Wet clay soils are also difficult to work and plant during moist spring conditions.

**Spring: March through June 30.** In general, warm season grasses – Little Bluestem (p.35), Big Bluestem (p.35), and Indiangrass (p.39), which do most of their growing during the warm summer months – show higher germination rates when planted in late spring/early summer, compared to fall seedings. *Either time period can be successful in most conditions.*

### SEEDING METHODS

**Hand broadcasting seed.** Start with a freshly-tilled seed bed free of rocks or soil clumps greater than two inches in diameter. Mix all of the seed (including the nurse crop seed) with a slightly dampened “carrier” such as sawdust, peat moss, or cracked corn. Sand is also an option but it can become too heavy. Use approximately 2 bushels or 2.5 cubic feet of carrier per 1,000 square feet of area. Divide the mixture in half and hand broadcast one half of the seed evenly over your site. Hand broadcast the second half of the seed over the site walking perpendicular to the initial direction to ensure an even distribution.

Cover the seed with 1/8 to 1/4 inch of soil with a rake or drag. Firm the seed in the soil by rolling the site with a cultipacker, roller, truck or tractor tires.

Mulch the designated planting area with approximately 1/2 inch of weed free straw. This mulch will help to control erosion on steep slopes and will help to keep sand or clay soils moist for a longer period. If you’re working on a very steep slope, cover the mulched area with a photo-degradable erosion control mesh with a 1/2 inch opening to allow for unimpeded wildflower seedling development. Secure the mesh with staples placed at one to two foot intervals.

**Mechanical planting of prairie seed.** On areas greater than one acre, it is more efficient to plant using a broadcast or a no-till seeder. The broadcast planter spreads the seed over the soil whereas the no-till seeders plant the seed in rows by opening slits in the soil. The broadcast seeder we recommend is the Brillion double box agricultural model, typically used to seed alfalfa and grass mixtures but equipped with native grass bristle brushes in the larger front box rather than the standard steel wire agitators. No-till seeders commonly used include Truax, Tye or John Deere.

## Post-Planting Maintenance

### YEAR ONE

First year weed control is required to reduce the competition between weeds and prairie seedlings for water, light, and space. Seeded areas should be mowed approximately three times during the first growing season to a height of four to six inches when the majority of weeds are in flower or when weeds reach a height of 10 to 12 inches. As a general rule of thumb, anything taller than 10 inches or in flower is a weed. Mowing this high will cut off the taller weeds while missing the shorter prairie perennials. Use a string trimmer or weed eater on small areas and an off set flail mower on larger areas. Flail mowers, as opposed to rotary mowers, will chop up the weeds as they are cut instead of laying the cut weeds on top of, and possibly smothering, the prairie seedlings. Mow before the weeds set seed to prevent further soil contamination. Do not pull weeds in a first year seeded area as this will disturb the developing seedlings and ungerminated seed. In the fall of the first growing season, maintain the vegetation at eight to ten inches through the winter to insulate the developing prairie seedlings and to help prevent frost heaving.

### YEAR TWO

During the spring of the second year, mow the standing residual vegetation to the ground in early spring and rake off the cuttings. If biennial weeds such as Sweet Clover are a problem, mow again to approximately 12 inches when the majority of weeds are in full flower but before they make seed.

### WHAT TO EXPECT DURING THE FIRST THREE YEARS

Prairie seeds will often germinate over a period of two to three years. Some will appear the first year, while others will come up in the second and even third year after the initial planting. Most perennial prairie flowers and grasses will not flower until their third or fourth full growing season. *Patience is required when establishing a prairie. Please follow these directions carefully and give your prairie time to develop.*

Perennial prairie plants devote most of their efforts in the first few years to developing their famous root systems. They will not be readily apparent in the first year, with little visible above-ground growth. However, they are steadily building their “root bank accounts” to sustain them in future years. The deep roots of the prairie flowers and grasses give them long-term staying power that allows them to squeeze out annual and biennial weeds, and return yearly for decades.



Establishment Guide Online: An expanded version of our Prairie Establishment Guide is available on our website. If you don't have internet access give us a call, we'll mail it to you free of charge.