Native Meadow Establishment Guide

Aside from plant selection, the most important step to successful meadow establishment is careful site preparation to eliminate competing weeds and cool season grasses. The following is meant to be a basic overview of site preparation and planting. However, every site is unique, and the presence of certain weeds – such as Johnsongrass, Canada Thistle, Chinese Bushclover, Spotted Knapweed, and Common Mugwort – may require more targeted management before the site is ready for planting. Furthermore, fields with significant populations of native prairie plants will require a different approach. It can be hard to recognize high quality, diverse native meadows without training, and once altered (even with the best of intentions) such meadows are very difficult – if not impossible – to recreate. Because of this, we encourage anyone who is interested in creating a native meadow to seek professional advice before taking any major steps.

Herbicide Preparation – Starting in Autumn

Existing weeds and non-native grasses can be killed by making three applications of non-selective herbicide (such as glyphosate*). To achieve this:

1. Mow or bushhog the area in September and allow the grass to grow 4-6 inches before applying herbicide. As with all herbicide use, be sure to read and carefully follow all instructions on the label of the product that you purchase. Wait 1-2 weeks before planting a cool season cover crop such as winter rye (plant no later than mid-Nov). This will help prevent erosion over the winter.
2. In April, mow the cover crop before it goes to seed and make a second herbicide application. Make a third herbicide application in early to mid-May, and plant your native perennials along with a nurse crop (such as millet) two weeks later, no later than June 7th.

*Be sure to read the label of the product that you purchase. Many retail formulations of brand-name herbicides such as Round-up have changed to include ingredients that are unsuitable for this application.

Herbicide Preparation – Starting in Spring

This process can also be started in Spring, with the goal of planting the following fall or winter:

1. Make your first herbicide application in late March or early April (the grass should be at least 4-6 inches high at the time of application.) As with all herbicide use, be sure to read and carefully follow all instructions on the label of the product that you purchase.
2. In mid-May to early June, make a second herbicide application. Wait 1-2 weeks before planting a summer cover crop such as annual rye or millet. This will help prevent erosion and stop weeds from spreading into newly bare ground. It's important to mow the cover crop in late summer to prevent it from going to seed and re-sowing itself, otherwise it can become weedy and out-compete the planted natives.
3. In September, make your final herbicide application and wait at least two weeks before planting your native meadow mix along with a winter cover crop.

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Organic (Solarization) Preparation

An organic option is to kill off existing vegetation using solarization. This involves covering the planting area with clear or black plastic for nine months to a year. To maximize the effectiveness of solarization, we recommend mowing the existing vegetation as close to the ground as possible before laying down 4-6 mm UV-resistant plastic. You'll need to weigh down the edges using cinderblocks to prevent wind from lifting and moving the plastic around (stakes tend to tear the plastic in strong winds and are thus not recommended). If using black plastic, you'll want to lift it a few times to allow weed seeds to germinate, before laying it back down to kill anything that comes up from the seed bank. Clear plastic does not need to be lifted. Once the existing vegetation has been killed and you are left with bare soil, you could then begin planting natives. Since the plastic is reusable, you could save it to use on a neighboring area and begin to expand on your meadow in future years.

Planting

For bigger meadows, the best way to plant is with a native seed drill. If you aren't able to hire a contractor with a native drill, you can lightly disc the soil, broadcast the seeds and nurse crop, and then pack the soil with a cultipacker. Because broadcasting is less efficient at spreading native seeds, you'll need to use nearly double the quantity of native seeds per square foot* when planting this way. It's also important to mix the native seeds with an inert carrier like rice hulls or clean sand (in a 1:1 ratio with the native seeds) when broadcast seeding. This will help ensure the native seeds – which are incredibly small and difficult to see – are being evenly spread across the site.

For smaller meadows (1/4 acre or smaller), we recommend planting plugs or a combination of seeds and plugs. This is because plugs establish more quickly than seeds and will therefore begin flowering and spreading a few years ahead of seeded perennials. However, seeds alone are also effective and are less expensive. If planting seeds, lightly rake the surface of the area (no more than ¼ - ½ of an inch deep) and plant a cover crop along with your native seed mix. Again, you'll want to mix the native seeds with a carrier like rice hulls or clean sand to help keep track of your application. Then, use a lawn roller to pack the seeds into the soil.

*Generally, about 30 seeds per square foot is the recommended rate when using a native seed drill (and 60 when hand-broadcasting), though specific site conditions may call for more or fewer seeds.

Maintenance

It takes around three years for a native meadow to take shape when started from seeds. This is because the native plants put a lot of energy towards root development in the beginning. The first summer after planting, it's important to mow the annual grass weeds (6-8" high) both in and around the meadow to prevent them from outcompeting slower-establishing perennials. After that, we recommend mowing once a year, ideally in February, to maintain your meadow.

Additional Resources:

Excerpt - 'Establishing a Wildflower Meadow from Seed' by Cathy Neal, NH Cooperative Extension

Xerces Society – Mid-Atlantic Native Meadows

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