

Resources

For professional advice, contact your county conservation district or state extension office:



<http://pacd.org/your-district/find-your-district/>

PENNSTATE



Cooperative Extension
College of Agricultural Sciences

<http://extension.psu.edu/counties>

Ernst Conservation Seeds, Inc.

8884 Mercer Pike, Meadville, PA 16335
800-873-3321 www.ernstseed.com

Natural Lands Trust, Hildacy Farm Preserve

1031 Palmers Mill Road, Media, PA 19063
610-353-5587 www.natlands.org

Useful reference/reading material:

Bringing Nature Home, Douglas W. Tallamy,

*Urban & Suburban Meadows, Bringing
Meadowscaping to Big and Small Spaces*,
Catherine Zimmerman

Published by:



pennsylvania environmental council

215-545-4570 www.pecpa.org



Watershed Coalition of the Lehigh Valley
www.watershedcoalitionlv.org

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and Conservation, Environmental Stewardship Fund.

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Cover photo: Ron Cogswell, *Dusk at the Meadow*,
Longwood Gardens Kennett Square (PA).



Nicholas A. Tonelli

Meadow Maintenance

The first several years after planting are critical to ensuring native grasses become well-established and that weeds do not take over.

These initial seasons require carefully timed mowing to prevent the weeds from developing seed heads while allowing the grasses to flourish. Weeds grow more quickly than native grasses and wildflowers, so regular high (4-6") mowing will keep the weeds from flowering while allowing the grasses to grow and mature. Cut errant large weeds off at ground height - instead of pulling - to avoid disturbing young grass plants. The frequency of mowing will depend a great deal upon the amount of rainfall in the first growing season, but mowing may need to be done up to once a month. Do not mow late in the season, since it is important to allow the young grasses to grow before winter. Mow one final time in the early spring (during March or April) of the second year.

After the first year, avoid mowing during grassland bird nesting season, from early May to mid-July. Mowing at this time can trap adult and fledgling grassland birds, killing them. Instead, where at all possible, use a weed trimmer to target undesirable vegetation, or mow the field

from the inside out, allowing the birds the chance to escape. Application of broadleaf herbicides is also appropriate if weeds are shading out the grasses.

Mowing later than July is also undesirable because it does not give the grasses enough time to develop before winter. This makes the meadow unsuitable habitat during the winter. Only mow in the late summer if there is a late season weed that needs to be managed.



In the second year, assess which weeds and invasive plants are causing the greatest problems, and consult with experts or do some research on the best ways to address those problems. Do not mow after early spring unless there are significant weed problems (see inside chart for a list of noxious weeds). It may be necessary to use a pre-emergent herbicide after mowing in the early spring. It is essential to prevent weeds from going to seed. A high mowing (up to 10") is recommended when the weeds are in full bloom, usually in June. At this point, the grasses are unlikely to have grown that high.

Eastern Meadowlark
Dominic Sherony

Meadows will not maintain themselves over time without mowing. Meadows are an early ecological successional stage, and, if left alone for a number of years, woody plants will take over and the site will reforest. The simplest way to maintain a meadow is to mow it in the early spring down to ground level, and then remove the clippings. Prescribed burns are "nature's way" of maintaining meadows, and burning can have many benefits for the health of a meadow. Before using a prescribed burn, seek out expert advice. Good sources for information on prescribed burns are the DCNR Bureau of Forestry and the Pennsylvania Game Commission.

Female Bobolink



Mike's birds

Herbicides

Although many people are nervous about using herbicides, feeling that they are not "natural," herbicides can be very effective tools in the establishment and maintenance of a healthy meadow. After all, the weeds that provide the greatest challenge to meadow establishment are generally not native to North America, and combating them using only mechanical means may not be enough.

The same chemical herbicide is often sold under a wide variety of different brand names produced by different manufacturers. Look for the name of the chemical on the label. Talk to a local resource professional about the correct herbicides to minimize damage to the meadow grasses and wildflowers.

Eastern Purple Coneflower



Doug Sherman

How to Create a Meadow in Southeastern Pennsylvania the Basics





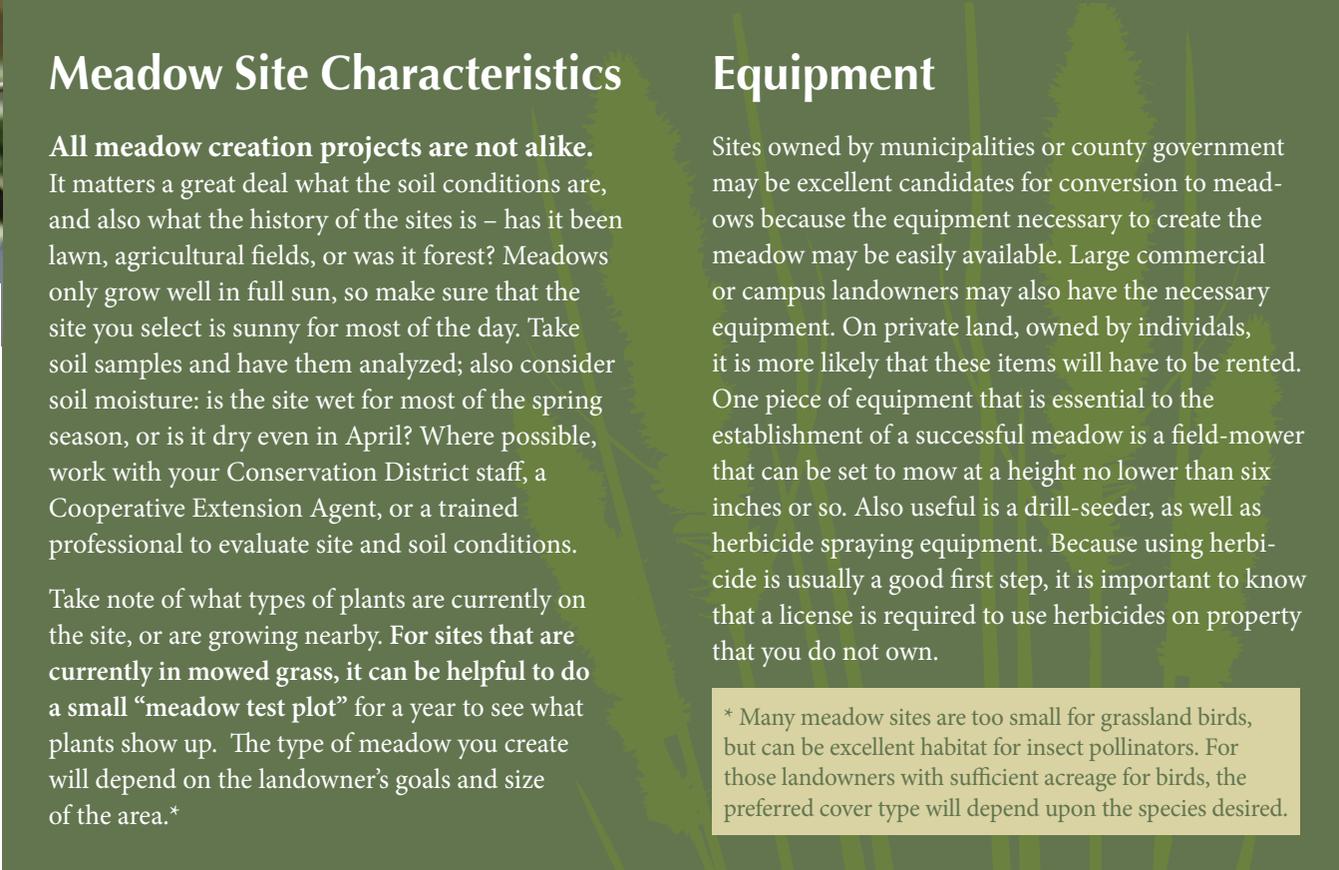
Ernst Seeds

Meadows – The Basics

Establishing a native plant meadow is not as simple or easy as letting the grass grow, but with planning and work, a successful native grass or wildflower meadow can be very rewarding. Native grass and wildflower meadows, naturally created by fire and other natural processes before European colonization of Pennsylvania, require a great deal more care to successfully establish in areas filled with seed stock of invasive plants and agricultural weeds.

This publication details the “basics” of what is required to create and maintain native grass and wildflower meadow in Southeastern Pennsylvania, focusing on the necessary steps, year by year. However, this publication is not meant to be a comprehensive resource, and it is highly recommended that those interested in establishing a native meadow seek out additional in-person professional help and take advantage of the numerous excellent published resources available.

Be prepared to perform regular maintenance for at least the first three years (or more) after planting, to ensure that the desired native species become well-established and that the site is not overtaken by invasive plants. How much maintenance is needed will depend a great deal on how well the site is prepared before the meadow is planted, and also on what types of invasive weed seeds are in the soil or can be easily carried to the site from adjacent areas.



Ernst Conservation Seeds

Meadow Site Characteristics

All meadow creation projects are not alike. It matters a great deal what the soil conditions are, and also what the history of the sites is – has it been lawn, agricultural fields, or was it forest? Meadows only grow well in full sun, so make sure that the site you select is sunny for most of the day. Take soil samples and have them analyzed; also consider soil moisture: is the site wet for most of the spring season, or is it dry even in April? Where possible, work with your Conservation District staff, a Cooperative Extension Agent, or a trained professional to evaluate site and soil conditions.

Take note of what types of plants are currently on the site, or are growing nearby. For sites that are currently in mowed grass, it can be helpful to do a small “meadow test plot” for a year to see what plants show up. The type of meadow you create will depend on the landowner’s goals and size of the area.*

Equipment

Sites owned by municipalities or county government may be excellent candidates for conversion to meadows because the equipment necessary to create the meadow may be easily available. Large commercial or campus landowners may also have the necessary equipment. On private land, owned by individuals, it is more likely that these items will have to be rented. One piece of equipment that is essential to the establishment of a successful meadow is a field-mower that can be set to mow at a height no lower than six inches or so. Also useful is a drill-seeder, as well as herbicide spraying equipment. Because using herbicide is usually a good first step, it is important to know that a license is required to use herbicides on property that you do not own.

* Many meadow sites are too small for grassland birds, but can be excellent habitat for insect pollinators. For those landowners with sufficient acreage for birds, the preferred cover type will depend upon the species desired.

Outreach

Working on public property will require working with various municipal or county bodies to make sure that everyone is “on-board” with the meadow project. Just because, for example, the municipal public works staff agrees with the meadow creation does not mean that the municipal governing board will support the project. Or, there may be citizen groups who may have objections based upon perceptions of a “sloppy” appearance or fear of insects or wildlife.

It is important to work with the community as a whole to make sure that your project does not run into roadblocks that could have been prevented by engaging concerns ahead of time. Even when working on private property, it can really be helpful to reach out to adjacent landowners to let them know the intentions of the project. Working with your local conservation district or watershed association is a great way to ensure that all the concerned stakeholders are informed of the project.

Once the community understands the significant habitat and environment benefits of meadow projects and learns that meadow areas are not be “neglected,” they are more likely to be supportive.

Educational signage will help to improve public perception.



K. Maxfield



USDA.gov

Site Preparation

By far the best way to ensure that a new meadow is successful to is completely eliminate the existing vegetation. There are a number of ways to do this, and which method to select will depend upon the size of the site and the resources available. For small sites, smothering the site with plastic can be very effective. If there are few existing weeds on a site, a plough or sod cutter can work, but this is not a method to use if agricultural weeds or other invasive plants are a problem ahead of time. Most common is to use herbicide: Gyophosphate (Roundup). This method can take several sprayings to be fully effective. One benefit to using plastic or herbicide is that the existing vegetation continues to stabilize the surface, limiting soil erosion. If a sod cutter or plough is used, then erosion control measures will need to be taken. Talk to your Conservation District about erosion control requirements.

Seed Selection

Which seed mix to choose will depend upon your soil texture and moisture conditions. Make certain you take this information into account, because a seed mix that is successful on one site may not do well on a different site. The grass chart, inside this brochure, lists a number of suitable grasses to choose from, but there are many other species available that may also be right for your site. Soil science is very complex and you’ll need an expert. Consult with experienced professionals to determine the best species for your site.

Site management is different depending upon whether native wildflowers are included in the original meadow seeding. This is because a mowing and maintenance schedule that helps facilitate the growth of grasses may impede the success of wildflowers. This is particularly true if it is necessary to use herbicide to control weeds after the initial planting, since the herbicide used is targeted to broadleafed plants (not grasses) and will therefore kill any native wildflowers along with undesirable weeds. Often it is best to leave wildflowers out of the initial seeding and add them at a later time, once the meadow has become established. A small selection of suitable wildflowers is also included in the chart inside this brochure.

Planting is best done in late spring when the soil is warm. Use of a no-till drill seeder for planting provides the best results with the least risk of erosion. However, if the soil has been ploughed, hand casting for small areas and broadcast seeders for larger areas may be used. In that case, be sure to mulch properly (not too heavily!) to prevent erosion.

Image by John Tann

A Selected List of Grasses for Meadows

Which seed mix to choose will depend upon your soil texture and moisture conditions. If sight lines are important for safety of residents living near a meadow, then select a seed mix that has limited use of species that grow taller than four feet. Consult with experienced professionals where possible to determine the best species for your site.

				
<p>Big Bluestem <i>Andropogon gerardii</i> Moisture: dry to medium 4 - 6 feet, warm season Photo: Ernst Conservation Seeds</p>	<p>Little Bluestem (<i>Schizachyrium scoparium</i>) Moisture: dry 2 - 3 feet, warm season Photo: Ernst Conservation Seeds</p>	<p>Sideoats Grama <i>Bouteloua curtipendula</i> Moisture: dry 2 feet, warm season Photo: Ernst Conservation Seeds</p>	<p>Broomsedge (<i>Andropogon virginicus</i>) Moisture: dry 2 - 3 feet, warm season Photo: Woodlot at en.wikipedia</p>	<p>Indiangrass <i>Sorghastrum nutans</i> Moisture: dry to medium 3 - 4 feet, warm season Photo: Ernst Conservation Seeds</p>
				
<p>Switchgrass <i>Panicum virgatum</i> Moisture: medium to wet 4 feet, warm season Photo: Ernst Seeds</p>	<p>Canada Wild Rye <i>Elymus canadensis</i> Moisture: medium to wet 2 feet, cool season Photo: Ernst Conservation Seeds</p>	<p>Purple Lovegrass <i>Eragrostis spectabilis</i> Moisture: medium 1 - 3 feet, warm season Photo: Ernst Conservation Seeds</p>	<p>Purpletop <i>Tridens flavus</i> Moisture: medium 2 - 3 feet, warm season Photo: Ernst Conservation Seeds</p>	<p>Prairie Dropseed <i>Sporobolus heterolepis</i> Moisture: medium 2 - 3 feet, warm season Photo: Ernst Conservation Seeds</p>
				
<p>Blue Joint Grass <i>Calamagrostis canadensis</i> Moisture: wet 2 - 4 feet, cool season Photo: Ernst Conservation Seeds</p>	<p>Awl Sedge <i>Carex stipata</i> Moisture: wet 1.5 - 3 feet Photo: Ernst Conservation Seeds</p>	<p>Fox Sedge <i>Carex vulpinoidea</i> Moisture: wet 3 feet Photo: Ernst Conservation Seeds</p>	<p>Tussock Sedge <i>Carex stricta</i> Moisture: wet 2 feet Photo: Ernst Conservation Seeds</p>	<p>Soft Rush <i>Juncus effusus</i> Moisture: wet 4 feet Photo: Ernst Conservation Seeds</p>

Meadow Wildflowers

							
<p>Butterfly Weed <i>Asclepias tuberosa</i> Loughmiller, Campbell and Lynn</p>	<p>Aromatic Aster <i>Symphotrichum oblongifolium</i> Wasowski, Sally and Andy</p>	<p>Lance-leaved Coreopsis <i>Coreopsis lanceolata</i> John Hixson</p>	<p>Eastern Purple Coneflower <i>Echinacea purpurea</i> Doug Sherman</p>	<p>Beebalm <i>Monarda didyma</i> Nature Center of Charleston</p>	<p>Wild Blue Lupine <i>Lupinus perennis</i> R. W. Smith</p>	<p>Blackeyed Susan <i>Rudbeckia hirta</i> George H. Bruso</p>	<p>Spiderwort <i>Tradescantia obiensis</i> Thomas L. Muller</p>

Noxious Weeds

These undesirable plants are considered harmful to animals or the environment.

							
<p>Bull Thistle <i>Cirsium vulgare</i> Tenaglia, D. - www.missouriplants.com</p>	<p>Crabgrass <i>Digitaria spp.</i> Meade, J., Rutgers NJAES Coop. Ext.</p>	<p>Ragweed <i>Ambrosia trifida</i> Meade, J., Rutgers NJAES Coop. Ext.</p>	<p>Burdock <i>Arctium lappa</i> Creative Commons - Chernilevsky, G.</p>	<p>Canada Thistle <i>Cirsium arvense</i> Tenaglia, D. - www.missouriplants.com</p>	<p>Johnson's Grass <i>Sorghum halepense</i> Swearingen, J. USDI National Park Service</p>	<p>Wild Parsnip <i>Pastinaca sativa</i> Creative Commons - Manske, M.</p>	<p>Curly Dock <i>Rumex crispus</i> USDA - Mohlenbrook, R. H.</p>
							
<p>Horseweed <i>Conza canadensis</i> USDA - Bodner, Ted</p>	<p>Bur Cucumber <i>Sicyos angulatus</i> www.illinoiswildflowerinfo</p>	<p>Field Bindweed <i>Convolvulus arvensis</i> USDA - Alexander, P.J.</p>	<p>Garlic Mustard <i>Alliaria petiolata</i> Creative Commons - Atkin, Tony</p>	<p>Queen Anne's Lace <i>Daucus carota</i> Creative Commons - Sibley, Christopher</p>	<p>Multiflora Rose <i>Rosa multiflora</i> Creative Commons</p>	<p>Jimsonweed <i>Datura stramonium</i> USDA - Justice, William</p>	<p>Honeysuckle <i>Lonicera tartarica, L. morrowii</i> Creative Commons - Roletschek, R.</p>