creating a meadow

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Helenium autumnale (Sneezeweed).
"I think the meadow really evokes a connection to the earth and a sense of peace and calm, but then when you walk into a meadow it's so full of life; it's just teeming. It's noisy with the buzz of the pollinators, the chirping of the crickets, the flutter of the birds and the butterflies. It's really alive. It's much more than a field that needs to be moved. It's full of life."

Peggy Bowers, Horticulturist

**why a meadow?**

**WHY PLANT A MEADOW INSTEAD OF A LAWN?**

**10 REASONS**

1. **No chemical pesticides/herbicides or fertilizers.** Eliminating toxic chemicals protects beneficial soil organisms that support the ecosystem, the plants and animals that live there, and the people and pets who visit there.

2. **Meadows** require minimal disturbance to the native landscape.

3. **Diversity.** Meadows are more than lawns that need to be mowed; they are habitats teeming with life. Meadows are home to many more different native plant, insect and animal species than monocultures (lawns).

4. **Only mow or burn** once between November and April. Meadows conserve fuel and labor.

5. **Sustainable.** Meadows thrive on a cradle-to-cradle cycle, using their waste to build soil organic matter that nourishes life.

6. **Year-round habitat.** Meadows provide year-round cover and food for insects and wildlife.

7. **Erosion control.** Unlike lawns that act as green concrete, the complexity and varying heights of meadow plants will soften rainfall and prevent water from rushing over the surface of the soil. In addition, the deep root systems hold and stabilize the soil.

8. **Bio remediation.** Meadows provide a matrix of microorganisms, fungi, green plants or their enzymes that can restore the natural environment altered by contaminants to its original condition. This is particularly important around bodies of water where meadow plants can block pollutant runoff from causing algae blooms.

9. **Low maintenance.** Once established, meadows require no watering, minimal mowing, no fertilizing, and no raking.

10. **Enjoyable.** The ever-changing beauty of a meadow evokes a sense of peace and calm, while the activity of its inhabitants provides endless enjoyment.

_Aster novae-angliae 'Purple Dome' (New England aster) and Panicum virgatum 'Shenandoah' (Red switchgrass)._
**introduction**

I set out to understand exactly how to create meadows as lawn alternatives. My journey led me to a fascinating group of expert plant people and meadow designers scattered throughout the United States. They generously shared their time and knowledge. This guide is the result of those travels, interviews and research. I hope to take the mystery out of meadowscaping by showing readers how to successfully establish a beautiful, diverse meadow or prairie habitat.

**MEADOWS**

What is a meadow? A meadow is a field of natural grasses and native wildflowers typically occurring in the eastern part of North America. Eastern meadows have a high proportion of cool season grasses. Meadows are found where the forest canopy has been opened by fire, flood or agricultural activities. Meadow plants are some of the first plants to vegetate an area, such as abandoned farmland or "old field meadows", where the soil has been disturbed. But meadows are a temporary ecological community. Without some type of natural or man made intervention, woody plants and trees will take over and shade out the grasses and flowers and the meadow will eventually turn into forest. This process is referred to as plant succession.

People often confuse the terms prairie and meadow. Prairie is the French word for meadow. Prairies are similar plant communities found in Midwestern North America,
Meadow design

My mission to learn about meadowscaping led me to Larry Weaner, a remarkable naturalistic landscape designer. During my interviews with Larry while strolling through his meadow creations, I began to realize that there is a little more to creating beautiful meadows than picking my favorite pink, yellow or blue flower.

The following concepts comprise the basis for sustainable meadow design. Larry Weaner, Larry Weaner Landscape Design Associates

**NATURE’S DESIGN**

The successful establishment of a sustainable meadow requires the understanding of how a meadow develops in nature. We need to understand the underlying ecology and the relationship the plants have to the soil, sun and other meadow plants. You cannot approach a meadow like you would a garden, where plants are chosen based on what you like. We have more latitude when planting a garden—if you are a little off on plant materials, it’s easy to fertilize, weed and water to maintain plant viability.

One of the reasons we want to trade in our lawn for a meadow is the sustainability factor. The plants must do the majority of the work. Even if our meadow planting is small and within spitting distance of the nearest hose bib, we want to be much more attuned to whether the plant is adapted to the specific conditions and native to the meadow site so we can bi-pass inputs usually required for a traditional garden or lawn.

The three key ecological concepts to understand when creating a meadow are:

- **Site Analysis**: pick the plants that are adapted to a situation.
- **Plant Communities**: right plant, right place—group together the plant species that naturally grow with one another.
- **Process of Change**: understand the process of change that takes place in a meadow over time.

Once you have a sound ecological foundation, you have the tools to go ahead and make plant selections. The key is first picking the plants that are adapted to the site. Then, and only then, will you be able to make the more aesthetic decisions such as plant color, texture and sequence of bloom.

Meadows at Milton Hershey School in Hershey, PA. Design, Timothy Hoover.
Site analysis

The first step after identifying where you want to plant your meadow is a careful site analysis. What is the soil type? How much direct sunlight is available? How much moisture is retained in this particular soil? Is the site sloped or level? A north-facing slope might be treated differently than would be a south-facing slope.

The basic criterion for selecting plants is choosing native plants that are adapted to the specific area. Plants like Little bluestem, a beautiful blue tinged grass that turns red in winter, and butterfly weed, that has a vibrant orange flower and attracts monarch butterflies, are found in dry meadow situations. If you have poor, gravely or sandy soil, you may think it a difficult place to grow a meadow, however, if you select plants that are adapted to those particular conditions, they will perform well.

This site analysis checklist will help you evaluate your meadow location. A site may contain more than one condition or soil type.

HOW TO DETERMINE SOIL TYPE

There are three basic soil types: sandy, loamy and clay.

Sandy soils are lighter and have particles big enough to see with the naked eye. These are poor soils, low in organic matter, and thus low in fertility. Water moves quickly through the soil taking with it nutrients and leaving persistently dry conditions. Sandy soils feel grainy and course to the touch.

Loamy soils are of medium texture, easy to work with, and with good organic matter (average garden soil). The organic matter helps retain moisture and provides good drainage. The soil particles vary in size between sand and clay soils and are slightly rough.

Clay soils have very fine particles packed tightly together. This limits drainage and causes the soil to be heavy and difficult to work with. If in doubt, take damp soil and roll between the palms of your hands. Clay soils will form a smooth rope.

Many meadow and prairie flowers are adapted to clay conditions and have deep tap roots that break up the clay, aerating the soil so water can slowly permeate. Silphium laciniatum (Compass plant), Dalea purpurea (Purple prairie clover) vigorously blooming in late July. The plants long tap root delivers moisture in this clay soil prairie condition.

Site analysis checklist

- Draw a diagram of the meadow area, note where north is to help determine the path of the sun over the area. As you examine the site make sure to mark areas that differ in soil, light or water conditions.
- Take a soil sample. If you have noted different soil types and conditions, make sure to do a separate sample of that area. The soil test evaluates soil pH (how acid or alkaline is the soil), buffer pH (value used to determine how much lime or sulfur should be added to bring soil to desired pH), soil nutrients and minerals and the organic matter content.
- Determine soil type, texture and structure—clay, sandy or gravelly, silt, loam.
- Moisture level: • low spot where water drains • high water table • poorly drained soil
- Make note of sun and shade conditions. Is there at least a half-day of sunlight?
- Topography—Flat? Hills or slopes? And which direction do they face?
- Is the site in its native state or has mulching, or removal or addition of topsoil altered it?
- Does the site have periods of water inundation or natural standing water areas/wetlands?
- How to determine soil type
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Many meadow and prairie flowers are adapted to clay conditions and have deep tap roots that break up the clay, aerating the soil so water can slowly permeate. Silphium laciniatum (Compass plant), Dalea purpurea (Purple prairie clover) and Baptisia australis (Blue false indigo) are just a few that possess these remarkable, deep tap roots. Grasses like Andropogon gerardii (Big bluestem), Sorghastrum nutans (Indian grass), and Elymus canadensis (Canada wild rye) are also great clay busters!

SOIL TESTING

To achieve a healthy, green lawn the soil must have the proper balance of minerals, nutrients, organic matter and soil organisms. Soil testing is particularly important so unnecessary nutrients are not used. Unfortunately, relatively few lawns are ever tested and excessive nutrients are indiscriminately applied, directly affecting soil health and ground water.

Meadows are the exact opposite. They do not rely on inputs to thrive. Meadow plants flourish because they are adapted to the soil conditions in which they are growing. A soil test is useful in determining the percentage of organic matte, soil pH and buffer pH. If the site has rich soil (soil high in organic matter, high fertility) you can expect an increase in pressure from weeds. Therefore, you should choose more competitive meadow plants such as Monarda fistulosa (Wild bergamot), Pycnanthemum virginianum (Virginia mountain mint), Helianthus helianthoides (Ox eye false sunflower) and Sorghastrum nutans (Indian grass). An alternative tactic would be to lower the pH by adding the recommended amount of sulfur to the soil. Nutrients are less available in soils with low pH. Meadow plants grow just fine in those soil conditions and will out-compete the weeds.

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COLOR

Begin working with colors you like and color combinations. Think about bloom sequence; make sure there is always something blooming throughout the season. Again, grasses are particularly beautiful, changing color as the season progresses.

**Penstemon digitalis** 'Husker Red' (Beard tongue). Consider foliage color as part of the color palette. Gardens of the Three Graces.

**Schizachyrium scoparium** (Little bluestem) bends with the wind in Connecticut meadow. Larry Weaner, Larry Weaner Landscape Design Associates.

left: Blue inflorescences of **Baptisia australis** (False indigo) provide a complimentary backdrop for blush red and yellow **Aquilegia canadensis** (Wild red columbine).

below: June Virginia meadow awash in fuchsia, lilac and gold color. Jeff Wolinski, Ecologist.
Hand seeding

Best for small areas or sites where it would be difficult to use a tractor.

General Seeding Rate: ½ lb Pure Live Seed (PLS) per 1,000 square feet. Most seed mixes come with a suggested seeding rate.

Tools
- Large tub or bushel basket
- 2 Five gallon buckets
- Rake
- Big metal roller filled with water

Materials
- Native flower and grass seed mix (¼ lb/1,000 sq. ft)
- Inert material (For every ¼ lb of meadow/prairie seed mix use 2 bushels of inert material. A bushel is equal to 8 gallons.)
  - Saw dust
  - Peat moss
  - Vermiculite
  - Perlite
  - Kitty litter
  - Other similar material
- Straw mulch

Step 1 Start with clear site — make sure all vegetation is killed off.

Step 2 Lightly rake soil, or till lightly and rake level if soil is not loose.

Step 3 Choose seed mix based on site analysis and design considerations. Make sure your meadow/prairie seed mix is regionally adapted to your climate, soil and light conditions.

Step 4 In a large tub, mix seed with an inert, slightly damp material. Mix thoroughly.

Step 5 Divide mixture into two equal parts, and then use a five gallon pail to carry it onto the area to be seeded.

Beware seed mixes sold in garden centers. Many contain non-native plants often with a high portion of annuals and biennials and few grasses. There are a number of mail order nurseries that specialize in this area. You can find a list in the resource section of this book.

Neil Diboll demonstrates hand seeding.
Finding local resources, such as nurseries, providing plants native to your area, is a key element in the successful outcome of your meadow or prairie planting.

The following sections are broken into nine broad regions. Within those regions, resources are listed in alphabetical order by state. The regional resource categories are comprised of:

- Web Resources
- Native Plant and Mail Order Nurseries
- Landscape Designers and Restoration Specialists
- Native Plant Societies
- Universities, Extension Services, Soil Testing Labs and Educational Organizations
- Gardens and Arboretums Preserving Natural Landscapes

More general resources follow the regional sections. In the general resource section you can find relevant books, plant databases and tools for bringing natural landscaping to your garden and community.

The regional resources lists are provided as a starting point in the creation of your meadow or prairie.¹ The lists are by no means complete. The need for these resources is growing and the industry is responding. New native plant vendors, consultants and programs are constantly being established. As part of this development, there is a growing understanding that the “right plant for the right place” is not only a native plant compatible with the site conditions, but also a plant native to your ecoregion. What exactly is an ecoregion? As the map on page 234 shows, an ecoregion (otherwise known as a bioregion) is a geographic area constituting a natural ecological community with characteristic flora, fauna, and environmental conditions and bounded by natural rather than man made borders.

For example, in Oregon, areas west of the Cascade Mountains, in the Willamette Valley, have higher rainfall, rich soils and temperate conditions. In the region east of the mountains, dry conditions persist and there are greater extremes in temperature. The plant pallet is vastly different in these ecoregions, located within the same state. Truthfully, it is rare that any state consist of a single ecoregion.

On the map, you can find your ecoregion. To learn about the topography, soils, vegetation and climate conditions in the ecoregion, use the corresponding number and locate the description. The description list starts on page 235, following the general resource section.

Understanding your ecoregion, doing a site analysis and working with local native plant nurseries and professionals will help further fine tune your quest to create a flourishing, truly native meadow or prairie.

¹Vendor listings do not constitute endorsement of these businesses or individuals.

Minnesota homeowners wanted to replace a chaotic mix of evergreens and ornamental grasses in their north facing, sloping front yard. EnergyScapes, Inc. designed and installed this simple, calming prairie garden with a mix of native flowers and grasses.