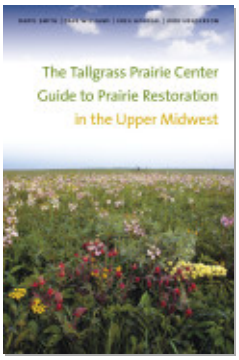
The Tallgrass Prairie Center Guide to Prairie Restoration in the Upper Midwest



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Small Prairie Plantings

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Overview

Small prairie plantings are used as backyard habitats, outdoor classrooms, community entryways, and low-input landscaping (reduced mowing, watering, fertilizing, and pesticide use) around homes and businesses. These plantings can range in appearance from natural-looking attempts to reconstruct a piece of prairie to more formally designed prairie gardens. Placed in high-visibility locations and viewed up close on a daily basis, these plantings are not necessarily a low-maintenance proposition. When 30 species are planted in a small area, a lot of labor can be invested trying to maintain balance. Ultimate satisfaction may depend on loosening expectations and learning to appreciate a little chaos. The rewards for establishing such personal refugia include increased familiarity with native flora and the joy of working with such a visually dynamic system.

The Planting Site

Choose a location that receives full sunlight for most of the day. To incorporate the planting into the surrounding landscape, take advantage of what the property has to offer. Perhaps there is a side yard, an area between two structures, or some otherwise well-defined parcel that can be completely or mostly filled by the planting. Use the planting to cover an entire slope or follow the length of a drive or swale. Interesting things can be done with small areas. And even a small planting is an opportunity to do less mowing.

What you don't want is a small rectangle of prairie all by itself in the middle of a turf grass lawn. The neighbors will wonder when you are going to come back and finish mowing. When working with a large campus or other expanse of lawn, fill the area as much as possible. Generally, the larger the planting, the better it will look. If the entire space is not available, shape the planting around

Fig. 13-1. The mowed border parallels the street and curves back to the building, allowing for a traditional mowed lawn between the building and the street. Photo by Kirk Henderson.

all or some of its borders, or use the planting as a transition zone between a mowed area and taller trees and shrubs (fig. 13-1).

If you lack a landscape architect's eye for shaping the planting to fit the site, a garden hose might help. As a flexible line on the ground, the hose can be moved around until a desirable size and shape are achieved. Consider leaving the hose buried in the grass as a permanent reminder of where to stop mowing the lawn and where to start managing the prairie. If the planting is to be managed with fire, maintain at least a 6-foot-wide mowed path between the planting and any woody vegetation or buildings.

Compared to traditional landscaping most prairie plantings look somewhat wild. Unless the intent is to test the local weed ordinance, think twice before establishing a front yard prairie in a very residential neighborhood. Chances are good that someone will be offended and a squabble may ensue. At the very least, front yard plantings need a wide, mowed border to set them back from the street and a buffer zone to protect them from a neighbor's herbicides.

To make prairie plantings more acceptable to neighbors, there are a few measures worth trying. Maintain a cleanly mowed border around the planting as an indication of your management and care. Use lawn timbers or a rock border to help define the area. A split rail fence provides a physical sense of containment,

even with just a couple of sections positioned at the corners of your prairie. Birdhouses and birdbaths placed in the planting may help neighbors connect with the habitat aspect. And if all else fails, there's always direct communication. Go talk to your neighbors and explain what it's all about.

Seedbed Preparation

Don't worry about soil quality. Native plants do just fine in poor soil. Extremely sandy or poorly drained soils will affect your selection of plant species, but they are no cause for hauling in topsoil or applying fertilizers. In fact, many people prefer poor soil prairies, finding them more attractive and more approachable. The plants don't grow quite as tall or get quite as thick. And poor soil probably means less weedy competition during establishment.

When it's time to prepare the seedbed, leave behind all preconceived notions related to conventional farming or gardening. Unless you are working in unusually compacted soil, there is no advantage to be gained by turning over or deeply tilling the soil. Such cultivation only stirs up more weed seed. The ideal seedbed is firm and smooth.

On bare-soil sites, seedbed preparation amounts to using a rake to scratch and slightly loosen the soil surface just before seeding. When you are not working with bare soil, the most important step is to sufficiently destroy any existing vegetation prior to planting. On sparsely vegetated sites, one herbicide application will be sufficient. Apply a glyphosate herbicide when existing vegetation is green and growing and no taller than 12 inches. Always follow label instructions when using herbicides.

Yard prairies are often installed into thick turf grass. Turf grasses can be quite persistent and need to be dealt with harshly right from the beginning. The time and effort this requires will pay off in the long run. Plan to make two glyphosate herbicide applications. After the first application, wait 2 weeks; then mow off the dead vegetation. Wait another 2 weeks for any regrowth to occur, and apply the herbicide a second time. Start this process in late April or early May so your site is ready for seeding sometime in June.

Prairies can also be seeded in the fall. These are called dormant seedings. Begin applying the herbicide in September to be ready to plant right after the first frost. The seed will lie on the ground through the winter and germinate in spring. This natural cold treatment actually improves germination for some native forb species.

If herbicides are not an option, the site can be prepared by smothering existing vegetation with heavy black plastic. Leave the plastic in place, cooking the

vegetation underneath, for at least a month — the longer the better. Another method of seedbed preparation is mechanical removal of the sod. Motorized sod cutters, available at rental stores, are fairly easy to operate.

Once the old vegetation has been destroyed, look the site over to decide whether the dead vegetation is so thick that it might prevent too much seed from reaching the soil. If that appears to be the case, conduct a controlled burn to get most of the dead vegetation out of the way (fig. 13-2). If burning is not an option, mow the site very short. After burning or mowing, rake the site clean and scratch up the soil a little in the process.

Consult local ordinances regarding the use of fire, and notify neighbors and the appropriate authorities before burning. Never burn alone. Have plenty of water on hand. And enlist the help of persons experienced in the use of prescribed fire.

Seed

Buy local seed. When ecologists recommend using local seed, they don't mean that you should purchase your seed from the local garden center. An ecologist's "local" refers to the seed's genetic origin. They want everyone to plant seed descended from the tallgrass prairie that was once in the vicinity of the planting or that derives from areas as close by as possible. In theory, that seed will be best adapted to local growing conditions. Plus there is a nice resonance to the idea of restoring what was actually once there and possibly providing local seed for others in the future.

When it comes to seed, opinions vary as to how local is local. Short of hand-collecting seed from nearby prairie remnants (great idea, but get permission), buying seed from a nursery or grower that specializes in native seed is the best way to live up to this ideal. Ideally, there is a native seed nursery within 200 miles of your planting. Always request local seed even if the nursery is very close by.

Don't be tempted by inexpensive, generic wildflower mixes. Packaged for nationwide distribution, these invariably contain inappropriate species — native somewhere else or not wildflowers at all. The planting will be more authentic and better adapted if it includes only those species native to your area. To minimize regrets, buy seed from a grower or nursery in your area that specializes in native seed. To search native seed sources online, type in key words such as "prairie," "native," "seed," "nursery," and the name of your state.

Use plenty of seed. A prairie planting is not a vegetable garden, where bare soil is maintained between rows of plants. Part of the strategy for suppressing

Fig. 13-2. Conducting a prescribed burn helps get dead plant material out of the way prior to seeding. Photo by Kirk Henderson.

weeds and reducing maintenance is to have all available space occupied by native plants right away. To that end, plant at least 80 seeds per square foot. Very roughly, that would be 8 ounces of pure live seed for 1,000 square feet. On large, level planting sites, that would be a heavy and unnecessarily expensive rate of seeding. On small plantings, it amounts to affordable insurance.

When putting together a seeding mix, emphasize diversity. Include many different native species to create a planting that is ecologically sound and visually interesting. Working with small areas allows you to load up on forbs without adding too dearly to the cost of the planting. Take advantage of this fact by experimenting with lots of different forbs. It's not totally predictable which species will thrive on a particular site, nor is it easy to predict how individual species will get along.

Grasses are equally important to the look of the planting, so do not skimp on this important component. Native grasses come in handsome shapes and sizes and are a source of color throughout the season. A good grass matrix provides spacing and a sense of order. Grasses also provide competition and support for forbs that might otherwise get too rangy and flop over. Put together a seeding mix that is pretty evenly divided between forbs and grasses.

Fig. 13-3. The prairie dropseed plants in the foreground are at full height and are as attractive as any ornamental grass. Photo by Kirk Henderson.

In small prairies where diversity is the goal, go easy on the taller grasses. For big bluestem, use no more than one-fourth ounce of pure live seed per 1,000 square feet. The same goes for Indian grass. Seed little bluestem and side-oats grama each at an ounce of pure live seed per 1,000 square feet. And try to work in some prairie dropseed, a beautiful, shorter-growing native grass, best started from live plants (fig. 13-3).

If soil conditions tend decidedly to one extreme or the other, that is to say, either very wet and heavy or very sandy and well drained, tailor the species mix to fit those conditions. And if the site is fairly shaded, purchase a mix designed for savanna or open woods. Otherwise, a diverse upland prairie mix (30 species or more) will result in the successful establishment of plenty of species.

Taller and More Aggressive Native Species

Some plants become overly dominant in small areas, threatening the visibility or even the survival of other species. Smaller plantings will retain their original diversity much better over time if the taller and more aggressive species are kept to a minimum. And smaller plantings tend to look better if they don't contain

so many of the really tall prairie species. If you want to include a specimen of any of these plants, consider putting in a couple of live plants instead of scattering their seed.

Some of the taller and more aggressive native species that should be kept to a minimum or omitted altogether include cup plant, New England aster, ox-eye sunflower, saw-tooth sunflower, Maximilian sunflower, and even big bluestem.

Black-eyed Susan, wild bergamot, and gray-headed coneflower may come on strong at first but shouldn't provide too much competition in the long run. Still, use them sparingly so they don't crowd something out early on.

On the other hand, this is the region of the tallgrass prairie. Unless you use a really limited seeding mix, the planting will include many species that, by late summer, are 4 feet tall or taller. Native plantings can exhibit sort of a split personality, resembling more of a traditional flowerbed early in the year and a small piece of wilderness by late in the growing season (figs. 13-4 and 13-5). Be prepared to embrace this reality.

Many native plants are not as showy as typical garden-variety plants. These plants with inconspicuous flowers are no less important in a native plant community. The prairie flora includes many species whose physical appeal derives from a distinctive shape of leaf and stem. Others have no appeal by traditional garden standards.

Native-seed dealers have catalogs and websites listing the species they carry. Some of these have photographs. Catalogs can be a good source of information about each species' habitat preference, growing height, and blooming time. Some dealers offer seed that is premixed for various situations. These mixes can be helpful. However, often no information is provided about how much of any one species the mix includes.

Scatter the seed by hand, making sure that plenty of seed is applied all the way out to the very margins of the planting. These edges are where the planting is most vulnerable to encroachment by surrounding nonnative species. When working with small quantities of seed, it's easy to run out before the entire area is covered. For better seed distribution, stir the seed into a bucket or pan that is half full of clean sand. Divide the sand and seed mixture into fourths, and seed one-fourth of the planting area at a time.

Lightly rake the seed into the soil to a depth of no more than one-quarter inch. After seeding, pack the soil tightly with a roller, or drive over it with a tractor. At the very least, walk the seed into the soil. Packing improves germination and seedling survival. Don't worry about packing too tightly. The seed will not be damaged.

A naturally patchy appearance can be achieved by planting concentrations

Fig. 13-4. In the spring when plants are small, tallgrass prairie plantings can resemble a traditional garden. Photo by Kirk Henderson.

Fig. 13-5. By late summer, the same planting resembles a small piece of wilderness. Photo by Kirk Henderson.

of individual species or small sets of species in selected areas. These concentrations can be isolated or overlapping. Place them randomly, or follow a plan. This mosaic seeding method can also be employed to position taller species at the back of the planting or down the middle, with shorter species in front or around the edges.

Consider putting together a matrix of less competitive species such as black-eyed Susan, partridge pea, round-headed bush clover, tall dropseed, little bluestem, and side-oats grama and scattering it uniformly throughout the planting. This method insures establishment of at least something over the entire planting area. Then seed the species concentrations over the top of that.

Live Plants

Small plantings can be greatly enhanced with the addition of live plants, even just a few. Spend most of your live plant budget on species that do not establish readily from seed. The following list includes plants that aren't as likely to establish from seed as well as some that bloom in early spring, when it's harder to get color into the planting. The list includes unusual plants and popular ones that will add to the quality and visual appeal of the planting. These plants are not native to all locations. Seek out your own regional gems. Suggested live plants include wild garlic, leadplant, Canada anemone, butterfly milkweed, silky aster, cream false indigo, New Jersey tea, shooting star, pale purple coneflower, rattlesnake master, prairie smoke, alumroot, yellow stargrass, round-headed bush clover, prairie blazing star, Michigan lily, great blue lobelia, wild quinine, prairie phlox, prairie rose, little bluestem, blue-eyed grass, and prairie dropseed. Also, consider establishing big bluestem and Indian grass strictly from live plants as a way to control the number and location of these taller grasses.

When ordering live plants, purchase the largest plants that your budget allows, especially if irrigation of the site is not possible. Tiny plants with little root mass are quick to shrivel and die during dry spells. Install the live plants right after the site has been seeded.

The smaller the planting, the easier it is to establish the whole thing from live plants. Live plants are more expensive than seed, and there's more labor involved. But live plants yield faster results and provide more control over the planting's eventual appearance. Live plants are recommended where a much more managed appearance is desired.

Woven weed barrier, also called landscape fabric, adds cost and labor to the project. It does provide effective weed control when you are working strictly

with live plants. Weed barrier is especially useful for maintaining spacing between plants and when working in formal settings. Weed barrier can be removed after a couple of years, once plants are well established.

Before installing weed barrier over turf grass or other existing vegetation, prepare the site with a glyphosate herbicide as described above, waiting 2 weeks after spraying before installing plants. It's possible to forgo the herbicide treatment if the weed barrier is put down far enough in advance of planting, in March or the previous fall. Purchase weed barrier of good quality, made of heavier material and with good UV stabilization.

Stretch the fabric tight. Overlap adjoining strips by 3 inches. Pin the weed barrier securely in place with 6-inch metal staples placed every 2 or 3 feet. Wait several days for the puffiness to go away as the weed barrier and underlying plant material flatten to the soil. This will make it easier to install the plants. The weed barrier makes a nice artist's canvas for onsite designing or transferring a design onto the site. Marking the location for individual plants or groups of plants is a good idea, especially when a labor crew does the installing.

To install the plants, cut an x in the weed barrier just big enough to dig the hole and accommodate the plant. When using bare rootstock, dig the hole wide enough to spread the roots and as deep as the root is long. Holes for tiny plants can be made with a dibble. For larger plants, a soil auger powered by a ⅜-inch, high-voltage drill will make the job easier. The root crown should be just below the soil surface without mounding the soil. A shallow, dish-shaped depression around each plant makes watering much easier. Fill the hole and pack the soil to remove all air pockets, and generously water the plants in.

Do not expose bare roots to sun and wind during the planting process. Carry them in a bag of peat moss, or keep them in a bucket of water during planting. Fine root hairs dry out incredibly fast, harming the plant's chance of survival. Order approximately one plant for each square foot of planting space.

Covering the weed barrier with mulch is important for aesthetic purposes when spacing needs to be maintained between plants, or if it matters how the planting looks before plants mature and hide the fabric. If the planting is to be used as a teaching aid, wider spacing makes it easier to identify individual species.

Use good-quality mulch. Wood chips from a garden center last longer and are weed-free compared to those from the local landfill. There is no way to completely weed-proof the planting, since weed seed blown into clean mulch can germinate and grow, too. Be careful not to smother the seedlings by piling mulch too high or too close.

As an alternative to expensive weed barrier and wood mulch, put down a layer of newspaper and cover it with leaves or grass clippings. These materials will last long enough to help plants get established and then decompose after a couple of years, allowing for more natural reproduction.

Maintenance

During the first growing season, prairie plants invest their energy sending down roots; they exhibit very little above-ground growth (fig. 13-6). During the first year, these tiny seedlings are at risk of being shaded out by tall weeds. Prairie seedlings can be difficult to identify also. This increases their chances of being disturbed or accidentally removed during any hand-weeding. The safest way to control weeds is to mow the planting to a height of 4 to 6 inches every 3 weeks throughout the first growing season. Weeds squeezing through the holes made in weed barrier should be snipped off instead of pulled. If irrigation is possible, turn on the sprinkler hose with the goal of providing an inch of water every week.

Fig. 13-6. It's difficult to anticipate what weed species will be released when existing vegetation is removed. Shown in late July, this planting is dominated by crab grass during its first growing season. Photo by Kirk Henderson.

Fig. 13-7. The second growing season brings on an explosion of black-eyed Susan. This is the only year the planting will look like this. Photo by Kirk Henderson.

Fig. 13-8. Wild bergamot is most conspicuous, but the planting in its third growing season begins to exhibit quite a bit of diversity, with many other plants starting to show up as well. Photo by Kirk Henderson.

Fig. 13-9. By the fourth growing season, biomass at ground level provides enough fuel to carry the fire. Fire helps eliminate a heavy build-up of thatch. Photo by Kirk Henderson.

During the second year (fig. 13-7), fill bare spaces with additional seed or with transplants. By the third or fourth growing season, some of the established plants can be divided and used to fill bare areas and improve distribution. Random weeds should be pulled or snipped off with hand trimmers before they produce seed or get too well established.

By the third year, even small plantings produce a tremendous amount of above-ground biomass (fig. 13-8). Fire is the best way to remove this material and prevent the build-up of a heavy layer of thatch. For general maintenance, burn the planting every 3 to 5 years (fig. 13-9).

Consideration for neighbors and local burn ordinances can make prescribed burning difficult or impossible. In this case, mowing is the best substitute for fire, as long as the cuttings are raked up and removed. It takes a heavy-duty mower to get through a mature planting.

Alternatives to mowing include cutting with grass clippers, hedge trimmers, or even a steel-bladed weed eater. Cutting and removing is a lot of work but makes it easier to enjoy emerging plants in spring. Do not get overzealous with spring clean-up, because butterfly eggs and larvae overwinter in the leaf litter.

For plantings in urban locations, it can be a good public relations move to mow the planting at the end of every fall so dead plant material does not attract negative attention through the winter. On the other hand, many of us enjoy seeing the dried plants silhouetted against the snow. And it's fun to watch juncos shake the stems of plants to eat the seeds off the snow.

To get to know the species and keep track of where they were planted, individual plants can be labeled with small markers stuck in the ground. Tags made for labeling plants can be purchased through catalogs and garden centers. Signs placed in plantings help people understand and appreciate what's going on. A "Prairie Restoration" sign tells neighbors that the tall stuff is there on purpose and is not the result of neglect. For young plantings, a "Prairie in Progress" sign is used as a request for patience.

Variations in site conditions and species composition make every small prairie planting an experiment with somewhat unpredictable results. The commitment of time and energy is as ongoing as it is in any garden project. As the planting develops, so does your relationship with the individual plants and the unique habitat they create.

Summary

- Yard prairies reduce the need for mowing, watering, fertilizers, and pesticides but are not necessarily a low-maintenance landscape.
- Native species do just fine in poor soil; many people prefer the look of poor-soil prairies.
- Turf grass or other existing vegetation must be thoroughly destroyed prior to seeding.
- Deep tillage should be avoided to prevent bringing more weed seed to the light of day.
- Smaller plantings will retain their original diversity much better over time if taller and more aggressive species are kept to a minimum.
- The seeding mix should be evenly divided between native forbs and grasses when the goal is to create a natural-looking prairie planting.
- Live plants can be used to enhance seeded prairies, or they may be used exclusively to achieve a more formal appearance.
- Apply seed at a heavy rate, at least 80 seeds per square foot, all the way to the edges of the planting.
- Mow the planting every 3 weeks throughout the first growing season.
- Some native species are aggressive and may require regular weeding.
- Burn or mechanically remove above-ground growth every 3 to 5 years.