Establishing a Herbicide-free Native Prairie Flower Garden from Seed

This is a step-by-step resource for homeowners who want to replace part of their lawn with an easy, low-cost, small prairie flower garden using native seed without herbicides. Native pollinators and birds have codeveloped with these native plants and need them to survive. Here is one of several ways to start a prairie flower garden.

Timeline:

Year One:	Spring/early summer: cover site with clear plastic and leave it on during the hottest months of the year November/December: remove plastic and immediately sow seed
Year Two:	Seed germinates in April. Trim weeds to 6-12"
Year Three:	Plants are maturing and starting to flower. Cut weeds to 6-12" or burn during the winter
Year Four:	Plants are mature and flowers bloom. Cut weeds to 6-12" or burn during the winter

Step 1 - Site selection

Step 2 - Site preparation

Step 3 - Seed sourcing and selection

Step 4 - Planting

Step 5 - Follow-up maintenance and long-term management

Site selection

Choose a site with full sun throughout most of the day. The condition of your site might vary from dry and rocky to wet. Your soil type will influence your seed selection. Consider a 10' set back from the road and define your prairie by mowing a border around it.

Site preparation

This is the most important step! Before planting, you will need to remove the existing vegetation. The best herbicide-free method is solarization where the area is covered with clear plastic. Solarization will kill weeds and weed seedlings. The best is a thicker, clear plastic as it will not tear as easily (1.5-4 mil or more). Black plastic and other opaque materials are less effective because they absorb and deflect some of the heat. Tip: consider posting signage like "Prairie in progress".

First, remove all vegetation by very short mowing. Irrigate thoroughly. Secure plastic around edges so it does not blow away. Tuck the plastic edges into the sod to prevent airflow from getting underneath. Weigh down the plastic with rocks or logs. The heavy plastic needs to be left in place for several months during the hottest time of the year before all vegetation underneath is dead. This requires 3-6 months. Remove plastic in late November/December and sow immediately. Seeding can be done directly in the mowed, dead vegetation. See cover material suggestions below.

Seed sourcing and selection

Purchase your seed mix from a local native seed nursery. It will be hardier for your climate and more disease-resistant if it comes from your area. Use a balanced mix of native varieties with varying flowering times throughout the year. Try to avoid some native grasses in small spaces like big bluestem, Indian grass and switch grass as they tend to take over. A diversity of plants is important for pollinators and birds. Soil moisture and sun determine proper seed selection. When sowing seed on slopes, incorporate erosion mats, oats or annual rye seeds to prevent erosion until the garden establishes. See seed and material sources listed below.

Planting

Timing is important! Sowing will take place late November/December as many seeds require exposure to a freeze and thaw cycle to break their dormancy. Mix seed with a larger volume of slightly moist sand or sawdust to help with seed distribution. About four parts of sawdust to one part seed. Seed will stick to sawdust. Divide the mixture and sow by using a grid-shaped pattern: apply half of the mixture onto the planting area in one direction. Then apply second half in a perpendicular direction. Avoid throwing clumps of seed mixture in one small area. Steep slopes may need to be stabilized with erosion mats (see materials list below). Sow seed on undisturbed ground. The seeds need direct contact with the soil to germinate but there is no need to cover the seed or rake it in. During winter freezes and thawing, seeds sown on the surface work their way into the soil to the proper depth for germination.

Follow-up maintenance and long-term management

Year 1. Your prairie will look messy and there will likely be no flowers. If this is a concern, plant a couple of potted natives. Control invasives by keeping them cut to a height of 6-12 inches throughout the first growing season, but avoid prairie flowers which are usually less than six inches tall in their first growing season. To identify invasives, use a free app like *Seek by iNaturalist*. To remove invasives, cut them off at the base and remove the green seed heads from the site. Do not pull them to avoid disturbing natives nearby. Always cut invasives before they are 12 inches high. String trimmers are best for small prairies. If using a mower, adjust to cut higher than 6 inches.

Year 2. If biannual invasives are a problem, cut them at 12 inches when they are in full bloom. Some patches of bare ground might still be visible. Prairie plants are developing deep root systems now.

Long-term management. By year three your prairie is starting to look more like what you envisioned before the work began. Mow your prairie at 12" every two years, late winter or early spring, just to control shrubs and trees. Use a lawn mower or string trimmer. This allows wintering insects and birds to benefit from prairie plants. If possible, burning during the winter would be the very best option.

Other helpful suggestions

Before you get started, check your local ordinance for grass or weeds. - Consider using signage to designate your prairie. - Enjoy collecting seeds from your prairie and donate them to your neighbors.

Seed Sources

Hamilton Native Outpost, Elk Creek, MO https://hamiltonnativeoutpost.com/
Pure Air Natives, St. Louis, MO https://pureairnatives.com/
Missouri Wildflowers Nursery, Jefferson City, MO https://mowildflowers.net/
Grow native! https://grownative.org/

Plastic or Tarps for Solarization

Local hardware store: Clear 6 mil Plastic Sheeting
Online: Tarpsnow.com: Super Heavy Duty Clear Poly Tarp, 14 mil, various sizes
Lrnn Clear Waterproof Tarps, various sizes
Waterproof Heavy Duty Tarpaulin, various sizes
Hydratarp Heavy Duty Clear, 11 mil, various sizes

Biodegradable Erosion Control Mats

Fiber mat "Geojute"
Wood shavings mat "Curlex No.1"
Straw mat "North American Green, S75 Single Net Straw Blanket"

References

"Establishing Pollinator Meadows from Seed", Xerces Society
https://xerces.org/publications/guidelines/establishing-pollinator-meadows-from-seed

"Reconstructing a Tallgrass Prairie", Native Landscaping Manual. Missouri Botanical Garden.
https://www.missouribotanicalgarden.org/plan-your-visit/family-of-attractions/shaw-nature-reserve/gardens-gardening-at-shaw-nature-reserve/native-landscaping-for-the-home-gardener/native-landscaping-manual

Grow native! https://grownative.org/ and https://grownative.org/learn/native-landscape-plans/

Missouri Prairie Foundation videos: https://moprairie.org/prairie-related-videos/

"Soil Solarization for Gardens and Landscapes" University of California
https://ipm.ucanr.edu/PMG/PESTNOTES/pn74145.html

"Obstacles to a Successful Meadow Establishment" Ernst Seeds https://www.ernstseed.com/help-guides/obstacles-to-a-successful-meadow-establishment/

"Native Plants for your Landscape", Missouri Department of Conservation https://mdc.mo.gov/trees-plants/native-plants-your-landscape

"Planting Prairie" Missouri Department of Conservation
https://mdc.mo.gov/magazines/conservationist/2001-11/planting-prairie

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