References and Resources for Prairies and Native Plantings

- For the backyard gardener, acreage owner, farmer, or classroom teacher/student -

Sustainable Urban Landscapes

IOWA STATE UNIVERSITY
University Extension
Why plant prairie species in the Midwest?

- Are low maintenance, once established—little water and no fertilizer needed
- Adapted to harsh climate extremes because prairie was the original vegetation
- Prevent soil erosion because of long, deep root systems
- Can restore/rebuild soils damaged by overuse
- Provide interest in the landscape—there are more than 200 prairie plants available in various shapes, sizes, and flower colors
- Create great wildlife habitat
- Are useful for large land areas that may be hard to till or have very dry or very wet soils—there are prairie plants adapted for all soil moisture levels
- Can establish and restore historic vegetation—prior to settlers plowing the land, prairie covered 85 percent of Iowa
- Make a great learning environment for students in science, math, language arts, social studies, history, and the arts.

Introduction

Prairie plants and other native plants can be used in many different types of plantings. Small prairie plantings near the home, school, or in parks can add interest to the landscape and attract butterflies, birds, and other wildlife. Large plantings may be used on acreages to help prevent erosion, provide feed for livestock, provide wildlife cover/food, or as part of a conservation program.

Resources listed in this publication will provide the background information and guidance so you will become more familiar with prairie plants and using them in plantings. Plant identification and information about establishment and management of native plantings are included in the resources listed.

This publication is the third in a series about prairie and native plantings. The first in the series, Introduction to Iowa Native Prairie Plants, SUL 18, discusses some common prairie plants and their growth characteristics. The second publication, Prairies and Native Plantings as Outdoor Classrooms, SUL 19, discusses the educational opportunities in a prairie to teach Iowa history, science, math, art, and environmental education.

General background

Plan your prairie to suit your individual goals—several examples:

- Add prairie plants to your landscape to reduce the amount of mowing, watering, and fertilizing.
- Establish a new prairie planting into bare soil—such as a previous row-crop field. A total reconstruction will be necessary because none of the remnant prairie remains.
- Help a biology teacher at a local school establish a prairie as an outdoor classroom to replace a portion of the turfgrass school yard.
- Restore an overgrazed pasture that has not been tilled or plowed. It will need special management to reestablish/renew the remaining original prairie vegetation and to remove the introduced bromegrass that was seeded into the pasture.
Plan the prairie

There are many resources available to assist you in reaching the goals of your native planting. Information about planting, maintaining, and reestablishing your prairie is plentiful. References including books, brochures, newsletters and Web sites are available. Local individuals, organizations, public planting sites, informational meetings, and agency personnel are good sources of information. Those with experience in prairie establishment and management, seed acquisition, and equipment use are invaluable to you as you start your project.

Learning to recognize prairie plants is useful for prairie remnant management and in identifying plants that are growing in a reconstruction. There are many references listed on page 6 in the “Plant identification” section to help with this process.

To establish a new prairie planting on your acreage or in your backyard, it is extremely helpful to learn from others who have been successful or at least have experience with prairie plantings. Establishment of a prairie planting is very different from planting a vegetable or flower garden or a field of corn or soybean. Previously growing perennial plants should be killed first so that the prairie seedlings can become established without competition. For example, if you are planting prairie into an existing bluegrass lawn, you will first need to kill the bluegrass before trying to establish the prairie. You can do this by removing the sod or using a nonselective herbicide, such as Roundup®, to kill the vegetation.

If there is an existing prairie remnant, identify the plants present. Inspect the area several times during the growing season and use reference books to help you with species identification. Next, determine management techniques that encourage the native plants and suppress the weedy plants (if present). The prairie may redevelop fairly rapidly after a few years of mowing, use of fire (with assistance), or suppression of unwanted weeds.

Site and size

Start with a planting that you can manage. More area can be added to the prairie in future years. Some people use the seed produced by the initial planting to expand the planting into adjoining areas. If you are planting a small prairie, make sure that the plants won’t be too tall. There needs to be enough vegetation so that the plants can support each other and not flop over or need to be staked. Refer to SUL 18, Introduction to Iowa Native Prairie Plants, for information on the heights of common prairie plants.

Blue-flag iris (Iris virginica) blooms in the spring in this prairie pothole marsh. (Polk County, Iowa)
Landowners wanting to establish larger plantings will want to find adequate seed sources before deciding how many acres to plant in one year. To help with larger plantings, special drills are designed for planting native seeds and these may be available for rent. Check with your local county conservation office, County Integrated Roadside Vegetation Management program, or Natural Resources Conservation Service (NRCS) office for the availability of a drill.

**Location/soil conditions**
Determine the soil condition of your site—is it dry or sandy, wet, or somewhere in between? If you do not know the soil properties of your site, contact your local Iowa State University Extension agriculture specialist, county conservationist, agricultural consultant, or horticulturalist for assistance. The type of soil and amount of moisture will determine the plants that will grow best in that environment. Refer to SUL 18, *Introduction to Iowa Native Prairie Plants*, for some ideas about matching the soil moisture conditions with the prairie species adapted to the site.

**Seed/plant sources**
When purchasing prairie seed know the type of seed, its source (whether grown locally or regionally), and its purity and germination. Ask for assistance in determining the source of seed that is best for your site and the amount of money that you wish to spend. Know the original source of seed that the grower is selling. Use local ecotype seed in your planting as much as possible.

The Native Grass Seeding Calculator is a tool designed to assist in developing seeding mixtures that are adapted to specific sites. The calculator also helps to figure seeding costs for various mixtures. Visit the Iowa NRCS Technical Resources Web site for more information about this planning tool at [www.ia.nrcs.usda.gov/technical](http://www.ia.nrcs.usda.gov/technical).

There are many prairie seed or plant producers in Iowa who have seed or plants (grown from seed) available for your prairie project. A thorough list of private and commercial seed sources is not included because it is ever changing. The following organizations and agencies offer up-to-date lists of local, Iowa, or regional seed sources:

![Prairie pothole marsh. (Polk County, Iowa)](image-url)
Butterfly milkweed (*Asclepias tuberosa*) is grown for ecotype seed at the Tallgrass Prairie Center. (University of Northern Iowa, Cedar Falls)

Seed heads of spiderwort (*Tradescantia* sp.) drying on a tarp. Seed will be used for future plantings. (Tallgrass Prairie Center, University of Northern Iowa, Cedar Falls)

producers. Talking with local people who have experience with prairies can help you to locate the best source of seed for your planting. Note that some of the sources are targeted for larger landowners and farmers.

Iowa Crop Improvement Association. 2007. *Native Species Seeds for Conservation and Restoration.* (515) 294-6921

www.agron.iastate.edu/icia

Iowa Prairie Network (list of prairie seed growers)

www.iowaprairienetwork.org

County Conservation Board, office in each county

www.mycountyparks.com (landowners)

Pheasants Forever, Iowa local chapters

www.iowapeasantsforever.org (landowners)

**Obtain advice from knowledgeable people**

There are helpful people who have experience with prairie establishment. Look locally to find those experts. Local prairie enthusiasts may be members of organizations such as the Iowa Prairie Network or the Iowa Native Plant Society. These organizations hold meetings, conduct tours of prairies and plantings, and have active Web sites that list events and tours.

If you are a landowner trying to establish a prairie as part of a conservation planting or farm program, you may want to contact the Iowa Department of Natural Resources (DNR) Private Lands Program, local NRCS office, local county conservationists, or Pheasants Forever biologists to help with your prairie. The Iowa DNR Private Lands Program has some cost-share opportunities available for both urban and rural clients. The DNR's Private Lands biologists and wildlife specialists have expertise in native prairie establishment. Contact the Private Lands biologist in your region of Iowa.

www.iowadnr.gov/wildlife/privatelands

**Organizations and agencies**

Iowa Association of County Conservation Boards

www.mycountyparks.com

Iowa Native Lands (prairie specialists listed by county)

www.prrcd.org/inl

Iowa Prairie Network (prairie enthusiasts statewide)

www.iowaprairienetwork.org

Natural Resources Conservation Service (NRCS) offers urban conservation and landowner cost-share programs. Contact Iowa NRCS office (515) 284-4769 or local county NRCS offices.

Local Iowa Resource, Conservation, and Development (RC&D) offices (see map on Web site for the office in your area)

www.ia.nrcs.usda.gov/partnerships/rcanddlist.html
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Pheasants Forever, Iowa local chapters
(native seed program)

www.iowapheasantsforever.org/page/Native-Seed-Program.jsp

Trees Forever

www.treesforever.org

Plant identification
Most of the books listed below include photos or illustrations of common prairie plants. The identification of many plants can be determined by looking at the pictures and drawings in these books. For detailed identification of unknown plants, you will need to go to more specialized botanical keys (Newcomb, 1977) or find a local person who can identify plants (look at Iowa Prairie Network reference list on their Web site). Faculty or staff at a local college or state university may be able to assist you with plant identification. The Ada Hayden Herbarium at Iowa State University is an excellent resource for especially difficult plant identifications. For more information, go to

www.public.iastate.edu/~herbarium/servicespage.html.

Plant keys

Photos and illustrations


www.wisc.edu/wisconsinpress


www.falcon.com


www.uiowa.edu/uiowapress


www.uiowa.edu/uiowapress

A reconstructed prairie garden, planted and maintained by students, offers many educational opportunities. (Hawkeye Community College, Waterloo, Iowa)
Establishment and management of the prairie planting

There are many successful methods for reconstructing your prairie. Most successful plantings require trial and error and patience. After planting a prairie from seed, you will need patience during the establishment period. It takes two to three years for the root systems of the (mostly) perennial prairie plants to crowd out other weedy plants that have grown there in the past. Prairie plants will eventually outcompete weeds, that are mostly annuals and biennials.

Prairie reconstruction and restoration


Note the non-native birdsfoot trefoil in the mowed area in this reconstructed prairie. (United Community Schools, Boone County, Iowa)


Prairie reconstruction with gayfeather (*Liatris pycnostachya*), gray-headed coneflower (*Ratibida pinnata*), and stiff goldenrod (*Solidago rigida*) at the ISU Field Extension Education Laboratory. (Boone County, Iowa)

**Prairie restoration**


**Invasive species**


Huebner, Cynthia, Cassandra Olson, and Heather C. Smith. 2005. *Invasive Plants Field and Reference Guide: An Ecological Perspective of Plant Invaders of Forest and Woodlands*. U.S. Department of Agriculture, Forest Service, Northeastern Research Station, Morgantown, WV. E-mail ryoung@fs.fed.us to request a copy.
Seedling growth—illustrations/photos


www.treesforever.org

Prairie seedlings in a screen house. (Ion Exchange, Harpers Ferry, Iowa)

Pale purple coneflower (*Echinacea pallida*) and white sage (*Artemisia ludoviciana*) in the Pohl Prairie Preserve. (Ames, Iowa)

Additional resources

Online

Tallgrass Prairie Center
www.tallgrassprairiecenter.org

Integrated Roadside Vegetation Management
www.uni.edu/irvm

The Living Roadway Trust Fund
www.iowalivingroadway.com

Iowa Natural Heritage Foundation
(section about prairie management)
www.inhf.org/prairiemgmt.htm

The U.S. Environmental Protection Agency
Green Landscaping
www.epa.gov/greenacres

Natural history of the prairie


Prairie plants around a street sign. Purple coneflower (*Echinacea purpurea*) and black-eyed Susan (*Rudbeckia hirta*).
Prairie references for children and young adults


**Events and prairies to visit**

Every county in Iowa has either a park, reconstructed roadside, or private land that contains prairie for you to enjoy. To find out where these areas are located, contact your local county conservation office. Several examples of places to visit:

**Decorah Parks and Recreation**, 24-acre reconstructed prairie and 11-acre filter strip; (563) 382-4158 [www.decorahia.org](http://www.decorahia.org)

**Neal Smith Wildlife Refuge**, Prairie City, IA, more than 5,000 acres of restored or reconstructed prairie that includes an area of grazing buffalo; (515) 994-3400 [www.fws.gov/midwest/nealsmith/](http://www.fws.gov/midwest/nealsmith/)

**Loess Hills**, Annual Loess Hills Prairie Seminar in early June, Loess Hills Wildlife Area, Onawa, IA; contact Western Hills Area Education Agency, Sioux City, IA, (712) 274-6000

**Iowa Native Plant Society**, an organization for plant enthusiasts, gardeners, and professional botanists that encourages conservation and ethical use of Iowa’s plants; promotes education about Iowa’s plants, their habitats, and preservation of these plants and their environment; statewide field trips [www.public.iastate.edu/~herbarium/inps/index.html](http://www.public.iastate.edu/~herbarium/inps/index.html)


[New England asters (*Aster novae-angliae*) bloom beautifully along an Iowa roadside in the fall.]
**Glossary**

**Local ecotype seed** is produced from plants that naturally evolved on or near your site and are adapted to the climate and soil conditions in your area.

**Prairie reconstruction** means the establishment of a new prairie planting on a site that contains no prairie species because the native prairie was eliminated; often the site was in cropland, converted pastureland, or a construction area.

**Prairie remnant** is an area containing some component of the original native vegetation, surviving intact on undisturbed soils. It is a relic of the native prairie vegetation that covered more than 85 percent of Iowa prior to European settlement.

**Prairie restoration** is the rejuvenation of a prairie that has been degraded by overgrazing, some mechanical disturbance, or mismanagement. Restoration generally involves a combination of removal of animals that overgrazed, prescribed burning, and perhaps exotic or woody species control.

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**About the covers**

**Front**

Top, l to r: Spiderwort (*Tradescantia ohiensis*), Wild rose (*Rosa* sp.), Black-eyed Susan (*Rudbeckia hirta*)

Bottom: Prairie remnant.

**Back**

Top: Prairie planting to reduce erosion on hillside at Pinicon Ridge Park. (Linn County, Iowa)

Bottom, l to r: Prairie pothole marsh. (Polk County, Iowa)
Big bluestem (*Andropogon gerardi*) in limestone-edged landscape planting.

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File: Horticulture 2-10

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Michigan lilies (*Lilium michiganense*) along an Iowa roadside.
Plan your prairie to suit your individual goals...