Sustainable Urban Landscapes

Introduction to Iowa Native Prairie Plants

The Iowa tallgrass prairie developed over the past 9,000 to 10,000 years, after the retreat of the last glaciers. The ecosystem that developed as a prairie consisted of communities of grasses, forbs, insects, and other animals. Prairie communities vary depending on the environment. Plants and animals in these communities adapted and evolved to survive a range of conditions from hot and dry to moist and boggy.

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TRAER, TAMA COUNTY, IOWA

Introduction to Iowa Native Prairie Plants

This publication focuses on the native plants that inhabit prairie communities. "Native plants" are plants that were growing naturally in a particular area before human settlement. Although many native plants are "prairie plants," the focus herein is on growing individual species or combinations of species in a garden or large planting, rather than on prairie construction or restoration.

Prairies are complex ecosystems that blend the topography and soils of an area with plant and animal communities that can live together in a stable relationship. The process can be complex and requires time and patience. Also, it is difficult to develop a prairie ecosystem on a space less than about a quarter acre.

Most people, however, choose to create a natural-looking garden or planting that serves many of the same functions as a prairie, namely, beauty, weed management, wildlife habitat, and the reduction of soil erosion and runoff. When planning a garden of native plants, it is a good idea to visit other gardens that have native plantings or to visit public gardens to see the size, form, and spread of the plants you would like to grow. Local prairie enthusiasts or conservationists organize prairie walks that can be a source of specific information about prairies. A visit to a prairie enables you to see different plants in their natural setting.

There are many advantages to growing native plants:

- Native plants are well adapted to local conditions. They are vigorous and hardy, so they can survive winter cold, and summer heat, drought and windy conditions.

- Once established, they require little or no irrigation. No fertilization is needed.

- They are resistant or tolerant to most insect pests and diseases.

- A blend of native species provides season-long color and interest.

- Native species are members of a plant and animal community that balances itself when there is a diverse assemblage of species. This natural balance keeps native plants from becoming invasive.

- They attract butterflies by serving as host plants for caterpillars and nectar plants for butterflies.

- Growing native plants is a fun learning process. Each season brings some answers and more questions.

A partial guide for native plants that may be suitable for your landscape can be found on pages 3–6. Note the column listing plant height. Some of the tall natives are not suitable for small spaces without staking individual plants.

TRAER, TAMA COUNTY, IOWA

An established urban reconstructed prairie

Iowa Native Prairie Plants—Pictorial Guide

Rattlesnake master
Eryngium yuccafolium

Spiderwort
Tradescantia ohioensis

Purple prairie clover
Dalea purpurea

Butterfly milkweed
Asclepias tuberosa

Swamp milkweed
Asclepias incarnata

Purple coneflower
Echinacea purpurea

Coreopsis
Coreopsis palmata

Partridge pea
Chamaecrista fasciculata

Great blue lobelia and goldenrod
Lobelia syphilitica, Solidago sp.

Iowa Native Prairie Plants

Grasses

Common/Latin Name	Soil Moisture Conditions*	Mature Height	Flower Period	Comments
Big bluestem *Andropogon gerardi*	M	5–7′	Aug.–Sept.	Sometimes known as “turkey foot” by the pioneers. Dominant plant of the eastern tallgrass prairie. Warm-season grass.
Indiangrass *Sorghastrum nutans*	M	3–6′	Aug.–Sept.	The plant forms an attractive mounded clump; excellent specimen plant in perennial gardens; warm-season grass.
Switchgrass *Panicum virgatum*	M	3–6′	July–Aug.	Bright yellow to tan fall color; seed heads are wispy sprays; warm-season grass.
Little bluestem *Schizachyrium scoparium*	DM	2–3′	Aug.–Sept.	Red-brown and russet fall color; specimen plant in perennial gardens; warm-season grass.
Canada wildrye *Elymus canadensis*	M	2–3′	May–June	Distinctive wheat-looking seed head that provides texture to mixed plantings; cool-season grass.
Sideoats grama *Bouteloua curtipendula*	M	8–18′	Apr.–June	Establishes quickly from seed; cool-season grass.
Prairie dropseed *Sporobolus heterolepis*	M/DM	2–3′	August	Beautiful grass for variation in texture and form; warm-season grass.

Forbs

Butterfly milkweed *Asclepias tuberosa*	M	2–3′	June–Aug.	Orange to yellow flowers; attracts many butterflies; host plant for monarch butterflies.
Swamp milkweed *Asclepias incarnata*	W	3–5′	June–Aug.	Pale pink to rose colored; smaller and more compact than common milkweed; host plant for monarch butterflies.
Partridge pea *Chamaecrista fasciculata*	M	1–2′	July–Aug.	A showy, annual legume that has bright yellow flowers and dark green foliage.
Cardinal flower *Lobelia cardinalis*	W	2–3′	Aug.–Sept.	Spike of red flowers; requires wet sites; does best along stream edges.
Great blue lobelia *Lobelia syphilitica*	WM/W	2–3′	Aug.–Sept.	Medium blue flowers. More common in natural Iowa habitats than cardinal flower.
New England aster *Aster novae-angliae*	M	2–4′	Sept.–Oct.	Purple or pink. Makes attractive cut flower in the fall; attracts butterflies and moths.
Plains tickseed *Coreopsis tinctoria* Prairie coreopsis *Coreopsis palmata*	DM	1–3′	May–Aug.	Yellow flowers. After flowering, the disc turns brown and produces seeds that resemble ticks, hence its common name. Tickseed is a good nectar source for bees and a valuable plant in the prairie biome.
Pale purple coneflower *Echinacea pallida*	M	2–3′	June–July	Long-lived perennial; resembles daisies with backward, curving pink-purple ray flowers; the flower center contains a prickly raised dome.
Purple coneflower *Echinacea purpurea*	M	2–3′	July–Aug.	A native to far southeast Iowa; grown extensively in home gardens.
Bottle gentian *Gentiana andrewsii*	M	1–2′	Aug.–Oct.	The common name notes that its flowers stay closed when it is blooming. Flowers are vibrant indigo-purple.
Prairie smoke *Geum trifolium*	M/D	1–2′	May–June	Delicate reddish-pink blooms in spring give way to fluffy seed heads that look like puffs of smoke in summer. Native to extreme northeast Iowa.

False sunflower or Oxeye *Heliopsis helianthoides*	M/WM	3–5′	July–Sept.	Smaller than most sunflowers; perennial; has interesting opposite-leaved foliage with 1-inch yellow flower heads from midsummer on; can be somewhat aggressive.
Prairie blazing star or Prairie gayfeather *Liatris pycnostachya*	M	1–4′	July–Oct.	The corms served as winter food for early settlers (and rodents). This signature tallgrass prairie plant has gained fame as a lavender cut flower in the florist industry. Pycnostachya means "thick-spiked," referring to the densely packed flower spikes.
Rough blazing star or Rough gayfeather *Liatris aspera*	M/DM	2–3′	July–Oct.	Violet/purple flowers. The flower spikes are larger and more separated along the stem than those of prairie blazing star. It takes longer to establish than its cousin, prairie blazing star.
Leadplant *Amorpha canescens*	DM	1–3′	June–Aug.	Small purple flowers; grayish-white compound foliage on perennial stems.
Shooting star *Dodecatheon meadia*	M/DM	1–2′	May	Will tolerate some shade; native to eastern Iowa. Quite showy in the early season with pale pink to white dramatic flowers.
Golden Alexander *Zizia aurea*	WM/M	1–3′	Apr.–June	Perennial of moist woods, prairie meadows, and thickets; establishes quickly from seed; yellow umbel resembling a more delicate Queen Anne's lace.
Wild bergamot *Monarda fistulosa*	M	1–3′	July–Aug.	Lavender blooms; like all members of the mint family, it has square stems and is pleasantly fragrant.
Gray-headed coneflower or Yellow coneflower *Ratibida pinnata*	M	3–4′	June–Sept.	Yellow flowers. When crushed, the mature head emits an anise fragrance. Easy to establish and showy. Both gray-headed coneflower and black-eyed Susan are great additions to mass plantings because they establish quickly, bloom prominently, and in a few years are replaced by other species as the planting becomes permanent.
Black-eyed Susan *Rudbeckia hirta*	M	1–2′	June–Oct.	Gold flowers. Black-eyed Susan is a great addition to mass plantings because it establishes quickly, blooms prominently, and then in a few years is replaced by other species as the planting becomes permanent. Its life cycle ranges from a sturdy annual to biennial.
Canada goldenrod *Solidago canadensis* and Gray goldenrod *Solidago nemoralis*	M	3–5′	July–Sept.	Common; easy to establish and provides rich golden fall color. Traditionally, and because it is so showy, it is falsely accused of causing human hay fever. (Its pollen is not windborne.)
Stiff goldenrod *Solidago rigida*	M	2–4′	Aug.–Oct.	Yellow flowers. The flowers of this species are in a prominent flat-topped cluster. Before flowering, the plant is erect and subtly attractive, with downy hair on the leaves.
Spiderwort *Tradescantia ohioensis*	M/WM	1–2′	Apr.–July	The plant's form and rich violet flowers are a hidden treat in the prairie planting.
Compass plant *Silphium laciniatum*	M	4–10′	Aug.–Sept.	Yellow, daisy-like flowers; one of the signature plants of the Iowa prairie. Early travelers used the plant's habit of orienting its deeply divided, side-turned leaves due north and south, making it a natural compass.
Purple prairie clover *Dalea purpurea*	M	1–2′	June–Aug.	1–3″ terminal spikes of rose- to magenta-colored flowers that open from the top down. It establishes easily from seed, and will often flower the same season it is planted. Good addition for most urban and non-urban settings.
White prairie clover *Dalea candida*	M/DM	1–3′	June–Aug.	Similar to purple prairie clover, but the white flowers and the divided leaves are larger. It is slower to establish and does not compete very well, especially in wet soil conditions.
Round-headed bushclover *Lespedeza capitata*	M/DM	2–4′	July–Aug.	Common in most Iowa prairies; has silvery green trefoil leaves and clusters of white flowers that turn chocolate brown as they mature.
Wild petunia *Ruellia humilis*	M	8″–1′	June–Aug.	A savannah or woodland-edge plant that has light lavender 1 to 1.5″ flowers on low-growing, dark green plants.
Rattlesnake master *Eryngium yuccafolium*	M/DM	2–4′	July–Aug.	Adds texture and variety to a prairie; yucca-like leaves have soft spiny edges. Years ago it was sometimes considered a remedy for snakebite. (Don't try that at home.)

*W = Wet WM = Wet Mesic M = Mesic DM = Dry Mesic D = Dry

Iowa Native Prairie Plants—Pictorial Guide

Canada wildrye
Elymus canadensis

Little bluestem
Schizachyrium scoparium

Indiangrass
Sorghastrum nutans

Sideoats grama
Bouteloua curtipendula

Prairie blazing star
Liatris pycnostachya

Gray-headed coneflower and wild bergamot
Ratibida pinnata, Monarda fistulosa (pink)

Rough blazing star
Liatris aspera

Cardinal flower
Lobelia cardinalis

Compass plant
Silphium laciniatum

Big bluestem *(Andropogon gerardii)*—MESIC, height 5–7 ft. It begins growth in late spring and flowers in late summer. This tall, deep-rooted perennial was the primary grass of the eastern tallgrass prairie that once covered thousands of acres. The seed head is three-branched, resulting in its common name—"turkey foot."

Wild bergamot *(Monarda fistulosa)*—MESIC, height 1–3 ft. This perennial prairie forb blooms between June and August. Its rosy-lavender-colored flowers are attractive to bees and butterflies.

Many native plants have been selectively bred, or even hybridized so that they meet the needs of people. An example is prairie blazing star, *Liatris pycnostachya.* Varieties of blazing star have been selected from nature for their form, flower color, and durability so they fit both landscape needs of homeowners and cut flower needs of florists.

Planting non-local strains near a prairie remnant or a native reconstruction should be avoided because of the potential for genetic contamination. If you are looking for plants that are native to your particular area, you need to find a commercial seed or plant source that is from local ecotypes. Many suggest using seed sources from within approximately a 50-mile radius of your planting. When ordering or purchasing seed, check with an expert regarding the optimum seeding rate.

Note: So called "wildflower" mixes may contain few native wildflower seeds and may contain many plants native to the United States but not to Iowa.

Local Ecotypes

Plants of the same species will vary considerably, depending on their geographic origin. Just as people have different traits that give them different attributes such as height, hair color, and facial shape, each plant species has a range of genetic variability.

For more information

Check these additional titles in the series on prairies and native plants at www.extension.iastate.edu/store.

Prairies and Native Plantings as Outdoor Classrooms, SUL 19

References and Resources for Prairies and Native Plantings, SUL 20

Grasses versus Forbs

Grasses typically have long leaves with parallel veins and can be useful in adding dimension to a planting. Several of the tall grasses wave gently in the wind, and they can provide a dash of subtle fall and winter color. Grasses do have flowers, which are generally greenish, yet some have interesting flowering structures that add appeal to the planting. Some grasses, such as Indiangrass, are well suited as stand-alone or clumps of accent plants, whereas others are better suited for filling in group plantings.

Forbs are the broadleaved plants in a prairie and often have showy blooms. Forbs may add color, texture, habitat for wildlife, and even scent to the planting.

The choice between separate plantings and mixed plantings of forbs and grasses is situation-dependent. Gardeners should consider the intended use of the site. Mixed plantings generally require more space and an understanding of the differences in biology of the plants being used.

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Environments for Native Plants

Dry soils are found on well to excessively drained, usually exposed sites. Soils that are thin to bedrock, or are sandy or gravelly and that occur on steep areas are typical. Dry sites are more common on south-facing slopes where it is the warmest and driest during the summer. Characteristics of the plants adapted to these areas include the following:

- Plants often less than 3 feet in height
- Leaves that are adapted to conserve moisture (thick surfaces, wilt throughout the day, or other actions to avoid water loss)

Mesic refers to sites that have good drainage, ample seasonally available water, and deep soils. A good description of mesic is moist, yet well drained. The subsoil (below the dark topsoil) is brightly colored, which indicates good drainage.

Wet sites have seasonally high water tables and often occur low on the landscape. Sedges (grass-like plants with triangular stems in cross section) may be a prominent group of species in wet sites, and the topsoil is either coal black to several feet in depth, or the subsoil is noticeably dull gray colored, or both.

ISU FEEL RECONSTRUCTED PRAIRIE, BOONE COUNTY, IOWA

Pale Purple Coneflower *(Echinacea pallida)*—MESIC, height 2–3 ft. Flowers bloom in June and July. These long-lived perennials resemble daisies, but with backward-curving pink-purple ray flowers; the flower center contains a prickly raised dome.

Introduction to Iowa Native Prairie Plants was originally printed as PM 1956.

Seed and plant collection ethics

Existing populations of native plants need protection. Some human-assisted seed dispersal (harvested seed) is often acceptable without the existing population being damaged, but some seed needs to remain to renew the native stand. ALWAYS get permission from the managers of a native site before harvesting seed, and limit yourself to taking no more than one-third of the seed crop produced. Taking actual plants to transplant to another area is not acceptable, unless construction or other activities on the site will cause the vegetation to be destroyed. Also, some native plants may not survive transplanting. Look for local information and assistance before you engage in collecting forays.

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