

2E-6 Native Landscaping



BENEFITS			
Low = <30% Medium = 30-65% High = 65-100%			
	Low	Med	High
Suspended Solids	■	■	■
Nitrogen	■	■	■
Phosphorous	■	■	■
Metals	■	■	■
Bacteriological	■	■	■
Hydrocarbons	■	■	■

Description: Native plants are those that grew naturally in Iowa before European settlement, and therefore are well-adapted to this environment. The tallgrass prairie ecosystem developed in Iowa over 10,000 years ago. It was an extremely diverse habitat that consisted of grasses, forbs (flowering plants), insects, and other animals. It adapted to survive conditions that ranged from hot and dry to moist and boggy in any given year; in addition to severe winters, frequent high winds, grazing by buffalo, and routine fire. The response to this ever-changing environment was the development of deep, fibrous root systems commonly reaching 6-12 inches deep. These root systems led to the development of Iowa’s fertile soils, and can still contribute significantly to soil quality enhancement. Carefully chosen native plants can be used in a wide variety of infiltration and filtration practices to increase water quality. Landscaping with native plants provides color and habitat, and is an important component for engineered practices to capture and treat the water quality volume and the first flush of runoff from larger storms.

Typical uses:

- Used in conjunction with engineered water management practices.
- Used for runoff management from residential, commercial, and institutional sites.
- Used in rain gardens, bioretention areas, vegetated swales, and basins.

Advantages/benefits:

- Reduces runoff rate and volume from impervious areas in infiltration practices.
- Removes sediment and pollutants to improve water quality.
- Plants are beautiful, hardy, drought-resistant, and low-maintenance.
- Provides aesthetic value and habitat for beneficial insects and animals.
- Reduces the need for inputs from fertilizers, pesticides, water, and mowing.

Disadvantages/limitations:

- Maintenance techniques are not as widely-known as for turf grass.
- Establishment takes longer than turf grass, especially with seeded areas.

Maintenance requirements:

- Annual removal of vegetation growth through burning, or mowing and baling/raking.
- Plantings need to be watered and weeded regularly during establishment.
- Maintenance goes down after establishment (2-3 years).

A. Description

Landscaping with native plants is a simple way to obtain multiple benefits while mimicking the native ecosystems of the tallgrass prairie, oak savannas, woodlands, and wetlands. Native species are low-maintenance once established because they are adapted to Iowa temperatures, wind, and rainfall patterns. Properly-designed native landscaping can improve the value of the site, improve aesthetics, support wildlife, increase soil and water quality, and absorb noise.

Through plant uptake, plants can bind nutrients and other pollutants, and remove water through evapotranspiration. Pathways for rainfall infiltration will be created through root development, which also contributes to a healthy soil structure. Each year, a part of the deep root mass of native plant dies off and decomposes. This annual organic matter deposition helps build soil organic carbon, which in turn helps the soil absorb more water. Soil microbes help bind together particles of sand, silt, and clay, along with organic matter, creating a more granular soil structure, which increases porosity and water holding capacity. An additional benefit of the deep root system is seen when native plants also resist local pests and disease. Natives do not get as stressed as typical non-native species during droughts or other severe environmental conditions common in Iowa.

Native species bloom at a variety of times throughout the growing season and attract butterflies and birds often not seen in non-native landscapes. Native plants attract this variety of beneficial birds, butterflies, insects, and other wildlife by providing diverse habitats and food sources. Conversely, closely-mowed lawns are of little benefit to most wildlife.

B. Stormwater management suitability

Native plants are used in many areas that are designed to infiltrate and temporarily store the water quality volume (WQv).

C. Pollutant removal capabilities

Native plants do not require fertilizers or pesticides, and will eliminate their use when replacing sod lawns. Typically, lawns also require significant amounts of watering to survive, which often results in additional runoff of water and pollutants. Weekly emissions from lawn mowing equipment used on typical sod lawns also contribute to air pollution. Native plants remove carbon from the air and sequester it in the soil. Sequestered atmospheric carbon increases soil organic matter, which increases the soil's ability to absorb water. Deeply-rooted native plants increase the soil's capacity to store water and reduce water runoff.

D. Application and feasibility

Native landscaping plants can be used in most of the infiltration and filtration practices. They can also be used as a landscape amenity. Application and feasibility are dependent on the type of application. Various native plants were adapted to dry, mesic, or wet landscapes. Consider your landscape or type of practice and choose plant species that will work best.

1. **Dry soils.** Dry soils are typically found in well-drained, exposed areas. They are more common on south-facing slopes where it is warmest and driest during the summer.
2. **Mesic soils.** Mesic refers to areas that are well-drained, yet moist like a typical vegetable garden. Mesic sites are not overly wet or dry.

3. **Wet soils.** Wet sites often occur low on the landscape and have a high water table. Lists of recommended species and those to avoid are available on the Iowa Native Lands website (http://www.prrcd.org/inl/recommended_plants.htm). Additional guidance is provided in the SUDAS Landscaping Specification (Section 9010).

E. Planning and design criteria

Native prairie plantings can be established from seed or plugs (young, rooted plants). Plugs are better than seed in smaller projects in residential areas because they are easier to establish and maintain. Natives can be incorporated into an existing garden bed, or a new bed can be made by removing sod and loosening the soil. Try to avoid putting native plants in soils that have been fertilized, as this often results in overly tall growth far beyond typical for that species.

In residential settings, it is usually best to use shorter native plants to create an aesthetically-pleasing landscape. This means avoiding species that grow more than 4 feet tall, such as big blue stem, Indian grass, compass plant, and cup plant. Native plants can be designed into any sunny landscape, but rarely do well in deep shade. Woodland species can tolerate shade but often do not have deep root systems.

Native plants can be intermingled in more formal beds and borders, or incorporated as a more natural informal prairie garden. Turf borders should be left to define the area or provide a path through the planting.

Strategically-placed native species plantings can function similarly to engineered infiltration- and filtration-based practices. Choose plants based on site considerations for light, moisture, and soil. Vary plant structure, height, bloom succession, and flower color for seasonal appeal and butterfly habitat. After planting, a shredded-wood mulch layer helps establish natives by retaining moisture and discouraging weeds, but may float if water pools. A few small rocks can help overcome this problem during the establishment phase.

F. Design procedures

Design procedures generally involve matching plant or seed mix selection to the soils, moisture regimes, and aspect of a site. Plant height, color scheme, and shade or open sun tolerance all come into play in plant selection for a site. A number of native nurseries have pre-selected mixes for various conditions; care should be taken with those mixes to ensure the species are appropriate for the site and don't get overly tall. Native seed supplies often provide information on preferences of various species if you want to create your own blend. Species lists for plant suitable for Iowa native landscaping are online at: http://www.prrcd.org/inl/recommended_plants.htm. See the SUDAS Seeding Specification (9010) for more information.

Always plant mowed turf borders or low-growing native turf around native landscaping in an urban setting to provide a border and kept appearance. In plantings such as bio-retention areas, consider a border planting of shorter prairie grasses, such as prairie dropseed, just inside the turf border. Border plantings increase social acceptance of native landscaping sites. Design the planting to accommodate fire management whenever possible.

Develop all mixtures based on pure live seed. Exclude or keep aggressive grasses like switchgrass or other cultivars to a minimum, or eliminate entirely. If the site is within one mile of an existing native prairie (not a reconstructed prairie), local ecotypes are recommended.

1. **Using live plants.** On small urban plantings, it is usually best to buy live plants. Plants should be spaced 12-18 inches apart. Live plantings will establish more quickly than seed, and provide an aesthetically-pleasing site, usually in the first year.
2. **Seeding recommendations.** When seeding a mix of native plants, plan on it taking about three years to get good establishment (ground cover). Native plants spend the first year or two developing deep root systems before putting much energy into above-ground growth. Therefore, a good maintenance plan is essential to keep the site mowed and/or weeded, to protect plants from weedy competition, and avoid unsightly-looking areas that can turn public opinion against native landscaping.
3. **Native turf.** A new alternative showing promise for certain settings is the use of a native turf mix. A native turf features a blend of low-growing native grasses that would provide more a lawn-like appearance, while providing deep, fibrous root systems that will help build and maintain soil quality. Mowing on native turf plantings could be eliminated, and the height of the vegetation would stay in the 8 to 18-inch range. Or, mowing could be done on a limited basis (once a month or less). It should be noted that native grasses are warm-season grasses, which means they respond to the increased sunlight as days grow longer and hotter. Therefore, native turf will not break dormancy and green up as early in the growing season as cool season sod lawns. However, they will be green and growing during the long, hot days of summer when non-native cool season turf often goes dormant in response to the hot, dry conditions. Native turf will not need fertilization or watering after the root systems are established. A way to irrigate should be provided the first, and possibly the second, year to ensure good establishment; but after root development has been achieved, no more irrigation will be necessary.

G. Inspection and maintenance requirements

Native prairie plantings require less maintenance than turf grass and non-native gardens, but still need routine weeding and watering until established. Fertilizer is not recommended for prairie plantings, as it can stimulate excessive growth and cause plants to flop over. Dead vegetation should be removed in the fall or spring. Delaying this step until spring will allow winter landscape interest and provide seed and cover for over-wintering birds. Remove dead vegetation by burning, mowing, raking, and/or baling the residue.