

Stormwater Management Plant Selection for Rain Gardens in Nebraska

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This is one of a series of three NebGuides on designing and installing rain gardens to provide a functional and aesthetic means for reducing stormwater runoff in urban areas.

Homeowners can reduce runoff from their yards by creating functional and aesthetic rain gardens. A rain garden is a small area in a residential yard or neighborhood planted with native and adapted vegetation. It is designed to temporarily hold rain water from a roof, driveway or other open area to allow it to soak in rather than run off. Water collected in the rain garden slowly infiltrates the soil within 48 hours and can reduce pollutants in runoff water.

This NebGuide provides tips on plant selection and layout and lists plants appropriate for rain gardens in Nebraska.

Plant Selection and Placement for Rain Gardens

A rain garden planted with a variety of plants adaptable to rain garden conditions will provide years of enjoyment to homeowners. Consider the following factors to create a well-planned and aesthetically pleasing rain garden.

Variety

Based on the size of the garden, select a variety of species that includes plants of different sizes, forms, textures and colors. This will add interest and visual depth and dimension. Use caution when selecting tall plants (over 3 feet) because tall species may tend to flop when mature, creating an unkempt look. They also may take up a significant amount of space in gardens sized for residential sites.

Season of Bloom or Interest

Select plants that bloom at different times to provide season-long flower and fragrance interest. Consider interesting seed heads, fruit, foliage colors and winter character when selecting rain garden plants. Habitat value for insects, butterflies, birds and small amphibians and reptiles also should be a primary selection factor.

Species Selection

Select plants that can tolerate “wet feet” for short periods. Some plants do well in soils that are always wet, while others do well in soils that are dry. Rain gardens are designed to hold water as it slowly drains into the surrounding soil, so plants

must be adapted to standing water (which occurs before the soil fully drains) or dry conditions (between rain events). Including different species of sedges, rushes and grasses with flowering plants will add a variety of root sizes and structures. Such root competition tends to encourage healthy growth for all plants while minimizing the potential for one species to take over the garden.

Plants Suited for Rain Gardens

The following lists of plants suitable for Nebraska rain gardens have been developed from several sources (refer to reference list) to provide a wide selection of possible plant choices for homeowners. *Table I* provides an overview of plants adaptable to wet rain garden conditions throughout Nebraska (garden bottoms and areas with consistently higher moisture levels). *Table II* lists plants that are well-adapted to drier garden conditions, such as the tops and sides of rain garden berms. Regionally native plants are typically best suited to the variable conditions found in rain gardens. In addition, their rooting depth, habit and growth cycle are conducive to enhancing soil drainage and water percolation and storage as the garden matures. Non-native plants, including many common landscape plants, also may be adaptable to rain garden conditions, but may not provide the root regeneration and soil aeration benefits associated with regionally native plants.

Some of the plants listed in the tables may be difficult to find from local commercial sources. Cultivars of listed species, as well as closely related species of listed plants, may provide viable substitutions. For example, Canada goldenrod (*Solidago canadensis*) is native throughout Nebraska but may not be commonly available in the trade. Several goldenrods are available in the trade that are either cultivars of *S.canadensis* (Golden Baby); another species native to Nebraska (*S.rigida*); or a species cultivar from a goldenrod native to Missouri (*Solidago rugosa* ‘Fireworks’, Fireworks goldenrod). Homeowners should contact local nurseries or local county extension offices for additional plant suggestions.

In all cases, plants should be selected to best match the specific location, soil conditions and aesthetic requirements for the rain garden site.

When selecting plants be aware that moving west in Nebraska may mean changes in climate and hardiness impacts, including earlier frost dates, increased periods of dryness, and

a higher soil pH. Refer to the native range information for each plant in the table to help select appropriate plants. Finally, tree planting is not recommended for residential rain gardens. Trees compete for needed water, root space and sunlight, and will reduce the vigor of other rain garden plantings.

Additional information on Nebraska native/adapted plants: Nebraska Statewide Arboretum, <http://arboretum.unl.edu/plantinfo.html>

References and Additional Resources

University of Wisconsin–Extension
UWEX Publication GWQ037
1-06-03-5M-100-S
Or

Wisconsin Department of Natural Resources
DNR Publication PUB-WT-776 2003

Plants native to Nebraska verified in:

Kaul, R. Sutherland, D. and S. Rolfsmeier. 2007. The Flora of Nebraska. School of Natural Resources, University of Nebraska–Lincoln.

Plants native to region verified in:

USDA Plant Database: <http://plants.usda.gov/>

Acknowledgment

The authors also would like to acknowledge the following individuals for providing additional information incorporated into the plant lists:

Wayne Petersen, Urban Conservationist
Iowa Natural Resources and Conservation Service

Inger Lamb, Director
Iowa Native Lands

Dr. David Sutherland, Professor Emeritus
Dept. Biology, University of Nebraska at Omaha

Table I. Plants appropriate for basins and wetter areas of rain gardens in Nebraska.

Western Nebraska Native ¹	Eastern Nebraska Native ¹	Adjoining or nearest states where regionally native	Common Name	Botanical Name	Approx Ht (Ft.)	Additional Information and Cautions
Perennial Flowers, Moist Soil, Sun						
	X		sweet-flag	<i>Acorus americanus</i>	1-3	rare, but more vigorous than <i>A. calamus</i>
			sweet-flag	<i>Acorus calamus</i>	1-3	introduced from Europe
X			blue giant hyssop	<i>Agastache foeniculum</i>	2-4	will tolerate light shade; reseeds
X			nodding onion	<i>Allium cernuum</i>	1-2	
	X		Canada anemone	<i>Anemone canadensis</i>	1-2	can be invasive
X	X		swamp milkweed	<i>Asclepias incarnata</i>	3-5	may be too tall for small sites; attracts butterflies
X	X		New England aster	<i>Aster novae-angliae</i>	1-5	can get too tall; use compact cultivars
X	X		boltonia	<i>Boltonia asteroides</i>	5-6	good cultivars available (3-4' ht)
X	X		marsh marigold	<i>Caltha palustris</i>	2-3	will not tolerate dry season
		IA, MO	white turtlehead	<i>Chelone glabra</i>	3-4	<i>C. lyonii</i> and hybrids also good
X			spotted joe-pye weed	<i>Eupatorium maculatum</i>	4-6	adapted to entire state; may be too tall for small sites
X	X		boneset	<i>Eupatorium perfoliatum</i>	3-4	
		WI, IA	queen of the prairie	<i>Filipendula rubra</i>	3-5	may be too tall for small sites
X	X		sneezeweed	<i>Helenium autumnale</i>	2-5	may be too tall for small sites
			daylily	<i>Hemerocallis</i> spp.	1-4	escaped cultivation; adaptable
	X		great St. John's-wort	<i>Hypericum pyramidatum</i>	4-6	may be too tall for small sites
X	X		yellow flag iris	<i>Iris pseudacorus</i>	3-4	introduced from Europe, adaptable throughout Nebraska
			Siberian iris	<i>Iris sibirica</i>	3-4	introduced from Eurasia, adaptable throughout Nebraska
		MN, IL	blue flag iris	<i>Iris versicolor</i>	2-3	has escaped cultivation; adaptable throughout Nebraska
	X		southern blue (Shreve's) iris	<i>Iris virginica</i>	2-3	
	X		meadow blazing star	<i>Liatris ligustylis</i>	3-5	may lodge ² when flowering (especially with any shade); attracts butterflies
	X		prairie blazing star	<i>Liatris pycnostachya</i>	2-4	attracts butterflies
		MO, IL	northern blazing star	<i>Liatris scariosa</i>	1-4	attracts butterflies
		MO, IL	marsh blazing star	<i>Liatris spicata</i>	3-4	may lodge ² when flowering (especially with any shade); attracts butterflies
	X		turk's-cap lily	<i>Lilium canadense</i> subsp. <i>michiganense</i>	2-4	
X	X		great blue lobelia	<i>Lobelia siphilitica</i>	2-4	
	X		seedbox	<i>Ludwigia alternifolia</i>	1-3	naturalized in one southeast NE county
X	X		monkey flower	<i>Mimulus ringens</i>	1-3	may grow as annual plant, will reseed
		IA	beebalm	<i>Monarda didyma</i>	2-4	select cultivars resistant to powdery mildew
X	X		wild bergamot	<i>Monarda fistulosa</i>	2-4	powdery mildew and aggressive habit can be problems
		MO	marsh (smooth) phlox	<i>Phlox glaberrima</i>	1-3	
		IA, MO	wild sweet William (meadow phlox)	<i>Phlox maculata</i>	2-3	

Western Nebraska Native ¹	Eastern Nebraska Native ¹	Adjoining or nearest states where regionally native	Common Name	Botanical Name	Approx Ht (Ft.)	Additional Information and Cautions
		MO	summer phlox	<i>Phlox paniculata</i>	2-3	introduced from eastern states; select mildew-resistant cultivars
	X		prairie phlox	<i>Phlox pilosa</i>	1-2	several cultivars available
X	X		Virginia mountain mint	<i>Pycnanthemum virginianum</i>	1-3	does not spread
X	X		cutleaf coneflower	<i>Rudbeckia laciniata</i>	4-6	may be too tall for small sites
X	X		Canada goldenrod	<i>Solidago canadensis</i>	2-4	can reseed profusely and spread by rhizomatous roots; compact goldenrod cultivars available
X	X		tall purple rue	<i>Thalictrum dasycarpum</i>	5-7	may be too tall for small sites
X	X		spiderwort	<i>Tradescantia bracteata</i>	1-1.5	
	X		Ohio spiderwort	<i>Tradescantia ohioensis</i>	2-3	
		IA	Virginia spiderwort	<i>Tradescantia virginiana</i>	1-2	
X			marsh St. John's-wort	<i>Triadenum fraseri</i>	1-2	may not tolerate dry soils
X	X		ironweed	<i>Vernonia fasciculata</i>	4-6	may be too tall for small sites
	X		Culver's root	<i>Veronicastrum virginicum</i>	3-6	may be too tall for small sites
		IA, SD	heart leaved (meadow) alexanders	<i>Zizia aptera</i>	1-3	
	X		golden alexanders	<i>Zizia aurea</i>	1-3	tolerates shade
Perennial Flowers, Moist Soils, Shade						
X	X		wild columbine	<i>Aquilegia canadensis</i>	1-3	allow to reseed for longevity
	X		Drummond's aster	<i>Aster drummondii</i>	2-3	very similar to arrow-leaf aster
	X		arrow-leaf aster	<i>Aster sagittifolius</i>	1-3	
	X		American bellflower	<i>Campanula americana</i>	1-5	annual plant in Nebraska; may grow too tall for small sites
	X		virgin's bower	<i>Clematis virginiana</i>	vine	
	X		bottlebrush grass	<i>Elymus hystrix</i>	3-4	
	X		sweet Joe-pye weed	<i>Eupatorium purpureum</i>	4-6	dwarf cultivars available; species may get too tall in small gardens
X	X		wild geranium	<i>Geranium maculatum</i>	0.5-1	native in one county; introduced in Eastern Nebraska; aggressive
X	X		cardinal flower	<i>Lobelia cardinalis</i>	2-3	may not tolerate dry season
	X		ostrich fern	<i>Matteuccia struthiopteris</i>	2-3	naturalized in two counties; can be aggressive
	X		Virginia bluebells	<i>Mertensia virginica</i>	1-2	naturalized in Douglas/Sarpy counties; dormant after flowering
	X		wild blue phlox	<i>Phlox divaricata</i>	0.5-2	cultivars available
Grasses and Grass-Like Plants, Moist Soils						
X	X		big bluestem	<i>Andropogon gerardii</i>	5-8	may be too tall for small sites; may lodge ²
			feather reed grass	<i>Calamagrostis acutiflora</i>	3-5	native to Europe; species <i>C. stricta</i> native to western Nebraska
X	X		bottlebrush sedge	<i>Carex comosa</i>	2-3	
		IA	fringed sedge	<i>Carex crinita</i>	3-5	may be too tall for small sites
		IA, KS	Gray's sedge	<i>Carex grayii</i>	2-3	shade tolerant
	X		wood gray sedge	<i>Carex grisea</i>	1-2	shade tolerant
X	X		prairie star sedge	<i>Carex interior</i>	1-3	
X	X		broom sedge	<i>Carex scoparia</i>	2-3	
X	X		common fox sedge	<i>Carex stipata</i>	1-3	shade tolerant
X	X		brown fox sedge	<i>Carex vulpinoidea</i>	2-3	
X	X		great spike rush	<i>Eleocharis palustris</i>	1-2	
	X		bottlebrush grass	<i>Elymus hystrix</i>	3-4	shade tolerant
X	X		Virginia wild rye	<i>Elymus virginicus</i>	2-3	shade tolerant; <i>E. macgregorii</i> similar, very ornamental
X	X		horsetail	<i>Equisetum hyemale</i>	3-4	shade tolerant
		SD	northern sweet grass	<i>Hierochloa hirta</i>	1-2	may spread aggressively; reseeds
	X		soft (common) rush	<i>Juncus effusus</i>	2-3	rare in Eastern Nebraska
X	X		Torrey's rush	<i>Juncus torreyi</i>	1-2	
		WI	moorgrass	<i>Molinia caerulea</i>	2-3	
X	X		switchgrass	<i>Panicum virgatum</i>	4-6	can be too tall; can be invasive
			ribbongrass	<i>Phalaris arundinacea</i> var. <i>picta</i>	1-2	can be very invasive, consider use carefully; tolerates light shade
	X		dark green bullrush	<i>Scirpus atrovirens</i>	3-5	too tall for small sites
X	X		Indian grass	<i>Sorghastrum nutans</i>	4-6	select shorter clump cultivars to minimize height and aggressive growth
X	X		prairie cordgrass	<i>Spartina pectinata</i>	4-6	may not tolerate dry season; may be too tall for small sites; may lodge ²
	X		prairie dropseed	<i>Sporobolus heterolepis</i>	1.5-2	fragrant flowers
Shrubs for Sun or Shade, Moist Soil						
X	X		indigo bush	<i>Amorpha fruticosa</i>	3-12	
		IA	black chokeberry	<i>Aronia melanocarpa</i>	3-6	compact cultivars available
	X		buttonbush	<i>Cephalanthus occidentalis</i>	6-10	may be too large for small site; fragrant flowers
X	X		redosier dogwood	<i>Cornus sericea</i>	3-8	compact cultivars available

Western Nebraska Native ¹	Eastern Nebraska Native ¹	Adjoining or nearest states where regionally native	Common Name	Botanical Name	Approx Ht (Ft.)	Additional Information and Cautions
		IA	low bush honeysuckle	<i>Diervilla lonicera</i>	2-4	
		IA	winterberry	<i>Ilex verticillata</i> cultivars (need male and female)	3-8	compact cultivars available; male/female should be matched
X		MO	Virginia sweetspire ninebark	<i>Itea virginica</i> <i>Physocarpus opulifolius</i>	3-8 5-10	compact cultivars available compact cultivars available
X	X	IA	purpleosier willow elderberry	<i>Salix purpurea</i> <i>Sambucus canadensis</i>	4-8 6-10	dwarf cultivar 'Nana' available cutleaf cultivar available; good wildlife plant
		SD, IA, WY	redberried elder	<i>Sambucus pubens</i>	10-15	
		SD, IA	white meadowsweet	<i>Spiraea alba</i>	3-4	
		IA, MO	arrowwood viburnum	<i>Viburnum dentatum</i>	8-12	compact and heavy fruit-producing cultivars available
	X		nannyberry	<i>Viburnum lentago</i>	6-8	tree and shrub forms available; powdery mildew can be a problem
	X		American cranberrybush	<i>Viburnum trilobum</i> (also listed as <i>V. opulus</i> var. <i>americanum</i>)	6-12	compact cultivars available; naturalized in Douglas County
		IA	blackhaw viburnum	<i>Viburnum prunifolium</i>	10-20	tree and shrub forms available

¹For the purposes of this table, Western Nebraska and Eastern Nebraska are roughly divided by a north-south line defined by U.S. Highway 183.

²'Lodge' describes a plant that has fallen over due to top growth weight, environmental damage (heavy winds or rain), or weakened stem or root strength. Tall perennial plants are most susceptible to lodging, which can create an unkempt weedy appearance. Problems with lodging can be minimized by using relatively short plants (including dwarf cultivars of species listed), planting tall plants away from garden edges, and planting tall plants in masses for collective support.

Table II. Plants appropriate for berms and drier areas of rain gardens in Nebraska.*

Western Nebraska	Eastern Nebraska	Adjoining or nearest states where regionally native	Common Name	Botanical Name	Approx Ht (Ft.)	Additional Information and Cautions
X	X		leadplant	<i>Amorpha canescens</i>	2-3	
	X		fragrant false indigo	<i>Amorpha nana</i>	1-3	
	X		butterfly milkweed	<i>Asclepias tuberosa</i>	1-2	planted throughout state; intolerant of wet soil*
X	X		heath aster	<i>Aster ericoides</i>	2-3	
X	X		sideoats grama	<i>Bouteloua curtipendula</i>	1-1.5	
X	X		purple poppy mallow	<i>Callirhoe involucrata</i>	0.5	groundcover
X	X		plains coreopsis	<i>Coreopsis tinctoria</i>	2-3	annual plant, will reseed; partial shade tolerance
X	X		white prairie clover	<i>Dalea candida</i>	1-3	
X	X		purple prairie clover	<i>Dalea purpurea</i>	1-3	partial shade tolerance
X	X		narrow-leaf purple coneflower	<i>Echinacea angustifolia</i>	2-3	
	X		pale purple coneflower	<i>Echinacea pallida</i>	2-3	native to SE Nebraska only
X	X		penstemon	<i>Penstemon</i> spp.	1-4	wide variety of species
X	X		prairie coneflower	<i>Ratibida columnifera</i>	2-3	planted throughout state
	X		grayheaded prairie coneflower	<i>Ratibida pinnata</i>	3-4	planted throughout state
X	X		little bluestem	<i>Schizachyrium scoparium</i>	2-3	cultivars available

*In addition to the perennial flowers and ornamental grasses listed, many drought-tolerant shrubs are also appropriate for berm plantings and locations adjacent to the rain garden basin. Consider low-to medium-height plants that are not invasive, have multi-season interest and do not require extensive pruning or maintenance once established.

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Issued August 2007

Extension is a Division of the Institute of Agriculture and Natural Resources at the University of Nebraska–Lincoln
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