

# Plant Materials for Vegetation Management along New York State Roadsides



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## Foreword

This document is intended to serve as a guide to those interested in using plant materials to manage the growth of weeds in low-maintenance landscapes, specifically along roadsides in New York State. The word “weed” is used here in the broadest sense, and is used to refer to any plant growing in a location where it is not wanted (i.e. any “plant out of place”). The information contained herein, however, will be of use to many others with an interest in using groundcovers in the Northeast as part of an integrated approach to managing weeds in low-maintenance landscapes.

The introductory section of this document describes the general concepts underlying integrated vegetation management, selection of plant materials and preparing sites for their planting, and details of the project funded by the New York State Department of Transportation to researchers at Cornell University and Suffolk County Cooperative Extension to evaluate plant species as potential groundcovers for use along roadsides. Among the attributes that make plant species suitable for this use are the ability to suppress or out-compete weeds, to have limited upward growth potential, and to tolerate a variety of abiotic and biotic stressors including drought, salt, and herbivory by insects and deer. The bulk of this document presents information on a diversity of broadleaved plants and grasses with potential for use in a variety of roadside situations, although certainly not all of them will find a home in these locations owing to certain shortcomings. The species description pages include photographs and boxes highlighting their horticultural features and application to roadside uses. The last portion of the document includes information on soil testing (including sources of soil-testing kits), USDA hardiness zones and typical precipitation in New York, and a glossary of terms related to botany and soil properties; indexes to the plant species by common name, scientific name, and plant height are found on the last pages.

We hope this document proves to be a useful guide, and thank all those who contributed to its preparation (listed in the Acknowledgments). We also appreciate the use of photographs provided by the many photographers and web sites listed under the photographs. In some cases, the source of the image is unknown, but we will add credits as they become known. It is expected that this document will be expanded as additional plant species are identified as useful candidates for roadside and other low-maintenance locations.

- L.A.W., A.F.S, and P.A.W.

## **Integrated Vegetation Management**

Reliability and public safety are of major concern across all rights-of-way and the performance of successful vegetation management on rights-of-way is desirable and necessary for variety of reasons. These include the maintenance of safe and clear sight distances, signs, and fixtures of vegetation for visibility and functionality; adequate drainage in roadway ditches; reduced fire hazards; and wind, snow or dust control. It is also necessary to protect the roadway surface from vegetation encroachment and to maintain drainage. Rights-of-way must also allow maintenance workers to perform their function without creating hazards to those that use and depend on the ROW. Managers of rights-of-way share common objectives, including user and worker safety, reduced fire hazard, and an assured ability to perform inspections.

Management of ROW vegetation is a complex challenge and a formidable task that varies greatly from one location to another. Because no single practice or method is likely to give the desired long-term result, a primary goal of rights-of-way vegetation management is to design an appropriate combination of practices (integrated vegetation management (IVM)) that ensure the safe operation and longevity of the particular right-of-way in question. The term IVM means different things to different people. While an integrated program attempts to include all aspects of roadside vegetation control including mechanical and biological control measures, the utilization of herbicides or chemical control measures to achieve many of the goals and objectives of an authentic IVM program needs to be based upon the appropriate knowledge of principles and practices of weed ecology. It is also understood that vegetation management concepts and techniques need to address social and environmental issues including traffic safety, water quality, rare and endangered species, wetland protection, native plantings, natural area preserves, and invasive weed management. The management techniques utilized in IVM programs may include manual, mechanical, chemical, cultural, and biological methodologies. Techniques that will likely produce the least long-term disturbance to the natural and human communities should be practiced.

Most ROW managers are also confronted with noxious or invasive weeds. Federal executive order ([Federal Executive Order 13112](#)) and State law (Environmental Conservation Law Article 9, Title 13, Invasive Species Council) require the NY State Department of Transportation to take steps to prevent the spread of invasive or noxious plants as well as detect and respond rapidly to and control populations of such species. Invasive species along New York State roadsides include phragmites, Japanese knotweed, giant hogweed, and others, each of which presents unique challenges related to management and control.

There are many management issues unique to each type of right-of-way, but this manual was designed to address the selection and utilization of plant species for establishment along or near New York ROWs in an effort to limit weed infestation, pre-



serve user safety, reduce maintenance time and expense and retain aesthetic appeal. The results presented in this manual are the result of many years of field trials and roadside demonstrations with each of these species, and describe their potential utilization in the roadside landscape.

## **Plant Material Selection Guidelines**

Plant material was selected upon the basis of prior information regarding utilization in difficult roadside settings with aspects such as plant height, invasive characteristics, weed suppressive abilities, tolerance to drought, full sun and salt, and inability to attract deer and rodents considered. These plant materials or groundcovers were selected by reviewing past literature, seed catalogues, and published research pertaining to plant materials that perform well on northern roadsides or landscapes. We tried to select groundcovers that were aesthetically pleasing and low growing besides tolerating poor soils. We also tried to select direct-seeded grasses by also reviewing past work related to prairie, roadside, and reclamation site establishment, and selected those which were able to be purchased regionally and would be likely to succeed in a cooler climate such as is found in the Northeast. Many of the groundcovers described are herbaceous perennials—that is, they are not woody but die back each season, resprouting in the spring to form an actively growing mass of groundcover. Nearly all of these species were established as transplants in field trials or roadside demonstrations. They can be purchased online as container-grown perennials from retail or wholesale nurseries specializing in groundcovers, such as *Hortech* or *Springhill Nurseries* in Michigan. Seed for these perennials can also often be purchased from suppliers such as *Ball Seed* or other European seed retailers such as *Jel-lito Company* in Germany for production of seedlings in a greenhouse or other protected environment before transplanting to the roadside site. Other groundcovers described are true grasses or monocots that can be transplanted or direct-seeded for establishment. Many of these can be purchased online from retail seed outlets such as the *Seed Super Store* or *Prairie Nursery*. In addition, a few of the groundcovers described are actually woody plant materials that were included in these trials because of their adaptability, appearance, and purported ability to suppress weeds. They generally lose their foliage at the end of each growing season, however.

We feel the ultimate groundcover selection is one that requires limited fertility, tolerates full sun, does not attract deer or rodents, requires limited mowing and suppresses weeds while remaining attractive and tolerant of environmental stressors. Several groundcovers proved to be top performers in many locations when transplanted. These included *alchemilla* or *lady's mantle*, *creeping phlox*, *Dianthus* or *tiny ruby carnations*, *Nepeta* or *catmint*, *ornamental goldenrod*, and *coral bells*. Others proved to be tolerant and weed suppressive when direct seeded and included *buffalograss*, *Russian wild rye*, *perennial ryegrass* and especially certain *fine fescue turfgrasses*. This manual provides a selection of groundcovers that will perform well in full sun, partial sun, or shaded settings when planted or broadcast seeded, and presents the selections that we considered the best overall performers in terms of establishment and weed suppression. Most of them are easily found online for re-

tail, but others are more difficult to obtain. We provide photos taken from various sites that were evaluated across New York State or downloaded from the internet.

This manual is organized alphabetically by groundcover scientific name, with broad-leaved species separated from grass species. Please note that while many, if not all, of these groundcovers will perform well in managed sites in full or partial sun, several will perform well in full sun with limited management inputs. A table listing the best performers is included at the end of this section for future reference.

## Site Preparation

For the purposes of this discussion, by “groundcover” we mean both broadleaf plants and grasses. Although each groundcover selection varies in terms of their ultimate height and locational preferences for establishment, many of them can be established easily in a prepared (well-tilled) landscape bed, with the addition of topsoil or organic matter assisting in their general establishment success. Some of the groundcovers require additional time to mature fully, while others are rapidly growing. Some grasses require occasional mowing, and many groundcovers would benefit from consistent rainfall, availability of adequate nitrogen, removal of dead foliage from time to time, and mulching. All of these perennials, however, tend to require limited irrigation and fertility to thrive. The following steps will help ensure good establishment of groundcovers, whether from transplants or direct-seeded.

**Plan your planting:** The first step in establishing a new groundcover, whether a broadleaf or grass, is to select the plant species to match the site characteristics. This will be facilitated by the information contained in the *Plant Material Description* sections of this publication. Make sure to pay attention to the amount of sunlight, soil moisture, and roadside salt expected on your proposed site, and choose species that can tolerate the expected environmental extremes. Also, choose plants expected to grow within acceptable limits; in general, choose lower growing plants for sites closer to roadways, and taller plants for more distant locations. Plants should be planted or seeded in large groups, leading to a dense canopy of foliage over time and generating an attractive, low-maintenance planting (the denser the canopy, the better the groundcover will be able to out-compete weeds).

The type of plants will affect the amount of work and timing of plantings. For example, all the broadleaf groundcovers in this manual should be installed as transplanted plants rather than direct seeding. Grasses may be installed as plugs or via direct seeding. Depending on the number or type of plants, an installation may need to order mulches, specialized equipment such as a seed drill, or water in advance to ensure the vegetation establishes properly.

Timing of planting is very important to success. Fall planting gives new plants time to establish after weeds have died back and gives the new plants a head start over weeds when spring arrives. With fall plantings, it is best to plant by the end of September for transplanted perennials and mid September for direct-

seeded grasses. Planting at these times will result in better root growth for overwintering. In addition, freezing and thawing will provide good seed-to-soil contact for spring germination and, by July, a dense groundcover stand is generally achieved.

**Remove competition:** If planting on a site heavily infested with weeds, take the time to remove these competitors before going any further. Although many groundcovers can outcompete weeds that grow from seed, established weeds (especially those with fleshy roots) may prevent the new transplants or direct-seeded groundcovers from establishing. Repeated herbicide application or use of a higher rate of glyphosate is often necessary to remove competing plants before groundcovers or grasses are planted. In some cases, site considerations or the type of vegetation being planted may limit herbicide use. In these cases, heavy mulching may be required to suppress competing weeds.

**Till the soil:** The next step is to make sure the soil is hospitable to the new plants to be introduced. Whether using transplanted groundcovers or grasses planted by plugs or direct seeding, till the soil to a depth of at least 8 inches. Tillage should be done when soils are moderately moist; if soils are waterlogged, large clumps will form, compaction will occur, and resulting soil structure will be poorly suited to plant establishment. If soils are very dry when tilled, it will be difficult to break up the soil properly, and the resulting seed bed will also be unfavorable to transplanted plants or seed (dry, tilled soils are also more prone to erosion following heavy rains).

**Add organic matter:** When dealing with soils that are high in clay or gravel, addition of topsoil (which is high in organic matter) or compost is crucial. Incorporated organic matter makes soil more permeable to water, increases the water-holding capacity, and encourages root growth. Composted leaves are an ideal source of organic matter. Avoid compost made primarily from wood chips or branches because this material tends to tie up nitrogen, an essential element for plants.

**Provide water.** Soil should be kept moist during the first few months after planting. By planting in spring and fall, it is often possible to water less as the weather is typically wetter and makes plants less likely to experience water stress than in mid-summer.

**Protect young plants:** Before transplants can start to grow vigorously, they may need to be nursed along. Mulching around transplants with 3 inches of shredded bark mulch will help retain soil moisture and limit growth of weeds near the plants. Hand-weeding may be needed to give your young plants a leg up on the competition; this will be significantly easier in plots that have been previously mulched. For direct-seeded plants, straw mulch or matting is often used after seeding to hold seed and soil in place, especially on sloped sites.

## **Results from Plant Material Evaluations**

The results from our field experimentation can be viewed in the final contract research report submitted to the NYSDOT (a brief synopsis appears in Appendix 5). However, on the pages that follow describing the groundcover species, we list information regarding their success in establishment, their locational preferences, weed suppressivity, and performance. Photos of each of the groundcovers were often collected from our own trials and demonstrations. Not all species were established in each evaluation region across NY State; only the best performers were utilized in roadside demonstrations later as well. We refer you to the CU Allstar Groundcover website to obtain more information related to groundcover trials and specifics. Certain groundcovers performed well in very specific settings, such as intense shade below a canopy of large white pines, while others were able to perform well in diverse locales. If establishing a large site with herbaceous ornamentals or direct-seeded grass cultivars, it is always best to conduct a smaller scale trial planting in your region before investing large quantities of time and money in a new establishment. Locational differences will certainly impact the outcome related to groundcover growth and performance. Other species that were not included in these studies may also be excellent performers in certain locations in New York State.

### **Best performers for roadside use**

On the following pages are lists of broadleaf groundcover species and grasses that we have found to be the best performers in our trials. In addition to these species, the manual includes many other species, some of which will likely perform as well or better than the ones we evaluated. We define “best performers” as those that became well established, suppressed weed growth, and were aesthetically pleasing. Some of the species in the *Plant Material Description* sections may perform as well, but we were not able to evaluate them in field or roadside trials. Groundcovers may also work in combination with others, but some species may be incompatible with others.



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*Best-performing broadleaf groundcovers. Asterisks next to a plant name indicate that it was evaluated only in field trials. Detailed information about each of these species can be found in the Plant Material Description section.*

Common name	Scientific name	Growth habit	Description
Albanian pinks	<i>Dianthus myrtinervius</i>	4" tall x 10"	Attractive low-growing, pink flowers
Blue star creeper*	<i>Laurentia fluviatilis</i>	2" tall	Attractive blue flowers all summer
Catmint "Walker's low"	<i>Nepeta x faassenii</i>	12-20" tall x 16"	Tall, rapid growth rate; attractive blue flowers
Spring cinquefoil "Nana"*	<i>Potentilla neumanniana</i>	3-4" tall	Five shiny leaflets, yellow blooms
Coral bells "Chocolate Veil"	<i>Heuchera americana</i>	18" tall	Dense canopy of chocolate - colored foliage
Creeping phlox "Emerald blue"	<i>Phlox subulata</i>	<6" tall	Attractive green foliage and flowers
Wild thyme	<i>Thymus serpyllum</i>	<6" tall	Low growing, drought tolerant
Creeping mazus*	<i>Mazus reptans</i>	2" tall	Low-growing with blue flowers in late spring; spreads indefinitely
Fragrant sumac "Gro-Low"*	<i>Rhus aromatica</i>	20" tall x 6-7"	Glossy green foliage, turns orange-red in autumn
Heath aster "Schneegitter"*	<i>Aster ericoides</i>	4-8" tall	White blooms in mounds
Lady's mantle	<i>Alchemilla mollis</i>	8-16" tall x 12"	Attractive green foliage and cream inflorescence
Lamb's ear	<i>Stachys byzantina</i>	12-18" tall	Silver foliage, inflorescences easily lodge
Maiden Pinks "Brilliant"	<i>Dianthus deltoides</i>	8" tall x 16"	Evergreen with deep rose-colored flowers
Goldenrod	<i>Solidago sphacelata</i>	4-8" tall	Attractive yellow flowers, drought and salt tolerant
Fleeceflower*	<i>Persicaria affinis</i>	5-8" tall	Foliage becomes colorful in fall, attractive pink-red poker-shaped flowers
Gold-moss sedum	<i>Sedum acre</i>	<3" tall	Low-growing green to blue green succulent foliage, drought and stress tolerant

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*Fine fescue cultivars that have exhibited variable performance in field and roadside trials across New York State, in terms of weed suppression and turf quality. All were seeded at the rate of 4 lb/1000 sq. ft. Other fescues evaluated (over 60 additional cultivars) were ranked generally as moderate performers.*

Fescue cultivar	Fescue type	Performance
Intrigue	chewings	Excellent
Columbra	chewings	Excellent
Wilma	chewings`	Excellent
Reliant II	hard	Excellent
Sandpiper	chewings	Very good
Oxford	hard	Very good
Rescue 911	hard	Very good
Treasure	chewings	Poor
Atilla	hard	Poor
Sylvia High	hard	Poor

***A Word about Grasses:*** Grasses are classified as warm-season or cool-season grasses. As the names imply, warm-season grasses do most of their growing in the summer, while the cool-season grasses do most of their growing in spring and fall. Cool-season grasses generally grow better in New York, but some warm-season grasses will grow well also. Most of the grasses described in this document are cool-season species.

# **Plant Material Descriptions**

## **I. Broadleaf perennials**

## Key to layout of the species description pages – Broadleaf plants

*Identifier bar* (top of page): Scientific name and principal common name. The bar is color coded:

- The left half of the bar indicates color of the blooms; if blooms are variably colored, this portion of the bar will have a color gradient covering the range of colors known for the species.
- The right half of the bar indicates approximate foliage color; if foliage is variegated, this portion of the bar will be striped or speckled.

*Name/Origin Box*: Scientific name, common name(s), and region of origin

### *Basic Plant Information*

- **Physical description**: Growth habit, color, height, etc. (see glossary for botanical terms).
- **Optimal growing conditions**: Conditions conducive to optimal growth of the species.
- **Susceptibility to pests and diseases**: Notable insect and disease problems.
- **Additional considerations**: Special notes, if applicable.

### *Highlights box*

- **Weed Suppressive Rating**: This rating is based on literature research, field tests at Cornell, and field tests on NYSDOT rights of way.
- **Hardiness**: New York is divided into hardiness zones (Appendix 3 map) that measure a species' ability to tolerate cold. The higher a number, the lower the cold tolerance.
- **Height x spread**: This item includes plant height and whether it will spread to cover ground. Use it as an aid in calculating quantities of plants to order or for density of planting.
- **Season of bloom and Flower color**: If aesthetics are a concern, these items state when/if plant blooms, and bloom color.
- **Exposure**: This item helps match plant and roadside conditions. A plant listed as "full sun to partial shade" will not do well under a bridge or in forested right of way.
- **Soil requirements**: This item helps match plant and soil. NYSDOT right of way soil quality varies; planting in less than suitable soil will likely result in poor plant establishment.
- **Moisture requirements**: This item helps match plant and local rainfall, or your ability to water plants after installation. Appendix 4 shows typical annual precipitation in NY.
- **Salt tolerance**: If you have areas that receive high quantities of salt, use this item to avoid plants that will die or suffer from exposure to salt.

### *Roadside Uses box*

- **Suitable Vegetation Zones**: This item lists the general roadside zone (RZ) where the plant would be effective. Appendix 2 shows the RZ's cited in this section. This item also lists specific places in the roadside (walls, beds, medians) where the plant might be used. [NOTE: *For this study, we did not test plants under guiderrails because of safety concerns and uncertainty about plant survival in these marginal soils. However, we do note plants that might work in Zone 1; these are educated guesses about plant survival in a difficult environment without impairing the working of guiderrails or causing pavement break-up with roots.*]
- **Mowing requirements**: This item lists any special issues with mowing. You should avoid mowing some plants, while others actually grow better after a mowing.
- **Salt tolerance**: This item indicates whether a plant can tolerate salt encountered in roadside situations. Avoid planting salt-sensitive species in areas where salt levels will be high.
- **Drought tolerance**: This item indicates the degree to which a plant tolerates lack of water.
- **Invasive potential**: This item indicates whether a plant is likely to spread uncontrollably.



**Scientific name:***Alchemilla mollis***Common name:**

Lady's mantle

**Region of origin:**

Asia minor

**Highlights:****Weed Suppressive Rating:****Good - Excellent****Hardiness:**

Zones 4-7

**Height x Spread:**

12 to 18 in. x 24 in.

**Season of bloom:**

Late spring to early summer

**Flower color:**

Yellow

**Exposure:**

Full sun or partial shade

**Soil requirements:**

Well-drained, organically rich, neutral to slightly acidic soil

**Moisture requirements:**

Moist soil

**Roadside uses:****Suitable vegetation zones:**

Managed roadside plantings, managed beds and focal points in sun (RZ2)

**Mowing requirements:**

Once yearly

**Salt tolerance:**

Limited

**Drought tolerance:**

Good once established

**Invasive potential:**

Limited in our trials but can reproduce by seed

**Physical description:** Lady's mantle forms clumps that may reach 24 in. wide; basal foliage is 8-10 in. tall with flower stems that reach 18 in. tall. The deciduous leaves are green, palmately veined with 7 to 11 shallow-toothed lobes, and are softly hairy. Basal leaves are 2 to 4 in. wide. Flowering occurs in late spring to early summer, but the period of bloom may be reduced in a warm or dry climate. Flowers are greenish yellow, each reach a diameter of 1/8 in., and are borne in compound cymes. This species is often confused with *Alchemilla vulgaris*, which is very similar but a little bit smaller, with leaves that are more hairy, and flowers slightly larger and a bit more yellow.

**Optimal growing conditions:** Lady's mantle performs best in moist, well-drained, organically rich soil that is neutral to slightly acidic. In regions with cool and moist climates, this plant can tolerate full sun or partial shade, but if the climate is hot or dry, it needs a location in partial shade. Winter hardiness: Zones 4-7. This species sometimes reseeds itself and may become invasive: if it becomes a problem, its spread can be limited by removing the flowers shortly after they fade (this can be accomplished by mowing).

**Susceptibility to pests and diseases:** Lady's mantle has no serious insect or disease problems, but in climates with hot nights, water collected in leaf depression may promote growth of fungus.

**Additional considerations:** Shade intolerant



Photos by Andrew Senesac, Cornell Cooperative Extension



**Scientific name:**

*Anemone x hybrida*  
(*Anemone japonica*)

**Common name:**

Japanese anemone,  
Hybrid anemone

**Region of origin:**

hybrid origin

**Highlights:**

**Weed Suppressive Rating:**

Poor to Fair

**Hardiness:**

Zones 4-8

**Height x Spread:**

2 to 4 ft. x 2 ft.

**Season of bloom:**

Late summer and fall

**Flower color:**

White or pink

**Exposure:**

Full sun to partial shade

**Soil requirements:**

Fertile, humus-rich, well-drained soil

**Roadside uses:**

**Suitable vegetation zones:**

Managed shaded sites and overpasses, borders of woodlands (RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Limited

**Drought tolerance:**

Minimal; prefers moist but well-drained soils

**Invasive potential:**

Limited

**Physical description:** Japanese anemone has saucer-shaped, semi-double flowers that are about 2 to 4 inches in diameter. The flower is either frosty white or rosy pink, with a silky sheen on the backside of the sepals. The leaflets usually have 3 lobes. The foliage is glossy and brilliant.

**Optimal growing conditions:** Partial shade is the better than full sun, but Japanese anemone will thrive in full sun if the soil is kept moist. Fertile, moist, humus-rich and well-drained soil is the best for Japanese anemone. It will grow well in most areas other than the hottest and driest regions of USA, and will perform poorly in strong wind or in winter weather if the soil is too wet.

**Susceptibility to pests and diseases:** Generally, this plant is free from pest or disease problems.



Photo by Paul Weston, Cornell U.



**Scientific name:**

*Arabis caucasica*

**Common name:**

Gray rockcress, Wall rockcress

**Region of origin:**

Mediterranean region,  
Europe to Iran

**Highlights:**

**Weed Suppressive Rating:**

Fair - Good

**Hardiness:** Zones 4-10

**Height x Spread:** 6 to 12 in. x  
about 18 in.

**Season of bloom:** Early to  
mid-spring

**Flower color:** White

**Exposure:** Full sun to moder-  
ate shade

**Soil requirements:** Fertile,  
well-drained, lightly acidic to  
alkaline soil

**Moisture requirements:**  
Moderately drought tolerant

**Roadside uses:**

**Suitable vegetation zones:**  
Managed medians, round-  
abouts or focal points of  
interest (RZ1, RZ2)

**Mowing requirements:**  
None

**Salt tolerance:**  
Moderate

**Drought tolerance:**  
Moderate to good once es-  
tablished; prefers cold win-  
ters

**Invasive potential:**  
Limited

**Physical description:** Gray rockcress is a low-growing herbaceous perennial that forms tufted mats; the habit can reach 6 to 12 in. tall and spread 18 in. wide. Leaves are evergreen, alternate, dentate, colored grayish green, covered with a soft white pubescence, and reach 1 in. long and ½ inch wide. The flowers, which are white with an attractive fragrance, have 4 petals (each petal being ½ in. long) and are at the top of 6- to 8-in.-long stems. Flowering occurs in early to mid spring. The fruit is a non-ornamental long silique.

**Optimal growing conditions:** Gray rockcress performs well in full sun (or partial shade in warm places) in fertile and very well drained soil. This species is moderately drought and soil tolerant, and does well in lightly acidic to alkaline soil. Gray rockcress prefers places with cold winters. In good conditions the rate of growth is moderate. Winter hardiness: Zones 4-10, but in zones higher than 7, heat and humidity may cause problems for the foliage, which can show reduced vigor.

**Susceptibility to pests and diseases:** When planted in a poorly drained soil, Gray rockcress may have diseases like crown rot, leaf spot, white rust, and mildew. Concerning pests, soil mealybugs and aphids may do some damage, but are not particularly threatening.



Photo by Andrew Senesac, Cornell Cooperative Extension

**Scientific name:**

*Asclepias tuberosa*

**Common name:**

Butterfly milkweed, Butterfly weed, Chigger flower, Indian paintbrush, Pleurisy root

**Region of origin:**

Eastern North America

**Highlights:**

**Weed Suppressive Rating:**

Fair to Good

**Hardiness:**

Zones 3-9

**Height x Spread:**

12 to 36 in. x 12 to 24 in.

**Season of bloom:**

Late spring to mid-summer

**Flower color:**

Yellow/Orange

**Exposure:**

Full sun

**Soil requirements:**

Well-drained, infertile soil.

**Roadside uses:**

**Suitable vegetation zones:**

Roadsides, medians, wild-flower beds and managed meadows (RZ2, RZ3)

**Mowing requirements:**

Once yearly

**Salt tolerance:**

Very good

**Drought tolerance:**

Very good once established

**Invasive potential:**

Limited

**Physical description:** Butterfly weed is perennial plant with alternating leaves that are 2 to 6 inches long and 0.25 to 1 inch wide. The stems are topped by many-flowered umbels in spring. The vibrant orange flowers are about 0.25 inches across, and bloom in spring.

**Optimal growing conditions:** This plant grows well in average, well-drained soils in full sun. It is a good choice for meadow gardens because it is drought tolerant, does well in dry and infertile soils, and competes very well with grass. Butterfly weed cannot compete with surface rooted trees.

**Susceptibility to pests and diseases:** Butterfly weed is generally pest free. However, leaf spots and rusts are sometimes present, and crown rot can be a problem in wet, poorly drained soils.



Photo courtesy CCE staff.



Photo courtesy Wildseed Farms



**Scientific name:**

*Aster ericoides*

**Common name:**

Heath aster, Snow flurry aster

**Region of origin:**

North America

**Highlights:**

**Weed Suppressive Rating:**

**Good - Excellent**

**Hardiness:**

Zones 3-9

**Height x Spread:**

3 to 6 in. x 3 to 12 in.

**Season of bloom:**

Fall

**Flower color:**

White with yellow centers

**Exposure:**

Full sun to partial shade

**Soil requirements:**

Well-drained soil

**Moisture requirements:**

Dry soil. Drought tolerant.

**Roadside uses:**

**Suitable vegetation zones:**

Managed sunny medians, wildflower beds and managed meadows, naturalized settings (RZ1, RZ2, RZ3)

**Mowing requirements:**

Once yearly

**Salt tolerance:**

Moderate to good

**Drought tolerance:**

Very good once established

**Invasive potential:**

Limited

**Physical description:** Heath aster is a dense, clump-forming plant with 1-inch-long and narrow foliage, covered with thousands of flowers in September. The flowers are 0.5 inch wide, many-petaled, daisy-like, white with yellow centers, and attract butterflies and other beneficial insects.

**Optimal growing conditions:** This plant grows easily in average, well-drained soil. It prefers full sun but tolerates some light shade, too. Heath aster prefers dry soils, and will tolerate drought.

**Susceptibility to pests and diseases:** There are no serious pests and disease problems for this plant. It has excellent mildew resistance.



Photo by John Cardina, Ohio State U.

**Scientific name:**  
*Athyrium nipponicum*

**Common name:**  
Japanese painted fern

**Region of origin:**  
Japan

**Highlights:**

**Weed Suppressive Rating:**  
**Good - Excellent** when established in dense stands

**Hardiness:**  
Zones 4-7

**Height x Spread:**  
6 to 12 in. x 9 to 18 in.

**Season of bloom:**  
Flowerless

**Exposure:**  
Partial to full shade

**Soil requirements:**  
Well-drained, humus-rich soil

**Moisture requirements:**  
Moist soil

**Roadside uses:**

**Suitable vegetation zones:**  
Shaded woodlands, shaded roadsides, overpasses or focal sites (RZ3)

**Mowing requirements:**  
None

**Salt tolerance:**  
Limited

**Drought tolerance:**  
Minimal

**Invasive potential:**  
Limited but thought to be allelopathic or weed suppressive when established in large masses

**Physical description:** Japanese painted fern is a deciduous fern with a weeping habit that forms dense clumps. The triangular, variegated fronds are up to 18 inches long and are distinguished by the silvery gray, almost metallic, color. This contrasts with the purplish red stalks.

**Optimal growing conditions:** Partial to full shade in moist, well-drained, humus-rich soil. Leaf scorch will occur if it is planted in an area with not enough moisture. It prefers neutral to slightly acidic soil. This plant is thought to be allelopathic.

**Susceptibility to pests and diseases:** Slugs and snails, aphids, and grubs can cause problems.



Photo by Paul Weston, Cornell U.



**Scientific name:**

*Aubrieta deltoidea*

**Common name:**

False rockcress, Purple rockcress, Lilacbush

**Region of origin:**

Europe

**Highlights:**

**Weed Suppressive Rating:**

Fair - Good

**Hardiness:**

Zones 4-9

**Height x Spread:**

6 to 12 in. x about 2 ft.

**Season of bloom:**

April-June

**Flower color:**

Pink, purple, red, white

**Exposure:**

Full sun to partial shade

**Soil requirements:**

Sandy, well drained

**Moisture requirements:** Prefers moist soil

**Roadside uses:**

**Suitable vegetation zones:**

Managed beds (RZ2, RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Limited

**Drought tolerance:**

Limited, but tolerates heat

**Invasive potential:**

Limited

**Physical description:** Lilac bush forms mats of low growing, trailing evergreen foliage. It is a short-lived perennial with balloon-shaped leaves with serrated edges. Flowering occurs in the spring and summer, blooms consist of pink, purple, red or white petals that are about 3/4" long.

**Optimal growing conditions:** The perennial can be found in rock crevices growing in very little soil, but it prefers moist, well-drained soil. Winter hardiness: Zones 4-9.

**Susceptibility to pests and diseases:** Watch for aphids, nematodes, flea beetles, and white blister.



Photos by Andrew Senesac, Cornell Cooperative Extension



## *Aurinia saxatilis*

## Basket of gold

**Scientific name:**

*Aurinia saxatilis*

**Common name:**

Basket of gold, Goldentuft,  
Goldentuft alyssum,  
Madwort, Rock madwort

**Region of origin:**

Europe, Turkey

**Highlights:****Weed Suppressive Rating:**

Fair - Good

**Hardiness:**

Zones 3-7

**Height x Spread:**

6 to 10 in. x 12 to 18in.

**Season of bloom:**

Early to mid-spring

**Flower color:**

Golden-yellow

**Exposure:**

Full sun

**Soil requirements:**

Well-drained, acidic or neutral soil

**Moisture requirements:**

Prefers slightly moist soil.  
Drought tolerant.

**Roadside uses:****Suitable vegetation zones:**

Roadside medians, rocky points, roundabouts, maintained beds with slightly moist soils (RZ2)

**Mowing requirements:**

None

**Salt tolerance:**

Limited

**Drought tolerance:**

Good

**Invasive potential:**

Limited

**Physical description:** Horizontally growing, this low spreader reaches 6 to 10 in. tall and spreads 12 to 18 in. wide. Leaves are grayish green with white hairs on both sides, and reach 2 to 5 in. long by ½ in. wide. Flowering occurs in early to mid-spring, the flowers being bright golden-yellow and reaching ¼ inch wide. The fruit is a glabrous silique and is non-ornamental.

**Optimal growing conditions:** This plant prefers full sun and very well drained soil, but nearly any acidic or neutral well drained soil is acceptable. The plant has good drought tolerance, yet basket of gold appears best when the soil is kept slightly moist. Moist, over-fertilized soil will produce a coarse, sprawling habit, and diseases like leaf spot and crown rot can be common if the soil is poorly drained. Winter hardiness: Zones 3 to 7.

**Susceptibility to pests and diseases:** Aphids and soil mealybugs can do some damage, but seldom serious. Leaf spot and crown rot can be problems in poorly drained soils.





**Scientific name:**

*Bergenia cordifolia*

**Common name:**

Heartleaf bergenia, Pig squeak (or Pigsqueak)

**Region of origin:**

Siberia

**Highlights:**

**Hardiness:**

Zones 3-8

**Height x Spread:**

6 to 12 in. x 9 to 18 in.

**Season of bloom:**

Early to late spring

**Flower color:**

Pink

**Exposure:**

Full sun or partial shade

**Soil requirements:**

Soils enriched with organic matter

**Moisture requirements:**

Moist soil

**Roadside uses:**

**Suitable vegetation zones:**

Managed beds, underpasses and focal sites in sun or shade (RZ2, RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Limited

**Drought tolerance:**

Moderate

**Invasive potential:**

Limited

**Physical description:** Heartleaf bergenia is a clump-forming perennial with cabbage-like evergreen foliage that has a bold, glossy appearance. Clusters of bell-shaped pink flowers are borne on scapes just above the foliage. The leaves may turn burgundy red in cold winters. The flowers are often of secondary interest due to the ornamental effect of the foliage.

**Optimal growing conditions:** Heartleaf bergenia grows well in full sun or partial shade and is adaptable to a wide variety of soils. Moist soils enriched with organic matter are preferred. The flower buds can be damaged during harsh winters.

**Susceptibility to pests and diseases:** Usually there are no serious problems.



Photo by Paul Weston, Cornell U.

**Scientific name:**

*Brunnera macrophylla*

**Common name:**

Largeleaf brunnera, Siberian  
bigloss

**Region of origin:**

Siberia

**Highlights:**

**Weed Suppressive Rating:**

Fair to good

**Hardiness:**

Zones 3-8

**Height x Spread:**

12 to 18 in. x 18 in.

**Season of bloom:**

Early to late spring

**Flower color:**

Blue

**Exposure:**

Partial shade

**Soil requirements:**

Well-drained, organic-rich  
soils

**Roadside uses:**

**Suitable vegetation zones:**

Shaded, managed beds or  
focal points; underpasses  
(RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Unknown

**Drought tolerance:**

Minimal, needs moist soils

**Invasive potential:**

Limited

**Physical description:** Clumps of large, heart-shaped leaves provide an excellent foliage effect all season. The star-like flowers are blue and small (about 1/8 to 1/4 inches across).

**Optimal growing conditions:** Largeleaf brunnera will grow best in partial shade in moist, well-drained, organic-rich soil. In southern zones, dense shade and moist soils are necessary while in northern zones, it will grow well with morning sun. Generally this plant requires little care.

**Susceptibility to pests and diseases:** No serious problems. Slugs and snails can become a problem occasionally.



Photo by Paul Weston, Cornell U.



**Scientific name:**

*Ceratostigma plumbaginoides* (*Plumbago larpentae*)

**Common name:**

Blue leadwood, Dwarf plumbago, Leadwort, Plumbago

**Region of origin:**

Western China

**Highlights:**

**Weed Suppressive Rating:**

Good to excellent

**Hardiness:**

Zones 5-9

**Height x Spread:**

8 to 12 in. x 12 to 18 in.

**Season of bloom:**

Summer to late fall

**Flower color:**

Deep blue

**Exposure:**

Full sun to partial shade

**Soil requirements:**

Rich, well-drained, acidic soil

**Moisture requirements:**

Does not tolerate wet, poorly-drained soil

**Roadside uses:**

**Suitable vegetation zones:**

Medians, roundabouts and managed beds (RZ1, RZ2, RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Good

**Drought tolerance:**

Very good once established

**Invasive potential:**

Moderate

**Physical description:** Blue leadwood is a wiry, mat-forming herbaceous perennial that grows 8-12 inches tall and spreads 12 - 18 inches wide. It has obovate, leathery, medium green foliage, with bronze tinge in autumn. Clusters of 5-petaled, star-shaped deep blue flowers bloom above the foliage on short stems from mid-summer to early fall. The flowers are about 0.5 to 0.75 inches in diameter, and are borne in small dense terminal clusters. Flowers of blue leadwood resemble those of woodland phlox.

**Optimal growing conditions:** Blue leadwood is happiest in rich, well-drained, acidic soil under full sun. This plant grows well in most soil conditions, but does not tolerate wet, poorly-drained soils. Blue leadwood prefers full sun except in hot afternoons.

**Susceptibility to pests and diseases:** This plant has no serious pest or disease problems. It is mildly invasive.



**Scientific name:**

*Chrysogonum virginianum*

**Common name:**

Green and gold, Goldenstar

**Region of origin:**

Eastern United States

**Highlights:**

**Weed Suppressive Rating:**

Fair - Good

**Hardiness:**

Zones 5-9

**Height x Spread:**

6 to 9 in. x indefinite

**Season of bloom:**

From spring till late summer

**Flower color:**

Golden-yellow

**Exposure:**

Shade

**Soil requirements:**

Well drained soil

**Moisture requirements:**

Not very drought tolerant.

**Roadside uses:**

**Suitable vegetation zones:**

Shaded managed beds in medians, roundabouts or focal points of interest (RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Exceptional

**Drought tolerance:**

Moderate once established

**Invasive potential:**

Limited

**Physical description:** This low-growing plant can reach 6 to 9 in. tall and spreads indefinitely. The semi-evergreen leaves are dark-green, opposite, and reach 1-2 in. long. The leaves are round-toothed along the edges, and the stems and flower peduncles are pubescent on both sides. Flowering occurs during spring and continues sporadically throughout the summer. Flowers are golden-yellow, five-petaled, and reach 1 to 1 ½ in. long. Fruit is tiny and non-ornamental.

**Optimal growing conditions:** Green and gold performs best in moist, well-drained soil, under partial or full shade. This plant is tolerant of a wide range of well-drained soils, and may develop successfully in richly organic soils. It is also tolerant to lighting conditions, although partial or full shade is vital in southern regions. On the other hand, green and gold is not very drought tolerant, and watering plants during summer is highly recommended. The rate of growth is moderate. Winter hardiness: Zones 5-9.

**Susceptibility to pests and diseases:** Green and gold has no serious insect or disease problems.

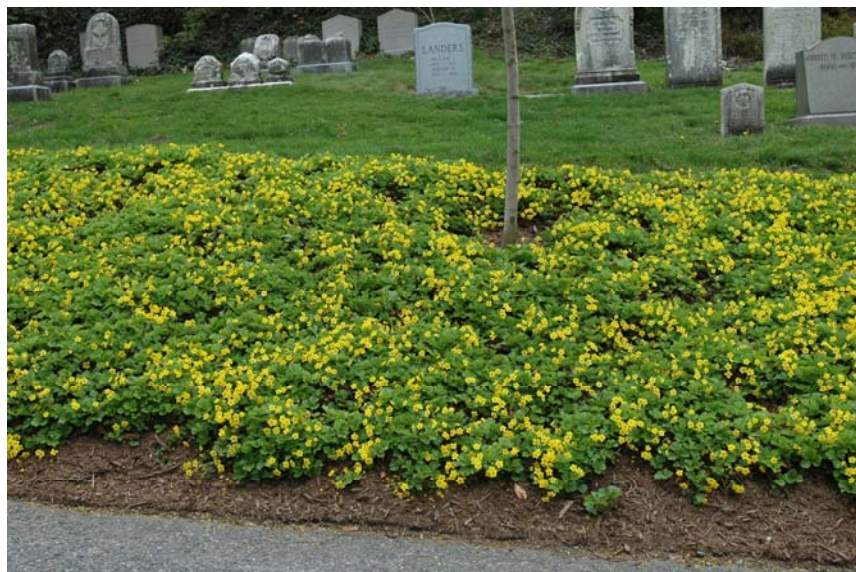


Photo by Michael Masiuk, Penn State U.



Photo by Andrew Senesac, Cornell Cooperative Extension



**Scientific name:**

*Delosperma nubigenum*

**Common name:**

Trailing ice plant, Yellow ice plant, Hardy ice plant

**Region of origin:**

South Africa

**Highlights:**

**Weed Suppressive Rating:**

**Good - Excellent**

**Hardiness:**

Zones 4-10

**Height x Spread:**

1 to 2 in. x about 36 in.

**Season of bloom:**

Summer

**Flower color:**

Yellow

**Exposure:**

Full sun

**Soil requirements:**

Well-drained soil

**Moisture requirements:**

Drought tolerant

**Physical description:** This mat-forming, creeping perennial plant may reach 2 in. tall and spreads indefinitely, creating a very attractive mossy, highly colored visual effect. The evergreen leaves are thick, oblong or linear, and fleshy. They are colored shiny green that turns reddish hues during autumn. They reach 1 ¼ long, and ¼ in. wide. Flowering occurs during summer, and flowers are bright yellow, solitary, and reach ¾ in. wide. The fruit is non-ornamental.

**Optimal growing conditions:** This plant is quite accommodating to a wide range of well-drained soils. It is also very drought tolerant, although vigor may be better during hot, dry summers with occasional watering. As with other species of its family, it prefers full sun, and growth is fast under good conditions. Winter hardiness: Zones 4-10.

**Susceptibility to pests and diseases:** In poorly drained soils, crown rot is the main disease. Concerning pests, this plant has no serious problems, but mealybugs are sometimes seen.



Photo courtesy Broome County / Cornell Coop. Ext.

**Roadside uses:**

**Suitable vegetation zones:**

Roadside medians, roundabouts and managed beds

(RZ2)

**Mowing requirements:**

None

**Salt tolerance:**

Moderate

**Drought tolerance:**

Exceptionally drought tolerant

**Invasive potential:**

Reproduces vegetatively and spreads in hot, dry climates

**Scientific name:**

*Dianthus deltoides*

**Common name:**

Maiden pink

**Region of origin:**

Western Europe and Eastern Asia

**Highlights:**

**Weed Suppressive Rating:**

Fair - Good

**Hardiness:**

Zones 3-9

**Height x Spread:**

4 to 8 in. x about 15 in.

**Season of bloom:**

Late spring to summer

**Flower color:**

Red

**Exposure:**

Full sun or partial shade

**Soil requirements:**

Well-drained, highly fertile, moderately rich alkaline soil

**Moisture requirements:**

Drought tolerant

**Physical description:** Growing horizontally and forming a wide-spreading mat of foliage, maiden pink is an excellent groundcover. This herbaceous plant reaches 4 to 8 in. tall by 15 in. wide. The leaves, evergreen and linear, look like grass, are ½ in. long, and colored medium green to bluish green. Flowering occurs during late spring or summer. The flowers, which may almost entirely cover the foliage, are ¾ in. wide and a scarlet red lavender with an attractive fragrance. Each flower has 5 petals and each petal has a dark V-shaped band on its base. The fruit is a cylindrical and non-ornamental capsule.

**Optimal growing conditions:** Maiden pink prefers full sun or partial-shade. The plant can grow well in a well drained, fertile, and moderately rich alkaline soil, and is drought tolerant. If the plant is sheared after the flowering, additional growth may occur. Winter hardiness: Zones 3-9.

**Susceptibility to pests and diseases:** Aphids, mites, *Fusarium*, and rust can do some damage.



Photos by Andrew Senesac, Cornell Cooperative Extension

**Roadside uses:**

**Suitable vegetation zones:**

Managed beds in medians, roundabouts, or sunny focal points (RZ1, RZ2, RZ3)

**Mowing requirements:**

Mow once yearly

**Salt tolerance:**

Moderate

**Drought tolerance:**

Excellent

**Invasive potential:**

Limited





**Scientific name:**

*Dianthus myrtinervius*

**Common name:**

Albanian pink, Mediterranean pink

**Region of origin:**

Balkans, Macedonia, North Greece

**Highlights:**

**Weed Suppressive Rating:**

Fair - Good

**Hardiness:**

Zones 4-9

**Height x Spread:**

About 2 in. x 8 in.

**Season of bloom:**

Summer

**Flower color:**

Pink

**Exposure:**

Full sun

**Soil requirements:**

Well-drained, neutral or lightly alkaline soil

**Moisture requirements:**

Drought tolerant

**Roadside uses:**

**Suitable vegetation zones:**

Medians, managed beds  
(RZ1, RZ2)

**Mowing requirements:**

None

**Salt tolerance:**

Moderate

**Drought tolerance:**

Very good once established

**Invasive potential:**

Limited

**Physical description:** This low-growing species forms a dense mat 2 in. tall and 8 in. wide. Leaves are tiny, ¼ in. long, and are colored bright green. Flowering occurs in summer, and flowers, colored deep pink with pale eyes, are solitary, ½ in. across, and densely cover the stems, just above the leaves.

**Optimal growing conditions:** This species performs best in well-drained, neutral to lightly alkaline soils. It prefers full sun. Planting in an organically rich soil may cause diseases. Summer heat may cause a lack of vigor, so it may be necessary to protect the plant from afternoon sun. Winter hardiness: Zones 4-9.

**Susceptibility to pests and diseases:** Slugs, grasshoppers, sow bugs, and even squirrels and deer are common pests. Fungal diseases such as crown rot and rust may be problematic in humid regions and wet soils.



Photo by Jennifer Allaire, Cornell U.

**Scientific name:**

*Erigeron glaucus*

**Common name:**

Seaside fleabane, Seaside daisy, Beach fleabane

**Region of origin:**

Pacific coast from southern California to northern Oregon

**Highlights:**

**Weed Suppressive Rating:**

Fair - Good

**Hardiness:**

Zones 5-9

**Height x Spread:**

about 10 in. x 18 in.

**Season of bloom:**

Mid to late spring

**Flower color:**

White

**Exposure:**

Full sun

**Soil requirements:**

Well-drained, sandy soil

**Moisture requirements:**

Drought tolerant; avoid too much moisture

**Roadside uses:**

**Suitable vegetation zones:**

Medians, roundabouts, sandy points, maintained beds (RZ1, RZ2, RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Good

**Drought tolerance:**

Very good

**Invasive potential:**

Limited

**Physical description:** Seaside daisy reaches 10 in. tall and spreads 18 in. wide. The semi-evergreen leaves are broad, fleshy, and colored grayish blue. The flowers are white and look like daisies; flowering occurs from mid to late spring.

**Optimal growing conditions:** As with other species of the family, seaside daisy prefers well-drained soils, especially sandy loam, and can tolerate a wide range of acidity and alkalinity under full sun. Seaside daisy is drought and infertility tolerant, and in fact can become leggy if there is too much water or fertilizer present. Winter hardiness: Zones 5 or 6 to 9. The optimal growing conditions of seaside daisy make it ideal for warm maritime districts.

**Susceptibility to pests and diseases:** Aphids can do some damage in summer months. Concerning diseases, seaside daisy may be susceptible to mildew, leaf spot, rust, and aster yellows.



Photos by Andrew Senesac, Cornell Cooperative Extension



*E. glaucus* establishing



**Scientific name:**

*Erigeron karvinskianus*

**Common name:**

Bonytip fleabane, Latin American fleabane

**Region of origin:**

South Mexico to Venezuela

**Highlights:**

**Weed Suppressive Rating:**

Fair - Good

**Hardiness:**

Zones 5-7

**Height x Spread:**

6 to 12 in. x about 20 in.

**Season of bloom:**

From spring till late summer

**Flower color:**

White to purple

**Exposure:**

Full sun or partial shade

**Soil requirements:**

Well-drained soil

**Moisture requirements:**

Drought tolerant, but prefers some moisture

**Roadside uses:**

**Suitable vegetation zones:**

Medians, roundabouts, wild-flower beds (RZ1, RZ2, RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Very good

**Drought tolerance:**

Very good once established

**Invasive potential:**

Limited

**Physical description:** This herbaceous perennial is a low growing, trailing plant that may reach a height of 6 to 12 in. tall and spread 20 in. wide. The leaves are evergreen, elliptical to oval, pubescent on both sides, and reach 1 ¼ in. long by ½ in. wide. Flowering begins in spring, and continues until the end of the growing season. The flowers have a yellow center, a corolla that is 5-lobed with white petals, which become pink and finally purple with age. This difference of colors between flowers of different ages gives a beautiful effect. The fruit is a non-ornamental achene.

**Optimal growing conditions:** Latin American fleabane prefers full sun or partial shade. The plant is able to tolerate high salinity and drought (but the growth is best with some water), and so is especially useful in the southwest. Therefore, a wide range of soils qualities is acceptable. The only major requirement is well-drained soil. Hardiness: Zones 5 to 7. The rate of growth is fast when the plant is well established.

**Susceptibility to pests and diseases:** Aphids are the principal pests of Latin American fleabane, but are rarely a serious problem.



**Scientific name:**

*Fragaria x*

**Common name:**

Species of this genus are commonly called strawberries

**Region of origin:** Europe

**NOTE:** This species can become invasive due to excessive vegetative growth.

**Physical description:** This plant, an interesting hybrid formed by crossing unknown species of *Fragaria* and *Potentilla*, is a large strawberry-like herb. The evergreen leaves are bright green and three lobed. Flowering occurs in spring, and the delicate flowers are five petaled and colored an attractive deep pink. The fruit is ornamental and edible.

**Optimal growing conditions:** A wide range of soils is tolerated by this species, but it needs good drainage. It performs best in full sun with a slightly moist soil, but light shade and minor drought are acceptable. The rate of growth is moderate to relatively fast under good conditions. Winter hardiness: hardy to Zone 6.

**Highlights:**

**Weed Suppressive Rating:**

Fair - Good

**Hardiness:**

Zones 5-10

**Height x Spread:**

3 to 6 in. x indefinite

**Season of bloom:**

Spring

**Flower color:**

Pink

**Exposure:**

Full sun

**Soil requirements:**

Well-drained soil

**Moisture requirements:**

Prefers lightly moist soil.  
Tolerates minor drought

**Susceptibility to pests and diseases:** Diseases such as leaf spot, blight, leaf rot, crown rot wild mosaic virus are sometimes a problem. Concerning pests, nematodes may do some damage.



Photos by Andrew Senesac, Cornell Cooperative Extension

**Roadside uses:**

**Suitable vegetation zones:**

Managed beds, naturalized plantings (RZ1, RZ2)

**Mowing requirements:**

None

**Salt tolerance:**

Moderate to good

**Drought tolerance:**

Very good once established

**Invasive potential:**

Significant due to stolons and runners used for vegetative spread





**Scientific name:**

*Geranium macrorrhizum*

**Common name:**

Bigroot cranesbill, Bigfoot geranium, Bigroot geranium, Hardy geranium, Musk geranium, Scented cranesbill

**Region of origin:**

Southern Europe

**Highlights:**

**Weed Suppressive Rating:**

Good - Excellent

**Hardiness:**

Zones 3-8

**Height x Spread:**

12 to 18 in. x about 15 in.

**Season of bloom:**

May-August

**Flower color:**

Pink or creamy white

**Exposure:**

Full sun to shade

**Soil requirements:**

Humus-rich, well-drained soil

**Moisture requirements:**

Dry or moist. Drought tolerant

**Roadside uses:**

**Suitable vegetation zones:**

Medians, roundabouts and managed beds with high organic matter (RZ2, RZ3)

**Mowing requirements:**

Limited

**Salt tolerance:**

Limited

**Drought tolerance:**

Very good once established

**Invasive potential:**

Limited

**Physical description:** Bigroot cranesbill is rhizomatous, semi-evergreen, mat- to clump- forming perennial with basal leaves, 5 to 7-lobed, toothed, aromatic, and about 8 inches long. The foliage turns crimson with orange tints in autumn. This plant is in flower from late spring to early summer; fragrant, one-inch wide, shallow bowl-shaped, pink or creamy white flowers are borne in dense terminal clusters.

**Optimal growing conditions:** This plant grows well in variety of soils, in full shade, partial shade, or full sun, but prefers humus-rich, dry or moist, well-drained soil in full sun. It is drought- and heat- tolerant. In areas with hot summers, however, bigroot cranesbill should be grown in partial shade.

**Susceptibility to pests and diseases:** Downy mildew, powdery mildew, rusts, gray mold, aphids, leaf spots, leaf miner, slugs, and snails can be a problem.

**Additional Notes:** The real geraniums should not be confused with the 'garden geranium'. The garden geraniums have been moved to the genus *Pelargonium*.



Photo courtesy Wikimedia

**Scientific name:**

*Gypsophila repens*

**Common name:**

Creeping baby's breath

**Region of origin:**

Europe; northwestern Spain

**Highlights:**

**Weed Suppressive Rating:**

Good - Excellent

**Hardiness:**

Zones 3-8

**Height x Spread:**

About 6 in. x 18 to 24 in.

**Season of bloom:**

From late spring till late summer

**Flower color:**

White to lilac

**Exposure:**

Full sun

**Soil requirements:**

Well-drained, gravelly soil

**Moisture requirements:**

Drought tolerant

**Roadside uses:**

**Suitable vegetation zones:**

Managed medians, wild-flower beds (RZ2, RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Limited

**Drought tolerance:**

Good

**Invasive potential:**

Limited

**Physical description:** Creeping baby's breath is a perennial, low growing plant. Forming very dense mats, it can reach 6 in. tall by 24 in. wide. The leaves are gray-green, with a smooth surface and look like grass. They reach 1 in. long. When flowering occurs, from late spring until the end of summer, the leaves are almost entirely covered by a multitude of flowers. The flowers, 1/3-in. across, are colored in a range of hues from white to lilac, and are not particularly fragrant. The fruit is non-ornamental.

**Optimal growing conditions:** Creeping baby's breath prefers full sun and very well drained soil. Growth is better if planted in a light-textured or gravelly soil (acidic soils are tolerable). The plant is easy to establish and is long lived. In addition, it is drought tolerant, but deep watering during summer may be beneficial. Winter hardiness: Zones 3 to 8.

**Susceptibility to pests and diseases:** Leafhoppers may do some damage. Diseases such as crown gall, blight, damping off, and aster yellows may be problematic.



Photo by André Karwath



**Scientific name:**  
*Helleborus orientalis*

**Common name:**  
Lenten rose

**Region of origin:**  
Europe

**Highlights:**

**Weed Suppressive Rating:**  
Fair to Good when established densely

**Hardiness:**  
Zones 4-9

**Height x Spread:**  
15 to 18 in. x about 15 in.

**Season of bloom:**  
Early spring

**Flower color:**  
Varies from purple to pink to cream-colored

**Exposure:**  
Partial to full shade

**Soil requirements:**  
Well-drained, humus-rich soil

**Moisture requirements:**  
Moist soil

**Roadside uses:**

**Suitable vegetation zones:**  
Shaded managed landscape beds, woodland edges, underpasses in well-drained but moist soil (RZ3)

**Mowing requirements:**  
None

**Salt tolerance:**  
Moderate

**Drought tolerance:**  
Minimal to moderate

**Invasive potential:**  
Limited

**Physical description:** The alternating leaves are dark and leathery, and are composed of 5 to 11 lance-shaped leaflets with saw-tooth edges. Although the leaves are evergreen, in northern regions leaves can become scorched and tattered in harsh winter weather. The saucer-shaped, nodding flowers are large (3 to 4 inches wide), and the colors vary from purple to pink to cream-colored with contrasting yellow stamens.

**Optimal growing conditions:** Lenten rose prefers areas with partial to full shade and moist, well-drained, humus-rich soil. If they are not covered by snow during extreme cold, the leaves can become scorched and tattered.

**Susceptibility to pests and diseases:** Black spot and crown rot can be a problem.

**Additional Notes:** The leaves, stems, and roots of Lenten rose are poisonous. Also, the sap can cause minor skin irritation that will last for a few minutes.

**Related Species:** *Helleborus niger* - Christmas rose. Christmas rose has less serrated, duller green leaves compared to Lenten rose. Flowers are pinkish white. Also, Christmas rose flowers earlier than Lenten rose.



Photo by Paul Weston, Cornell U.

**Scientific name:**  
*Hemerocallis dumortieri*

**Common name:**  
Early daylily

**Region of origin:**  
Eurasia (Europe to China,  
Japan, Korea)

**Highlights:**

**Weed Suppressive Rating:**  
**Good - Excellent** when es-  
tablished densely

**Hardiness:**  
Zones 2-9

**Height x Spread:**  
19 to 24 in. x about 18 in.

**Season of bloom:**  
Spring

**Flower color:**  
Yellow

**Exposure:**  
Full sun to partial shade

**Soil requirements:**  
Rich, neutral to slightly  
acidic soil

**Moisture requirements:**  
Moist soil

**Roadside uses:**

**Suitable vegetation zones:**  
Medians, overpass plant-  
ings, roundabouts and man-  
aged beds (RZ2, RZ3)

**Mowing requirements:**  
Remove dead foliage in  
spring

**Salt tolerance:**  
Moderate

**Drought tolerance:**  
Very good once established

**Invasive potential:**  
Can spread effectively and  
is thought to be allelopathic

**Physical description:** This plant is a light yellow-flowered daylily that has leaves about 0.5 inch wide and 15 inches long. The scapes are shorter than the leaves, and carry 2 to 4 sessile flowers per stem. The funnel-shaped flowers, which bloom in spring, have a fruity fragrance.

**Optimal growing conditions:** Although daylilies grow well in partial shade in most soils, they prefer rich and moist soil, and will produce more flowers under full sun. However, flowers grown under full sun are shorter-lived than the ones grown under partial shade. This plant is thought to be allelopathic.

**Susceptibility to pests and diseases:** This plant is generally free from disease problems, especially if soil is kept well drained. Slugs and snails can be damaging, especially to the young plants in the spring. Mites, aphids, and thrips can become troublesome, too.





**Scientific name:***Heuchera americana***Common name:**

American alumroot, Alumroot, Coral bells

**Region of origin:**

Eastern North America

**Highlights:****Weed Suppressive Rating:****Good - Excellent****Hardiness:**

Zones 4-9

**Height x Spread:**

18 to 24 in. x about 12 in.

**Season of bloom:**

Late spring to early summer

**Flower color:**

White

**Exposure:**

Shade

**Soil requirements:**

Well-drained, slightly acidic soil

**Moisture requirements:**

Prefers moist soil. Moderately drought tolerant

**Roadside uses:****Suitable vegetation zones:**

Medians, roundabouts, maintained beds with higher organic matter and partial shade (RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Limited

**Drought tolerance:**

Moderate

**Invasive potential:**

Limited

**Physical description:**

American alumroot has a distinctive growth habit. The basal leaves are low growing and form a mound, whereas the flower stems are thin and can reach 18-24 in. tall. Leaves are evergreen, have a purple color when they are young, and become dark green with maturity. Mature leaves reach 3-4 in. wide, are heart-shaped, and a bit toothed along the edges, with a stiff pubescence on both sides. The range of color of the foliage gives it a handsome effect. New leaves are produced throughout the season. Flowering occurs in late spring to early summer. The flowers are tiny, only 1/8 in. wide, with a greenish white color and are borne on very long, thin stems.

**Optimal growing conditions:**

American alumroot performs best in shade and does not tolerate full sun in regions with hot summers, especially if there is a lack of moisture. Keeping the plant regularly watered is required for constant foliage production. The plant prefers well-drained, moist soils that are slightly acidic, and has a tolerance for gravelly or stony soils. It has a certain degree of drought tolerance as well, and so is one of the best of this family for gardens in the southern regions. Winter hardiness: Zones 4 to 9.

**Susceptibility to pests and diseases:**

Leaf spot, powdery mildew, stem rot, and leaf and stem smut are diseases sometimes noticed. Concerning pests, strawberry root weevil, foliar nematodes, mealybugs, and four-lined plant bug can be occasionally observed, but the plant has no serious pest problems.



Photos by Andrew Senesac, Cornell Cooperative Extension

**Scientific name:**

*Heuchera sanguinea*

**Common name:**

Coral bells, Alumroot, Crimson bells

**Region of origin:**

Rocky Mountains

**Highlights:**

**Weed Suppressive Rating:**

Good - Excellent

**Hardiness:**

Zones 3-8

**Height x Spread:**

12 to 20 in. x about 12 in.

**Season of bloom:**

Late spring to early summer

**Flower color:**

Red, pink, or white

**Exposure:**

Full sun or partial shade

**Soil requirements:**

Well-drained soil with good organic matter content. Avoid heavy clay soils

**Moisture requirements:**

Moist soil

**Roadside uses:**

**Suitable vegetation zones:**

Medians, roundabouts, maintained beds with higher organic matter and partial shade (RZ2, RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Limited

**Drought tolerance:**

Moderate

**Invasive potential:**

Limited

**Physical description:** The name 'Coral bells' comes from its bell-shaped flowers that vary in color from red to pink to white. Coral bells form low, mounding clumps of light green, marbled foliage with light cream variegation. The panicles of flowers are held on wiry stems.

**Optimal growing conditions:** Although coral bells grow well in full sun to partial shade, in areas with hot and humid summers, partial shade is preferred over full sun, and hot afternoon sun should be avoided. Well-drained soil is critical, and heavy clay soils will cause poor growth.

**Susceptibility to pests and diseases:** Stem rot, root and vine weevils, mealy bugs, and Japanese beetles can be problems.





## *Hosta plantaginea*

## Fragrant plantain lily

**Scientific name:**

*Hosta plantaginea* (syn. *H. subcordata*)

**Common name:**

August lily, Fragrant hosta, Fragrant plantain lily

**Region of origin:**

China and Japan

**Highlights:****Weed Suppressive Rating:**

Good to Excellent

**Hardiness:**

Zones 3-8

**Height x Spread:**

12 to 18 in. x 18 to 24 in.

**Season of bloom:**

Late summer

**Flower color:**

White

**Exposure:**

Full to partial shade

**Soil requirements:**

Well-drained soil with good organic matter content

**Roadside uses:****Suitable vegetation zones:**

Shaded medians, underpasses, focal gardens and woodlands (RZ3)

**Mowing requirements:**

Remove dead vegetation in early spring

**Salt tolerance:**

Limited

**Drought tolerance:**

Reasonable once established but prefers adequate moisture

**Invasive potential:**

Limited

**Physical description:** Hosta plants have heart-shaped leaves that are light-yellowish green and glossy. The flowers are very large, trumpet-shaped, white, and heavily fragrant.

**Optimal growing conditions:** Hostas require full to partial shade, as well as soil with good organic matter content. Partial shade is preferred, and in some drier areas, full sun can cause the leaves to yellow and scorch on the edges. It grows best in rich, well-drained soil with some moisture and shade.

**Susceptibility to pests and diseases:** Generally, hostas require little maintenance and are easy to grow. However, slugs, snails, leaf spots, and crown rot can become a problem.



Photo by Stan Shebs

## *Hosta undulata*

## Wavy-leaved plantain lily

**Scientific name:**

*Hosta undulata*

**Common name:**

Wavy-leaved plantain lily

**Region of origin:**

hybrid

**Highlights:****Weed Suppressive Rating:**

**Good - Excellent**

**Hardiness:**

Zones 3-8

**Height x Spread:**

12 to 18 in. x about 18 in.

**Season of bloom:**

Mid summer

**Flower color:**

Pale lavender

**Exposure:**

Light to moderate shade.  
Tolerates full sun

**Moisture requirements:**

Moist soil

**Roadside uses:****Suitable vegetation zones:**

Shaded managed gardens  
or borders, underpasses or  
focal sites (RZ3)

**Mowing requirements:**

Remove dead foliage in  
spring or late fall

**Salt tolerance:**

Limited

**Drought tolerance:**

Limited but will tolerate full  
sun if soil is moist

**Invasive potential:**

Limited

**Physical description:** Wavy-leaved plantain lilies have basal, ovate leaves that are about 6 inches long. The leaves are striped lengthwise at the center with cream or white. The pale lavender flowers are about 2 inches long, gradually widening and funnel-form, and are borne on a scape about 1 foot tall.

**Optimal growing conditions:** Light to moderate shade and moist soil is preferred, and soil pH should range from 6 to 7. *Hosta undulata* tolerates full sun better than other *Hosta* species.

**Susceptibility to pests and diseases:** Leaf spots, crown rot, chewing insects, and slugs can be problems



Courtesy Missouri Botanical Garden Plantfinder

**Scientific name:**

*Laurentia fluviatilis* (syn. *Pratia pedunculata*, *Isotoma f.*)

**Common name:**

Blue star creeper, Laurentia, Pratia, Swamp isotoma

**Region of origin:**

Australia

**Physical description:** Blue star creeper is an evergreen mat-forming perennial with tiny, deep green leaves that are elliptic, slightly toothed, and 0.2 to 0.4 inch long. Starry, light blue flowers are borne from late spring to early fall.

**Optimal growing conditions:** Blue star creeper prefers moist soil, in full sun to partial shade. This plant is evergreen in warmer climates, and semi-evergreen in colder climates. It is drought tolerant.

**Susceptibility to pests and diseases:** There are no serious pest or disease problems for this plant.

**Highlights:**

**Weed Suppressive Rating:**

Good - Excellent

**Hardiness:**

Zones 6-8

**Height x Spread:**

2 in. x 18 in.

**Season of bloom:**

Late spring to early fall

**Flower color:**

Light blue

**Exposure:**

Full sun to partial shade

**Soil requirements:**

Well-drained soil

**Moisture requirements:**

Prefers moist soil. Drought tolerant



Photo by J. Cardina, Ohio State U.

**Roadside uses:**

**Suitable vegetation zones:**

Managed roundabouts, woodlands (RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Limited

**Drought tolerance:**

Limited

**Invasive potential:**

Limited



**Scientific name:**  
*Lavandula hybrida*

**Common name:**  
Lavender, Lavandin

**Region of origin:**  
Southern Europe

**Highlights:**

**Weed Suppressive Rating:**  
Fair to Good

**Hardiness:**  
Zone 5

**Height:**  
About 18 in.

**Season of bloom:**  
Mid summer

**Flower color:**  
Violet-blue

**Exposure:**  
Full sun

**Soil requirements:**  
Well-drained, calcareous soils

**Roadside uses:**

**Suitable vegetation zones:**  
Managed beds in full sun with well-drained soils, prefers hot conditions  
(RZ2, RZ3)

**Mowing requirements:**  
Once yearly

**Salt tolerance:**  
Moderate

**Drought tolerance:**  
Very good once established

**Invasive potential:**  
Limited

**Physical description:** Lavender is a bushy, branching shrub. Its lower branches are woody, but the young stems are herbaceous. It grows to about 3 feet tall. The violet-blue leaves grow up to 2 inches in length with smooth edges. Flowering occurs in summer, with blooms produced on terminating, wiry, blunt spikes 6-8 inches long.

**Optimal growing conditions:** Lavender grows well in drained soil located in full sun. The plant is usually transplanted from vegetative cuttings. Once it is transplanted, it takes a few years for the planting to fully establish. The hybrid lavender tolerates heat and difficult growing conditions better than native lavender which originated in higher altitudes in Southern France.

**Susceptibility to pests and diseases:** No serious pest or disease problems have been reported for this species



Photo courtesy Florilege Nature



**Scientific name:**

*Mazus reptans*

**Common name:**

Creeping mazus

**Region of origin:**

Himalayas

**Highlights:**

**Weed Suppressive Rating:**

Fair - Good

**Hardiness:**

Zones 4-9

**Height x Spread:**

About 2 in. x indefinite

**Season of bloom:**

Late spring

**Flower color:**

Violet-blue

**Exposure:**

Partial to full shade

**Soil requirements:**

Well-drained, rich, fertile soil

**Moisture requirements:**

Not very drought tolerant

**Roadside uses:**

**Suitable vegetation zones:**

Managed shady beds (RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Limited

**Drought tolerance:**

Limited

**Invasive potential:**

Slight (in rich soils only)

**Physical description:** This low-growing plant has a creeping habit and spreads indefinitely. The semi-evergreen leaves are fresh green, almost oval, and may reach 2 in. long. The edges of leaves are toothed. Flowering occurs in late spring, and the violet-blue flowers are very attractive. They may be solitary, or grouped in twos or threes. Each blossom is formed of two halves, and the lower lobe of the uppermost lip is white with yellow. The fruit is non-ornamental.

**Optimal growing conditions:** Creeping mazus can tolerate a wide range of very well drained soils, but performs best in a rich, fertile soil. Not particularly resistant to drought, it needs a frequent watering during the summer. Creeping mazus does well in full to partial shade. Growth is slow at the beginning, then moderate when established. Winter hardiness: Zones 4 to 9.

**Susceptibility to pests and diseases:** This plant has no serious pest or disease problems.



Photos by Andrew Senesac, Cornell Cooperative Extension



*Mazus reptans* after winter



**Scientific name:**

*Mentha piperita*

**Common name:**

Peppermint, Black peppermint

**Region of origin:**

Europe

**Highlights:**

**Weed Suppressive Rating:**

Good - Excellent

**Hardiness:**

Zones 3-8

**Height x Spread:**

12 to 24 in. x indefinite

**Season of bloom:**

Summer

**Flower color:**

Lilac to purple

**Exposure:**

Full sun to partial shade

**Soil requirements:**

Fertile, well-drained soil

**Moisture requirements:**

Prefers slightly moist soil.  
Limited drought tolerance

**Roadside uses:**

**Suitable vegetation zones:**

Medians, roundabouts and managed beds (RZ3)

**Mowing requirements:**

Once yearly

**Salt tolerance:**

Limited

**Drought tolerance:**

Limited

**Invasive potential:**

High

**Physical description:** Peppermint can reach 12 to 24 in. tall and spreads indefinitely. The leaves are 2½ in. long, are toothed about the edges, and have a medium green color. The distinctive feature of the leaves is their strong peppermint fragrance. Flowering occurs in mid to late summer, and the flowers can have, depending on the specimen, a lilac-pink to purple color. They are formed of spikes 1 to 3 ft long.

**Optimal growing conditions:** Almost any kind of soil may be acceptable for peppermint, and this species is especially tolerant of saturated soils. The soil must be lightly moistened at all time, because the plant performs poorly under drought conditions. Peppermint prefers full sun to partial shade. Under good conditions, the rate of growth is fast. Winter hardiness: Zones 3-8.

**Susceptibility to pests and diseases:** This plant has no serious disease or pest problems.



Photo by Andrew Senesac, Cornell Cooperative Extension



**Scientific name:**

*Microbiota decussata*

**Common name:**

Siberian cypress, Russian arborvitae, Russian juniper

**Region of origin:**

Russia

**Highlights:**

**Weed Suppressive Rating:**

Good - Excellent

**Hardiness:**

Zones 2-8

**Height x Spread:**

6 to 24 in. x 3 to 12 ft.

**Season of bloom:**

Non-flowering

**Flower color:**

Non-flowering

**Exposure:**

Full sun to partial shade

**Soil requirements:**

Well-drained soil

**Moisture requirements:**

Moderate moisture

**Roadside uses:**

**Suitable vegetation zones:**

Managed beds, sloped sites near underpasses or in medians (RZ3)

**Mowing requirements:**

None; evergreen

**Salt tolerance:**

moderate

**Drought tolerance:**

Tolerates cold but not drought

**Invasive potential:**

Limited

**Physical description:** Siberian cypress is a low growing, coniferous evergreen shrub that forms a woody ground cover, similar to Creeping juniper (*Juniperus horizontalis*), although it does not lie directly on the ground like junipers. The bright green new foliage turns dark green by summer, then turns bronze to burgundy with exposure to cold and sun in autumn and winter. The soft and feathery, scale-like awl-shaped leaflets are held in flattened sprays. Plants grown in shades may produce needlelike leaves as well. The fruits are small, berry-like cones, 0.25 inches across, with leathery pale brown scales. The flowers and cones are not of any ornamental importance.

**Optimal growing conditions:** Siberian cypress is easily grown in moderately moist but well-drained soil in full sun to partial shade. Although this plant will not survive in hot, humid climates, and is not especially drought tolerant, it is very adaptable to poor, thin soils and is extremely tolerant of cold. It can be planted in exposed sites where other plants would freeze to death.

**Susceptibility to pests and diseases:** This plant has no serious pest or disease problems.



Photo courtesy Selection New Plants

**Scientific name:**

*Nepeta x faassenii*

**Common name:**

Catmint, Blue catmint

**Region of origin:** Eurasia,

Africa

**Highlights:**

**Weed Suppressive Rating:**

Good - Excellent

**Hardiness:**

Zones 3-8

**Height x Spread:**

About 18 in. x 18 in.

**Season of bloom:**

Late spring to summer

**Flower color:**

Lavender

**Exposure:**

Full sun

**Soil requirements:**

Well-drained soil

**Moisture requirements:**

Very drought tolerant

**Roadside uses:**

**Suitable vegetation zones:**

Medians, wildflower beds and managed meadows (RZ2)

**Mowing requirements:**

Once yearly

**Salt tolerance:**

Limited

**Drought tolerance:**

Very good once established

**Invasive potential:**

Limited

**Physical description:** *Nepeta x faassenii* is a sterile hybrid between *N. mussinii* and *N. nepetella*. This perennial plant has a clump, mound-forming habit, and reaches 18 in. tall. Leaves are deciduous--although basal leaves often stay green during the winter--and are narrow, opposite, with toothed edges. They are silvery gray, pubescent on both sides, aromatic when crushed (mint fragrance), and reach 1 ½ in. long. Flowering occurs in late spring and continues throughout the summer. Lavender flowers are trumpet-shaped and are borne in spikes ½ in. long. Stems reach 18 in. long. No fruit is produced.

**Optimal growing conditions:** Catmint may be adaptable to a wide range of well-drained soils. It is tolerant to pH and texture, and is very drought-resistant. It performs best in full sun. Growth is moderate. This plant is thought to be allelopathic. Winter hardiness: Zones 3-8.

**Susceptibility to pests and diseases:** This species has no serious pest or disease problems. In poorly drained soils, crown rot is sometimes problematic.



Photos by Andrew Senesac, Cornell Cooperative Extension





**Scientific name:**

*Pachysandra terminalis*

**Common name:**

Pachysandra, Japanese pachysandra

**Region of origin:**

Japan

**Highlights:**

**Weed Suppressive Rating:**

Good to excellent

**Hardiness:**

Zones 5-9

**Height x Spread:**

6 to 8 in. x 12 to 18 in.

**Season of bloom:**

Early spring

**Flower color:**

White

**Exposure:**

Partial to full shade

**Soil requirements:**

Well-drained, acidic soil high in organic matter

**Moisture requirements:**

Prefers moist soil, but is drought tolerant

**Roadside uses:**

**Suitable vegetation zones:**

Shaded medians, roundabouts, heavily shaded sites  
(RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Limited

**Drought tolerance:**

Good once established

**Invasive potential:**

Spreads vegetatively in shaded sites

**Physical description:** Japanese pachysandra is an evergreen plant that forms a dense and solid carpet. It has alternating leaves that are dark green, glossy, and lightly toothed. The leaves are ovate, 2 to 4 inches long, and 0.5 to 1.5 inches wide. The stems are slender, upright, and greenish, while the flowers are white, and in terminal spikes. The flowers are neither numerous nor particularly showy.

**Optimal growing conditions:** Partial to full shade is preferred; the leaves will yellow if exposed to full sun. Japanese pachysandra grows best in moist, well-drained soils with a pH of about 5.5 to 6.5, with good organic matter content. Poorly drained, heavy clay soil should be avoided.

**Susceptibility to pests and diseases:** *Volutella pachysandrae*, or leaf blight, can become serious. Root rot and euonymus scale can also cause significant damage.

**Additional Notes:** It can be difficult to replant vegetation in an area that has contained an established bed of pachysandra. Pachysandra is thought to be allelopathic.



Photo by Paul Weston, Cornell U.

**Scientific name:**

*Persicaria affinis*

**Common name:**

Fleeceflower, Himalayan knotweed

**Region of origin:**

Himalayas

**Highlights:**

**Weed Suppressive Rating:**

**Good-Excellent**

**Hardiness:**

Zones 3-8

**Height x Spread:**

Up to 12 in. x 24 in. or more

**Season of bloom:**

Mid-summer to mid-autumn

**Flower color:**

Deep red to pink

**Exposure:**

Full sun to partial shade

**Soil requirements:**

Tolerates most soils

**Moisture requirements:**

Prefers moist, but not wet, soil

**Roadside uses:**

**Suitable vegetation zones:**

Moist medians, roundabouts  
(RZ2, RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Unknown

**Drought tolerance:**

Limited

**Invasive potential:**

Limited

**Physical description:** An evergreen, mat-forming plant with dark green, lance-shaped leaves ranging from 2 to 6 in. in length. Height up to 10", and spreading to 24" or more. Foliage turns redish bronze in autumn. Blooms from mid-summer through mid-autumn. Blooms are spikes (2 to 3 in. long) of small (1/4") flowers; color of flowers ranges from pink to deep red, often changing from pink to red (or from red to pink, depending on the cultivar) during the season, finally turning brown in autumn, providing visual interest during the winter.

**Optimal growing conditions:** The plant prefers full sun and moist soil, but will tolerate partial shade. Does not tolerate excessive soil moisture. Winter hardiness: Zones 3-8.

**Susceptibility to pests and diseases:** Aphids, slugs, and snails may be problematic.



Photo by Bjorn Thon



Photo courtesy Wikipedia—Kurt Stueber



**Scientific name:**  
*Petrorhagia saxifraga*

**Common name:**  
Tunic flower, Coat flower,  
Saxifrage pink

**Region of origin:**  
Central Europe

**Highlights:**

**Weed Suppressive Rating:**  
Fair - Good

**Hardiness:**  
Zones 4-8

**Height x Spread:**  
About 10 in. x 12 to 18 in.

**Season of bloom:**  
Early summer

**Flower color:**  
Pale pink

**Exposure:**  
Full sun

**Soil requirements:**  
Well-drained soil

**Moisture requirements:**  
Prefers moist soil

**Roadside uses:**

**Suitable vegetation zones:**  
Moist medians, roundabouts  
(RZ2, RZ3)

**Mowing requirements:**  
None

**Salt tolerance:**  
Limited

**Drought tolerance:**  
Limited

**Invasive potential:**  
Limited

**Physical description:** This perennial plant forms low mounds, and can reach 10 in. long by 12-18 in. wide. The leaves, which are linear and opposite, reach ¼ to ½ in. long and are very narrow and acute. The serration at the base of each leaf is covered with bristles. Flowering occurs in the beginning of the summer, and flowers are visible throughout the summer. Flowers are pale pink and reach 1/3 in. wide.

**Optimal growing conditions:** The plant prefers full sun and a moist, well-drained soil. Drainage is very important, and growth of the plant is rapid under good conditions. Saxifrage pink prefers drainage of a rock garden. Winter hardiness: Zones 4-8.

**Susceptibility to pests and diseases:** Saxifrage pink has no serious problems with pests and diseases.



Photo courtesy Rob's Plants



**Scientific name:**

*Phlox stolonifera*

**Common name:**

Creeping phlox

**Region of origin:**

Eastern part of the United States (from Pennsylvania to Georgia)

**Highlights:**

**Weed Suppressive Rating:**

Poor

**Hardiness:**

Zones 4-9

**Height x Spread:**

6 to 12 in. x indefinite

**Season of bloom:**

Mid to late spring

**Flower color:**

Purple to violet

**Exposure:**

Light to moderate shade

**Soil requirements:**

Organically rich, acidic to neutral soil

**Moisture requirements:**

Drought tolerant

**Roadside uses:**

**Suitable vegetation zones:**

Roadside plantings, medians, roundabouts and managed beds (RZ1, RZ2, RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Good

**Drought tolerance:**

High

**Invasive potential:**

Spreads rapidly in well-drained soils but not particularly invasive

**Physical description:** The common name of *Phlox stolonifera* comes from its tendency to spread by leafy horizontal stems underground). It is low growing and mat forming. It may reach 6 to 12 in. tall, and spreads indefinitely. The elliptic leaves are evergreen and dark green in color; they reach 1 to 3 in. long and are quite attractive. The leaves on the flowering stems are tiny, reaching less than 1 in. in length. Flowering occurs in mid to late spring; the flowers are purple to violet and look like trumpets.

**Optimal growing conditions:** Creeping phlox prefers light to moderate shade. It performs in any organically rich loam or humus-enriched soil, if the soil is acidic or neutral. If the climate is not too warm, Creeping phlox can tolerate an exposure in full sun. Winter hardiness: Zones 4-9.

**Susceptibility to pests and diseases:** The main disease problem of this species in hot and humid places is powdery mildew, which is more often noticed in early spring and during the summer. One solution to this problem is to cut back the stems to initiate new growth.



Photos by Andrew Senesac, Cornell Cooperative Extension



**Scientific name:**

*Phlox subulata*

**Common name:**

Moss phlox, Moss pink

**Region of origin:**

Northeastern United States

**Highlights:**

**Weed Suppressive Rating:**

Good - Excellent

**Hardiness:**

Zones 3-9

**Height x Spread:**

4 to 6 in. x about 24 in.

**Season of bloom:**

Early to mid-spring

**Flower color:**

Purple

**Exposure:**

Full sun

**Soil requirements:**

Well-drained soil

**Moisture requirements:**

Prefers moist soil. Moderately drought tolerant

**Roadside uses:**

**Suitable vegetation zones:**

Managed beds in sunny medians, roundabouts or focal points  
(RZ1, RZ2, RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Moderate

**Drought tolerance:**

Moderate

**Invasive potential:**

Limited

**Physical description:** Moss phlox forms dense mounds reaching 6 in. tall, and spreads indefinitely. The evergreen leaves are mostly opposite, although upper ones may be alternate. Leaves are ciliate, entire, and medium green in color, and about 1 in. long by 1/8 in. wide. Flowering occurs in early to mid-spring, and flowers are borne in dense terminal panicles. The flowers, which are 3/4 in. across, are colored red-purple to violet-purple, pink, or white. The fruit is a small capsule and is non-ornamental.

**Optimal growing conditions:** Moss phlox performs best in full sun. It is tolerant of a wide range of soil types, but good drainage is necessary. Although this plant is moderately drought-resistant, it performs best in a slightly moist soil. Concerning pH, moss phlox prefers lightly alkaline soils. Growth is rapid under good conditions. Winter hardiness: Zones 3-9.

**Susceptibility to pests and diseases:** Aphids and mites are sometimes problematic. Spider mites may be a problem during hot summers. Concerning diseases, crown rot, fungus leaf spot, mildew, rust, and verticillium wilt have been mentioned.



Photos by Andrew Senesac, Cornell Cooperative Extension





**Scientific name:**

*Polystichum acrostichoides*

**Common name:**

Christmas fern

**Region of origin:**

Eastern North America

**Highlights:**

**Weed Suppressive Rating:**

Good to excellent

**Hardiness:**

Zones 3-9

**Height x Spread:**

About 2 ft. x 2 ft.

**Season of bloom:**

None

**Flower color:**

Flowerless plant

**Exposure:**

Shade, to partial shade

**Soil requirements:**

Acidic, well-drained soil

**Moisture requirements:**

Prefers moist soil, but tolerates drought.

**Roadside uses:**

**Suitable vegetation zones:**

Woodside areas, shaded roadside settings (RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Moderate

**Drought tolerance:**

Very good once established

**Invasive potential:**

Limited

**Physical description:** The Christmas fern grows in lush clumps, and its leathery, lance-shaped fronds are dark green year-round. The sterile fronds are shorter, and usually broader, while fertile fronds are longer and slender, and have the undersides of it tips bronze with spores.

**Optimal growing conditions:** Partial shade in moist, acidic, well-drained soil is the optimum site for Christmas fern, although this plant grows well in most conditions with little maintenance. It tolerates drought, heat, and poor soil as well as repeated transplanting.

**Susceptibility to pests and diseases:** Rabbits, chipmunks, and box turtles can be a problem.



Photo by Paul Weston, Cornell U.



**Scientific name:**  
*Potentilla nepalensis*

**Common name:**  
Nepal cinquefoil

**Region of origin:**  
Nepal

**Highlights:**

**Weed Suppressive Rating:**  
**Good - Excellent**

**Hardiness:**  
Zones 5-8

**Height x Spread:**  
12 to 18 in. x indefinitely

**Season of bloom:**  
Summer

**Flower color:**  
Purple

**Exposure:**  
Full sun

**Soil requirements:**  
Well-drained soil

**Moisture requirements:**  
Drought tolerant

**Roadside uses:**

**Suitable vegetation zones:**  
Wildflower beds, naturalized sites, reclamation areas and managed meadows  
(RZ2,RZ3)

**Mowing requirements:**  
None

**Salt tolerance:**  
Moderate to good

**Drought tolerance:**  
Very good but prefers warm climates and moderate temperatures

**Invasive potential:**  
Limited

**Physical description:** The height of this perennial, sprawling plant is quite variable. Under typical conditions, Nepal cinquefoil reaches 12-18 in. tall, but may reach a height of 30 in., with indefinite spreading when conditions are optimal. The plant is compact, and has long leafy stems (which may be pruned if necessary during summer). The semi-evergreen leaves are dark green, have 5 leaflets, and are coarsely dentate. Flowering occurs in early summer and continues sporadically throughout the summer; the stems support purple or crimson-colored flowers, which have 5 petals and reach 1 inch long. The fruit is non-ornamental.

**Optimal growing conditions:** Nepal cinquefoil prefers full sun with a well-drained soil. This species doesn't like extreme temperatures (heat or cold), and reaches an optimum growth in regions with moderate summers and winters. The plant only persists for two or three years. Winter hardiness: Zones 5-8.

**Susceptibility to pests and diseases:** Nepal cinquefoil has no serious problems with pests or diseases.



Photos by Andrew Senesac, Cornell Cooperative Extension



**Scientific name:**

*Potentilla neumanniana*

**Common name:**

Spring cinquefoil, Dwarf spring cinquefoil

**Region of origin:**

Europe

**Highlights:**

**Weed Suppressive Rating:**

Good - Excellent

**Hardiness:**

Zones 5-8

**Height x Spread:**

3 to 6 in. x 6 to 12 in.

**Season of bloom:**

Spring through summer

**Flower color:**

Yellow

**Exposure:**

Full sun

**Soil requirements:**

Well-drained soil

**Moisture requirements:**

Prefers moist soils, but will tolerate most soils

**Roadside uses:**

**Suitable vegetation zones:**

Wildflower beds, naturalized sites, and managed meadows (RZ1, RZ2,RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Moderate to good

**Drought tolerance:**

Moderate

**Invasive potential:**

Limited

**Physical description:** A low-growing evergreen groundcover with palmate, toothed, medium-green leaves (with 5 or 7 lobes). The plants produce saucer-shaped, yellow flowers (1 " across) starting in spring and continuing for most of the summer. Plants reach a height of 4" and tend to form clumps up to 12" across. The cultivar 'Nana' is more compact, reaching a height of only 3" and a spread of 6".

**Optimal growing conditions:** Spring cinquefoil prefers full sun with a well-drained soil, but tolerates partial shade and a variety of soil types. Winter hardiness: Zones 5-8.

**Susceptibility to pests and diseases:** May be affected by various pathogens (downy & powdery mildew, leaf blister, rust, or leaf spots).



Photos courtesy G. A. Monroe





**Scientific name:**

*Rhus aromatica*

**Common name:**

Fragrant sumac

**Region of origin:**

Eastern North America

**Highlights:**

**Weed Suppressive Rating:**

Fair - Good

**Hardiness:**

Zones 4-9

**Height x Spread:**

About 2 ft. x 6 to 8 ft.

**Season of bloom:**

Spring

**Flower color:**

Yellow

**Exposure:**

Full sun or light shade

**Soil requirements:**

Well-drained, moderately fertile soil

**Moisture requirements:**

Moist soil. Drought tolerant

**Roadside uses:**

**Suitable vegetation zones:**

Sloped sites, medians, underpasses or roundabouts in sunny or partly shaded conditions (RZ2, RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Moderate

**Drought tolerance:**

Very good once established

**Invasive potential:**

Limited

**Physical description:** This low-growing, spreading perennial plant is a woody groundcover that may reach 2-2 ½ ft tall, and spreads 6-8 ft wide. Foliage is dense and aromatic; leaves are 3-palmate, slightly hairy on both sides, and reach 4 in. long. They are bright green, and turn red-orange in autumn. Flowers are yellow, ¼ in. across, and are borne in small panicles. Fruit is non-ornamental.

**Optimal growing conditions:** Fragrant sumac performs best in a moist, moderately fertile, well-drained soil. It prefers full sun but tolerates light shade. Full sun is preferable to obtain best autumn color. Winter hardiness: Zones 4-9.

**Susceptibility to pests and diseases:** Caterpillars and scale insects are the main arthropod pests. Concerning diseases, powdery mildew, wood rot, leaf spot blister, canker, and dieback may be problems.



Photo by Michael Masiuk, Penn State U.



Photo by Andrew Senesac, Cornell Cooperative Extension

**NOTE:** The foliage of fragrant sumac resembles that of poison ivy. The major difference is that the leaves of poison ivy are shiny, whereas those of fragrant sumac are not.



**Scientific name:**

*Rudbeckia fulgida*

**Common name:**

Black-eyed susan, Golden coneflower

**Region of origin:**

North America

**Highlights:**

**Weed Suppressive Rating:**

**Good - Excellent**

**Hardiness:**

Zones 3-9

**Height x Spread:**

30 in. x 12 to 24 in.

**Season of bloom:**

Summer to fall

**Flower color:**

Yellow with brown center

**Exposure:**

Full sun to partial shade

**Soil requirements:**

Prefers moderately fertile, heavy but well-drained soil

**Moisture requirements:**

Moist soil. Tolerates mild drought

**Roadside uses:**

**Suitable vegetation zones:**

Moist medians, wildflower beds and managed meadows (RZ2, RZ3)

**Mowing requirements:**

Once yearly

**Salt tolerance:**

Limited

**Drought tolerance:**

Fairly good once established

**Invasive potential:**

Limited

**Physical description:** Black-eyed Susan is a rhizomatous perennial with large golden yellow flowers with brown centers. The leaves of this plant are dark green, hairy, and have prominent veins. The basal leaves are about 5 inches long and half as wide, oblong to lance-shaped, while the stem leaves are toothed and smaller. The flowerheads are 3.5 to 5 inches across, and has 1 to 2 inch long, bright, golden yellow petals surrounding a velvety, dark brown center. It blooms in late summer to fall.

**Optimal growing conditions:** Although Black-eyed Susan adapts to a wide variety of soil conditions, the optimal condition for this plant is moderately fertile, somewhat moist, heavy but well-drained soil that does not dry out, in full sun or partial shade. It tolerates clay soil and mild droughts.

**Susceptibility to pests and diseases:** Slugs and snails feed on young plants, and aphids, powdery mildew, rust, smut, and leaf spots can occur.



Photos by Andrew Senesac, Cornell Cooperative Extension



**Scientific name:**

*Sedum acre*

**Common name:**

Gold-moss stonecrop,  
Golden carpet stonecrop,  
Yellow sedum, Wall pepper

**Region of origin:**

Europe, North Africa

**Highlights:**

**Weed Suppressive Rating:**

Good—Excellent

**Hardiness:**

Zones 4-9

**Height x Spread:**

2 to 4 in. x indefinite

**Season of bloom:**

Summer

**Flower color:**

Bright yellow-green

**Exposure:**

Full sun to partial shade

**Soil requirements:**

Well-drained, gravelly soil

**Moisture requirements:**

Drought tolerant

**Salt tolerance:**

Moderate to good

**Roadside uses:**

**Suitable vegetation zones:**

Managed beds in medians,  
roundpoints, walls, and focal  
points (RZ1, RZ2, RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Moderate to good

**Drought tolerance:**

Very good

**Invasive potential:**

May become invasive

**Physical description:** Gold-moss stonecrop is a creeping groundcover with smooth-margined, triangular, light green leaves on thick woody stems. Forms evergreen mats of foliage less than 4" high, and produces small (1/2"), bright yellow-green blooms in summer.

**Optimal growing conditions:** Prefers sandy or gravelly soil, but tolerates everything from rich dirt to sandy soils, even growing in cracks in masonry and rocks. Does well in full sun to partial shade, but not in dense shade when water is limiting (although the species is drought tolerant when in full sun). Acceptable soil pH ranges from neutral to slightly alkaline. Winter hardiness: Zones 4-9.

**Susceptibility to pests and diseases:** Mealybugs, scales, slugs, and snails can be problematic.

**Additional details:** Attractive to bees, butterflies, and birds. May become invasive.



Photo courtesy R. A. Howard, The Smithsonian Institution



Photo courtesy Michael Clayton, Univ. of Wisconsin



**Scientific name:**

*Sedum reflexum*

**Common name:**

Spruced-leaved stonecrop,  
Spruce stonecrop, Jenny's  
stonecrop, Prickmadam

**Region of origin:**

Europe

**Highlights:**

**Weed Suppressive Rating:**

Fair - Good

**Hardiness:**

Zone 3

**Height x Spread:**

8 to 10 in. x indefinite

**Season of bloom:**

Mid-summer

**Flower color:**

Bright yellow

**Exposure:**

Full sun

**Soil requirements:**

Well-drained, slightly acidic  
soil

**Moisture requirements:**

Drought tolerant

**Salt tolerance:**

Good

**Roadside uses:**

**Suitable vegetation zones:**

Managed beds in medians,  
roundpoints, walls, and focal  
points (RZ1, RZ2, RZ3)

**Mowing requirements:**

None, but removal of dead  
foliage in spring is needed

**Salt tolerance:**

Moderate to good

**Drought tolerance:**

Exceptional

**Invasive potential:**

Can spread vegetatively

**Physical description:** Spruce-leaved stonecrop is a mat-forming herbaceous perennial plant that reaches 8 to 10 in. tall and spreads indefinitely. The evergreen leaves are bluish green, linear, alternate, pointed, and are about ½ in. long. Flowering occurs in mid-summer, and bright yellow flowers, which are borne atop upright stems, form 1 to 1 ½ in. wide clusters.

**Optimal growing conditions:** This plant performs best in well-drained, slightly acidic soils in full sun. It is drought tolerant, but a little watering may be necessary during extend heat periods. This plant is easy to establish and growth is moderate under good conditions. Winter hardiness: hardy to Zone 3.

**Susceptibility to pests and diseases:** Slugs, nematodes, aphids, and weevils have been sometimes noticed. This species has no serious disease problems.



Photos by Andrew Senesac, Cornell Cooperative Extension





**Scientific name:**

*Sedum spurium*

**Common name:**

Stonecrop, Two-row stonecrop

**Region of origin:**

Asia

**Highlights:**

**Weed Suppressive Rating:**

Fair - Good

**Hardiness:**

Zones 3-8

**Height x Spread:**

About 3 in. x 3 to 12 in.

**Season of bloom:**

Late spring to early fall

**Flower color:**

Pink/magenta

**Exposure:**

Full sun to partial shade

**Soil requirements:**

Well drained soil

**Moisture requirements:**

Drought tolerant

**Roadside uses:**

**Suitable vegetation zones:**

Roadside medians, meadows, naturalized zones and conservation areas

(RZ1, RZ2, RZ3)

**Mowing requirements:**

Once yearly

**Salt tolerance:**

Moderate

**Drought tolerance:**

Very good once established

**Invasive potential:**

Moderate

**Physical description:** This plant is a vigorous, mat-forming perennial with semi-evergreen, scalloped, fleshy green leaves with serrated edges. The cultivar 'John Creech' bears many pink flowers above the foliage from late spring to early fall.

**Optimal growing conditions:** This plant is easily grown in average, moderately fertile, well-drained soil in full sun. It tolerates light shade, heat, drought, and poor soil conditions.

**Susceptibility to pests and diseases:** Mealybugs, scale insects, slugs, and snail can become problems.

**Additional Notes:** This plant can cause mild stomach upset if ingested. Also, contact with the sap may irritate skin.



Photo by Stan Shebs, Wikipedia.

**Scientific name:**

*Silene saxifraga*

**Common name:**

Tufted catchfly

**Region of origin:**

European Alps

**Highlights:**

**Weed Suppressive Rating:**

Fair - Good

**Hardiness:**

Zone 4

**Height:**

4 to 8 in. x 4 to 6 in.

**Season of bloom:**

May to August

**Flower color:**

White

**Exposure:**

Sunny

**Soil requirements:**

Well-drained soil

**Moisture requirements:**

Dry soil

**Roadside uses:**

**Suitable vegetation zones:**

Managed beds in full sun, naturalized areas, and focal points (RZ2, RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Limited

**Drought tolerance:**

Very good; prefers well-drained soils and warm sites

**Invasive potential:**

Limited

**Physical description:** Tufted catchfly is a long-lived herbaceous plant that forms dense, round tufts measuring 4 to 6 inches in length. Leaves are long and narrow, sometimes lanceolate with finely serrated margins. Each spindly, 2-inch stem, which is pubescent at the base, supports a solitary flower. Flowers are typically white to greenish-white and sometimes yellowish in color with a white calyx. Reproduction is usually by seed. Propagation may be accomplished by dividing these plants in the summer and fall, and via cuttings in the late summer.

**Optimal growing conditions:** Ideal for rock gardens since these plants grow well on limestone and in rock crevices. Prefers well drained, dry soils with a sunny exposure. Will tolerate winter weather, as long as protection is provided against winter wetness.

**Susceptibility to pests and diseases:** No serious pest or disease problems have been reported for this species



Photo by Andrew Senesac, Cornell Cooperative Extension



## *Silene uniflora*

## Double bladder campion

**Scientific name:**

*Silene uniflora*

**Common name:**

Double bladder campion

**Region of origin:** Europe**Highlights:****Weed Suppressive Rating:**

Fair - Good

**Hardiness:**

Zones 3-7

**Height x Spread:**

About 6 in. x 8 in.

**Season of bloom:**

Summer

**Flower color:**

White

**Exposure:**

Full sun

**Soil requirements:**

Well-drained, moderately fertile, neutral or lightly alkaline soil

**Moisture requirements:**

Moist soil

**Physical description:** This deeply rooting, horizontally growing perennial plant has a prostrate habit and reaches 6 in. tall and spreads 8 in. wide. The semi-evergreen leaves are fleshy, opposite, entire, lance-shaped, and colored gray-green. They reach ¾ in. long and are slightly hairy. Flowering occurs in summer, and double white flowers 1 in. across are produced densely on branchy stems. They are solitary, or borne in few-flowered clusters.

**Optimal growing conditions:** This species does well in well-drained, moderately fertile, neutral to lightly alkaline soils. It prefers full sun but light shade is acceptable. Winter hardiness: Zones 3-7.

**Susceptibility to pests and diseases:** Pests such as slugs, snails, whiteflies, spider mites, and aphids are sometimes problematic. Concerning diseases, rust, smut, and leaf fungi are common.



Photo by Andrew Senesac, Cornell Cooperative Extension

**Roadside uses:****Suitable vegetation zones:**

Low-growing focal points

(RZ2, RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Limited

**Drought tolerance:**

Limited

**Invasive potential:**

Limited

**Scientific name:**

*Solidago cutleri*

**Common name:**

Alpine goldenrod, Cutler's alpine goldenrod

**Region of origin:**

Northeastern United States

**Highlights:**

**Weed Suppressive Rating:**

Fair - Good

**Hardiness:**

Zones 4-9

**Height x Spread:**

About 12 in. x 30 in.

**Season of bloom:**

July - September

**Flower color:**

Yellow gold

**Exposure:**

Full sun

**Soil requirements:**

Well-drained soils

**Moisture requirements:**

Drought tolerant once established

**Roadside uses:**

**Suitable vegetation zones:**

Medians, roundabouts, maintained beds

(RZ1, RZ2, RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Very High

**Drought tolerance:**

High

**Invasive potential:**

Limited

**Physical description:** Alpine goldenrod is a great ornamental plant that blooms in late summer with masses of yellow flower clusters. The plant grows uniformly in compact mounds, producing densely packed, four-inch-long rods of tiny individual yellow gold florets. It reaches about one foot tall and spreads to about 2 feet wide.

**Optimal growing conditions:** Alpine goldenrod performs best in well-drained soils under full sun. The plant is completely winter hardy and quite drought tolerant once established. Winter hardiness: Zones 4 to 9.

**Susceptibility to pests and diseases:** The plant is susceptible to rust and other fungal diseases.



Photo by Andrew Senesac, Cornell Cooperative Extension



Photo by G. Bryant



## *Solidago sphacelata*

## Autumn goldenrod

**Scientific name:**

*Solidago sphacelata*

**Common name:**

Autumn goldenrod

**Region of origin:** Southeastern US

**Highlights:****Weed Suppressive Rating:**

Good - Excellent

**Hardiness:**

Zones 2-8

**Height x Spread:**

About 18 in. x 2 ft.

**Season of bloom:**

Late summer

**Flower color:**

Bright yellow

**Exposure:**

Full sun

**Soil requirements:**

Well-drained, low-fertile, sandy soil. Very salt tolerant

**Moisture requirements:**

Dry to medium moisture.  
Drought tolerant

**Roadside uses:****Suitable vegetation zones:**

Low-growing medians, front of wildflower beds and in managed sites (R22, R23)

**Mowing requirements:**

None

**Salt tolerance:**

Exceptional

**Drought tolerance:**

Very good once established

**Invasive potential:**

Limited

**Physical description:** This perennial plant has a clumping habit and reaches 18 in. tall and 2 ft. across. The alternate leaves are 2 to 5 in. long, are colored medium green, and have serrated margins. Flowering occurs in late summer, and the small bright yellow flowers, which are 1/12 to 1/8 in. wide, are borne in large panicles up to 10 in. long.

**Optimal growing conditions:** Autumn goldenrod prefers full sun, although it can tolerate light to moderate shade. It performs best in poor to moderately fertile soils, especially in sandy soils; in high fertility soils, growth is more rampant. Good drainage is necessary, and this plant is moderately drought-resistant. Also, this species is very tolerant to high salt conditions, making it well suited to roadsides. Winter hardiness: Zones 2-8.

**Susceptibility to pests and diseases:** This species has no serious insect pest problems, but diseases such as powdery mildew, rust, and some fungal spots sometimes occur.

**Additional notes:** Thought by many to be the cause of allergies, but this is not so. The culprit is ragweed, which blooms at the same time but is less conspicuous. The foliage of goldenrod and ragweed are also quite different; the leaves of goldenrod are smooth-edge and either pointed or lobed, while those of ragweed are strongly notched.



Photo courtesy Missouri Botanical Garden

**Scientific name:***Stachys byzantina***Common name:**

Lamb's ear, Woolly hedgenettle, Woolly betony, Woolly woundwort

**Region of origin:**

Southwestern Asia

**Highlights:****Weed Suppressive Rating:**

Good - Excellent

**Hardiness:**

Zones 4-8

**Height x Spread:**

12 to 18 in. x 24 to 36 in.

**Season of bloom:**

Summer

**Flower color:**

Pink to purple

**Exposure:**

Full sun

**Soil requirements:**

Well-drained, low-fertile soil

**Moisture requirements:**

Drought tolerant, but prefers moist soil

**Roadside uses:****Suitable vegetation zones:**

Managed plantings in medians, roundabouts or focal points (RZ3)

**Mowing requirements:**

Best growth if mowed after flowering

**Salt tolerance:**

Limited

**Drought tolerance:**

Good once established

**Invasive potential:**

Limited

**Physical description:** This herbaceous perennial plant reaches 12-18 in. tall and can spread up to 3 ft wide. Unlike most groundcovers, the flowers, colored pink to purple and reaching ½ in. long, are not the most ornamental attribute of this plant; the leaves are considered more attractive. Evergreen, light gray, and covered with velvety white hairs, they really look like lamb's ears, and are quite attractive when crushed. They reach 4 in. long. The visual effect of the leaves is so important that some gardeners recommend removing the flowers as they develop when the flowering begins, in June and until frost, because flowers can spoil the visual impact of the plant.

**Optimal growing conditions:** Lamb's ears performs best in moist but well-drained soils (good drainage is especially important in humid regions), under full sun. The growth is better in low-fertility soils. The plant is soil- and drought-tolerant to some extent, but performs best with water (sub-irrigation is better than overhead watering). In good conditions, the growth rate is moderate to fast. In the second year, tall inflorescences fall and decompose, disfiguring the plant. Trimming will prevent this problem. Winter hardiness: Zones 4 to 8.

**Susceptibility to pests and diseases:** If summers are hot, especially at night, the hairy foliage traps moisture and dew, resulting in significant disease problems. Under good conditions, Lamb's ears has few serious disease and pest problems, although aphids and soil mealybugs may be occasional pests.



Andrew Senesac, Cornell Cooperative Extension

Photo by



**Scientific name:**

*Teucrium canadensis*

**Common name:**

American germander, Wild germander, Wood sage

**Region of origin:**

North America

**Highlights:**

**Weed Suppressive Rating:**

Good - Excellent

**Hardiness:**

Zones 5-8

**Height x Spread:**

12 to 36 in. x 24 to 30 in.

**Season of bloom:**

July - Sept.

**Flower color:**

Purple, cream, or pink

**Exposure:**

Full sun to partial shade

**Soil requirements:**

Well-drained soil

**Moisture requirements:**

Prefers constant moisture, but is drought tolerant

**Physical description:**

American germander is a clump-forming perennial that grows to 2 to 3 feet. It is a member of the mint family, and the foliage of this plant resembles that of miniature oak leaves; this plant has crisp, bright green leaves that smell musky when crushed. The small, tubular flowers bloom from July to September, and are colored purple, cream, or pale pink.

**Optimal growing conditions:**

This plant grows best in moist, well-drained soil in full sun, but tolerates partial shade, drought, and salt spray. It is best if moisture is relatively constant.

**Susceptibility to pests and diseases:**

American germander has no serious pest or disease problem.



Photo by Andrew Senesac, Cornell Cooperative Extension

**Roadside uses:**

**Suitable vegetation zones:**

Medians, roundabouts, maintained beds with soils with consistent moisture levels (RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Limited

**Drought tolerance:**

Moderate

**Invasive potential:**

Limited

**Scientific name:**

*Thymus praecox*

**Common name:**

Creeping thyme, Mother-of-thyme, Woolly thyme

**Region of origin:**

Europe

**Highlights:**

**Weed Suppressive Rating:**

Fair - Good

**Hardiness:**

Zones 5-7

**Height x Spread:**

About ½ in. x 18 in.

**Season of bloom:**

Late spring to early summer

**Flower color:**

Rose-purple

**Exposure:**

Full sun or partial shade

**Soil requirements:**

Well-drained soil

**Moisture requirements:**

Drought tolerant

**Roadside uses:**

**Suitable vegetation zones:**

Managed sunny beds  
(RZ1, RZ2, RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Moderate

**Drought tolerance:**

Very good

**Invasive potential:**

Limited

**Physical description:** This herbaceous perennial plant is mat forming, and may reach ½ in. tall with an 18 in. spread. The small evergreen leaves are opposite, entire, dark green, and are ¼ in. long and wide. They are also aromatic and have an attractive fragrance. Flowering occurs in late spring to early summer, and flowers are very tiny, ½ in. across, and are colored rose-purple. The flowers are attractive to bees, and the fruit is non-ornamental.

**Optimal growing conditions:** Creeping thyme performs best in full sun, but can tolerate partial shade. A wide range of soils is acceptable, but a good drainage is necessary. This species is drought-resistant and has a rapid rate of growth. Winter hardiness: Zones 5-7.

**Susceptibility to pests and diseases:** Pests such as aphids, soil mealy bugs, slugs, and snails may do some damage. Fungal diseases and root rot may be problematic in poorly drained soils.



Photo courtesy Wikimedia



**Scientific name:**

*Thymus serpyllum*

**Common name:**

Wild thyme, Creeping thyme, Mother-of-thyme

**Region of origin:**

Europe, Western Asia, and Northern Africa

**Highlights:**

**Weed Suppressive Rating:**

Good - Excellent

**Hardiness:**

Zones 3-8

**Height x Spread:**

3 to 6 in. x about 18 in.

**Season of bloom:**

Late spring and early summer

**Flower color:**

Purple

**Exposure:**

Full sun

**Soil requirements:**

Moderately acidic to neutral, low-fertility soil

**Moisture requirements:**

Prefers dry sites; very drought tolerant

**Roadside uses:**

**Suitable vegetation zones:**

Managed sunny beds

(RZ1, RZ2, RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Moderate

**Drought tolerance:**

Very good

**Invasive potential:**

Moderate

**Physical description:** This perennial plant has a creeping habit, and forms mats reaching 3 to 6 in. tall. The evergreen leaves are dark green, ¼ to 1/3 in. long, opposite, and oval-shaped to oblong. They are lightly pubescent on both sides and have a strong odor of mint. Flowering occurs in late spring and early summer; purple flowers are ¼ in. across, and are borne in a small spike inflorescence. Flowers have an attractive fragrance and attract bees.

**Optimal growing conditions:** Wild thyme performs best in moderately acidic to neutral soil, with low fertility, under full sun. Organic soils are acceptable if drainage is excellent. It may also tolerate light shade. It is very drought-resistant, and grows better in warm, dry places. Growth is slow to moderate under good conditions. Winter hardiness: Zones 3-8.

**Susceptibility to pests and diseases:** This plant has no serious pest problems, although slugs and snails sometimes cause damage. Concerning diseases, leaf blight may occur during cold, rainy periods, especially in winter.

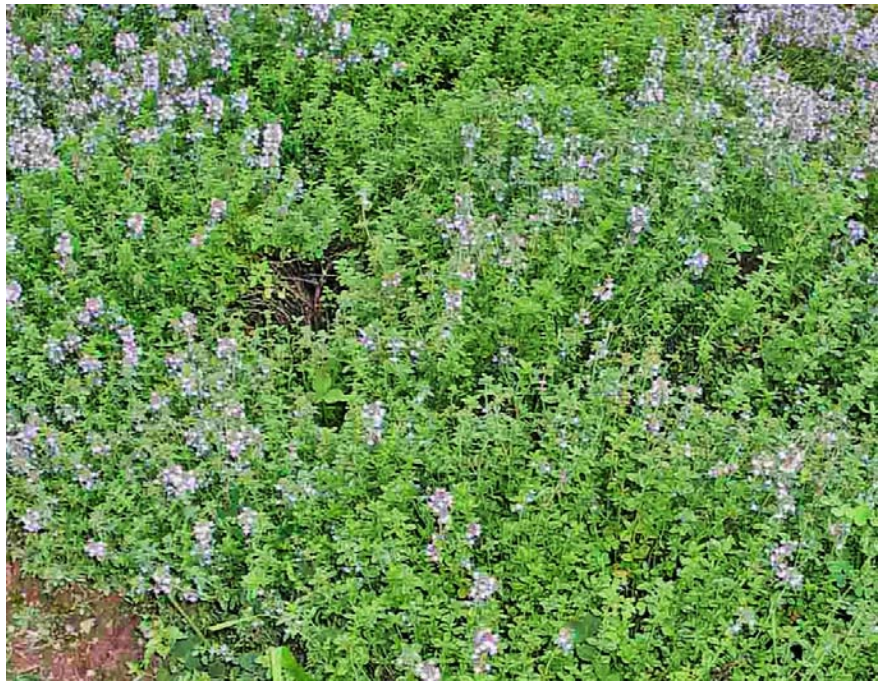


Photo by Andrew Senesac, Cornell Cooperative Extension

**Scientific name:***Tiarella cordifolia***Common name:**Foamflower, False miterwort,  
Miterwort**Region of origin:**

Eastern North America

**Highlights:****Weed Suppressive Rating:****Poor****Hardiness:**

Zones 3-8

**Height x Spread:**

10 to 12 in. x 12 to 15 in.

**Season of bloom:**

Late spring to early summer

**Flower color:**

White or light pink

**Exposure:**

Full sun to partial shade

**Soil requirements:**

Well-drained soil

**Moisture requirements:**Prefers moist, well drained  
soil**Roadside uses:****Suitable vegetation zones:**Shaded roadside medians  
and managed beds, round-  
abouts (RZ3)**Mowing requirements:**

None

**Salt tolerance:**Unknown but suspected to  
be less tolerant**Drought tolerance:**Moderate, but prefers moist,  
well-drained soil higher in  
organic matter, but not wet  
soils,**Invasive potential:**

Non-invasive

**Physical description:** Foamflower is a vigorous, stoloniferous plant that has very attractive, heart-shaped, pale green leaves that turn bronze-red in autumn and winter. The foliage is red veined and deeply dissected, and spreads by runners. Foamflower bears creamy white flowers in spring and summer.

**Optimal growing conditions:** Although this plant tolerates a wide range of soil conditions, it prefers moist, humus-rich, well-drained soil in full sun to partial shade. Dried out soil, as well as excessive winter moisture, should be avoided.

**Susceptibility to pests and diseases:** Foamflower is prone to rust and slugs.





**Scientific name:**

*Veronica peduncularis*

**Common name:**

Creeping speedwell, Creeping veronica

**Region of origin:**

Garden hybrid (Waterperry School of Horticulture)

**Highlights:**

**Weed Suppressive Rating:**

Fair - Good

**Hardiness:**

Zones 5-8

**Height x Spread:**

4 to 6 in. x about 12 in.

**Season of bloom:**

Spring

**Flower color:**

Lavender blue with white eyes

**Exposure:**

Full sun to partial shade

**Soil requirements:**

Poor to moderately fertile, well-drained soil

**Moisture requirements:**

Moist soil

**Roadside uses:**

**Suitable vegetation zones:**

Managed beds for low-growing vegetation in sun or shade (RZ2, RZ3)

**Mowing requirements:**

Trim once yearly

**Salt tolerance:**

Moderate

**Drought tolerance:**

Minimal to moderate, but tolerates all sun and soil conditions

**Invasive potential:**

Limited

**Physical description:** This is a low-growing, creeping, mound-forming groundcover that grows to 6 inches. The small, shiny, deep green leaves are flushed with burgundy as the weather gets cooler, and the color intensifies as the temperature drops. In spring, it covers itself with 1/2 -inch lavender blue flowers with white eye and dark blue veins that can re-bloom on and off throughout the summer and fall.

**Optimal growing conditions:** This plant grows well in any poor to moderately fertile, well-drained soil in full sun to partial shade. Should be grown in protected areas in locations colder than Zone 6.

**Susceptibility to pests and diseases:** This plant has no serious insect or disease problems. However, scale insects, downy mildew, powdery mildew, rust, leaf smut, and root rot can occur.



Courtesy Missouri Botanical Garden Plantfinder

# **Plant Material Descriptions**

## **II. Grasses**



## Key to layout of the species description pages – Grasses

*Identifier bar* (top of page): Scientific name and principal common name. The bar for grasses is gray since grasses are similar in color and have inconspicuous blooms.

*Name/Origin Box*: Scientific name, common name(s), and region of origin

### *Basic Plant Information*

- **Physical description:** Growth habit, color, height, etc. (see glossary for botanical terms)
- **Optimal growing conditions:** Conditions conducive to optimal growth of the species (see glossary for terms pertaining to soil pH and texture).
- **Susceptibility to pests and diseases:** Notable insect and disease problems.
- **Additional considerations:** Special notes, if applicable.

### *Highlights box*

- **Weed Suppressive Rating:** This rating is based on literature research, field tests at Cornell, and field tests on NYSDOT rights of way.
- **Hardiness:** New York is divided into hardiness zones (Appendix 3 map) that measure a species' ability to tolerate cold. The higher a number, the lower the cold tolerance.
- **Height x spread:** This item includes plant height and whether it will spread to cover ground. Use it as an aid in calculating density of seeding.
- **Season of bloom and Flower color:** If aesthetics are a concern, these items state when/if the grass blooms, and the bloom color.
- **Exposure:** This item helps match plant and roadside conditions. A grass listed as "full sun to partial shade" will not do well under a bridge or in forested right of way.
- **Soil requirements:** This item helps match plant and soil. NYSDOT right of way soil quality varies; planting in less than suitable soil will likely result in poor grass establishment.
- **Moisture requirements:** This item helps match plant and local rainfall, or your ability to water grasses after establishment. Appendix 4 shows typical annual precipitation in NY.
- **Salt tolerance:** If you have areas that receive high quantities of salt, use this item to avoid grasses that will die or suffer from exposure to salt.

### *Roadside Uses box*

- **Suitable Vegetation Zones:** This item lists the general roadside zone (RZ) where the grass would be effective. Appendix 2 shows the RZ's cited in this section. This item also lists specific places in the roadside (walls, beds, medians) where the grass might be used. [NOTE: For this study, we did not test plants under guiderrails because of safety concerns and uncertainty about plant survival in these marginal soils. However, we do note grasses that might work in Zone 1; these are educated guesses about plant survival in a difficult environment without impairing the working of guiderrails or causing pavement break-up with roots.]
- **Mowing requirements:** This item lists any special issues with mowing. You should avoid mowing some grasses, while others actually grow better after a mowing.
- **Salt tolerance:** This item indicates whether a grass can tolerate salt encountered in roadside situations. Avoid planting salt-sensitive grasses in areas where salt levels will be high.
- **Drought tolerance:** This item indicates the degree to which a plant tolerates lack of water.
- **Invasive potential:** This item indicates whether a plant is likely to spread uncontrollably.

**Scientific name:**

*Agropyron cristatum*

**Common name:**

Crested wheatgrass, Fairway crested wheatgrass, Wheatgrass

**Region of origin:**

Russian and Siberian steppe habitats, Eurasia

**Highlights:**

**Weed Suppressive Rating:**

Good - Excellent

**Hardiness:**

Zones 2-5

**Height x Spread:**

1½ to 3 ft. x widely spreading up to 4 ft.

**Season of bloom:**

Late spring

**Flower color:**

Bluish-green

**Exposure:**

Full sun

**Soil requirements:**

Well-drained, sandy to clay loams

**Moisture requirements:**

Drought tolerant

**Roadside uses:**

**Suitable vegetation zones:**

Medians, wildflower beds, and managed meadows

(RZ2, RZ3)

**Mowing requirements:**

Once yearly

**Salt tolerance:**

Moderate

**Drought tolerance:**

Very good once established

**Invasive potential:**

Limited

**Physical description:** A cool season, perennial bunch grass of medium height, 1½ to 3 feet, bluish-green in appearance. Growth begins in early spring, with flowering in late spring. If adequate soil moisture is present, grass may regrow in the fall. Propagation by seed and tillers. The root system is fibrous and finely branched with most roots extending to a depth of 3.3 feet, but may penetrate to a depth of 8 feet. Crested wheatgrass has a short-broad, very distinct flattened seedhead measuring 1½ to 3 inches in length and tapering toward the tip. Each cluster of flowers making up the spike are overlapping and flat, and each seed tapers into a short awn. Leaves measure 6 to 10 inches in length with flat blades, 1/16 to 1/4 inches in width. The upper surface is slightly pubescent and coarse while the lower surface is smooth. Short, membranous ligules are present at the junction of the sheath and blade, as are short auricles that are pointed and clasping. Leaves are rolled in the bud. Stems are long and slender, 2 to 3 feet in height, and found growing in dense clumps.

**Optimal growing conditions:** Since crested wheatgrass is deep rooted, it thrives well in drought and cold conditions. It grows in a wide variety of soil types, but is best adapted to medium textured, loamy soils that provide adequate drainage. This grass will tolerate moderate levels of salt and alkaline and weakly acidic conditions. Winter hardiness: Zones 2, 3, 5.

**Susceptibility to pests and diseases:** No serious disease problems have been reported for this species. However grass stands can be severely damaged by insects, particularly the black grass bug (*Labops hesperius*). Other pests include billbugs, grubs, leafhoppers, and mature click beetles.



Photo by Andrew Senesac, Cornell Cooperative Extension

**Scientific name:**

*Agrostis stolonifera*; *A. alba*

**Common name:**

Creeping bentgrass, Redtop

**Region of origin:**

Eurasia

**Highlights:**

**Weed Suppressive Rating:**

Good - Excellent

**Hardiness:**

Zones 3-8

**Height x Spread:**

2-5 feet x 3 feet

**Season of Bloom:**

June—September

**Flower Color:**

Reddish

**Exposure:**

Full Sun

**Soil requirements:**

Establishes well in most soils

**Moisture requirements:**

Moderate

**Roadside uses:**

**Suitable vegetation zones:**

Roadside medians, roundabouts, naturalized areas, and reclamation sites (RZ3)

**Mowing requirements:**

Moderate; prefers mowing or grazing for best density

**Salt tolerance:**

Moderate to good

**Drought tolerance:**

Limited

**Invasive potential:**

Limited

**Physical description:** A creeping cool-season perennial grass that grows 2-5 feet tall. An isolated plant can spread vegetatively to a diameter of 3 feet. The leaf blades are up to 8" long and 1/3" across; they are green, blue-green, or grey-blue, linear in shape, hairless, and flat. Creeping bentgrass blooms from June to September. Reddish flowers have tall, narrow leaves and fine stems. Creeping bentgrass is a sod-forming grass that forms dense vegetative colonies. It also readily reseeds itself.

**Optimal growing conditions:** Creeping bentgrass does best in moderately well-drained, loamy soils. Tolerates heat, cold, frequent flooding, acidic soils, and is moderately salt tolerant. Adapted to a wide range of soil and climatic conditions; pH 4.5 to 8.0. Full sun. Good for ditches, unmowed highway banks, and median strips with frequent salt applications. Winter hardiness: Zones 3-8.

**Susceptibility to pests and diseases:** Not particularly susceptible to insects and diseases. Competes best with weeds when established in monoculture.

**Additional considerations:** Drought and shade intolerant





**Scientific name:**

*Andropogon gerardii*

**Common name:**

Big bluestem, Bluejoint, Turkeyfoot bluestem

**Region of origin:**

North America

**Highlights:**

**Weed Suppressive Rating:**

Fair - Good

**Hardiness:**

Zones 3-9

**Height x Spread:**

4 to 8 ft. x 2 to 3 ft.

**Season of bloom:**

September to February

**Flower color:**

Purplish red

**Exposure:**

Full sun

**Soil requirements:**

Light, fertile soil

**Moisture requirements:**

Prefers moist soil. Does not tolerate excessive winter moisture. Drought tolerant once established.

**Roadside uses:**

**Suitable vegetation zones:**

Medians, wildflower beds and managed meadows

(RZ3)

**Mowing requirements:**

Once yearly

**Salt tolerance:**

Limited

**Drought tolerance:**

Very good once established

**Invasive potential:**

Limited

**Physical description:** Big bluestem is a tall perennial bunch grass that forms large erect clumps of stems with attractive foliage that changes color seasonally - the leaves that are blue-green in spring, develop red tinges as they mature in summer, then turn copper-brown by fall. Reddish cast with lavender tones appears after frost. In late summer, flowering stems rise above the foliage, bearing three finger-like branches resembling turkey feet that are purplish in color. Big bluestem grass usually grows to 4-8 feet, but can grow taller in moist soils.

**Optimal growing conditions:** Big bluestem grass grows well in most growing conditions with varying moisture/fertility/ pH level of soil, but prefers light, moist, fertile soils under full sun. This plant does not tolerate excessive winter moisture. It develops an extensive root system that saturates the top 2 ft of soil and reaches up to 12 ft below ground. Once established, it is drought-tolerant.

**Susceptibility to pests and diseases:** There are no serious pest or disease problems for Big bluestem.



Above photo by Andrew Senesac, Cornell Cooperative Extension



**Scientific name:**  
*Buchloe dactyloides*

**Common name:**  
Buffalograss

**Region of origin:**  
North America

**Highlights:**

**Weed Suppressive Rating:**  
Fair

**Hardiness:**  
Zones 1-8

**Height x Spread:**  
4 to 8 in.; Moderate spread

**Season of bloom:**  
Flowerless

**Exposure:**  
Full sun to shade

**Soil requirements:**  
Tolerates compacted soil

**Moisture requirements:**  
Drought/flood tolerant

**Roadside uses:**

**Suitable vegetation zones:**  
Roadside medians, meadows, naturalized areas, conservation areas (RZ2, RZ3)

**Mowing requirements:**  
Once yearly

**Salt tolerance:**  
Moderate

**Drought tolerance:**  
Very good once established

**Invasive potential:**  
Limited

**Physical description:** Buffalograss is a warm-season, low growing, fine-leaved perennial that forms an attractive turf with a soft blue green color. Without mowing, the narrow leaves curl downward to give a soft, prairie look.

**Optimal growing conditions:** Buffalograss grows best in dry areas with less than 25 inches of annual rainfall. It tolerates prolonged droughts, very high or low temperatures (+120 to -30 degrees Fahrenheit), periods of flooding, and compacted soil. When there is limited water supply, buffalograss is very competitive against weeds. Because of this, it can be used as an effective weed barrier. Buffalograss is slow in establishing.

**Susceptibility to pests and diseases:** Buffalograss has no serious pest or disease problems.

**Additional Notes:** Mowing shorter than 1.5 inches can cause thinning.





**Scientific name:**

*Calamagrostis canadensis*

**Common name:**

Bluejoint reedgrass, Bluejoint, Meadow pinegrass, Canadian reedgrass, Marsh pinegrass, Marsh reedgrass

**Region of origin:**

North America, Siberia

**Highlights:**

**Weed Suppressive Rating:**

Good - Excellent

**Hardiness:**

Zones 3-7

**Height x Spread:**

60 in. x N/A

**Season of bloom:**

May to August

**Flower color:**

Purplish

**Exposure:**

Partial shade

**Soil requirements:**

Moderately well-drained, mineral soils; can adapt to a wide range of soil texture

**Moisture requirements:**

Moist soil. Drought tolerant once established

**Roadside uses:**

**Suitable vegetation zones:**

Medians, wildflower beds, and managed meadows (RZ3)

**Mowing requirements:**

Once yearly

**Salt tolerance:**

Limited

**Drought tolerance:**

Very good once established

**Invasive potential:**

Limited

**Physical description:** This plant is a prairie grass that spreads by rhizomes. It has very narrow (< 1/3" wide), elongated, bluish leaves that are not hairy, but rough to the touch. The delicate panicle is purplish with spreading branches and is between 4 in. to 8 in. long. The formation of the panicle occurs between May and August.

**Optimal growing conditions:** Bluejoint reedgrass thrives in boreal and temperate regions in moderately well-drained mineral soils. The grass cannot germinate in drought conditions, but once it is established it is very drought resistant. Growth is very fast. Winter hardiness: Zones 3 to 7.

**Susceptibility to pests and diseases:** This plant is susceptible to insect or fungal damage of the lower stems, a condition referred to as white top.



Photo by Andrew Senesac, Cornell Cooperative Extension



**Scientific name:**

*Carex glauca* (*Carex flacca*,  
*Carex firma*)

**Common name:**

Blue sedge, Carnation grass,  
Glaucous sedge; Heath  
sedge

**Region of origin:**

Europe, Northern Africa,  
North America

**Physical description:** Blue sedge is a dense, clump-forming sedge with narrow, blue-gray to blue-green evergreen foliage that grows to 6 to 12 inches. Although it blooms on terminal, cylindrical spikes in late spring, this plant is grown mainly for its foliage effect.

**Optimal growing conditions:** Blue sedge tolerates a wide range of soil conditions, and exposures; it can adapt to areas with fairly heavy shade, is very drought tolerant, withstands light foot traffic, is hardy to about 0°F (-18°C). It prefers moist soil.

**Susceptibility to pests and diseases:** There are no serious pest or disease problems for this plant.

**Highlights:**

**Weed Suppressive Rating:**

**Good - Excellent**

**Hardiness:**

Zones 4-8

**Height x Spread:**

6 to 12 in. x 12 to 15 in.

**Season of bloom:**

Late spring

**Flower color:**

Flowers are insignificant

**Exposure:**

Full sun to shade

**Moisture requirements:**

Prefers moist soil, but  
drought tolerant.



**Roadside uses:**

**Suitable vegetation zones:**

Medians, roundabouts and  
managed beds in sun or  
shade (RZ2, RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Good

**Drought tolerance:**

Very good once established

**Invasive potential:**

Limited

**Scientific name:**

*Carex morrowi*

**Common name:**

Japanese sedge, Morrow's sedge

**Region of origin:**

Japan

**Highlights:**

**Weed Suppressive Rating:**

Fair - Good

**Hardiness:**

Zones 6-9

**Height x Spread:**

About 12 in. x 12 to 18 in.

**Season of bloom:**

Early to mid-spring

**Flower color:**

Brown

**Exposure:**

Shade

**Soil requirements:**

Organically rich, fertile soil

**Moisture requirements:**

Moist soil

**Roadside uses:**

**Suitable vegetation zones:**

Limited but thought to be allelopathic or weed suppressive when established in large masses (RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Unknown

**Drought tolerance:**

Minimal

**Invasive potential:**

Limited

**Physical description:** This plant has a grass-like habit and forms a dense, compact tuft. It may reach 12 in. or more in height in very fertile soil, and 12 to 18 in. wide. The semi-evergreen leaves are flat, thick, and reach 12 in. long and ¼ in. wide. They are dark green with narrow white edges. Flowering occurs in early to mid-spring, and the brown, short-lived flowers are clustered in groups of four to six. It is important to note that flowers are non-ornamental.

**Optimal growing conditions:** Japanese sedge performs best in shade; this unusual trait is not common for true ornamental grasses. It does well in organically rich soils with high fertility, but is not very drought tolerant; watering during the summer can be useful. Winter hardiness: Zones 6 to 9.

**Susceptibility to pests and diseases:** Japanese sedge has no serious disease or insect problems.



Photos by Andrew Senesac, Cornell Cooperative Extension



*C. morrowi* in winter



**Scientific name:**  
*Elymus canadensis*

**Common name:**  
Canada wild rye

**Region of origin:**  
North America

**Highlights:**

**Weed Suppressive Rating:**  
Good - Excellent

**Hardiness:**  
Zones 3-8

**Height x Spread:**  
36 to 60 in. x 4 to 24 in.

**Season of bloom:**  
Late summer to early autumn

**Flower color:**  
Red brown

**Exposure:**  
Full sun

**Soil requirements:**  
Well-drained, moderately fertile soil

**Moisture requirements:**  
Moist soil. Drought tolerant

**Roadside uses:**

**Suitable vegetation zones:**  
Medians, wildflower beds  
(RZ3)

**Mowing requirements:**  
Once yearly

**Salt tolerance:**  
Limited

**Drought tolerance:**  
Very good once established

**Invasive potential:**  
Limited

**Physical description:** This perennial ornamental grass forms tufts with erect stems that reach 4-6 ft tall, and spreads 24 inches wide. Leaves are medium-green to blue-green, have a rough texture, and reach 8-14 in. long. Flowering occurs in late summer and early autumn. Flowers are 8-10 in. long, colored red-brown, and are borne in dense spikes.

**Optimal growing conditions:** Canada wild rye performs best in well-drained soils with a medium fertility, and can tolerate humid conditions. It prefers full sun. Winter hardiness: Zones 3-8.

**Susceptibility to pests and diseases:** A number of diseases may infect Canada wild rye. The list includes damping off, ergot, cat-tail, powdery mildew, tar spot, rust, smut, brown patch and some fungal spot.



Photo courtesy Virginia Kline



Winter photo of *E. canadensis* by Andrew Senesac, Cornell Cooperative Extension



**Scientific name:***Elymus junceus***Common name:**

Russian wild rye

**Region of origin:**

Russia

**Highlights:****Weed Suppressive Rating:****Good - Excellent****Hardiness:** Very winter hardy**Height x Spread:**

6 to 18 inches; Little to no spread

**Season of Bloom:**

Early spring

**Flower Color:**

Yellow

**Exposure:** Full sun**Soil requirements:**

Prefers well-drained, fertile loams

**Moisture requirements:** Low moisture use. Drought tolerant but intolerant to flooding**Roadside uses:****Suitable vegetation zones:**

Roadside medians, road edges, naturalized areas

(RZ2, RZ3)

**Mowing requirements:**

Moderate; a vigorous bunch-grass that performs best when mowed or grazed

**Salt tolerance:**

Limited to moderate

**Drought tolerance:**

Good to excellent, but prefers well-drained soils with some moisture

**Invasive potential:**

**Physical description:** A very hardy, cool-season bunch grass with an abundance of long, dense, basal leaves that are 6 to 18 inches long and up to 1/4 inch in width. Plants vary from light to dark green, with many shades of blue-green. The erect, naked stems, about 36 inches tall, have flowering heads that form a dense, erect spike.

**Optimal growing conditions:** It can be grown on a fairly wide range of soil types, but does best on well-drained fertile loams with a pH between 6.5-9.0. It is exceptionally tolerant of cold and drought and is highly tolerant of salinity.

**Susceptibility to pests and diseases:** Grasshoppers, cutworms and other insects are sometimes problematic, but no troublesome diseases have been noted.

**Additional Notes:** Does not do well on heavy clay or soils of low fertility. Intolerant of shade and flooding.



Photo courtesy California Lutheran University

**Scientific name:**

*Festuca arundinacea* cv.  
*Rebel exceda*

**Common name:**

Tall fescue

**Region of origin:**

Europe

**Highlights:**

**Weed Suppressive Rating:**

Fair to Good

**Hardiness:**

1,3,5-8,12 and upper parts  
of zone 9.

**Height x Spread:**

48 inches x N/A

**Season of bloom:**

Mid Spring

**Flower color:**

Yellow

**Exposure:**

Full sun to partial shade

**Soil requirements:**

Grows best in deep, well-  
drained soils

**Moisture requirements:**

Drought resistant

**Roadside uses:**

**Suitable vegetation zones:**

High traffic areas such as  
sports fields, alleyways,  
overpasses, medians

(RZ2, RZ3)

**Mowing requirements:**

Multiple times yearly

**Salt tolerance:**

Moderate

**Drought tolerance:**

Moderate to good

**Invasive potential:**

Limited

**Physical description:** A cool-season bunching grass with moderately fine-textured leaves. It is densely growing, dark green, and will grow to 48 inches or more in height and is similar in appearance to ryegrass. Tall fescue flowers in the spring and seeds mature in early summer. Seeds are 4 to 7 mm long. This direct-seeded grass tolerates high traffic and soil compaction well

**Optimal growing conditions:** Tall fescue is tolerant of heat, shade, drought, and low fertility. It is adapted to a wide range of soil and climatic conditions, but performs best on well drained clay soils. It is tolerant of low soil pH but is most productive when the soil pH is 5.8 to 6.5. Winter hardiness zones: 1,3,5-8,12 and upper parts of zone 9.

**Susceptibility to pests and diseases:** Fescues have few major pest problems. The Rebel Exceda cultivar is more disease resistant than others, including greater tolerance to brown patch and leaf spot.

**Additional Notes:** Mowing lower than 1.5 inches can cause thinning.



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**Scientific name:***Festuca longifolia***Common name:**

Hard fescue

**Region of origin:**

Europe

**Highlights:****Weed Suppressive Rating:****Good - Excellent****Hardiness:**

Zones 3-8

**Height x Spread:**

8 to 12 inches x N/A

**Season of bloom:**

Mid-late Spring

**Flower color:**

Yellow

**Exposure:**

Full sun to partial shade

**Soil requirements:**

Grows best in deep, well-drained soils

**Moisture requirements:**

Drought resistant

**Roadside uses:****Suitable vegetation zones:**

Roadside medians, road-sides, reclamation areas, roundpoints, full sun and shaded sites, naturalized settings or meadows

(RZ2, RZ3)

**Mowing requirements:**

Once yearly, if any

**Salt tolerance:**

Moderate to good

**Drought tolerance:**

Very good once established

**Invasive potential:**

Limited

**Physical description:** Hard fescue, a cool-season grass, is one of the “hardest” of the fescues. Its leaves are medium to dark green and narrow -- tough and almost needle-like, and stay green for longer than warm-season grasses. Grows slowly in bunch formations with an extensive root system and, if left uncut, reaches a mature height of only 8 to 12 inches.

**Optimal growing conditions:** Hard fescue is well-adapted to infertile, acidic soils and tolerates shade, cold temperatures, and drought better than other cool-season grasses. Irrigation and fertilizer restrict development. It is very salt tolerant and is good for non-mowed slopes, ditch banks, and median strips. Grows best in deep, well-drained soils. Winter hardiness: zones 3-8.

**Susceptibility to pests and diseases:** Highly resistant to diseases. It is generally healthier than the other fescues.

**Additional Notes:** Low heat tolerance; not adapted to close mowing.



Photo courtesy Onego.ru



**Scientific name:**

*Festuca rubra* subsp. *commutata*

**Common name:**

Chewings fescue

**Region of origin:**

Europe

**Highlights:**

**Weed Suppressive Rating:**

Good - Excellent

**Hardiness:**

Zones 3,5,6, and 7

**Height x Spread:**

8 to 12 inches x N/A

**Exposure:**

Partial sun to heavy shade

**Soil requirements:**

Tolerates poor soil as long as it is relatively dry. Grows best in deep, well-drained soils

**Moisture requirements:**

Drought resistant

**Roadside uses:**

**Suitable vegetation zones:**

Roadside medians, roadsides, reclamation areas, roundpoints, full sun and shaded sites, naturalized settings or meadows

(RZ2, RZ3)

**Mowing requirements:**

Once yearly, if any

**Salt tolerance:**

Moderate to good

**Drought tolerance:**

Very good once established

**Invasive potential:**

Limited

**Physical description:** A cool-season, densely tufted bunching grass that grows slowly and, if left uncut, reaches a mature height of only 8 to 12 inches. Stays green longer than warm-season grasses. Leaf blades of Chewings fescue are thin, bristle-like and stiff.

**Optimal growing conditions:** Chewings fescue is tolerant of dry, shady, windy, and cold conditions. It is adapted to a wide range of soil conditions, including acidic and infertile soils, but prefers sandy soils. Irrigation and fertilizer restrict development. Winter hardiness: Zones 3,5,6, and 7.

**Susceptibility to pests and diseases:** The fescues have few major pest problems. However, under wet conditions they can be attacked by red thread and leaf spot.



Photo courtesy Wikimedia

**Scientific name:**

*Festuca rubra*  
subsp. *trichophylla*

**Common name:**

Creeping red fescue

**Region of origin:**

Europe

**Highlights:**

**Weed Suppressive Rating:**

**Good - Excellent**

**Hardiness:**

1,3,4,5-8, and upper parts of zone 9.

**Height x Spread:**

8 to 24 inches; Moderate spread

**Season of bloom:**

Mid-late spring

**Flower color:**

Yellow

**Exposure:**

Full sun to heavy shade

**Soil requirements:**

Grows best in deep, well-drained soils

**Moisture requirements:**

Drought tolerant

**Roadside uses:**

**Suitable vegetation zones:**

Roadside medians, road-sides, reclamation areas, roundpoints, naturalized settings or meadows  
(RZ2, RZ3)

**Mowing requirements:**

Once yearly, if any

**Salt tolerance:**

Moderate to good

**Drought tolerance:**

Very good once established

**Invasive potential:**

Limited

**Physical description:** Creeping red fescue is a cool-season grass that will grow slowly and if left uncut reach a mature height of 8 to 24 inches. It is similar in appearance to chewings fescue except it has a creeping growth pattern. Its leaf blades are thin, bristle-like and deeply ridged above and stay green longer than warm-season grasses.

**Optimal growing conditions:** Tolerant of acidic soil, shade, and drought. Irrigation and fertilizer restrict development. Must be sown thickly to get a dense cover (6 pounds per 1,000 square feet). Grows best in deep, well-drained soils. Winter hardiness: Zones 1,3,4,5-8, and upper parts of zone 9.

**Susceptibility to pests and diseases:** The fescues have few major pest problems. However, under wet conditions they can be attacked by red thread and leaf spot.



Photo courtesy Wikimedia



**Scientific name:**

*Koeleria cristata* (syn. *K. macrantha*, *K. pyramidata*)

**Common name:**

Junegrass, Prairie junegrass, Koeler grass

**Region of origin:**

North America

**Highlights:****Weed Suppressive Rating:**

Fair - Good

**Hardiness:**

Zones 3-9

**Height x Spread:**

1½ to 2 ft. x 2 to 6 in.

**Season of bloom:**

Late Spring (May - June)

**Flower color:**

Yellow or gold

**Exposure:**

Full sun to partial shade

**Soil requirements:**

Medium to coarse texture soils

**Roadside uses:****Suitable vegetation zones:**

Reclamation areas, mowed roadsides, medians and meadows (RZ2, RZ3)

**Mowing requirements:**

Several times yearly

**Salt tolerance:**

Moderate

**Drought tolerance:**

Very good

**Invasive potential:**

Can grow aggressively once established and crowd out other species

**Physical description:** This plant is a tall, erect, tufted bunchgrass that reproduces from seeds and tillers. It typically grows in small bunches 2 to 6 inches in diameter and reaches heights of 18 to 26 inches. The root system is shallow and fibrous. Growth begins in May, flowering in June and July, and seed production occurs through September. If adequate soil moisture is present, grass may regrow in the fall. Produces an attractive silvery-green spike-like panicle, 1 to 5 inches in length, with a fine pubescence below the seedhead. Leaves are primarily basal in orientation with narrow blades (folded in the bud), 1½ to 5 inches in length, somewhat pubescent or glabrous, especially the lower leaves. Blades are flat with a rough upper surface (due to coarse ribbing) and finely striate on the lower surface. Sheaths are distinctly veined. Short, membranous ligules and no auricles are present.

**Optimal growing conditions:** Junegrass is primarily found in sandy or coarser soils, but can survive in clay loam soils. It is usually found in soils with pH between 5.5 and 8.0, and has moderate tolerance to soils that are acidic or alkaline. It does not respond well to soils with high salinity, but thrives in soils with low nutrient content. Tolerant to drought. Winter Hardiness: Zones 3 to 9. Predominantly located in open woods and dry upland meadows.

**Susceptibility to pests and diseases:** No serious pest or disease problems have been reported for this species.



© Larry Allain

**Scientific name:**

*Leymus arenarius*

**Common name:**

Blue lyme grass, Sand rye-grass, Blue dune grass, Sea lyme grass, Beach wild rye, Rancheria grass

**Region of origin:**

Europe, Asia

**CAUTION:** This species is likely to become invasive.

**Highlights:**

**Weed Suppressive Rating:**  
Good - Excellent

**Hardiness:**  
Zones 3-9

**Height x Spread:**  
2 to 4 ft. x indefinite

**Season of bloom:**  
Summer

**Flower color:**  
Blue-gray

**Exposure:**  
Full sun

**Soil requirements:**  
Well-drained soil

**Moisture requirements:**  
Very drought tolerant

**Roadside uses:**

**Suitable vegetation zones:**  
Medians, wildflower beds and managed meadows  
(RZ2, RZ3)

**Mowing requirements:**  
Once yearly

**Salt tolerance:**  
High

**Drought tolerance:**  
Very good

**Invasive potential:**  
High: rhizomes can resprout

**Physical description:** This plant is an ornamental grass that spreads by underground stems (rhizomes). The growth habit is compact, even if it arches over when the stems become too long. It reaches 2 to 4 feet tall and spreads indefinitely. The evergreen leaves are 12 in. long and ½ in. wide, rough, and colored a deep bluish green. Flowering occurs in summer, and flowers are borne in dense spikes that reach 5 to 7 in. in length. Although the foliage is very attractive, the same cannot be said for the flowers. The fruit is non-ornamental, too. This species reproduces by thick, rapidly growing underground stems or rhizomes, leading to its ability to spread invasively.

**Optimal growing conditions:** Blue lyme grass is soil-tolerant, but performs best in well-drained soil under full sun. It can develop in extremes of heat and cold, and is very drought resistant. Growth is fast, but may become slow during hot summers. Winter hardiness: Zones 3 to 9.

**Susceptibility to pests and diseases:** No serious pest or disease problems have been reported for this species



Photos by Andrew Senesac, Cornell Cooperative Extension





**Scientific name:**

*Liriope spicata*

**Common name:**

Creeping lily-turf

**Region of origin:**

China and Japan

**Highlights:**

**Weed Suppressive Rating:**

Good - Excellent

**Hardiness:**

Zones 4-10

**Height x Spread:**

8 to 12 in. x 6 to 12 in.

**Season of bloom:** Summer

**Flower color:**

Pale violet to white

**Exposure:**

Partial shade

**Soil requirements:**

Prefers fertile, well-drained soil

**Moisture requirements:**

Drought tolerant, but prefers moist soil

**Physical description:** This evergreen perennial plant reaches 8-12 in. in height and spreads 6 to 12 in. in width. Grass-like leaves are ¼ in. wide and may reach 18 in. long. The leaves are dark green, but in northern areas may become pale green-brown during the winter. Flowering occurs in summer, and flowers are ¼ in. wide, pale violet to white, and arranged in terminal racemes. The fruit looks like a blue-black berry.

**Optimal growing conditions:** Although tolerant of a wide range of soils, heat, drought, and light exposure, creeping lily-turf performs best in light shade and a moist, fertile, and well-drained soil. Its drought tolerance makes it especially suitable for dry and sunny places. Growth is moderate. Winter hardiness: Zones 4-10.

**Susceptibility to pests and diseases:** No serious pest or disease problems. Snails and slugs may do some damage, and scale insects and mealybugs are sometimes problematic.



Photos by Andrew Senesac, Cornell Cooperative Extension

**Roadside uses:**

**Suitable vegetation zones:**

Shaded roadsides, sunny medians, roundabouts, and managed beds (RZ2, RZ3)

**Mowing requirements:**

None

**Salt tolerance:**

Good

**Drought tolerance:**

Very good once established

**Invasive potential:**

Spreads rapidly to establish a monoculture



**Scientific name:**

*Lolium perenne* cv. *Palmer*  
(types III-V) & cv. *Prelude*  
(types III, IV, & GLS)

**Common name:**

Perennial ryegrass

**Region of origin:**

Europe

**Physical description:** A cool-season, fine-textured, dark green grass with a bunch-type growth habit. Its leaves have a shiny underside with parallel veins running the length of the leaf. Grows to a height of 12 to 24 inches.

**Optimal growing conditions:** Perennial ryegrass prefers full sun but will tolerate partial shade, has a moderately low tolerance for heat and drought, and has a high tolerance for cold temperatures. It does best between 5.5-6.5 pH. Winter hardiness: Zones 5-8, and upper 9 & 12.

**Highlights:**

**Weed Suppressive Rating:**

Good - Excellent

**Hardiness:**

Zones 5-8, and upper 9 & 12

**Height x Spread:**

12 to 24 inches; Moderate spread

**Exposure:**

Full sun to partial shade

**Soil requirements:**

Somewhat poorly drained

**Moisture requirements:**

Moderate (9-10 mm per day)

**Susceptibility to pests and diseases:** Palmer and Prelude have improved resistance to insects and gray leaf spot.

**Additional considerations:** Limited to moderate drought tolerance; requires watering under hot, dry conditions.

**Roadside uses:**

**Suitable vegetation zones:**

Roadside medians, rights of way, roundabouts, managed turf settings (RZ3)

**Mowing requirements:**

Multiple times yearly

**Salt tolerance:**

Limited

**Drought tolerance:**

Limited to Moderate

**Invasive potential:**

Limited



Photo courtesy Wikimedia



**Scientific name:**  
*Schizachyrium scoparium*

**Common name:**  
 Little bluestem

**Region of origin:**  
 Eastern North America

**Highlights:**

**Weed Suppressive Rating:**  
**Good - Excellent**

**Hardiness:**  
 Zones 5-9

**Height x Spread:**  
 20 to 40 in. x 1 to 2 ft.

**Season of bloom:**  
 Late summer to mid-autumn

**Flower color:**  
 Non ornamental

**Exposure:**  
 Full sun

**Soil requirements:**  
 Well-drained, moderately-fertile soil

**Moisture requirements:**  
 Drought tolerant

**Roadside uses:**

**Suitable vegetation zones:**  
 Mowed medians, wildflower beds and managed meadows (RZ2, RZ3)

**Mowing requirements:**  
 Once yearly

**Salt tolerance:**  
 Moderate

**Drought tolerance:**  
 Moderate

**Invasive potential:**  
 Limited

**Physical description:** This perennial grass forms dense tufts of erect stems that spread slowly. Plants may reach 3 ft. tall and 12 in. wide. Leaves are linear, medium green to gray-green, and reach 18 in. long. They often turn orange-red in autumn. Flowering occurs in late summer to mid-autumn, and racemes of spikelets are 6 inches long.

**Optimal growing conditions:** Little bluestem does well in well-drained soil with a medium fertility. It prefers full sun. Winter hardiness: Zones 5-9.

**Susceptibility to pests and diseases:** Little bluestem has no serious insect or disease problems.



Photo of dormant *S. scoparium* by Andrew Senesac, Cornell Cooperative Extension

**Scientific name:**

*Sporobolus heterolepis*

**Common name:**

Prairie dropseed, Northern dropseed

**Region of origin:**

Native to the Great Lakes

**Highlights:**

**Weed Suppressive Rating:**

Good - Excellent

**Hardiness:**

Zones 3-4

**Height x Spread:**

2 to 4 ft. x 18 to 24 in.

**Season of bloom:**

Late July-August

**Flower color:**

Reddish to purplish

**Exposure:**

Full sun

**Soil requirements:**

Well-drained, sand, loam soil

**Moisture requirements:**

Drought tolerant

**Roadside uses:**

**Suitable vegetation zones:**

Mowed medians, roadsides, conservation sites

(RZ2, RZ3)

**Mowing requirements:**

Once to several times yearly

**Salt tolerance:**

Moderate

**Drought tolerance:**

Moderate to good

**Invasive potential:**

Limited

**Physical description:** This ornamental grass with deep green foliage grows as a short, compact, tufted grass with individuals clearly separated. Each clump forms a fountain of fine, long, narrow blades from which airy panicles of florets and seeds grow. It reaches 2 to 4 feet tall. The emerald green leaves are about 24 in. long and 1/8 in. wide. They are covered with hairs that are about 1/8 in. long. The leaves tend to brown on the end. Flowering occurs in the summer, and flowers produce a seed head that has a faint but unmistakable fragrance.

**Optimal growing conditions:** Prairie dropseed prefers a well-drained soil in a sunny location. It is heat and drought tolerant but does appreciate water during droughty periods. Winter zone: 3-4.

**Susceptibility to pests and diseases:** No serious pests or diseases are reported for this species.



Photo courtesy J.S. Peterson





## Additional Information

### Cornell University's Groundcover Roadside Uses Website

<http://www.entomology.cornell.edu/Extension/Woodys/CUGroundCoverSite/ DOTgroundcovers/GroundcoverMain.html>

### Access this manual online at:

<http://www.entomology.cornell.edu/Extension/Woodys/CUGroundCoverSite/ DOTgroundcovers/RoadsideManualRev3.pdf>

### Cornell University's Allstar Groundcover Website

<http://www.entomology.cornell.edu/Extension/Woodys/CUGroundCoverSite/ GroundcoverMain.html>

## Additional sources of information

Listed below are books and web sites containing information you may find useful in researching groundcovers for your particular application. Most of the information for the pages in this website came from the books listed below.

### ARTICLES

- WESTON, L.A., ESHENAUER, B., and LAMB, E. June 15, 2007. Groundcover Design for Every Occasion. American Nurseryman 204(6): 14-19. Describes the utilization of groundcovers in diverse landscape settings.
  - WESTON, L. A., A. F. SENESAC, J. ALLAIRE SHAGENSKY, S. H. EOM, P. A. WESTON, and J. CARDINA. 2006. [A safe bet for the landscape](#). American Nurseryman 203(4): 35-38. Describes the results of evaluation of groundcovers in 3 distinct geographic locations.
- (both articles can be found at <http://www.amerinursery.com/Default.aspx?TabId=344>)

### BOOKS

- ARMITAGE, A. M. 1989. Herbaceous Perennial Plants. Varsity Press, Athens, GA
- STARK, F. B. & LINK, C. B. 1969. Enjoy your garden: Flowers in color
- LABADIE, E. L. 1983. Ground Covers in the Landscape. Sierra City Press, Sierra City, California, USA
- MACKENZIE, D. S. 1997. Perennial Ground Covers. Timber Press, Portland, Oregon



## Additional Information (continued)

### BOOKS (CONTINUED)

- STILL, S. M. 1994. Manual of Herbaceous Ornamental Plants, 4th ed. Stipes Publishing Company, Champaign, Illinois, USA.
- THOMAS, G. S. 1990. Plants for Ground-Cover, Revised Edition. Timber Press, Portland, Oregon.
- ZOMLEFER, W. B. 1994. Guide to Flowering Plant Families. The University of North Carolina Press.

### WEB SITES OF INTEREST\*

Additional sites related to groundcovers in the landscape:

- [Fescues](http://www.hort.cornell.edu/department/faculty/weston/fescue/index.html) as groundcovers (<http://www.hort.cornell.edu/department/faculty/weston/fescue/index.html>)
- [Other grasses and forbs](http://www.hort.cornell.edu/department/faculty/weston/mixes/index.html) as groundcovers\_ (<http://www.hort.cornell.edu/department/faculty/weston/mixes/index.html>)
- [Floridata](http://www.floridata.com/) - An extensive database of information and photos of a wide variety of plants (<http://www.floridata.com/>)
- [Forestry Images](http://www.forestryimages.org/) - A virtual treasure trove of photos of plants and pests(<http://www.forestryimages.org/>)
- [Grasses of Iowa](http://www.public.iastate.edu/~botany/iowapoaceae/index.html) - As its name suggests, this site covers grass species common to Iowa and the midwest. Features identification aids and photos of many species of grasses. (<http://www.public.iastate.edu/~botany/iowapoaceae/index.html>)
- [Growing Greener](http://www.ci.orlando.fl.us/planning/nature/charts_groundcover.htm) - A site hosted by the City of Orlando, FL ([http://www.ci.orlando.fl.us/planning/nature/charts\\_groundcover.htm](http://www.ci.orlando.fl.us/planning/nature/charts_groundcover.htm)). Includes a limited listing of groundcovers suitable to subtropical areas, with photos and information about propagation
- [Guide to Common Grasses of Minnesota](http://www.cbs.umn.edu/herbarium/Grasses/grass_text/contents_page.htm) - Hosted by the J. F. Bell Museum of Natural History, Univ. of Minnesota. Although the species coverage is centered in Minnesota, this site has useful information about grass taxonomy and anatomy in addition to very nice photos. A technical key for identifying grasses is also featured. ([http://www.cbs.umn.edu/herbarium/Grasses/grass text/contents page.htm](http://www.cbs.umn.edu/herbarium/Grasses/grass_text/contents_page.htm))
- [Jelitto Perennial Seeds](https://www.jelitto.com/haupt_en.html) - A very useful listing of lots and *lots* of groundcover species. Follow links to "Plant- and Growing Conditions" ([https://www.jelitto.com/haupt\\_en.html](https://www.jelitto.com/haupt_en.html))
- [Kansas Wildflowers and Grasses](http://www.lib.ksu.edu/wildflower/) - A site detailing over 375 species of plants found in Kansas. Maintained by Mike Haddock of Kansas State University (<http://www.lib.ksu.edu/wildflower/>)

## Additional Information (continued)

- [Missouri Botanical Garden Plantfinder](http://www.mobot.org/gardeninghelp/plantinfo.shtml) - A searchable site loaded with horticultural information and photographs of about the over 4,000 plants in the Kemper Center display gardens (plus selected additions) by garden location, scientific name or common name. Search online for plants that meet any of 40 characteristics or uses including: height, bloom time, flower color, good fall color, attracts hummingbirds, and more. (<http://www.mobot.org/gardeninghelp/plantinfo.shtml>)
- [Keir's Botanical Photo Archive](http://www.keiriosity.com/index.html) - A work of love by Keir Morse, a free lance photographer. A photographic archive of a tremendous number of plants, not to mention some great photos of wildlife and U.S. national parks. (<http://www.keiriosity.com/index.html>)
- [Oregon State University Landscape Plant website](http://oregonstate.edu/dept/ldplants/gardenp.htm) - Hosted by the OSU Department of Horticulture, this site contains information and images on over 850 species of landscape plants, mostly woody. (<http://oregonstate.edu/dept/ldplants/gardenp.htm>)
- [Range Plants of Utah](http://extension.usu.edu/rangeplants/index.htm) - A website covering a wide variety of plants found in the western desert areas of the U.S. Hosted by Utah State University Cooperative Extension (<http://extension.usu.edu/rangeplants/index.htm>)
- [Victor Valley Water district](http://www.vvwater.org/guide/grndcvr.htm) - A listing of groundcovers suited to the High Desert. Maintained by Victor Valley water district of Victorville, CA (<http://www.vvwater.org/guide/grndcvr.htm>)
- [Vincent Simeone's Website](http://www.vincentsimeone.com) - A website with some helpful plant lists and website information for mail order nurseries(<http://www.vincentsimeone.com>).



# Appendix 1

## Measuring soil pH and nutrients

Soil testing can be done with inexpensive kits available to the homeowner, or by having samples sent to a professional service. Cooperative extension offices are generally equipped to basic soil nutrient analysis. Here is what extension educators at Clemson University have to say about the various options for measuring soil nutrients:

### How reliable are the soil test kits found in gardening stores?

Here are the advantage of the garden store soil testing kits:

- They are cheap (provided you use your kit more than once or twice).
- They can give you a very general indication of your soil pH and fertility status if that is all you want.

The advantages of sending a soil sample to a professional laboratory are:

- The results are much more accurate. You will know your soil pH value within a tenth of a pH unit and your nutrient results will accurate within a few parts per million.
- Your soil sample will be handled by a professional staff of technicians who run these types of samples every workday.
- If you only need a couple soil samples tested a year, the cost of the kit will not be a real savings (especially since chemicals age and need to be replaced).
- You will receive recommendations specific for whatever type plant you want to grow. The recommendations are based on the latest university research data base.
- If you need further assistance, an Extension county agent can give you follow-up advice. If you use a kit, it will be very difficult for the agent to help with interpretation since the kits use different extractants and sufficiency ratings.

There are more accurate kits available through such companies as Hach and LaMotte but now we're talking hundreds of dollars. (Source: <http://hubcap.clemson.edu/-blpprt/bobweb/BOBWEB9.HTM>)

### Sources of soil testing kits:

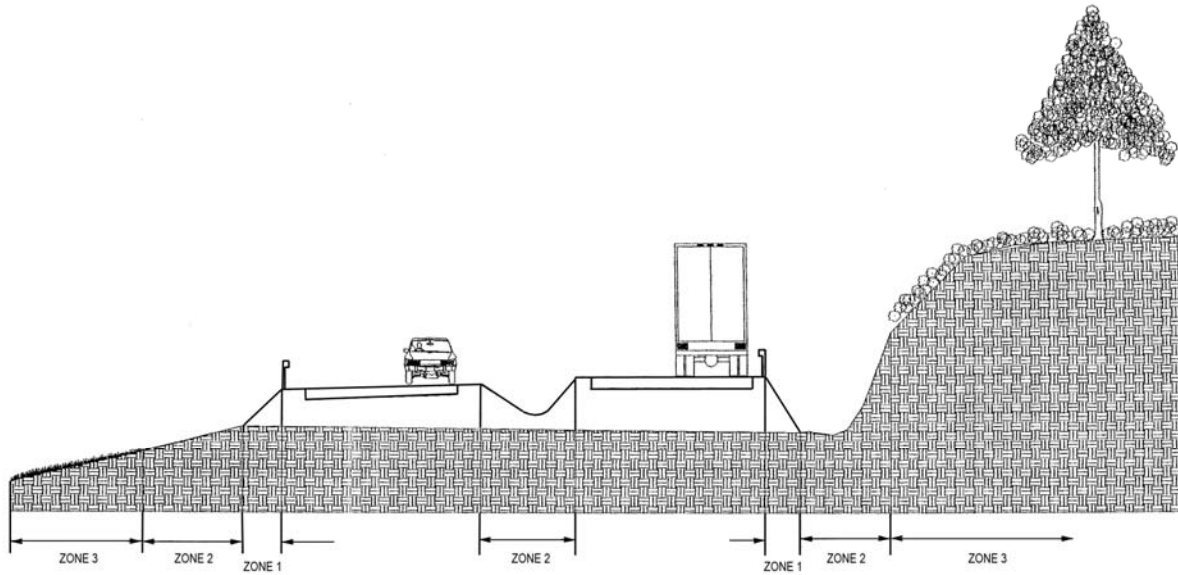
Forestry Suppliers ([http://www.forestry-suppliers.com/drilldown\\_pages/view\\_category.asp?cat=312](http://www.forestry-suppliers.com/drilldown_pages/view_category.asp?cat=312))

Heirloom Seeds (<http://www.heirloomseeds.com/soil.htm>)

Home Harvest Garden Supply (<http://homeharvest.com/soiltesting.htm>)

## Appendix 2

### NYS Department of Transportation—Roadside Functional Zones



#### FUNCTIONAL ZONE OBJECTIVES

**ZONE 1: VEGETATION-FREE ZONE**  
(WIDTH AS NECESSARY TO MEET OPERATIONAL NEEDS)

- PROVIDE FOR SURFACE DRAINAGE
- PREVENT PAVEMENT BREAKUP BY PLANTS
- PROVIDE VISIBILITY AND MAINTENANCE OF ROADSIDE HARDWARE

**ZONE 2: OPERATIONAL ZONE**  
(FROM ZONE 1 TO MEET OPERATIONAL NEEDS)

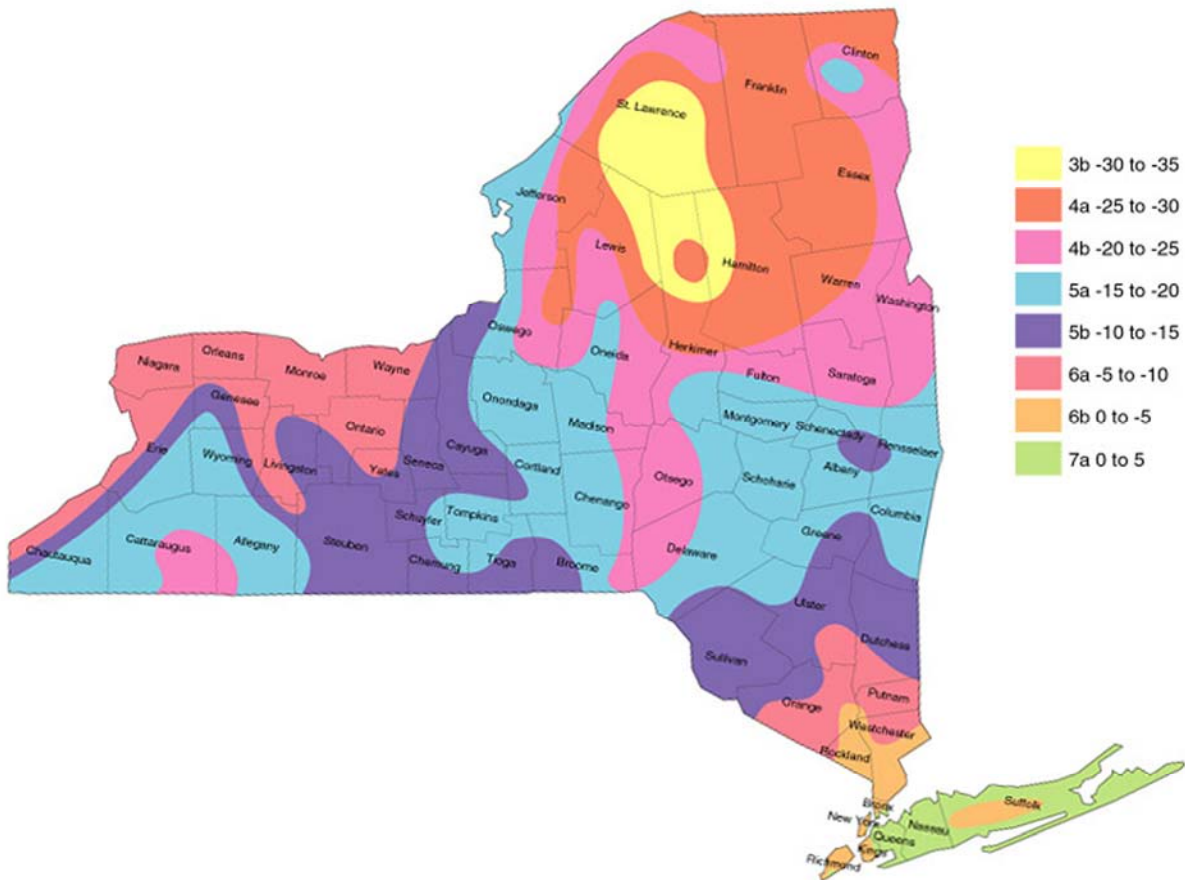
- MAINTAIN HAZARD-FREE VEHICLE RECOVERY AREA
- PROVIDE SIGHT DISTANCE FOR PASSING AND STOPPING
- PROVIDE SIGHT DISTANCE AT INTERSECTIONS
- MAINTAIN HYDRAULIC CAPACITY OF DITCHES
- WEED CONTROL
- PREVENT EROSION

**ZONE 3: TRANSITION ZONE**  
(FROM ZONE 2, WIDTH VARIES)

- BLEND AND/OR SCREEN ADJACENT SURROUNDINGS
- CONTROL WEEDS
- REMOVE DANGER TREES
- MANAGE TREES TO REDUCE SHADING IN AREAS PRONE TO ROADWAY ICING
- PREVENT EROSION
- MAINTAIN AND ENHANCE VISUAL QUALITY
- PRESERVE WETLANDS AND WILDLIFE HABITAT

# Appendix 3

## New York State Hardiness Zones



Courtesy Purdue University

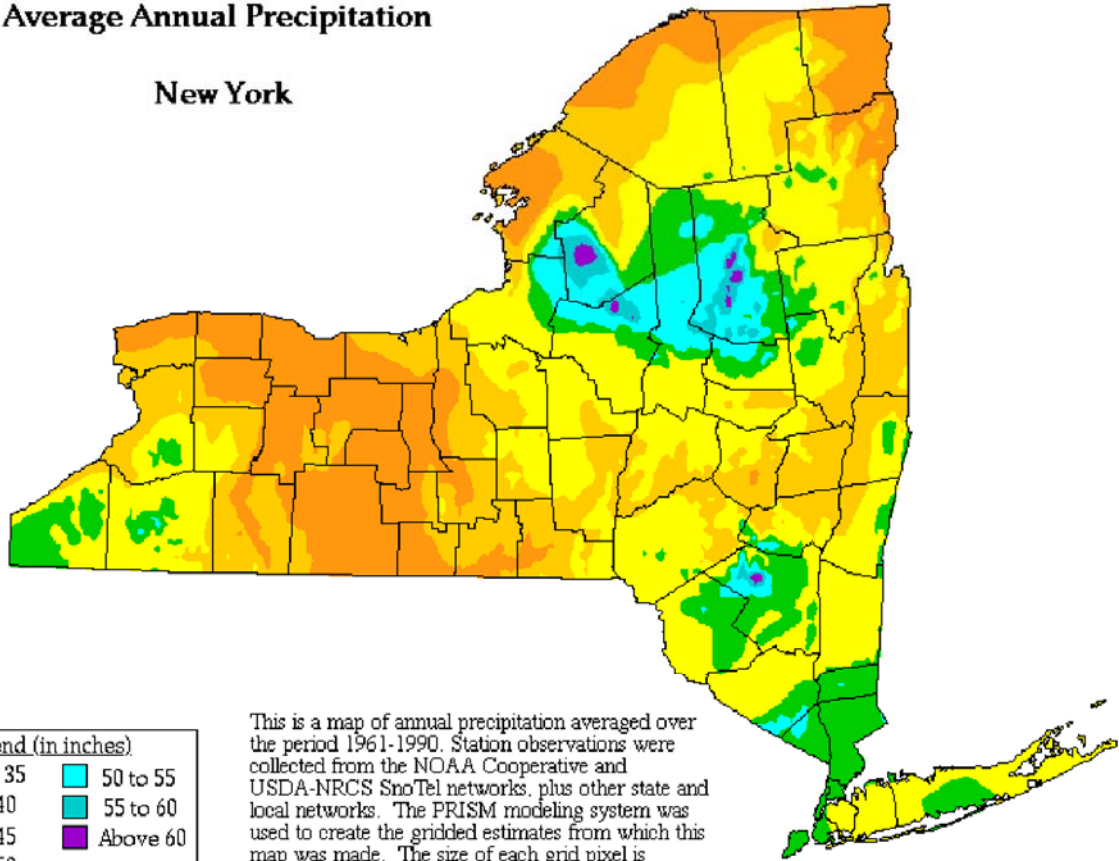


# Appendix 4

## New York State Precipitation Map

### Average Annual Precipitation

### New York



Legend (in inches)	
Under 35	50 to 55
35 to 40	55 to 60
40 to 45	Above 60
45 to 50	

For information on the PRISM modeling system, visit the SCAS web site at <http://www.ocs.orst.edu/prism>

This is a map of annual precipitation averaged over the period 1961-1990. Station observations were collected from the NOAA Cooperative and USDA-NRCS Snotel networks, plus other state and local networks. The PRISM modeling system was used to create the gridded estimates from which this map was made. The size of each grid pixel is approximately 4x4 km. Support was provided by the NRCS Water and Climate Center.

Copyright 2000 by Spatial Climate Analysis Service, Oregon State University

The latest PRISM digital data sets created by the SCAS can be obtained from the Climate Source at <http://www.climatesource.com>

## Appendix 5. Synopsis of Experimental Results from Ithaca and Riverhead, NY

Initially, the NYSDOT wished to determine which species, either transplanted or direct seeded, would be able to be successfully established along guidrails of paved highway routes in diverse climatic zones encountered across New York State. The NYSDOT was interested in determining which mixtures of species could be established economically and contribute to aesthetic appeal along managed highways, but more importantly, wished to determine which species could be managed without excessive herbicide application or mowing in these areas right next to the roadside.

Our studies have shown that in more traditional landscape settings or low maintenance sites located a distance away from the roadside, certain transplanted perennials or direct seeded mixtures of grasses can prove successful in establishing over time (within a one year period). Nearly all groundcover species we selected to evaluate can overwinter well in nearly all climatic zones across New York State, provided they are successfully established in the late summer or early fall. A very few groundcovers can successfully compete against weeds over time with no additional weeding if mowed or if trimmed. Competition against weeds is improved if the groundcover can rapidly establish after seeding or planting, and forms a denser canopy to suppress light interception at the soil surface. Nearly all species that are transplanted do require some additional weeding in order to survive and thrive, but there are species such as blue lymegrass, coral bells, Rhus, creeping phlox, and catmint that have successfully performed in landscapes and roadside settings without additional weeding, and have continued to thrive over a 2- to 3-year period. However, much past this time frame of 2 years, the beds must be trimmed, plant materials clipped, and replanting of dead materials undertaken to manage these established zones, either in a roadside or median setting.

Many of these perennial groundcovers we evaluated are, in fact, highly suitable for establishment in sunny sites in road medians or areas needing aesthetic emphasis along the highway. Given their relative expense, they are not suitable for general establishment along a highway and would require far too much labor to install and manage in general establishments along the roadside. They all require that soil be adequately tilled and prepared before establishment and this limits their usage around the state of New York, except in particular managed sites. In addition, they do not perform well when exposed to heavy traffic, random mowing, salt runoff, debris deposit, and other challenging situations encountered next to the pavement in roadside areas. In this case, soils next to paved roadsides are too poor to generally support the establishment of these perennial transplanted groundcovers. Our handbook, however, does suggest where these materials can be best utilized in landscaped areas along the highway, in limited maintenance settings. In addition, we have found there are certain species of groundcovers that do very well in both droughty and high salt conditions, which are frequently encountered along roadsides. In this case, the challenge will be for landscape managers and DOT personnel to find these materials at a garden center for later establishment, or order them from a whole sale producer or nursery. Many of these materials are not readily located in every region of the state of New York.

In addition, we evaluated mixtures and cultivars of direct seeded species for their ability to establish in low maintenance settings in landscapes or roadsides across New York State.

Again, we have shown that certain cultivars and mixtures have the capacity to establish well and be highly weed-suppressive when planted into a well-prepared site, where soil has been tilled and prepared. Over time, they require little maintenance, limited mowing and limited fertility and rainfall to thrive. However, these cultivars or mixtures are often expensive and difficult to locate. Producers of seed of native species or turf grass producers have access to these cultivars but they are not inexpensive. In addition, if they are direct seeded into sites that are compacted, have poor drainage, or already heavily infested with annual and perennial weeds, they are not likely to establish well initially. Many of the fine fescues that performed well in our trials require additional time to germinate and establish. Once established, cultivars like Oxford, Intrigue, and Reliant II, as well as mixtures such as the No Mow mix perform very well, especially if they are mowed to minimize weed competition after they become well established. However, perennial ryegrasses and tall fescues such as Palmer, Prelude, Rebel, and Tarheel also can perform well, and they establish more rapidly. Unfortunately, they also require additional mowing to thrive as they produce more biomass.

If one is considering establishment immediately next to the guiderail or highway, these slower-growing, direct-seeded, cool-season grasses will not perform particularly well as we have seen in roadside trials, due to poor drainage and soil conditions encountered along most roadsides, as well as runoff encountered in these locations. To establish them successfully, it is almost certain that hydroseeding or careful hand seeding into a well prepared soil seed bed must occur, where weed removal and soil tilth is ensured. For new construction sites, new roadside areas, reclamation sites, and focal-point medians, these direct-seeded cultivars and mixtures might be of interest. However, given their current expense and requirements for establishment, we do not see these direct-seeded native groundcovers or turfgrasses being readily incorporated into current recommendations of the NYSDOT, unless an adequate seed sources at reasonable costs can be located.



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## The Groundcover Project Team

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- Stephanie Mallozzi, Cornell Cooperative Extension of Dutchess Co.
- Walt Nelson, Cornell Cooperative Extension of Chemung Co.
- Renee Schloupt, Cornell Cooperative Extension of Broome Co.
- Elizabeth Lamb, NYS IPM Program

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- Jeff McCaffrey, Assistant Director of Advising & Research, Office of Undergraduate Biology, Cornell University, Ithaca, NY.

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- MaryEllen Papin, Maintenance Environmental Coordinator
- Kevin Miller - Senior Landscape Architect
- Jeff Dunlap, Retired Resident Engineer, Monroe West Residency and Residency staff

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Mike Temple, Resident Engineer, and the staff of the Northern Dutchess Residency

#### *NYSDOT Region 9*

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#### *NYSDOT Region 10*

- Gary Gentile, Retired Senior Landscape Architect
- Robb Smith, Rich Gass, and Ken DeKenipp, Maintenance Environmental Coordinators
- Darrel Kost, Resident Engineer, Kevin Matthaei, Assistant Resident Engineer, and the staff of Suffolk East Residency

# Glossary

## Botanical terms

achene – a small, dry, hard, non-opening fruit containing a single seed

auricle – an ear-shaped appendage, typically on a grass (some may surround the sheath)

awl – a leaflet tapering from the base to a slender or rigid point

awn – a bristle-shaped appendage

calyx – the outer part of a flower, usually green, composed of sepals

ciliate – feathery

corolla – the petals of a flower

cyme - A broad, flattish determinate inflorescence (central or terminal flowers blooming first)

dentate – notched or toothed

dissected – leaf shape characterized by very deep notches between lobes

entire – leaf shape characterized by lack of any notches or teeth

inflorescence – the flowering part of a plant

lanceolate – long and narrow, tapered at both ends

ligule – a thin, membranous projection from the tip of the leaf sheath

obovate – inverted ovate; egg shaped, with the broader end away from the base

ovate – egg-shaped, with the broader end near the base

palmate – a leaf shape that is radially lobed or divided

panicle – a loose, irregularly compound inflorescence

peduncle – a flower stalk, supporting either a single flower or a cluster

pubescent – covered with hairs

rhizome – an underground stem by which plants spread

rhizotamous – characterized by the presence of rhizomes

scape – a flower stem, without any foliage, rising from the ground

sepal - one of the outermost circles of modified leaves surrounding a flower



sessile – lacking a stalk (e.g. a leaf blade attached directly to a stem)

siliqua – a dry, elongated fruit found in the family Cruciferae

spike – a simple inflorescence composed of sessile flowers arranged along an elongated stalk

tiller – the shoot that sprouts from the base of a grass plant

umbel – an inflorescence in which the peduncles of a cluster spring from the same point

### **Terms pertaining to soil**

acidity – the availability of hydrogen ions (pH). pH ranges from 1 to 14, with 7 being neutral. Soils with a pH of less than 7 are said to be acidic, and above 7, alkaline. Some rough breakdowns in soil pH are as follows:

acidic – pH from 5.0 to 5.5

slightly acidic – pH from 5.8 to 6.5

neutral – pH from 6.6 to 7.3

slightly alkaline – pH from 7.4 – 8.0

alkaline – pH higher than 8.0

heavy – high in clay and low in organic matter

rich – high in organic matter (decomposing leaf or plant litter)

**Indexes  
of  
Plant Species**

## Index of species by common name

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<i>Laurentia fluviatilis</i> .....	37
<i>Mazus reptans</i> .....	39
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<i>Liriope spicata</i> .....	83
<i>Lolium perenne</i> .....	84

#### Over 24"

<i>Agropyron cristatum</i> .....	68
<i>Agrostis stolonifera</i> .....	69
<i>Andropogon gerardii</i> .....	70
<i>Calamagrostis canadensis</i> .....	72
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<i>Festuca arundinacea</i> .....	77
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