
HERBACEOUS PERENNIALS

Debbie Lonnee, Mervin C. Eisel and Anne Hanchek

Perennials often serve as the backbone of a flower garden. Many perennials have showy blooms with a diversity of colors. Some have good quality foliage that remains attractive throughout the growing season and provides a background for other plants. They can be used as color accents in foundation plantings; in mass plantings along highways; in woodland gardens, rockeries, and pond plantings; and in beds and borders. They can stand alone or be mixed with woody plants, annuals, and bulbs. Some perennials are fragrant, while others make excellent cut flowers. Many different perennials will grow in sunny or shady sites and provide many different functions. Tables 1 through 11 describe what species or genera can be used for different functions.

A perennial can be broadly defined as an herbaceous plant that lives for more than three years. Perennial plants die back to the ground at the end of the season and reemerge the following year. The life expectancy of each perennial varies. Some will last for only a few years, however, peonies, can live for many decades. Comparatively, an annual completes its life cycle in one growing season.

Perennials have some disadvantages. Initially, the plant cost is higher than annuals, but if pro-rated over the years, the actual cost can be less expensive than annuals. Site preparation should be more thorough than for annuals since any remaining perennial weeds will eventually create major maintenance problems. The actual planting operation is likely to be more labor intensive, but occurs only once. Some plants will need dividing every three to five years. Perennials need to be divided or renovated every six to eight years.

The most successful landscapes are not composed of perennials or annuals alone, but a combination of both. Perennials should be part of the overall landscape plan. Ideally, perennials are backed by shrubs, a fence, or a wall to create a background. This provides an attractive background, minimizes traffic through the landscape, and provides wind protection.

Plant Selection

In a large perennial garden, plants should be planted in groups. The large, tall plants should be in groups of three or more, medium sized plants in groups of at least three to five, and the smaller plants, five or more. Learn the height and spread of different varieties so they can be spaced properly.

Choose plants for each site, based on the amount of light the garden receives. Full sun is generally considered six to eight hours of direct sunlight. Part sun/part shade is four to six hours of direct sunlight a day, while shade is considered less than four hours of direct sunlight. The time of day the garden receives light is critical as well; typically, afternoon light is the most intense during the summer months.

Care should be taken when selecting plants so that the colors, size, texture, fragrance, and form pleasantly relate to one another and to permanent landscape features. Many perennials are grown specifically for their beautiful foliage with great color and texture. Some flowering perennials have good looking foliage all season long. Others, such as *Liatis* and Lilies, have foliage that dies down rather early in the season. Different species and cultivars of perennials can be planted so there is continuous bloom from spring until fall. Such species include: iris, peonies, lilies, daylilies, phlox, coreopsis, and chrysanthemums.

Planting

The soil should be free of perennial weeds prior to planting. Perennial weeds should be killed with systemic herbicides. A deep sandy loam is the ideal soil for perennials. If the soil is sandy or clay, generous quantities of organic matter should be incorporated into the soil prior to planting. The topsoil should be 15-18 inches deep, and the soil should be spaded to a depth of eight to ten inches. Adding phosphate prior to tilling is often beneficial since it does not readily move through the soil profile and it is required for root development. Fertilizer should be added based on a soil test. If this is not practical, two to three lbs. of 18-18-8 fertilizer per 100 square feet

will be beneficial. This fertilizer is 50 percent slow release so it should last the entire season. The easiest way to fertilize an entire garden is to broadcast the fertilizer using a rotary spreader.

Perennials are generally available as either bare root divisions or container grown plants. Potted perennials can be planted in the garden during any season. Potted perennials can vary in sizes from a small cell plug, to larger material in three-inch container, or a number one to number five container. If potted material is root bound, pull the roots away from the soil or cut them with a knife to encourage them to move into the surrounding soil. Container plants can be planted anytime throughout the growing season. Bare root perennial plants or divisions should be planted when they are dormant: in early spring or fall. In general, fibrous rooted plants should be transplanted or divided in the spring. Those with fleshy roots or enlarged storage organs should be divided and planted in the fall. Therefore, bare root perennials are typically available as a dormant plant or division in spring and fall. An advantage of purchasing bare root material is that it is generally less expensive than potted material. Check bare root divisions for any mold problems. White mold is rarely serious and can be washed off. Check the roots for any soft or dead roots and cut them off. Corms, bulbs, rhizomes, and tuberous roots are all available bare root. Know the proper planting depth for each type of bare root structure.

The planting hole for a perennial should be about the same depth as the root ball or the length of the division roots, and at least twice as wide. Incorporate some bone meal and or slow release fertilizer into the backfill before placing the soil back in around the plant. Water thoroughly after planting. Plants that are planted in fall should be mulched to enhance root growth and survival.

Culture

Spring care for perennials normally consists of removal of dead plant tops and winter mulches. Perennials need regular, thorough watering throughout the growing season, unless all varieties planted are adapted to dry conditions. Many native perennials are suitable for drier landscapes. Check the soil two to three inches deep to determine the need for irrigation. For most perennials, one inch of water per week, applied at one time, is usually adequate. Organic mulch is advantageous for perennials, as it will keep the soil

cooler and more evenly moist. Mulches inhibit weeds and keep soil from splashing on the leaves of the perennials, thereby preventing some foliar disease problems.

Install organic mulches, such as wood chips, bark mulch, or cocoa bean mulch, in spring as soon as the ground warms up to about 60° F. Do not place mulch up against the growing stems or crowns, as that can smother them or cause disease problems. Wood mulches will break down with time, so additional mulch can be added periodically.

Perennials will benefit from regular fertilization, although perennials do not need high fertility. Top dress with a soluble 10-10-10 or a 50 percent slow release 18-18-8 granular fertilizer. Water-soluble fertilizers such as Miracle-Gro or Peters 20-20-20 can also be used, but they are more expensive and do not last as long as a slow release product. Fertilization is best done in the spring and early summer months. Reduce fertilization in late summer and early fall, unless the plants are nutrient deficient. When topdressing, do not allow fertilizer granules to stay on the foliage or rest in the axils of the leaves.

Weeds can compete with perennials for moisture and nutrients, and can harbor diseases and insects. Weeds can be prevented with the use of a pre-emergent herbicide, or they can be removed mechanically or by hand. Post-emergent herbicides should only be used with great care and applied with the wipe method, rather than a spray.

Taller perennials benefit from some support such as stakes or grow-through supports. Tie stems carefully to stakes using a figure eight knot with Stretch-tie, strips of cloth, or twine. Peonies and other large perennials can be staked with cages early in the season so the plants can grow through the cages.

Deadheading or removing spent blossoms from perennials will keep them looking clean and may help force some new growth that will bloom again later in the season. It also keeps perennials from going to seed, which can inhibit vegetative growth.

Fall care normally consists of the removal of diseased foliage. For winter protection, the tops of healthy plants should be left to help catch leaves and snow which provides additional winter protection. If the

perennials are marginally hardy, apply a winter mulch of marsh hay or straw after the ground is frozen and stays frozen. Remove the mulch as soon as it warms up in spring to prevent plants from rotting.

For most perennials, the control of pests and diseases is similar to that for annuals. Since perennial plants stay in the same place for years, disease inoculum can accumulate to levels requiring control. This can occur with peonies, lilies and iris. Provide good air circulation and irrigate early in the day to prevent having wet foliage during the night. Some insect control may be necessary especially if the perennials are susceptible to viruses carried by leafhoppers or thrips, or if only a few varieties of perennials are used. Most disease problems must be addressed early in the season and preventative measures taken throughout the season. All pest problems should be attended to when first noticed.

Deer can be a major problem in perennial gardens. The most reliable and perhaps the only method for keeping deer out of the garden is a ten to twelve-foot fence. Other claimed methods of deer control include Milorganite, lion dung, soap flakes, human hair, bright reflectors, and hot sauce. Hinder, Deer Away, Liquid Fence, and others work for short periods of time until the deer become accustomed to them or they are washed off by rain. Plantskydd Animal Repellent, Tree Guard, and RepelEx are some additional products to try.

Propagation of Perennials

Perennials can be propagated by either sexual propagation from seed, or by asexual propagation from divisions, rooted cuttings, or tissue culture. Although many perennials can be commercially started from seed, named cultivars will not propagate true from seed. Starting plants from seed is slow and, therefore, not practical for most homeowners. Species perennials and some named varieties such as Echinacea purpurea 'Magnus' produce seed, which produces plants similar to the parent. Perennial seed is generally available through wholesale seed houses in North America and Europe. Most perennials seeds require scarification and/or stratification for optimum germination. Some seeds also require light to germinate. Seeds should be buried to a depth of two to three times the diameter of an individual seed. Commercially, sophisticated seeding machines place the correct number of seeds per planting cell and at the proper depth. Seedlings are grown to a specific size, and then transplanted into large plugs or pots, and grown on to salable sizes. Asexual or vegetative propagation creates a plant that

is identical to the parent plant. Tip cuttings from growing stems should be treated with a rooting hormone and stuck in a rooting medium that is kept moist throughout the rooting process. Rooting time will vary with the type of plant being propagated. Some perennials such as Papever have roots that produce new plants when cut into sections and planted in a growing medium. Many perennials form large clumps such as Hosta and Hemerocallis, which can be divided into many plants. This is known as crown division. Entire clumps are dug with as many roots as possible and are cut into several divisions. If buds or "eyes" are present in the clump, each division should contain a minimum of two to three "eyes." North America and the Netherlands specialize in selling bare root divisions.

Table 1. Perennials that do not require frequent division*.

<u>Aconitum</u> (Monkshood)**	<u>Kirengeshoma</u> (Yellow Waxbells)
<u>Actaea</u> (Baneberry)	<u>Lathyrus</u> (Sweet Pea)**
<u>Adenophora</u> (Ladybells)	<u>Ligularia</u> (Golden Ray)
<u>Alchemilla</u> (Lady's Mantle)	<u>Limonium latifolium</u> (Wide-Leaf Sea-Lavender)
<u>Amsonia</u> (Blue Star)	<u>Lupinus</u> (Lupine)**
<u>Anemone</u> (Anemone)**	<u>Lysimachia</u> (Loosestrife)
<u>Aruncus</u> (Goatsbeard)	<u>Mertensia</u> (Bluebells)**
<u>Asclepias</u> (Milkweed)	<u>Nepeta</u> (Catmint)
<u>Baptisia</u> (False Indigo)**	<u>Oenothera</u> (Evening Primrose, Sundrops)
<u>Bergenia</u> (Bergenia)	<u>Paeonia</u> (Peony)**
<u>Brunnera macrophylla</u> (False Forget-Me-Not)	<u>Papaver</u> (Poppy)**
<u>Callirhoe involucrate</u> (Poppy Mallow)**	<u>Perovskia</u> (Russian Sage)
<u>Cimicifuga</u> (Bugbane)	<u>Platycodon</u> (Balloon Flower)**
<u>Clematis</u> (Clematis)	<u>Polemonium</u> (Jacob's Ladder)
<u>Convallaria majalis</u> (Lily-of-the-Valley)	<u>Polygonatum</u> (Solomon's Seal)
<u>Dicentra spectabilis</u> (Bleeding Heart)	<u>Pulmonaria</u> (Lungwort)
<u>Dictamnus</u> (Gas Plant)**	<u>Pulsatilla</u> (Pasque Flower)
<u>Echinops</u> (Globe Thistle)	<u>Salvia</u> (Sage)
<u>Epimedium</u> (Barrenwort)	<u>Scabiosa</u> (Pincushion Flower)
<u>Eryngium</u> (Sea Holly)**	<u>Senna</u> (Wild Senna)
<u>Euphorbia</u> (Spurge)	<u>Sedum</u> (Stonecrop)
<u>Filipendula</u> (Meadowsweet)	<u>Stylophorum</u> (Celandine Poppy)
<u>Geranium</u> (Cranesbill)	<u>Thalictrum</u> (Meadow Rue)
(Grasses)	<u>Thermopsis</u> (False Lupine)
<u>Gypsophila</u> (Baby's Breath)**	<u>Trollius</u> (Globe Flower)
<u>Helleborus</u> (Hellebore)**	
<u>Hemerocallis</u> (Daylily)	
<u>Hibiscus</u> (Rose Mallow)	
<u>Hosta</u> (Hosta)	
<u>Iberis</u> (Edging Candytuft)	
<u>Iris</u> (Siberian Iris hybrids)	

*List provided with permission and courtesy of
Mike Heger, Ambergate Gardens.
**Prefer minimum disturbance.

Table 2. Perennials that require frequent division*.

Achillea (Yarrow)
Anchusa (Italian Alkanet)
Armeria (Sea Pink)
Artemisia (Wormwood)
Aster (Aster)
Astilbe (False Spirea)
Boltonia asteroides (Thousand Flower Aster)
Campanula (Bellflower)
Catananche (Cupid's Dart)
Centaurea (Knapweed)
Cerastium (Snow-in-Summer)
Chelone (Turtlehead)
Chrysanthemum (Garden Mum)
Coreopsis grandiflora (Large-Flowered Tickseed)
Delphinium (Larkspur)
Dicentra eximia and Dicentra formosa hybrids
Bleeding Heart)
Echinacea purpurea (Purple Coneflower)
Erigeron (Fleabane)
Gaillardia (Blanket Flower)
Geum (Avens)
Helenium (Helen's Flower)
Heuchera (Coral Bells)
Iris (Bearded Iris)
Leucanthemum (Shasta Daisy)
Monarda (Bee Balm)
Phlox (Meadow Phlox – Maculata Group)
Phlox (Summer Phlox – Paniculata Group)
Physostegia (False Dragonhead)
Primula (Primrose)
Rudbeckia (Coneflower)
Scabiosa (Pincushion Flower)
Solidago (Goldenrod)
Stachys byzantina (Lamb's Ear)
Stokesia laevis (Stokes Aster)
Tanacetum (Painted Daisy – Coccineum Group)
Tradescantia (Spiderwort)
Veronica (Speedwell)

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Table 3. Perennials tolerant of deep shade*.

<u>Actaea</u> (Baneberry)	<u>Mertensia virginica</u> (Virginia Bluebells)
<u>Adiantum</u> (Maidenhair Fern)	<u>Osmunda cinnamomea</u> (Cinnamon Fern)
<u>Arisaema</u> (Jack-in-the-Pulpit)	<u>Osmunda claytoniana</u> (Interrupted Fern)
<u>Arum italicum</u> (Arum lily) – tender	<u>Osmunda regalis</u> (Royal Fern)
<u>Aruncus</u> (Goatsbeard)	<u>Pachysandra</u> (Spurge)
<u>Asarum</u> (Ginger)	<u>Phlox stolonifera</u> (Creeping Phlox)
<u>Bergenia</u> (Bergenia)	<u>Podophyllum peltatum</u> (Mayapple)
<u>Caulophyllum thalictroides</u> (Blue Cohosh)	<u>Polygonatum</u> (Solomon’s Seal)
<u>Chelone</u> (Turtlehead)	<u>Polystichum acrostichoides</u> (Christmas Fern)
<u>Chrysogonum</u> (Green and Gold)	<u>Pulmonaria</u> (Lungwort)
<u>Cimicifuga</u> (Bugbane)	<u>Sanguinaria</u> (Bloodroot)
<u>Convallaria majallis</u> (Lily-of-the-Valley)	<u>Smilacina</u> (False Solomon’s Seal)
<u>Cornus canadensis</u> (Buncheberry)	<u>Stylophorum</u> (Celandine Poppy)
<u>Cystopteris</u> (Bladder Fern)	<u>Tiarella</u> (Foamflower)
<u>Disporum</u> (Fairy-Bells)	<u>Tricyrtis</u> (Toad Lilly)
<u>Dryopteris</u> (Wood Fern)	<u>Trillium</u> (Trillium)
<u>Epimedium</u> (Barrenwort)	<u>Uvularia</u> (Bellwort)
<u>Gillenia</u> (Bowman’s Root)	<u>Vinca</u> (Periwinkle)
<u>Hepatica</u> (Liverwort)	<u>Viola canadensis</u> (Canada Violet)
<u>Hosta</u> (Hosta)	
<u>Iris cristata</u> (Crested Iris)	
<u>Lamiastrum galeobdolon</u> (Yellow Archangel)	
<u>Lamium</u> (Spotted Dead Nettle)	

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Table 4. Perennials tolerant of dry shady sites*.

<u>Acanthus mollis</u> (Common Bear's-Breech)	<u>Galium odoratum</u> (Sweet Woodruff)
<u>Adonis amurensis</u> (Amur Adonis)	<u>Geranium macrorrhizum</u> (Bigroot Cranesbill)
<u>Aegopodium podagraria</u> 'Variegatum' (Bishop's Weed)	<u>Geranium phaeum</u> (Mourning Widow)
<u>Anemonex hybrida</u> (Japanese Anemone)	<u>Helianthus strumosus</u> (Woodland Sunflower)
<u>Arum italicum</u> (Arum Lily)	<u>Helleborus</u> (Hellebore)
<u>Aster cordifolius</u> (Heart-Leaved Aster)	<u>Hosta</u> (Hosta)
<u>Aster divaricatus</u> (White Wood Aster)	<u>Hystrix patula</u> (Bottlebrush Grass)
<u>Bergenia</u> (Bergenia)	<u>Lamiastrum galeobdolon</u> (Yellow Archangel)
<u>Brunnera macrophylla</u> (False Forget-Me-Not)	<u>Lamium maculatum</u> (Spotted Dead Nettle)
<u>Colchicum</u> (Autumn Crocus)	<u>Liriope</u> (Lily-Turf) – tender
<u>Convallaria majalis</u> (Lily-of-the-Valley)	<u>Luzula nivea</u> (Snowy Woodrush)
<u>Cornus canadensis</u> (Bunchberry)	<u>Lysimachia nummularia</u> (Moneywort)
<u>Corydalis lutea</u> (Yellow Fumewort)	<u>Podophyllum peltatum</u> (Mayapple)
<u>Cyclamen</u> (Hardy Cyclamen)	<u>Polygonatum</u> (Solomon's Seal)
<u>Dennstaedtia punctilobula</u> (Hay-Scented Fern)	<u>Polystichum acrostichoides</u> (Christmas Fern)
<u>Deschampsia flexuosa</u> (Crinkled Hairgrass)	<u>Sedum ternatum</u> (Crowsfoot Stonecrop)
<u>Disporum</u> (Fairy-Bells)	<u>Symphytum grandiflorum</u> (Large-Flowered Comfrey)
<u>Dryopteris filix-mas</u> (Male Fern)	<u>Vancouveria hexandra</u> (American Barrenwort)
<u>Epimedium</u> (Barrenwort)	<u>Viola palmata</u> (Early Blue Violet)
<u>Eranthis</u> (Winter Aconite)	<u>Viola pubescens</u> (Downy Yellow Violet)
<u>Erythronium</u> (Fawn-Lily)	<u>Waldsteinia</u> (Barren Strawberry)
<u>Eupatorium rugosum</u> (White Snakeroot)	
<u>Filipendula vulgaris</u> (Dropwort)	
<u>Galanthus</u> (Snowdrop)	
<u>Galax urceolata</u> (Wand-Flower)	

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Table 5. Perennials tolerant of dry sunny sites*.

<u>Achillea</u> (Yarrow)	<u>Helictotrichon sempervirens</u> (Blue Oat Grass)
<u>Alcea</u> (Hollyhock)	<u>Heterotheca</u> (Hairy Golden Aster)
<u>Andropogon gerardi</u> (Big Bluestem)	<u>Iberis sempervirens</u> (Edging Candytuft)
<u>Anaphalis</u> (Pearly Everlasting)	<u>Iris</u> (Bearded Iris)
<u>Antennaria</u> (Pussy Toes)	<u>Koeleria cristata</u> (Junegrass)
<u>Anthemis</u> (Golden Marguerite)	<u>Lavandula</u> (Lavender)
<u>Arabis</u> (Rock Cress)	<u>Lespedeza</u> (Bushclover)
<u>Arenaria</u> (Sandwort)	<u>Leymus arenarius</u> (Blue Lyme Grass)
<u>Armeria</u> (Thrift)	<u>Leymus racemosus</u> (Siberian Wild Rye)
<u>Artemisia</u> (Wormwood)	<u>Liatris aspera</u> (Rough Blazingstar)
<u>Asclepias tuberosa</u> (Butterfly Milkweed)	<u>Limonium latifolium</u> (Wide-Leaf Sea-Lavender)
<u>Aster azureus</u> (Sky Blue Aster)	<u>Linum</u> (Flax)
<u>Aster ericoides</u> (Heath Aster)	<u>Lupinus perennis</u> (Lupine)
<u>Aster laevis</u> (Smooth Aster)	<u>Lychnis</u> (Campion)
<u>Aster pilosus</u> (Frost Aster)	<u>Macleaya</u> (Plume Poppy)
<u>Aster parmicoides</u> (White Aster)	<u>Malva</u> (Mallow)
<u>Astragalus canadensis</u> (Canada Milk Vetch)	<u>Monarda fistulosa</u> (Bergamot)
<u>Aubretia</u> (Rock Cress)	<u>Nepeta</u> (Catmint)
<u>Aurinia saxatilis</u> (Basket-of-Gold)	<u>Oenothera macrocarpa</u> (Ozark Sundrops)
<u>Baptisia bracteata</u> (Cream False Indigo)	<u>Opuntia</u> (Prickly-pear Cactus)
<u>Baptisia lactea</u> (White False Indigo)	<u>Origanum</u> (Ornamental Oregano)
<u>Belamcanda</u> (Blackberry Lily)	<u>Panicum virgatum</u> (Switch Grass)
<u>Bouteloua curtipendula</u> (Side-Oats Gramma)	<u>Papaver orientale</u> (Oriental Poppy)
<u>Callirhoe involucrata</u> (Poppy Mallow)	<u>Penstemon</u> (Beard-Tongue)
<u>Campanula rotundifolia</u> (Harebell)	<u>Perovskia</u> (Russian Sage)
<u>Centaurea Montana</u> (Mountain Bluet)	<u>Petrorhagia</u> (Tunic Flower)
<u>Centranthus ruber</u> (Red Valerian)	<u>Phlomis russeliana</u> (Sticky Jerusalem Sage)
<u>Cerastium</u> (Snow-in-Summer)	<u>Phlox</u> (Creeping Phlox – Subulata Group)
<u>Coreopsis</u> (Tickseed)	<u>Platycodon grandiflorus</u> (Balloon Flower)
<u>Dalea purpurea</u> (Purple Prairie Clover)	<u>Potentilla</u> (Cinquefoil)
<u>Dianthus</u> (Pinks)	<u>Pulsatilla vulgaris</u> (European Pasqueflower)
<u>Dictamnus</u> (Gas Plant)	<u>Ratibida pinnata</u> (Yellow Coneflower)
<u>Echinacea pallida</u> (Pale Purple Coneflower)	<u>Rudbeckia fulgida</u> var. <u>speciosa</u> (Orange Coneflower)
<u>Echinacea purpurea</u> (Purple Coneflower)	<u>Ruellia humilis</u> (Wild Petunia)
<u>Echinops</u> (Globe Thistle)	<u>Salvia</u> (Sage)
<u>Erigeron</u> (Fleabane)	<u>Saponaria ocymoides</u> (Rock Soapwort)
<u>Eryngium</u> (Sea Holly)	<u>Schizachyrium scoparium</u> (Little Bluestem)
<u>Euphorbia</u> (Spurge)	<u>Sedum</u> (Stonecrop)
<u>Festuca</u> (Fescue)	<u>Sempervivum</u> (Hen and Chicks)
<u>Filipendula vulgaris</u> (Dropwort)	<u>Silphium laciniatum</u> (Compass plant)
<u>Gaillardia</u> (Blanket Flower)	<u>Solidago rigida</u> (Stiff Goldenrod)
<u>Gaura</u> (Wand Flower) – tender	<u>Solidago speciosa</u> (Showy Goldenrod)
<u>Geranium macrorrhizum</u> (Bigroot Cranesbill)	
<u>Geranium phaeum</u> (Mourning Widow)	
<u>Geum triflorum</u> (Prairie Smoke)	
<u>Goniolimon tataricum</u> (Tatarian Sea-Lavender)	
<u>Gypsophila</u> (Baby's Breath)	
<u>Helianthus</u> (Sunflower)	

Table 5 (Continued). Perennials tolerant of dry sunny sites*.

Sorghastrum nutans (Indian Grass)
Sporobolus heterolepis (Prairie Dropseed)
Stachys byzantina (Lamb's Ear)
Tanacetum vulgare (Common Tansy)
Thermopsis (False Lupine)
Thymus (Thyme)
Tradescantia ohiensis (Ohio Spiderwort)
Verbascum (Mullein)
Verbena stricta (Hoary Vervain)
Veronica pectinata (Comb Speedwell)
Viola pedata (Birdsfoot Violet)
Yucca (Adam's Needle)

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Table 6. Perennials tolerant of wet shady sites*.

<u>Adiantum pedatum</u> (Maidenhair Fern)	<u>Onoclea sensibilis</u> (Sensitive Fern)
<u>Arisaema triphyllum</u> (Jack-in-the-Pulpit)	<u>Osmunda cinnamomea</u> (Cinnamon Fern)
<u>Aruncus dioicus</u> (Sylvan Goatsbeard)	<u>Osmunda claytoniana</u> (Interrupted Fern)
<u>Astilbe</u> (False Spirea)	<u>Osmunda regalis</u> (Royal Fern)
<u>Astrantia</u> (Masterwort)	<u>Petasites</u> (Butterbur)
<u>Athyrium felix-femina</u> (Lady Fern)	<u>Phalaris arundinacea</u> cultivars (Ribbon Grass)
<u>Calla palustris</u> (Wild Calla)	<u>Physostegia</u> (Obedient Plant)
<u>Caltha palustris</u> (Marsh Marigold)	<u>Primula beesiana</u> (Bee's Primrose)
<u>Carex muskingumensis</u> (Palm Sedge)	<u>Primula bulleyana</u> (Bulley's Primrose)
<u>Carex nigra</u> (Black-Flowering Sedge)	<u>Primula florindae</u> (Tibetan Primrose)
<u>Chelone</u> (Turtlehead)	<u>Primula japonica</u> (Japanese Primrose)
<u>Cimicifuga</u> (Bugbane)	<u>Primula pulverulenta</u> (Silverdust Primrose)
<u>Darmera peltata</u> (Umbrella Plant)	<u>Rodgersia</u> (Roger's Flower)
<u>Eupatorium</u> (Joe-Pye Weed)	<u>Symplocarpus foetidus</u> (Skunk-Cabbage)
<u>Filipendula</u> (Meadowsweet)	<u>Thalictrum dasycarpum</u> (Tall Meadow Rue)
<u>Epimedium</u> (Barrenwort)	<u>Thelypteris palustris</u> (Marsh Fern)
<u>Gentiana andrewsii</u> (Closed Gentian)	<u>Tradescantia</u> (Spiderwort)
<u>Hosta</u> (Hosta)	<u>Trollius</u> (Globeflower)
<u>Ligularia</u> (Golden Ray)	<u>Viola oblique</u> (Marsh Blue Violet)
<u>Lobelia cardinalis</u> (Cardinal Flower) and its hybrids	<u>Woodwardia</u> (Chain Fern)
<u>Lobelia siphilitica</u> (Great Blue Lobelia)	
<u>Lysichiton</u> (Yellow Skunk-Cabbage)	
<u>Lysimachia</u> (Loosestrife)	
<u>Matteuccia struthiopteris</u> (Ostrich Fern)	
<u>Myosotis palustris</u> (True Forget-Me-Not)	

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Table 7. Perennials tolerant of wet sunny sites*.

<u>Acorus</u> (Sweet Flag)	<u>Lysichiton</u> (Yellow Skunk-Cabbage)
<u>Andropogon gerardi</u> (Big Bluestem)	<u>Lysimachia</u> (Loosestrife)
<u>Angelica atropurpurea</u> (Angelica)	<u>Mimulus ringens</u> (Monkey Flower)
<u>Aruncus dioicus</u> (Sylvan Goatsbeard)	<u>Miscanthus</u> (Maiden Grass) – numerous cultivars
<u>Asclepias incarnata</u> (Swamp Milkweed)	<u>Monarda</u> (Bee Balm)
<u>Aster novae-angliae</u> (New England Aster)	<u>Myosotis palustris</u> (True Forget-Me-Not)
<u>Aster puniceus</u> (Swamp Aster)	<u>Panicum virgatum</u> (Switch Grass)
<u>Aster umbellatus</u> (Flat Top Aster)	<u>Persicaria</u> (Fleece Flower)
<u>Astrantia</u> (Masterwort)	<u>Petasites</u> (Butterbur)
<u>Baptisia leucantha</u> (White False Indigo)	<u>Phalaris arundinacea</u> (Ribbon Grass) and cultivars
<u>Cacalia atriplicifolia</u> (Pale Indian Plantain)	<u>Physostegia</u> (False Dragonhead)
<u>Calamagrostis canadensis</u> (Blue Joint Grass)	<u>Pontederia cordata</u> (Pickerel Weed)
<u>Calla palustris</u> (Wild Calla)	<u>Potentilla palustris</u> (Marsh Cinquefoil)
<u>Caltha palustris</u> (Marsh Marigold)	<u>Pycnanthemum virginianum</u> (Mountain Mint)
<u>Campanula glomerata</u> (Clustered Bellflower)	<u>Ranunculus acris</u> (Common Buttercup)
<u>Carex hystericina</u> (Porcupine Sedge)	<u>Ratibida pinnata</u> (Yellow Coneflower)
<u>Carex lacustris</u> (Lake Sedge)	<u>Rudbeckia laciniata</u> (Cutleaf Coneflower)
<u>Carex muskingumensis</u> (Palm Sedge)	<u>Rudbeckia subtomentosa</u> (Sweet Black-Eyed Susan)
<u>Carex nigra</u> (Black-Flowering Sedge)	<u>Sagittaria</u> (Arrowhead)
<u>Carex vulpinoides</u> (Fox Sedge)	<u>Sanguisorba canadensis</u> (Canadian Burnet)
<u>Chelone</u> (Turtlehead)	<u>Scutellaria</u> (Skullcap)
<u>Cimicifuga</u> (Bugbane)	<u>Senecio aureus</u> (Golden Ragwort)
<u>Coreopsis tripteris</u> (Tall Coreopsis)	<u>Senna hebecarpa</u> (Wild Senna)
<u>Darmera peltata</u> (Umbrella Plant)	<u>Silphium integrifolium</u> (Rosinweed)
<u>Eupatorium maculatum</u> (Joe-Pye Weed)	<u>Silphium perfoliatum</u> (Cupplant)
<u>Eupatorium perfoliatum</u> (Boneset)	<u>Silphium terebinthinaceum</u> (Prairie Dock)
<u>Filipendula</u> (Meadowsweet)	<u>Solidago ohioensis</u> (Ohio Goldenrod)
<u>Gentiana andrewsii</u> (Closed Gentian)	<u>Solidago patula</u> (Swamp Goldenrod)
<u>Glyceria maxima</u> ‘Variegata’ (Variegated Manna Grass)	<u>Solidago riddellii</u> (Riddell’s Goldenrod)
<u>Helenium</u> (Helen’s Flower)	<u>Spartina pectinata</u> (Prairie Cord Grass)
<u>Helianthus grosseserratus</u> (Sawtooth Sunflower)	<u>Symplocarpus foetidus</u> (Skunk Cabbage)
<u>Heliopsis helianthoides</u> (Oxeye)	<u>Telekia speciosa</u> (Scented Oxeye)
<u>Hibiscus</u> (Rose Mallow)	<u>Thalictrum dasycarpum</u> (Tall Meadow Rue)
<u>Houttuynia cordata</u> ‘Chameleon’ (Korean Houttuynia)	<u>Tradescantia</u> (Spiderwort)
<u>Iris laevigata</u> (Rabbit-Ear Iris)	<u>Trollius</u> (Globe Flower)
<u>Iris</u> (Louisiana Iris hybrids)	<u>Valeriana officinalis</u> (Garden Heliotrope)
<u>Iris pseudacorus</u> (Yellow Flag)	<u>Veratrum</u> (False Hellebore)
<u>Iris shrevei</u> (Wild Iris)	<u>Verbena hastata</u> (Blue Vervain)
<u>Iris versicolor</u> (Blue Flag)	<u>Vernonia</u> (Ironweed)
<u>Liatris spicata</u> (Spike Gayfeather)	<u>Veronicastrum</u> (Culver’s Root)
<u>Lilium superbum</u> (Turk’s Cap Lily)	<u>Viola obliqua</u> (Marsh Blue Violet)
<u>Lobelia cardinalis</u> (Cardinal Flower) and its hybrids	<u>Zizia aurea</u> (Golden Alexander)
<u>Lobelia siphilitica</u> (Great Blue Lobelia)	

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Table 8. Perennials with exceptional foliage qualities*.

Achillea ‘Anthea’ USPP 8828, ‘Moonshine’ & ‘Schwellenburg’ (Yarrow) – fine-textured silver foliage.
Acorus (Sweet Flag) – green or variegated linear foliage.
Actaea (Baneberry) – handsome finely dissected foliage.
Ajuga (Bugleweed) – various colors.
Alchemilla (Lady’s Mantle) – green hairy leaves.
Allium senescens ‘Glaucum’ (Ornamental Onion) – twisted gray-green foliage.
Allium tanguticum ‘Summer Beauty’ (Ornamental Onion) – shiny, stiff green foliage.
Amsonia (Blue Star) – willow-like green foliage.
Angelica gigas (Angelica) – bold, architectural, green foliage.
Armeria maritime (Sea Pink) – grass-like green foliage.
Aruncus europaeus (European Ginger) – glossy evergreen foliage.
Arrhenatherum elatius ‘Variegatum’ (Variegated Bulbous Oat Grass) – variegated foliage.
Artemisia (Wormwood) – silver foliage of various textures.
Aruncus dioicus (Sylvan Goatsbeard) – handsome foliage reminiscent of False Spirea.
Aruncus aethusifolius (Dwarf Goatsbeard) – fine-textured green foliage.
Aster lateriflorus ‘Horizontalis,’ ‘Lady in Black,’ and ‘Prince’ (Calico Aster) – purplish foliage.
Astilbe (False Spirea) – fine-textured green foliage.
Athyrium ‘Branford Beauty’ and ‘Branford Rambler’ (Hybrid Fern) – mottled gray-green fronds exhibiting reddish tones.
Athyrium ‘Ghost’ (Hybrid Fern) – silvery white fronds.
Athyrium niponicum ‘Pictum’ (Japanese Painted Fern) – mottled gray-green fronds.
Bergenia (Bergenia) – bold evergreen foliage.
Brunnera macrophylla (False Forget-Me-Not) – dark green heart-shaped leaves.
Brunnera macrophylla ‘Jack Frost’ USPPAF, ‘Langtrees,’ ‘Hadspen Cream,’ and ‘Variegata’ (Variegated False Forget-Me-Not) – variegated foliage.
Calamagrostis x acutifolia ‘Overdam’ (Variegated Feather Reed Grass) – variegated linear foliage.
Carex (Sedge) – linear foliage of various colors.
Chelone (Turtlehead) – dark green, distinctly veined leaves.
Cimicifuga ramosa ‘Atropurpurea,’ ‘Brunette,’ and ‘Hillside Black Beauty’ USPP 9988 (Bugbane) – purplish foliage.
Clematis recta ‘Purpurea’ (Ground Clematis) – purplish foliage.
Corydalis (Fumewort) – finely divided fern-like foliage.
Darmera peltata (Umbrella Plant) – bold green foliage.
Dianthus (Pinks) – a number of types have glaucous blue foliage.
Epimedium (Barrenwort) – attractive, glossy green leaves.
Eryngium (Sea Holly) – architectural green foliage.
Eupatorium fistulosum and E. maculatum (Joe-Pye Weed) – dark green rugose leaves.
Eupatorium rugosum ‘Chocolate’ (White Snakeroot) – chocolate-brown foliage.
Euphorbia dulcis ‘Chameleon’ (Purple Spurge) – foliage emerges gray-purple and matures to deep purple.
Euphorbia polychroma (Cushion Spurge) – neat mound of green foliage.
Ferns – fine-textured foliage in various shades of green.
Festuca glauca ‘Elijah Blue’ (Sheep Fescue) – grassy blue foliage.
Filipendula ulmaria ‘Aurea’ (Golden Queen-of-the-Meadow) – golden foliage.
Filipendula ulmaria ‘Variegata’ (Variegated Queen-of-the-Meadow) – variegated foliage.
Filipendula vulgaris ‘Plena’ (Double Dropwort) – fine-textured green foliage.
Galium odoratum (Sweet Woodruff) – fine-textured green foliage.
Geranium (Cranesbill) – palmate-shaped green leaves.
Gillenia trifoliata (Bowman’s Root) – narrow, prominently veined, dark green foliage.

Table 8 (Continued). Perennials with exceptional foliage qualities*.

Hakonechloa macra ‘Aureola’ (Variegated Japanese Forest Grass) – variegated foliage.
Helianthus salicifolius (Willow Leaf Sunflower) – narrow, green, willow-like leaves.
Helictotrichon sempervirens (Blue Oat Grass) – blue foliage.
Helleborus (Hellebore) – leathery green foliage.
Heuchera (Coral Bells) – handsome foliage of various colors.
Hibiscus ‘Kopper King’ USPP 10793 (Rose Mallow) – copper-red leaves with orange-red undersides.
Hosta (Hosta) – bold foliage of various colors.
Iberis (Edging Candytuft) – glossy evergreen foliage.
Iris pallida ‘Argentea Variegata’ (Sweet Iris) – linear foliage striped white
Iris pseudacorus ‘Variegata’ (Variegated Yellow Flag) – yellow variegated foliage in spring
Iris (Siberian Hybrids) – linear green foliage.
Kirengeshoma palmate (Yellow Waxbells) – green maple-like foliage.
Lamiastrum galeobdolon ‘Herman’s Pride’ (Yellow Archangel) – variegated foliage.
Lamium (Spotted Dead Nettle) – silver variegated or golden foliage.
Leymus arenarius ‘Blue Dune’ and ‘Glaucus’ (Blue Lyme Grass) – metallic blue foliage.
Ligularia (Golden Ray) – bold green or purplish foliage.
Lilium (Martagon Lilies) – whorled green leaves.
Luzula nivea (Snowy Woodrush) – linear green foliage.
Lychnis coronaria (Rose Campion) – silver foliage.
Lysimachia ciliata ‘Purpurea’ (Fringed Loosestrife) – chocolate purple foliage.
Lysimachia nummularia ‘Aurea’ (Golden Moneywort) – golden foliage.
Lysimachia punctata ‘Alexander’ USPP 10598 (Variegated Yellow Loosestrife) – variegated foliage.
Macleaya (Plume Poppy) – grayish green lobed leaves.
Miscanthus (Maiden Grass) – linear foliage of various colors.
Molinia caerulea ‘Variegata’ (Variegated Moor Grass) – variegated foliage.
Oenothera fruticosa ‘Sonnenwende’ (Common Sundrops) – dark red foliage early in the season.
Pachysandra procumbens (Alleghany Spurge) – silvery mottled leaves
Paeonia (Peony) – handsome green leaves.
Panicum virgatum ‘Cloud Nine,’ ‘Dallas Blue’ USPP 11202, ‘Heavy Metal,’ and ‘Prairie Sky’ (Switch Grass) – blue foliage.
Patrinia scabiosifolia (Golden Lace) – bold, divided, green leaves.
Penstemon digitalis ‘Husker Red’ (Foxglove Beard-Tongue) – reddish purple foliage.
Perovskia (Russian Sage) – fine-textured, silver-gray foliage.
Phalaris arundinacea ‘Feesey’ (Variegated Ribbon Grass) – variegated foliage.
Phlox divaricata ‘Chattahoochee’ (Woodland Phlox) – shiny, dark green foliage.
Phlox ‘Becky Towe’ USPPAF, ‘Crème de Menthe,’ ‘Darwin’s Joyce,’ and ‘Norah Leigh’ (Summer Phlox – Paniculata Group) – variegated foliage.
Phlox glaberrima (Smooth Phlox) – shiny, deep green foliage.
Phlox x procumbens ‘Variegata’ (Trailing Phlox) – variegated foliage.
Phlox stolonifera (Creeping Phlox) – glossy evergreen foliage.
Physostegia virginiana ‘Variegata’ (Variegated False Dragonhead) – variegated foliage.
Platycodon grandiflorus (Balloon Flower) – attractive gray-green leaves.
Polemonium (Jacob’s Ladder) – fine-textured green foliage.
Polemonium caeruleum ‘Brise d’Anjou’ USPP 9781 (Variegated Jacob’s Ladder) – variegated foliage.
Polygonatum falcatum ‘Variegatum’ (Variegated Solomon’s Seal) – variegated foliage.
Polygonatum humile (Dwarf Solomon’s Seal) – small, oval-shaped, green leaves.
Pulmonaria (Lungwort) – mottled to silver foliage.
Rheum palmatum (Chinese Rhubarb) – bold green to purple-red foliage.

Table 8 (Continued). Perennials with Exceptional Foliage Qualities*.

Rodgersia (Roger's-Flower) – bold green foliage.
Rudbeckia maxima (Great Coneflower) – bold, bluish gray foliage.
Sanguisorba (Burnet) – fine-textured green foliage.
Sedum caucicola 'Lidakense' (Stonecrop) – small, rounded leaves tinged purple.
Sedum 'Frosty Morn' (Stonecrop) – variegated foliage.
Sedum 'Matrona' (Stonecrop) – gray-green foliage shaded maroon.
Sedum 'Arthur Branch' – and 'Mohrchen' (Stonecrop) – burgundy foliage.
Sedum sieboldii 'Mediovariegatum' (October Daphne) – variegated foliage.
Sedum 'Vera Jameson' (Stonecrop) – glaucous purple foliage.
Smilacina (False Solomon's Seal) – satiny green leaves.
Sorghastrum nutans 'Sioux Blue' (Indian Grass) – bright blue-gray foliage.
Spartina pectinata 'Aureomarginata' (Variegated Prairie Cord Grass) – variegated foliage.
Sporobolus heterolepis (Prairie Dropseed) – narrow, fine-textured foliage.
Stachys byzantina (Lamb's Ear) – silver foliage.
Stylophorum (Celandine Poppy) – handsome, green, lobed leaves.
Tanacetum corymbosum (Caucasian Daisy) – fine-textured green foliage.
Thalictrum (Meadow Rue) – fine-textured, blue-green foliage.
Tiarella (Foamflower) – deep green leaves of various shapes.
Verbascum (Mullein) – soft hair foliage.
Veronica spicata ssp. *incana* (Spike Speedwell) – silver foliage.
Veronica 'Waterperry' (Speedwell) – shiny green leaves with bronze tones.
Veronicastrum (Culver's Root) – architectural green foliage.
Viola labradorica (Labrador Violet) – small, heart-shaped leaves with purplish tones.
Yucca (Adam's Needle) – linear green or variegated foliage.

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Table 9. Perennials with long periods of bloom*.

Achillea ‘Anthea’ (Yarrow)
Achillea millefolium hybrids (Yarrow)
Achillea ‘Moonshine’ (Yarrow)
Achillea ‘Schwellenburg’ (Yarrow)
Agastache (Anise Hyssop) – tender
Allium (Ornamental Onion)
Anthemis (Golden Marguerite)
Aster x frikartii (Frikart’s Aster)
Asteromoea (Ghengis Kahn Aster)
Astrantia (Masterwort)
Boltonia asteroides (Thousand Flower Aster)
Brunnera macrophylla (False Forget-Me-Not)
Buddleia (Butterfly Bush) – tender
Calamintha (Calamint)
Campanula ‘Birch Hybrid’ (Hybrid Bellflower)
Campanula carpatica (Carpathian Bellflower)
Caryopteris (Blue Mist Spirea) – tender
Centranthus ruber (Red Valerian)
Chrysogonum (Golden Star)
Coreopsis grandiflora (Large-Flowered Tickseed)
Coreopsis lanceolata (Lance-Leaved Tickseed)
Coreopsis ‘Moonbeam’ (Tickseed)
Corydalis lutea (Yellow Fumewort)
Dendranthema ‘Clara Curtis’ (Hardy Garden Mum – Rubellum Group)
Dicentra eximia and D. formosa hybrids (Bleeding Heart)
Echinacea purpurea (Purple Coneflower)
Echinops (Globe Thistle)
Eupatorium (Joe-Pye Weed)
Euphorbia polychrome (Cushion Spurge)
Fragaria ‘Lipstick’ (Ornamental Strawberry)
Gaillardia (Blanket Flower)
Gaura (Wand Flower)
Geranium cinereum (Grayleaf Cranesbill)
Geranium sanguineum (Bloody Cranesbill) – ‘Alpenglow’, ‘New Hampshire Purple’, ‘Max Frei’ and ‘Striatum’-
Goniolimon tataricum (German Statice)
Helenium (Helen’s Flower)
Helianthus (Sunflower)
Heliopsis helianthoides (Oxeye)
Helleborus (Hellebore)
Hemerocallis (Daylily) – ‘Happy Returns’, ‘Mini Stella’, ‘Pardon Me’, and ‘Stella de Oro’
Heterotheca (Hairy Golden Aster)
Heucherella alba (Foamy Bells)
Inula ensifolia (Sun Ray Flower)
Kalimeris incisa (Orphanage Plant)
Knautia macedonica (Crimson Pincushion)
Lamium maculatum (Spotted Dead Nettle)
Lavandula (Lavender)

Table 9 (Continued). Perennials with long periods of bloom*.

Leucanthemum (Shasta Daisy)
Linum perenne (Blue Flax)
Malva alcea ‘Fastigiata’ (Hollyhock Mallow)
Myosotis palustris (Forget-Me-Not)
Nepeta (Catmint)
Origanum (Ornamental Oregano)
Patrinia scabiosifolia (Golden Lace)
Perovskia (Russian Sage)
Persicaria amplexicaulis (Mountain Fleece) – tender
Persicaria affinis (Himalayan Fleece Flower)
Petrorhagia (Tunic Flower)
Phlox (Summer Phlox – Paniculata Group) ‘David’, ‘Franz Schubert’, ‘Laura’, ‘Sandra’, and ‘World Peace’
Physostegia virginiana (False Dragonhead)
Platycodon grandiflorus (Balloon Flower)
Ratibida pinnata (Yellow Coneflower)
Rudbeckia fulgida (Orange Coneflower)
Rudbeckia lacinata (Cutleaf Coneflower)
Salvia nemerosa (Hybrid Sage)
Salvia verticillata (Lilac Sage)
Scabiosa columbaria ‘Butterfly Blue’ and ‘Pink Mist’ USPP #8957 (Pincushion Flower)
Sedum (Stonecrop)
Solidaster (Hybrid Goldenrod)
Stylophorum (Celandine Poppy)
Thalictrum delavayi ‘Hewitt’s Double’ (Yunnan Meadow Rue)
Tradescantia (Spiderwort)
Tricyrtis (Toad Lily)
Veronica ‘Giles vanHees’ (Speedwell)
Veronica spicata ‘Goodness Grows’ and ‘Icicle’ (Spike Speedwell)
Veronica longifolia (Longleaf Speedwell)
Veronica ‘Sunny Border Blue’ (Speedwell)
Veronica ‘Waterperry’ (Speedwell)
Viola obliqua ‘Purple Showers’ (Marsh Blue Violet)

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Table 10. Perennials for cut flowers.

Achillea (Yarrow)
Astilbe (False Spirea)
Chrysanthemum (Garden Mum)
Delphinium (Larkspur)
Heuchera (Coral Bells)
Iris (Iris)
Leucanthemum (Shasta Daisy)
Liatris (Blazingstar)
Lilium (Lily)
Paeonia (Peony)

Table 11. Tall perennials for background plants.

Amsonia (Willow Amsonia)
Baptisia (False Indigo)
Cimicifuga (Snakeroot, Bugbane)
Delphinium (Larkspur)
Helianthus (Perennial Sunflower)
Heliopsis (Oxeye)
Paeonia (Peony)
Phlox (Phlox)
Veronica (Speedwell)
