
GROUND COVERS

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A ground cover can be defined as any material that covers the soil surface. A good landscape definition of a ground cover is: "A living, perennial growing plant that spreads by rhizomes or underground stems, stolons, offsets, or rooting of branches such as tip layering". A ground cover can be a low growing herbaceous or woody plant. Some definitions include annual plants used to cover a soil surface. The authors consider non-living materials, organic or inorganic, a mulch, not a ground cover.

Uses of Ground Covers

In the landscape, ground covers can provide a transition from woody plants, turf grass, and hardscaping to sidewalks, pathways, and driveways. Aesthetically, they can add color, form, texture, and fragrance to the landscape. Ground covers can be used as a way of dealing with difficult landscape situations, such as steep hills, under shade trees, or areas that may be difficult to mow.

Ground covers should stabilize the soil and prevent erosion by wind and water. A good ground cover can help protect water quality by minimizing runoff. Ground covers also help control or manage weeds. A good ground cover should also be attractive. Almost any uniform plant mass is more attractive than bare soil. Taller ground covers can create masses to balance architectural structures. The color or texture of some ground covers can create complements or contrasts to architectural features. Other than turf grass, most ground covers will not tolerate foot traffic and are best planted in areas with infrequent or no foot traffic.

Ideally, a ground cover minimizes maintenance. However, some ground covers are the most maintenance intensive part of the landscape. The amount of maintenance required will be dependent on how well suited the ground cover is for the site. The lower the ground cover, the more maintenance intensive it is likely to be, especially in sunny locations, but maintenance requirements are likely to be reduced once the ground cover is established. Taller ground covers on slopes can reduce maintenance when compared to maintaining a lawn. Taller ground covers can help control or direct both vehicular and pedestrian traffic. They can also create wind protection and provide screening.

Plant Selection

One of the most common ground cover choices for many areas is turf grass. There are few ground covers that can be mechanically maintained and that are as tolerant to foot traffic. Few ground covers stabilize the soil as well as turf. It is quick to become established at reasonable costs and creates an attractive landscape setting. However, grass as a ground cover is not without problems. Grass is usually a monoculture, which can make correction of problems more difficult. A turf grass cover produces little height to balance architectural masses, and there is little variation in color and texture. Some grasses are intolerant of shade and those that tolerate shade are not of the same quality as those grown in the sun. Some areas are too small or isolated to be mowed without difficulty.

Ground covers come in many forms and sizes, from those that are low and ground hugging, to woody plants that can easily reach three feet and taller in height. Factors to consider when choosing a ground cover include the ultimate spread and height of the plant, the foliage texture and color, flowers if any, hardiness, soil conditions, and light, including the winter sun. Most broadleaf evergreen materials will need protection from the winter sun. Semi-hardy woody plants require considerable pruning. Moisture is of primary importance. Some ground covers will tolerate dry sites. Very few ground covers will tolerate sites that are poorly drained. Some ground covers have specific pH requirements, but most are not pH specific. Grasses are the main weed problem when growing ground covers in sunny areas, therefore ground covers for sunny areas must either be tall enough or dense enough to out-compete the grasses. For this reason, it is often easier to grow ground covers in shady areas where weed competition is reduced.

The best ground covers for slopes have suckering roots or stems that readily root upon contact with the soil. This is important to stabilize the soil and for quick and full establishment of the ground cover.

Ground covers should be aggressive enough to compete and quickly fill in an area, yet they should be controllable. However, some aggressive ground covers are difficult to control. Considerable thought should be given before some of the invasive ground covers that spread by rhizomes or seed are introduced into any area. Use hardscaping elements to effectively control 'aggressive' ground covers by keeping them confined to areas bordered by sidewalks, driveways,

buildings, and walls. However, not all ground covers are aggressive spreaders. Consider mounding types, such as Hosta or Hemerocallis, which do not send out runners, but do create a ground cover effect by growing larger and wider each year.

Information about the plant's habit will be helpful in plant selection for ground cover purposes. For example, the cultivar of birdsfoot trefoil 'Emerald' tends to be horizontal in habit while the normal types tend to be upright. Also, wild strawberries normally reproduce by runners, whereas the French type strawberry is runnerless. Within the genus Geranium, most G. sanguineum cultivars create a mound in habit, while the species G. macrorrhizum tends to be more spreading.

A ground cover should be long lived. Some plants used as ground covers tend to die out in the center, which opens areas for weeds to become established. Ground covers should also be attractive for as long a period as possible. Some have attractive bloom, good foliage through the growing season, as well as good fall color. Ground covers that are evergreen add winter interest provided they are hardy. Others such as fleece flower have brown winter foliage, and P.G. hydrangea have brown flower panicles during the winter.

Unfortunately, some good ground covers may be difficult to obtain. This may be reflected in the price of the plants, but price is less of a consideration if the area to be planted is small. Presently, the more specialized nurseries have been propagating a wider selection of plant material thereby increasing the availability of ground covers to the consumer. Many ground covers are propagated by softwood cuttings, seed, or division. Growers are providing garden centers with ground covers in sizes ranging from small cell-packs, to large three-inch containers and even some plants in #1 containers. Woody plants used as ground covers are sold in many larger container sizes. Various uses of ground covers are listed in Table 1. Tables 2 and 3 describe many attributes of several functional ground covers. For detailed information on additional woody ground covers, see the Chapter on Woody Trees, Shrubs and Vines

Culture

Ground covers should be relatively free of disease problems. For example, specific cultivars of junipers can vary in their susceptibility to juniper blight. Healthy and actively growing plants are ideal selections, whereas stressed plants and root bound plants are slow to get started.

Success with ground covers is often dependent on proper site preparation, as soil preparation is the most

important step in establishing a successful ground cover. This can be a difficult task. For example, berms constructed of heavy clay, worked when too wet by heavy equipment, are almost impossible to prepare properly. When replacing soil on a scalped site, care should be taken to prevent the creation of soil texture layers. Root movement is often impeded by these layers. It is desirable to incorporate the different soil layers by tilling as deep as possible. It is also desirable to incorporate phosphorus in the upper 12-18 inches of soil, as this promotes root development. Additional fertilizer should be added based on the results of a soil test. The top six to eight inches of soil should be tilled again just prior to planting.

If the area is infested with perennial weeds, especially grassy weeds such as quack grass, they should be killed with an herbicide, such as Glyphosate, before any soil preparation begins. Competition must be suppressed to allow the plants to become established. This can be accomplished by hand weeding, the use of mulches, herbicides, or a combination of weed control methods. Weed seedlings may also be controlled by the use of pre-emergent herbicides in certain ground covers.

Spacing of plants depends on the mature size and the vigor of the species. Petite ground covers for small areas might be planted as close as six inches apart. Many perennials can be planted 18-24 inches or more apart. Some woody materials are planted three to five feet apart, or even further apart if they sucker prolifically such as sumac.

The best time to plant ground covers is in the spring, when the soil is moist and when temperatures are still cool. They can be planted throughout the growing season, but ideally, the more time they have to establish a good root system before winter, the better they will survive the winter. If planting is done late in the season, consider mulching for winter protection.

Newly planted materials are often in need of more frequent watering and a constant vigilance is required to watch for any insect problems such as aphids and spider mites which are usually a problem on materials stressed by recent transplanting. Mulching newly planted ground covers with an organic mulch such as wood chips, bark, or cocoa bean shells can aid in moisture and weed control.

Ground covers are not synonymous with no or low maintenance. By carefully selecting the plant material, with proper site preparation and with appropriate establishment care, ground covers can be a valuable asset to the landscape.

Table 1. Hardy ground covers for a variety of specific uses.

A.	Tall ground covers with suckering roots.			
	Korean Barberry	Buffalo berry	Some Lilacs	P. G. Hydrangea
	Grey Dogwood	Some Peashrubs	Fleece Flower	Smooth or Staghorn Sumac
B.	Tall ground covers without suckering roots.			
	Redtwig Dogwood	Black Chokeberry	Hedge Cotoneaster	Forsythia
C.	Low woody ground covers.			
	Arnold Dwarf Forsythia	Coralberry	Abeliophyllum	Snowberry
	Emerald Mound Honeysuckle	Sweetfern	Bush Honeysuckle	
D.	Evergreen ground covers.			
	Pachysandra	Periwinkle	Spreading Yews	Bearberry
	Pachistima	Many Junipers	Many Thymes	Wineleaf Potentilla
	Winter Creeper Euonymus (borderline hardiness)			
E.	Vines useful as ground covers.			
	American Bittersweet	Virgin's Bower	English Ivy	Perennial Sweet Pea
	Monk's Hood Vine	Boston Ivy	Virginia Creeper	Canada Moonseed
	Common Trumpet Creeper	Some <u>Rubus</u>		
F.	Aggressive ground covers.			
	Sumac	Goutweed	Fleece Flower	Some Coarse Landscape Grasses
G.	Ground covers for shade.			
	Wild Ginger	Jacob's Ladder	Lily-of-the-Valley	Lamiastrum
	Violet	Bellworts	Bugleweed	Foamflower
	Hosta	Lamium	Barrenwort	May Apples
	Ligularia	European Wild Ginger		
H.	Ground covers for rough sites.			
	Some Daylilies	Sumac	Crown Vetch	Bird's Foot Trefoil
I.	Ground covers for dry sites.			
	Many Junipers	Sumac	Barren Strawberry	Peashrub
	Wineleaf Potentilla	Sweetfern	Sedum	
J.	Flowering ground covers.			
	Daylilies	Lamium	Hosta	Jacob's Ladder
	Sedum		Lamb's Ear	Aguga
K.	Ground covers for poorly drained sites.			
	Hosta	Sweet Flag	Iris	

Table 2. Characteristics for various herbaceous ground covers.

Botanical Name	Common Name	Type	Sun	Part Sun	Shade	Height	Habit	Flower	Foliage	Site Preference	Method of Propagation	Notes
<i>Aegopodium podagraria</i> 'Variegata'	Snow on the Mountain	herbaceous	x	x	x	10-12"	creeping	white, insignificant	Variegated green and white	good or poor soil	vegetative	can be invasive
<i>Armeria</i>	Sea Pink, Thrift	herbaceous	x	x		8-12"	tuft-forming	pink, white, mid-spring	green	salt tolerant	seed	evergreen foliage
<i>Ajuga reptans</i>	Common Bugleweed	herbaceous	x	x	x	4-10"	spreading	purplish, blue, spike	green, variegated	well-drained, sandy	vegetative	prefer acidic soils
<i>Artemisia</i> 'Silver Brocade'	Artemisia	herbaceous	x			4-6"	spreading	white	silver/grey	poor, dry soil tolerant	vegetative	
<i>Asarum canadensis</i>	Canadian Ginger	herbaceous		x	x	6-12"	creeping	insignificant	green	rich, acidic soil	vegetative, seed	
<i>Asarum europaeus</i>	European Ginger	herbaceous		x	x	6-12"	clump	insignificant	shiny green	rich, acidic soil	vegetative/seed	
<i>Cerastium</i>	Snow-In-Summer	herbaceous	x			3-6"	mat forming	white	grey green	well-drained	seed	prefers low fertility
<i>Convallaria maialis</i>	Lily-of-the-Valley	herbaceous		x	x	6-8"	spreading	white	bright green	poor soil tolerant	pips	
<i>Coronilla varia</i>	Crown Vetch	herbaceous	x	x		18-24"	spreading	white	green	well-drained	seed	can be aggressive
<i>Dianthus</i> 'Bath's Pink'		herbaceous	x			6-8"	spreading	pink	green and blue	well-drained	vegetative	no tolerance for drought
<i>Epimedium</i>	Barrenwort	herbaceous				12-18"	slowly spreading	white, yellow, rose	green with red tinges	well-drained rich loamy soil	divisions	
<i>Euonymus coloratus</i>	Purple Wintercreeper	herbaceous	x	x	x	8"	spreading	insignificant	green	tolerant of most soils	vegetative	evergreen, marginal in zone 4
<i>Euonymus fortunei</i> 'Variegata'	Variegated Wintercreeper	herbaceous	x	x	x	6-8"	spreading	insignificant	Variegated green and white	tolerant of most soils	vegetative	
<i>Galium odoratum</i>	Sweet Woodruff	herbaceous		x	x	6"	spreading	white	green	acidic, loamy well-drained soil	seed	
<i>Geranium macrorrhizum</i>	Bigroot Geranium	herbaceous	x	x		12-18"	spreading	white, pink, magenta	green, pungent	well-drained	vegetative	drought tolerant
<i>Geranium sanguineum</i>	Bloodred Geranium	herbaceous	x	x		6-12"	clump	red, white, pink	green	well-drained	vegetative	
<i>Gypsophila repens</i>	Creeping Baby's Breath	herbaceous	x	x		6"	creeping	white to lilac	grey-green	gravelly, well drained	vegetative	tolerates acidic soils
<i>Hemerocallis fulva</i>	Tawny Daylily	herbaceous	x	x		2'	clump	orange	green	well-drained soils	divisions	rapid spreader
<i>Hosta</i>	Hosta, Funkia, Plantain Lily	herbaceous	x	x	x	6-48"	clump	lavender white	variegated yellow	rich, moist, well-drained soils	divisions, TC	thousands of cultivars to choose from
<i>Houttuynia cordata</i>	Chameleon Plant	herbaceous	x	x		12-15"	spreading	yellow, tiny	variegated, green, white and --	moist soil tolerant	vegetative	can be aggressive
<i>Ilex sempervirens</i>	Candytuft	herbaceous	x			6-12"	clump	white	grey green	well drained	seed	
<i>Lamium galeobdolon</i> 'Variegatum'	Yellow Archangel	herbaceous		x	x	12"	clump	yellow	silver green	rich, loamy, acidic	vegetative	

Table 2 (Continued). Characteristics for various herbaceous ground covers.

Botanical Name	Common Name	Type	Sun	Partial Sun	Shade	Height	Habit	Flower	Foliage	Site Preference	Method of Propagation	Notes
<u>Lamium g. 'Hermans Pride'</u>	Yellow Archangel	herbaceous		x	x	12"	spreading	yellow	green, variegated	rich, loamy, acidic	vegetative	
<u>Lamium maculatum</u>	Spotted Dead Nettle	herbaceous	x		x	8-10"	spreading	white, pink	green to silver	well-drained	vegetative	Beacon Silver, 'White Nancy', 'Pink Pewter'
<u>Lysimachia nummularia</u>	Moneywort, Creeping Jenny	herbaceous	x			1-3"	spreading	yellow	green	requires moist, well-drained soil	vegetative	
<u>Lysimachia n. 'Aurea'</u>	Golden Moneywort	herbaceous	x			1-3"	spreading	yellow	chartreuse yellow	requires moist, well-drained soil	vegetative	
<u>Myosotis alpestris</u>	Forget-me-Not	herbaceous	x			4-12"	spreading	blue, white	green	moist, well-drained	seed	can self sow readily
<u>Nepeta 'Walkers Low'</u>	Catmint	herbaceous	x			18-24"	clump	purplish blue	silver green	well drained	vegetative	long bloomer
<u>Pachysandra procumbens</u>	Allegheny Pachysandra	herbaceous		x	x		clump	insignificant	green	loamy, well drained	vegetative	
<u>Pachysandra terminalis</u>	Japanese Spurge	herbaceous	x		x	6-8"	slowly spreading	insignificant	green	loamy, well drained	vegetative	
<u>Phlox subulata</u>	Moss or Creeping Phlox	herbaceous	x			6"	spreading	pink, blue, white	green	well-drained, gravelly	vegetative	
<u>Polygonum 'Border Jewel'</u>	Fleeceflower	herbaceous	x			4"	clump	pinkish red	green	moist, well-drained	vegetative	
<u>Polygonum cuspidatum 'Compactum'</u>	Fleeceflower	herbaceous	x			18-35"	spreading, rhizomatous	red	green	good or poor soil	vegetative	drought and heat tolerant
<u>Sedum acre</u>	Golden Carpet Sedum	herbaceous	x			3-6"	spreading	yellow	green	good or poor soil	seed	
<u>Sedum kamschatcicum</u>	Yellow Stonecrop	herbaceous	x			3-4"	spreading	orange-yellow	deep green	good or poor soil	vegetative	
<u>Sedum 'Dragon's Blood'</u>	Dragon's Blood Sedum	herbaceous	x			3-4"	spreading	red	green	good or poor soil	vegetative	
<u>Sempervivum tectorum</u>	Hen and Chicks	herbaceous	x			8-12"	rosette	pink	green, purplish red	well-drained	vegetative	
<u>Stachys lanata</u>	Lamb's Ears	herbaceous	x			4-6"	spreading	undesirable	silver grey	rich, well-drained	seed	
<u>Thymus</u>	Mother of Thyme	herbaceous	x			1-3"	spreading	purplish	green, variegated	tolerates moisture	vegetative	
<u>Tiarella cordifolia</u>	Allegheny Foamflower	herbaceous		x	x	12-18"	spreading	white	green, variegated	moist, well-drained	vegetative, seed	
<u>Veronica p. 'Georgia Blue'</u>	Speedwell	herbaceous	x			12"	spreading	blue	green	evenly moist	vegetative	
<u>Vinca minor</u>	Common Periwinkle	herbaceous	x		x	6"	spreading	blue	green	evenly moist	vegetative	
<u>Vinca minor 'Illumination'</u>	Illumination Periwinkle	herbaceous	x		x	3-6"	spreading	blue	yellow and green	evenly moist	vegetative	patented cultivar

Table 3. Characteristics for various woody ground covers.

Botanical Name	Common Name	Type	Sun	Part Sun	Shade	Height	Habit	Flower	Foliage	Site Preference	Method of Propagation	Notes
<u>Aronia melanocarpa</u>	Black Chokeberry	woody	x	x		up to 5'	shrub	white	Shiny dark green	tolerates most soils	vegetative	prefer acidic soils
<u>Berberis koreana</u>	Korean Barberry	woody	x			up to 6"	shrub	yellow	green	tolerates most soils	vegetative	does sucker
<u>Dierilla lonicera</u>	Dwarf Blue Honeysuckle	woody	x	x		up to 4'	shrub	yellow	green	tolerates most soils	vegetative	rhizomatous, rapidly spreading
<u>Microbiata decussata</u>	Siberian Cypress	conifer	x	x		8"	clump	NA	soft, feathery	well-drained	vegetative	
<u>Rhus aromatica</u>	Fragrant Sumac	woody	x	x		up to 6'	shrub	yellowish	green, good fall color	tolerates most soils	vegetative	cultivar 'Gro-Low'
<u>Rhus glabra</u>	Smooth Sumac	woody	x	x		up to 10'+	shrub	greenish	green, good fall color	tolerates most soils	vegetative	suckers, colonizes
<u>Rhus typhina</u>	Staghorn Sumac	woody	x	x		up to 10'+	shrub	greenish	green, good fall color	tolerates most soils	vegetative	suckers readily
<u>Sorbaria sorbifolia</u>	Ash Leaf Spirea, Ural False	woody	x	x		up to 8'	shrub	white	green, fern-like	tolerates most soils	vegetative	suckers and spreads profusely
<u>Symphoricarpos albus</u>	White Snowberry	woody	x	x		up to 6'	shrub	pink	green	tolerates most soils	vegetative	white berries in autumn