

turf. Occasionally they were dangerous to the user and left unwanted residues. But modern herbicides are a boon to the homeowner and to the turf grower.

Proper choice of herbicides and observance of instruction will help to control most common weeds of turf. The herbicide 2,4-D has been used for 25 years. Earlier, vapors of this chemical readily damaged adjacent desirable plants. However, low volatility forms now available have largely eliminated this problem. Combining some herbicides controls most broadleaved weeds in turf, although the chemicals can damage some trees and shrubs if applied carelessly or at excessive rates. The main concern with the preemergence crabgrass herbicides is overdosage

which can temporarily thin the turf.

Efficient weed control with herbicides reduces the need for nitrogen fertilizer. Prior to the development of effective herbicides, heavy nitrogen application was the only alternative for controlling some serious weeds.

Several turf weeds such as annual bluegrass, sedges, goosegrass, and torpedograss have not responded to the currently useful management practices or herbicides.

For further reading:

U.S. Department of Agriculture, *Better Lawns*. Home and Garden Bulletin 51, Washington, D.C. 20250, 1971.

_____, *Lawn Weed Control With Herbicides*. Home and Garden Bulletin 123, Washington, D.C. 20250, 1971.



ground covers can cure headaches such as problem sites, bare spots

THE BUILDER, in siting your house to your lot, makes deep cuts in the ground to fit house, walks, and driveways to the main road. The exposed soil slowly washes away with each rain . . .

A hard, foot-beaten path through your yard is used as a shortcut by everyone in the neighborhood while that expensive stone and gravel path you put in remains unused . . .

The spreading and upright shrubs you planted near the foundation of your house are finally beginning to grow. But the view from the street is something less than the photo in the garden magazine—the one you blew \$75 at the nursery to duplicate. Your plants look dreadfully haphazard and helterskelter . . .

You're spending a lot of time clipping between the individual trees and shrubs and the grass underneath isn't growing very well, either, because of the dense shade . . .

Blowing your top isn't the solution to these problems. There's a better way.

Try planting ground covers, which include any low growing plants. You can use most vines, prostrate forms of conifers, broad- and narrow-leaf evergreens, and some annual and perennial herbaceous plants.

Low-growing plants can do a lot of things. They can cover bare spots in the yard, prevent soil erosion, regulate foot traffic, and tie together unrelated plants into a composition. In addition, they may serve as a fire-retarding screen in arid regions, filter out dust particles from the air, and hide litter that might blow into your yard.

Ground covers can be used in areas where no other kind of plant or artificial cover can be used. Installed with careful attention to the requirements of plants and site, ground covers can solve such site problems as a steeply

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sloping bank, the inner courtyard of a shopping mall or building, and areas of dense shade.

Once established, ground covers require yearly maintenance at the most to keep them attractive.

The establishment of ground covers always takes a lot of time. Regardless of the site selected for the ground covers, the soil must be modified to support root growth of the plants.

You should make certain that water is available at all times to prevent the soil and the roots from drying out.

And, you'll have to keep the bed clear of weeds until the plants cover the area. You'll find that it's a good idea to keep the growing areas carefully defined, both for the sake of looks and to keep the plants within bounds.

Regardless of what plant you select, you will find that they are all handled very much alike for site, soil preparation, planting procedures, watering and fertilizing, over-winter care, and yearly management.

The site itself should be prepared thoroughly before setting out the plants. Dig the soil at least 6 inches deep.

Spring flowering bulbs were planted in ground cover, Euonymus, for extra color.



Spread 2 to 3 inches of organic material such as peat, well-rotted manure, or leaf mold over the ground and spade it into the soil.

On uneven ground where the entire area cannot be worked, dig individual planting holes. Dig these deep enough so you can backfill partially with soil mixed with organic material before you set out the plants. Use topsoil for the rest of the refill.

You can plant most slopes and banks in ground covers. Low banks 2 to 4 feet high can be planted without any additional preparation, but you should build retaining walls at the foot of steep slopes to reduce the slope and help prevent erosion. Sloping areas are usually dry so you must select plants which will tolerate periodic drought. Large, vigorous plants such as junipers or cotoneasters usually are grown on slopes.

Use a fertilizer on the planting site when you prepare the soil. Spade the fertilizer into the soil. Follow recommendations for fertilizer for your area. Fertilizer needs vary according to soil types and area of the country.

Although you can plant ground covers anytime during the growing season, early spring is the best time in most places. This allows the plants to become well established during a long growing period before winter.

When you plant ground covers, space the plants so they will cover the site as quickly as possible. You may put small plants like bugleweed as close as 4 to 6 inches apart. Set such large plants as juniper or cotoneaster as much as 4 feet apart. Closer planting will cover the ground more rapidly but the cost of additional plants may be prohibitive.

The table shows the area that approximately 100 plants will cover when set at various distances apart. For example, if you set the plants 4 inches apart, 100 plants will cover around 11 square feet.

A well-established ground cover planting usually needs little maintenance. Occasional fertilizing, mulching, weeding, and watering are the main requirements.

**Areas Covered by 100 Plants
at Different Planting Distances**

<i>Planting distance (inches)</i>	<i>Area covered (square feet)</i>
4	11
6	25
8	44
10	70
12	100
18	225
24	400
36	900
48	1,600

Fertilize the plants during winter and again in early spring. To avoid burning the foliage, scatter a pelleted form of commercial fertilizer over the planting when the foliage is dry.

Ground covers are slow in covering bare ground. Consequently, weeds are likely to grow, especially the first year. You can control most weeds with a mulch of wood chips, straw, or other organic refuse. The mulch will also retain moisture in the soil. If weeds break through the mulch, pull them by hand. The selection and uses of mulches are discussed in the chapter that begins on page 241.

Do not dig around the plants. Digging breaks the surface roots and promotes germination of weed seeds.

Do not rely on summer rainfall to keep your ground cover watered. Water on a regular schedule throughout the growing season, particularly during dry weather. Methods to automate watering are discussed on pages 66 and 67.

Allow the water to penetrate deeply into the soil, but do not water so heavily that the soil becomes soggy. Water again when the soil is dry to the touch and the tips of the plants wilt slightly at midday. One inch of water every 10 to 14 days is satisfactory for rapid establishment of the plants. During winter months, water the plants thoroughly when the weather is dry and the temperature above freezing.

In cold climates with no permanent snow cover, plantings in direct sunlight may need protection during the winter months to prevent the thawing out of

plant tissues. Direct sunlight can cause permanent damage. You can protect the plants by laying conifer branches or burlap over the beds. If the plants heave out of the soil in cold weather, push them back immediately. Do not wait until spring.

Ground covers usually need pruning only to remove dead wood and keep the planting in bounds. You can mow some plants that are grown on level ground.

Ground covers will show winter injury just as do other plants. Evergreen plants, for example, suffer considerable damage when the foliage has been windburned following an extremely dry winter. You can shear such plantings or individually prune out damaged branches in early spring.

Plantings of juniper may be so badly winter damaged that soil areas become bare. When this happens, you should replant bare areas rather than wait until the old planting fills in the gaps.

You can reduce winter damage by covering the plants with an anti-transpirant spray. These sprays cut down moisture loss. They are available at garden supply stores. If you spray plants in the fall, they will retain the waterproof cover for most of the winter months. You also should spray plants when you transplant them. How to make cuttings and divide ground cover plants are discussed in the chapter that begins on page 195.

From the list, you can select a ground cover for any hardiness zone, height, and site. It gives the common and Latin name, height at maturity, type of growth, hardiness zones, soil and light requirements, and comments on leaf, flower, or fruit color or other characteristics.

Plants are keyed to the numbered hardiness zones shown on the map inside the front cover of this book. The temperatures shown for each zone are based on average minimum temperatures taken from long-term weather records. Soil type, rainfall, summer temperatures, and daylength also determine whether a plant can thrive in a given location.

Guide to Selecting Groundcovers

Common name	Height (Inches)	Hardiness (Zone)	Type	Soil and light	Comments
Barrenwort <i>Epimedium alpinum</i> ; <i>E. grandiflorum</i> ; <i>E. pinnatum</i>	12	4-8	Woody herb	Tolerates almost any soil	Dense foliage; lasts into winter; white, yellow, lavender flowers
Bearberry <i>Arctostaphylos uvaursi</i>	6-10	2-9	Evergreen shrub	Excellent in stony, sandy, acid soils	Low; hard to transplant; bright red fruit
Bergenia, heartleaf <i>Bergenia cordifolia</i>	12	5-10	Creeping, clumpy perennial; thick root-stocks	Sun or partial shade	Pink flowers; thick, heavy foliage
Broom <i>Genista pilosa</i> ; <i>G. sagittalis</i>	6-12	5-9	Deciduous shrub	Well-drained soil; sun	Flowers are pea shaped
Bugleweed <i>Ajuga reptans</i>	4-8	5-9	Perennial herb	Tolerates most soils	Densely packed plants; blue-purple flowers; rapid grower
Capeweed <i>Phyla nodiflora</i>	2-4	9-10	Creeping perennial herb	Sand and waste areas	Low-growing; spreads rapidly; cut like grass; light pink flowers
Coralberry <i>Symphoricarpos orbiculatus</i>	to 36	3-9	Deciduous shrub	Thrives in poor soils	Rapid growth by underground stems; requires yearly pruning
Cotoneaster <i>Cotoneaster adpressa</i>	6-30	5-10	Semi-evergreen herb	Full sun, reseed	Stems will layer subject to fire blight
<i>C. apiculata</i>	5-9				
<i>C. dammeri</i>	6-10				
<i>C. horizontalis</i>	7-10				
<i>C. microphylla</i>	5-9				
Cowberry <i>Vaccinium vitis-idaea</i>	to 12	5-9	Small evergreen shrub	Acid soil	Small pink flowers, dark-red berries
Creeping lilyturf <i>Liriope spicata</i>	to 12	5-10	Matted herb	Extreme heat, dry soil, stands salt spray	Dense mat, dark green leaves, purple flowers
Creeping lippia <i>Phyla nodiflora</i> var. <i>canescens</i>	2-4	5-10	Creeping perennial	Any soil, sun	White, lilac flowers

Guide to Selecting Groundcovers—Continued

Common name	Height (Inches)	Hardiness (Zone)	Type	Soil and light	Comments
Creeping thyme	to 3	5-10	Subshrubby with creeping stems	Tolerates dry soils, sun	Substitute for grass, extremely variable
<i>Thymus serpyllum</i>					
Crownvetch	12-24	3-7	Herb	Dry, steep banks, sun	Small pink flowers
<i>Coronilla varia</i>					
Daylily	18-60	3-10	Root, fleshy and tuberos parts	Sun, dry to boggy soils	Few problems; summer flowers
<i>Hemerocallis</i>					
Dichondra	1-2	9 and 10	Evergreen perennial	Sunny or shady locations	Poor drought resistance; rarely needs clipping; spreads rapidly
<i>Dichondra repens</i>					
Dwarf bamboo		6-10	Low shrub	Sun; sandy soil	Foliage brown in winter; fire hazard; grass substitute
<i>Sasa pumila, S. veitchii, and Shibataea kumasaca</i>					
English ivy	6-8	5-9	Evergreen vine	Sun or shade	Clip leaves to control leaf spots
<i>Hedera helix</i>					
Forsythia species	Trim to 18	5-9	Deciduous shrub	Sun, well-drained soil	Stems root easily; yellow flowers in spring
<i>Forsythia</i> spp.					
Galax	6	5-7	Evergreen, stemless perennial herb	Moist, rich, acid soil, shade	White flowers in spring; leaves turn bronze in fall
<i>Galax aphylla</i>					
Germander	to 10	6-10	Small woody perennial	Sun or partial shade	Winter damage without protection
<i>Teucrium chamaedrys</i>					
Ground-ivy	3	3-9	Trailing perennial	Sun or shade; any soil	Becomes a pest in lawn if not trimmed; forms a low mat
<i>Glechoma hederacea</i>					
Heath	6-12	5-8	Evergreen shrub	Poor, acid soils, sun	Pink, purple, red, white varieties
<i>Erica carnea</i>					
Heather	6-24	4-7	Evergreen shrub	Acid soil, well-drained, low fertility, sun	Shear plants each spring
<i>Calluna vulgaris</i>					
Holly, Japanese	Keep to 24	6-10	Evergreen shrub	Sun or semi-shade	Slow growing; small bank plantings
<i>Ilex crenata</i>					
Hollygrape, dwarf	to 10	6-9	Evergreen shrub	Sun or shade, any type soil	Yellow flowers
<i>Mahonia repens</i>					

Honeysuckle, Japanese <i>Lonicera japonica</i>	5-9	Twisting, trailing vine	Sun or partial shade	Prune yearly to keep in bounds; a semi-evergreen with white turning to yellow flowers
Iceplant <i>Cephalophyllum</i> , <i>Carpobrotus</i> , <i>Delosperma</i> , <i>Drosanthemum</i> , <i>Malephora</i> , <i>Lampranthus</i>	4-6	Low succulent	Sun; well-drained soil	Temporary ground cover in cold climates; brilliant colored flowers open in full sunlight
Japanese spurge <i>Pachysandra terminalis</i>	5-8	Evergreen herb	Semi-shade under tree	Spreads by underground stems
Juniper <i>Juniperus horizontalis</i> <i>J. sabina</i> <i>J. procumbens</i> <i>J. chinensis</i> <i>J. conferta</i>	12-18 trim to 36	Evergreen conifer	Sun; dry areas	Yearly pruning of upright forms; wide range of foliage colors; some turn purple in winter
Lantana <i>Lantana setlowiana</i> ; <i>L. montevidensis</i>	6-10	Trailing shrub	Sun, high salt tolerance	Wide range of flower colors
Lily-of-the-valley <i>Convallaria majalis</i>	6-10	Rootstock	Rich, moist, high organic soil; partial shade	Fragrant white bell-shaped flowers
Lilyturf dwarf (Mondgrass) <i>Ophiopogon japonicus</i>	7-10	Matted herb	Any soil, sun or shade	Spikes of pale lilac flowers
Moss sandwort <i>Arenaria verna</i>	3	Perennial herb	Fertile soil, moist; partial shade	Requires some winter protection
Moss, pink <i>Phlox subulata</i>	6	Evergreen perennial	Porous soil; sun	Flowers are shade of pink and white
Periwinkle <i>Vinca minor</i> (small leaves) <i>V. major</i> (large leaves)	6-8	Trailing herb	Avoid high nitrogen fertilizer, poorly drained soils	Purple, blue, and white flowers

Guide to Selecting Groundcovers—Continued

Common name	Height (Inches)	Hardiness (Zone)	Type	Soil and light	Comments
Plantain lily <i>Hosta</i> spp.	12-16	4-10	Tufted plant with broad leaves	Moist, well-drained soils; shade	Needs frequent division
Polygonum, dwarf <i>Polygonum cuspidatum</i> var. <i>compactum</i>	12-24	4-10	Stout perennial	Rocky or gravelly soil; sun	Foliage turns red in fall
Rose, memorial <i>Rosa wichuraiana</i>	6-12	5-9	Semi-evergreen low-growing shrub	Banks and sand dunes	2-inch white flowers
St.-Johns-wort <i>Hypericum calycinum</i>	9-12	6-10	Semi-evergreen shrub	Semi-shade; sandy soil	Yellow flowers in summer; red foliage in autumn
Sand Strawberry <i>Fragaria chiloensis</i>	10-12	6-10	Perennial herb	Suitable for most soils	Spreads rapidly
Sarcococca <i>Sarcococca hookeriana</i>	to 72	6-10	Evergreen shrub	Shade	Shear for height control; small white flowers, large leaves
South African daisy <i>Gazania rigens</i>	6-9	9-10	Evergreen perennial	Avoid high nitrogen fertilizers; poorly drained soils	Light green foliage; orange flowers
Stonecrop, goldmoss <i>Sedum acre</i>	4	4-10	Evergreen perennial	Dry areas	Forms mats of tiny foliage
Strawberry geranium <i>Saxifraga sarmentosa</i>	15	7-9	Perennial herb	Partial shade; rock gardens, heavy clay soils	Spreads by runners
Thrift <i>Armeria maritima</i>	6	5-9	Perennial herb	Sandy soil; full sun	Small pink flowers in spring
Wandering-Jew <i>Zebraea pendula</i>	6-9	10	Tender herb	Shade, acid or alkaline soils	Roots easily
Wintercreeper <i>Euonymus fortunei</i>	2-4	5-10	Clinging evergreen vine	Sun; shade; ordinary soil	Rapid, flat growth; subject to scale insects
Wintergreen <i>Gaultheria procumbens</i>	4	5-7	Creeping evergreen	Acid soil; moist shady areas	Creeps over area
Yarrow <i>Achillea millefolium</i>	2-3	5-9	Fern-like perennial herb	Adapted to poor, dry soil; full sun	Remains green even during drought