

\$5.95

Garden Guide

*A comprehensive planting and growing guide
for bulbs, plants, shrubs, & roses*



van  Bourgondien

IMPORTANT! UPON ARRIVAL

We are often asked questions about the proper storage of the plant material we offer. In response, we offer you these guidelines...

Bulbs for Spring Planting

Plant the bulbs as soon as you receive your shipment. If you cannot plant the bulbs immediately, remove the bulbs from plastic bags and put them on a tray in a cool, dark, dry, well-ventilated place until you have a chance to plant them. Do not let the bulbs freeze. Plant outdoors when the conditions are right for your zone.

Bulbs for Fall Planting

Plant the bulbs as soon as possible after you receive them. If you cannot plant them right away, open the cartons. If the bulbs are in plastic bags, remove them from the plastic. Place them on a tray in a cool, dark dry, well-ventilated area until you can plant them. Do not store them at temperatures below 39°F. Generally all bulbs planted during the fall are hardy and do not need any special protection unless specified in this planting guide.

Perennial Roots

Dormant Bare roots: We usually ship perennials to you in their dormant state, that is: bare roots, usually without leaves, in bags with loose peat moss. They may have some shoots beginning to grow. It is very important to plant these dormant perennials as soon as possible after you receive them. If it is absolutely necessary to store them for a short time before planting them, open the cartons and any plastic that is around the roots. If the roots appear dry, soak them for a few hours in warm water. Thereafter store in slightly moist peat moss in a very cold but not freezing location until you can plant. They can also be placed in pots of soil if planting will be delayed for more than 2 weeks.

Non-dormant in Pots: Some perennials will be shipped to you from our greenhouses. They will be in



pots and may have actively growing green leaves.

These pots should be immersed in water upon arrival to thoroughly soak the root ball. These non-dormant plants must be hardened off before planting outside. Keep in a cool bright room, and place outside on mild days and gradually leave outside when it is cooler. After a week or so or when nighttime temperatures are above freezing, plant outside. If a severe dip in temperature is expected, you may want to place straw or an old blanket over the green leaves to protect them from severe damage. Frost or cold will not permanently hurt the plant, but it may damage the new leaves and set growth back.

Storage of Summer Flowering Bulbs

To store summer flowering bulbs, dig the bulbs when the foliage has withered or turned brown by a light frost. Air dry in a well-ventilated area for a week. Then remove all soil from the bulbs. Bulbs must be dried before storing or they will rot. Dust the bulbs with a fungicide and store in dry peat moss or wood shavings in a brown paper bag, open crate, netted bag or even old pantyhose. Store at 50–55° in a dry location until time to replant.

Where to Plant

The most important rule when planting is to choose an area that is well-drained. Most bulbs will rot or deteriorate quickly where soil is constantly damp. Most bulbs thrive in full sun, or at least 5-6 sunny hours daily. Some, like Fritillaria and wood hyacinths prefer filtered shade. Others, like tuberous begonias and caladiums, do best in partial shade.

Soil Drainage

Most bulbs, perennials and many other garden plants require 'well-drained' soil in order to thrive. Areas that often have 'sitting' water or constantly soggy soil can quickly cause roots to rot and deteriorate, especially over winter.

Testing for Drainage

Dig a hole 1-foot deep by 1-foot wide. Fill the hole completely with water and record how long it takes for the water to completely drain. The ideal time is between 10 and 30 minutes. If it drains in less than 10 minutes, the soil is drought-prone and most suitable for plants that need dry or very well drained soil. If it takes 3 to 4 hours, your soil is poorly drained, due either to a large percentage of clay or due to compaction or an impermeable layer of minerals below the surface that blocks water movement.

Improving Soil Drainage

Any soil is improved by working in lots of organic matter, such as manure, compost or peat moss. Thoroughly till or double dig the area to a depth of 10-12". If your soil drains too quickly, organic matter will help it hold moisture. If your soil is poorly drained, organic matter will improve the texture. Very poorly drained areas may need to have drainage tile installed or you may need to garden in raised beds. Raising the soil level by just a few inches greatly improves drainage.

Bulb & Root Types

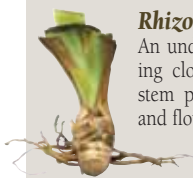
What do the different types of bulb & root systems mean?

Bulbs:

A true bulb is a thickened, fleshy, and commonly subterranean bud, usually emitting roots from its underside and the stems, flowers, and foliage from the crown. The term "bulb" applies to a large class of flowering and ornamental bulbous-like plants in their dormant condition such as corms, tubers, rhizomes and pips.

Examples:

True Bulbs: Lilies,
Tulips, Onions
Pips: Lily of the Valley
Tuber: Dahlias



Rhizomes:

An underground stem with branching in close to the soil surface. This stem produces roots, stems, leaves and flowers along its length.

Examples: Bearded Iris,
Eremurus

Tap Roots:

A strong nearly perpendicular main root that carries the plant axis straight into the ground. All other roots of the plant are secondary to it.

Examples: Hibiscus, Lupines



Corms:

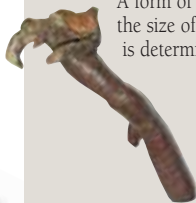
An underground bulb-like portion of the stem of a plant consisting of fleshy tissue with a bud at the top.

Examples: Crocus, Gladiolus, Crocosmia

Roots with Eyes:

A form of rhizome where the size of the plant grade is determined by the number of buds or eyes. Such as 1 to 2 eye or 2 to 3 eye divisions.

Examples: Astilbe,
Dicentra, Hosta,
Paeonia



Fibrous Roots:

Mainly consists of thread-like, profusely branched roots with no main or tap-root development.

Examples: Coreopsis, Clematis



Tubers:

A short, thickened, fleshy part of an underground stem, where new plants develop from buds, or eyes.

Examples: Dahlia, Potato



Potted Plants:

This is a group of plants that usually transplant better as potted versus bare root, or when the plant is produced from tissue culture.



Overwintering

Hardy Plants are those that can be left in the ground safely all year even where frost penetrates deeply into the soil. Most of the beloved bulbs of spring (bulbs planted in the fall) are in this category - crocus, daffodils, tulips, and hyacinths are the most familiar ones. Lilies and many perennials are also hardy in most zones. It is important to know your hardiness zone so that you can know what is hardy in your garden. The lower the zone number, the colder the zone. For example, zone 2 is colder than zone 3. A plant that is hardy to zone 3, may not overwinter in a zone 2 garden unless given special protection. Bulbs benefit greatly from a 2-4" deep mulch of shredded bark or hardwood, compost or leaves. Mulch prevents the ground from alternately freezing and thawing, which can heave the bulbs out of the ground during winter. In summer, mulch conserves moisture and suppresses weeds. Wait until the ground freezes before applying a winter mulch to fall planted bulbs.

Tender Plants are those that can't survive the cold temperatures in your area. In most colder zones, you must dig up bulbs like begonias, dahlias, and gladioli before fall frost, winter them indoors and plant again in spring. Of course, in very warm climate zones, some can be left

in the garden year round. When brought indoors for the winter, storage temperatures may range from 45°-60°F depending on the type of bulb. Many gardeners treat them as annuals and replace them each season. If a bulb or perennial is borderline hardy in your area and you must provide protection, apply a thick winter mulch.

Bulbs and corms that have a protective papery husk are easy to deal with. Simply dig up in the fall and shake the soil off. If the foliage has not quite died, leave the bulbs upright in a cool spot for a couple of weeks. Cut off the dead foliage and store the bulbs in old nylon stockings or mesh bags in a cool but frost-free area. Summer blooming bulbs with fleshy tubers or roots should be dug before frost and spread out in a shaded spot (like a garage) until the outside of the tuber feels dry. Then lay them in uncovered shallow flats or boxes filled with peat moss, sawdust or vermiculite. Check monthly to make sure they are not drying out and shriveling. They should stay plump until spring planting time, so you may have to sprinkle them with a little water to keep the right moisture.

Caution: Too much water will cause mold.

BULBS & TUBERS

Near effortless planting preparation produces spectacular rewards.

No other types of plants will give the gardener more beauty, or a wider range of variety, color and flowering times than flowering bulbs. They will produce flowers of incredible colors from one end of the growing season to the other. Nothing else will reward you with so much pleasure for so little effort.

Color and time of bloom are two of the most important elements to consider when planning your bulb and garden planting. It can be very helpful to make a sketch of your garden before planting. Consider which bulbs to plant and where based upon height, sunlight, color and blooming time. Remember, some bulbs (most of the bulbs you plant in fall) are hardy and can remain undisturbed for years while others (most of the bulbs you plant in spring) are tender and must be dug up and stored before cold weather sets in.

Good soil preparation is the first step to successful bulb gardening. Make sure the soil is loose and porous. Well-drained soil is a must or bulbs will rot. The soil should be turned over and organic matter or peat moss should be worked through so that good root development can be formed.



To encourage root development work a bulb nutrient such as Bulb Buddy™ into the soil. The depth of planting for bulbs depends on their size. A good rule of thumb is that the depth should be three times the diameter of the bulb. Small bulbs should be covered with 1-2" of soil

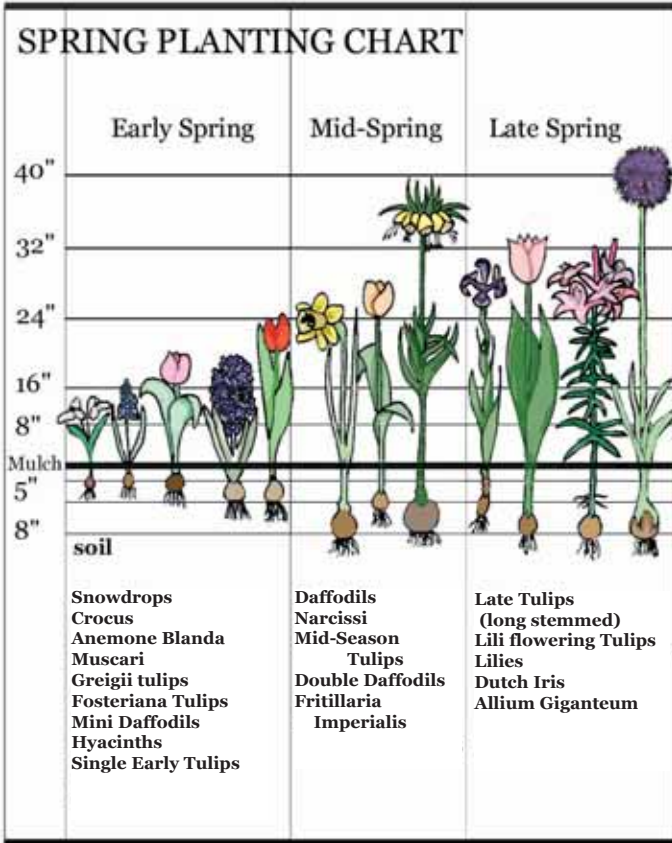
while large bulbs should be planted 6–8" deep (see individual listings for specifics). In the South, plant large bulbs 2" deeper than the normal recommendations.

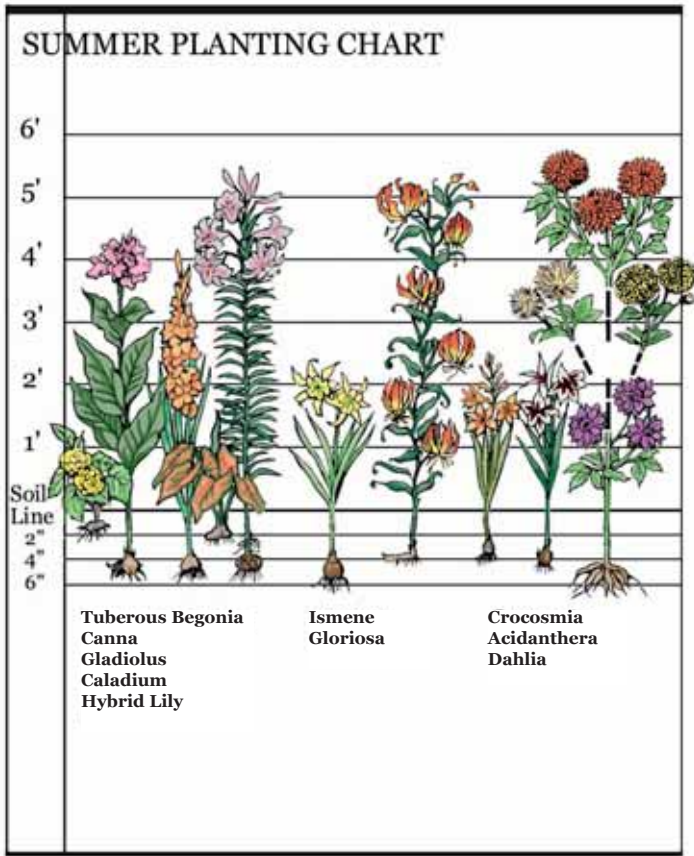
The spacing of bulbs depends largely on the effect you are trying to achieve. The most effective planting technique is to plant most bulbs in clumps rather than in individual lines. Space bulbs according to color with the softer colors in the front and the more vibrant in the background. Group bulbs according to height and in sequential bloom pattern for a long-lasting show of color.

Plant with the pointy side facing up. If you can't tell which is the rooting side and which is the sprouting side, plant the bulb on its side. It will figure out which way is up!

After planting, cover bulbs with soil, water well, and mulch with shredded leaves. In the spring when the first shoots appear remove the mulch, sprinkle again with bulb food (Bulb Buddy™). This will encourage flowering and also help rebuild the bulb for the next year.

If the weather is dry, water the bulbs during their growing period. When the flowers begin to fade and before a seed pod forms, cut the flower head, being careful to leave the foliage to die back naturally. Spring flowering bulbs do not have to be dug and stored in most hardiness zones.





Bulb Do's & Don'ts

- **Always** plant bulbs in borders or beds with good drainage. Planting bulbs in well-drained soil is vital and the most important instruction we can give you. Our guarantee does not cover losses from planting in poorly drained soil.
- **Do Not** use strong commercial fertilizer or fresh manure when planting.
- **Always** cut as little foliage as possible when cutting flowers from your bulbous plants. The leaves and foliage are essential for storing food for next year.
- **Do Not** let the flower go to seed. Cut flowers as they fade and remove any seed pods that form. Leave the foliage to keep the bulb strong.
- **Always** let the foliage die back on its own in the garden before trimming it back or digging up the bulbs. Do not trim back healthy green foliage or the bulb will not perform well next year.
- **Never** dry bulbs in the sun, always in the shade in a well ventilated area.
- **Always** store bulbs in a dry, well ventilated area to prevent mold or mildew. Do not store them in an air tight container.
- **Do Not** grow tulip bulbs year after year in the same place. Sooner or later they may be attacked with a fungus disease called fire blight, which affects both foliage and flowers. Either change the soil or the location; follow the principle of crop rotation.
- **Always** label the bulbs as you plant them. Use labels that are big enough so that 2-3" of the label is below soil level. Smaller bulbs can get heaved out of the soil during winter freezing and thawing. Labeling prevents you from accidentally digging up bulbs out of season. Do not rely on your memory alone. Labeling is much safer.

Naturalizing

Naturalizing bulbs is a popular planting technique to achieve a natural effect in the landscape - as if nature had planted them. You can naturalize bulbs in a meadow or woodland, in areas under deciduous trees and shrubs, at the edges of paths and walkways, or in a lawn. The traditional method of naturalizing is to scatter the bulbs across the area and plant them where they fall. Or you can simply plant the bulbs at random, avoiding any resemblance to rows or patterns. In succeeding years, the bulbs will multiply and fill in the spaces. Daffodils naturalize beautifully in an open area at the edge of woodlands, or on the slope of a lawn. Small bulbs like snow crocus, snowdrops and Siberian squill whose foliage matures fast, are best for naturalizing in lawns, set out individually or in clusters.



Bulbs for Outdoor Containers

Many summer-blooming bulbs take beautifully to container growing. To get a longer growing season, you can start many of them indoors early in spring and move them outdoors, pot and all, when temperatures are warm enough. Tuberous begonias, caladiums, calla lilies, dwarf cannas, dwarf dahlias and zephyranthes are some of the best to try. Whether potting bulbs for indoors or outdoors, make sure the

pot has good drainage by placing gravel or broken pottery in the bottom of the pot. Position the bulbs at the recommended depth and water well once, and then water sparingly until top growth appears. After that, keep the soil moist and remember that clay pots dry out very quickly. In hot weather, water daily. Turn the pots a bit each day to keep stems straight.

Bulbs for Cut Flowers

You may want to grow some summer bulbs - particularly dahlias, callas, lilies, gladioli, and anemone coronaria - primarily for cutting. A separate bed, or a section of your vegetable garden, is often the best solu-

tion for growing large quantities of these bulbs. If good drainage is a problem, make a raised bed. Follow the same recommendations for spacing and depth as you would for using them in the border.

Bulb Preparation & Planting



- 1 Prepare Bed**
Dig out the soil to proper depth. A shovel is quicker and easier than a trowel.



- 3 Plant**
Place bulbs firmly in soil, pointed end up. Plant bulbs in clusters, 12 or more to produce best effect.



- 2 Condition Soil**
Loosen the soil and add fertilizer. If soil is sandy, mix with peat moss or leaf compost. For clay-based soil, add sand or peat moss.



- 4 Cover and Mulch**
Cover the bulbs with soil, water well. Add two or three inches of mulch in cold areas.

Varieties

Abyssinian Gladiolus See *Acidanthera*.

Achimenes grandiflora (*Star of India*) Start rhizomes indoors between January and April. Plant 1/2" deep and 1" apart in a mixture of moist peat moss and sand. Keep them in a warm (60–65°F), lightly shaded location. Do not overwater since rhizomes may rot. Give plants more light (never hot direct sunlight) as growth appears. Feed when actively growing. Grows 6–10" tall and blooms July–August. Dig and dry at end of growing season and store in a cool dry place.

Outdoors After danger of frost has passed and plants started indoors are 3" high, transplant them into a shady garden. Instead of garden soil, use a loose mixture of peat moss, sand or perlite and leaf mold. Fertilize once a month and protect from direct sun and wind. Can be used as a hanging basket plant.

Acidanthera bicolor 'murielae' (*Abyssinian Gladiolus*) Plant in spring in a sunny, well-drained area. Space bulbs 6" apart and 3–4" deep. Water well throughout the growing season. They grow 24–36" tall and flower from August through September and are especially fragrant. Dig and store indoors for the winter in zones 3–7. Hardy in zones 8–10. Now classified as *Gladiolus oallianthus 'murielae'*.

Allium Plant all varieties of Allium in rich, well-drained soil in full sun in early fall. The smaller varieties of Allium should be planted 4" deep and the larger varieties 7–8" deep. Alliums are members of the onion family, so their fragrance may be rather pungent. Zones 4–9.

Alocasia See *Colocasia*, page 10.

Alpine Hyacinth See *Brimeura*, page 9.

Amaryllis Belladonna (*Belladonna Lily*) Choose a sunny, well-drained location. Dig to a depth of 12–15" and enrich the soil with organic matter. Replace about 9" of soil and plant the bulbs 4–6" apart. (In zones 9–10, plant bulbs only 1–2" deep). They do not like to be disturbed once planted. May be grown indoors as a potted plant with the culture the same as *Hippeastrum* (see "Indoor Bulbs" page 22). Grows 18" tall. Zones 8–10.

Amarcrinum howardii Plant bulbs so the bulb 'nose' is 2" below soil surface in the spring after all chance of frost has passed. Plant in well-drained, fertile soil in sun to light shade. Keep soil moist, but not wet throughout the growing season. Can grown in containers on the patio so the sweet fragrance may be enjoyed. Dig prior to frost in the fall or move containers to a frost-free location. In warm locations, allow the foliage to winter and the bulbs to go dormant. This is a cross between *Amaryllis 'Belladonna'* and *Crinum*. Grows 2–5" tall. Blooms Sept.–Oct. Hardy in zones 7–10.

Anemone blanda (*Greek windflowers*) Soak corms for 24 hours in tepid water before planting. Plant early in the fall 2" deep and 2" apart in full sun. Flowers may not open in shade. They grow about 6" tall and bloom April–May. Ideal for naturalizing. Hardy in zones 5–9.



Anemone coronaria 'De Caen' Soak corms in tepid water overnight before planting. Plant the corms in a sunny area 2" deep and 4–6" apart with the rounded side facing upward. Grows 12" tall. Blooms June–August. From zone 8 south, plant outdoors in early fall. In zones 4–7, bulbs must be protected with a heavy winter cover of leaves or straw. In zones 2 and 3, plant in early spring after all danger of frost has passed. Hardy in zones 8–10.

Anemone coronaria 'St. Brigid' Cultural instructions are the same as *Anemone coronaria 'De Caen'*. Hardy in zones 8–10.

Arisaema candidissimum (*Cobra Lily*) Plant in sun or partial shade in well-drained soil that is not dry. Plant corms about 5" deep in humusy or gravelly soil. Performs best in half shade. Grows 15" tall and blooms June–July. Hardy in zones 5–9.

Arum Italicum Plant tubers 3–4" deep and 12–18" apart in moisture-retentive, well-drained soil enriched with plenty of organic matter. Grow in partial shade. Top dress every year with well-rotted compost. Once established, do not disturb the plant. Grows 12–18" tall. Blooms April–May and has showy seed heads in late summer to early fall. Hardy in zones 5–10.

Autumn Crocus See *Colchicum*, page 10.

Babiana stricta (*Baboon Flower*) Plant in full sun to light shade in fast-draining garden soil. Space corms 5–9" apart and 2" deep. The bulbs are not hardy and must be lifted over the winter. They may be used as an indoor plant in colder climates by transplanting the corms to a deep (6–8") pot. Let the plant dry out and go dormant after the leaves turn brown. Resume watering after a rest period of six to eight weeks. Grows 12–18" tall. Blooms July–August. Hardy in zones 8–10, zone 6 with winter mulch.

Begonias In cold areas, start the tubers indoors about 6 weeks before you anticipate the last frost. Plant the tuber in potting soil, round side down, about 1" below the surface. Water well and then keep the soil moist but not soggy. Keep in a warm, semi-shady area. When all danger of frost has passed, transplant outdoors being careful not to disturb the roots.

In the garden, begonias need rich, porous, well-drained soil and shelter from wind. Space 12" apart in shade or partial shade. Keep moist and fertilize at least once a month. Staking the plants may be necessary in windy areas. Tuberous begonias should be dug and stored over the winter. Hardy in zone 10.

Belladonna Lily See *Amaryllis Belladonna*, page 8.

Bellevalia pycnantha See *Muscari*, page 17.

Bessera elegans (*Coral Drops*) Plant tubers 1" deep in sandy loamy soil in a sunny location after last frost date in the garden. If planting in containers, tubers may be planted earlier as long as container is in a frost-free area. After all threat of frost has passed, move container outside to a sunny location. Coral Drops are not cold hardy and must be dug prior to fall frosts and stored in a frost-free location. Grows 2-4' tall. Blooms June-July. Hardy in zones 9-11.

Bletilla (*Hardy Orchid*) Plant the bulb in partial shade in moist, rich soil. Space 6" apart and 4" deep. Grows 10-12" tall. Blooms June-July. Zones 6-8. **Indoor Culture** Plant the bulb in a 4" pot about 2" deep. Keep in a cool area with indirect light. Fertilize about once a month.

Blood Lily See *Indoor bulbs, Haemanthus*, page 22.

Brimewra amethystina (*Alpine Hyacinth*) Plant the bulbs in the fall 1-2" deep and 4-5" apart in humus rich, well-drained soil in sun to light shade. Apply a layer of mulch to prevent frost heaving and to conserve moisture. The small bulbs make the best display when several are grouped in an area, planted closely together and left undisturbed to naturalize. Reseeds readily. May be forced. See *Forcing Bulbs in the Home* instructions. Grows 6-12" tall and 8-12" wide. Blooms May-June. Hardy in zones 4-10.

Brodiaea (*Triplet Lily*) Select a sunny location with sandy, dry, well-drained soil. Plant the corms 4" deep and 3-5" apart. Mulch heavily in zones 5-7 for winter protection. In colder areas, dig and store over the winter. Hardy in zones 5-8 with a heavy mulch.

Caladium For maximum performance start bulbs indoors about 6 weeks before the last frost date. Start in flats or individual pots. Plant about 1" deep in damp peat moss or vermiculite. Space 3". Water well and keep in a very warm area. Transplant outdoors when all danger of frost has passed and the soil has warmed. Outdoors, plant 1" deep and about 10" apart. Grow in full to partial shade. Water frequently and fertilize once a month. Caladiums are highly recommended for container gardening. Grows 12-18"

tall. Caladiums are winter hardy only in zones 10 and 11. In other areas, they must be dug and stored indoors for the winter.

Calla Lily See *Zantedeschia*, page 20.

Calochortus venustus (*Mariposa Lily*) In the fall, plant the bulbs 2" deep and 4-6" apart in well-drained soil in a sunny location. In colder regions, mulch heavily after the ground freezes to prevent frost heaving. They need a dry, warm period after flowering for foliage to ripen. If necessary, lift the bulbs in late summer and replant in the fall. Bulbs may also be grown in pots to overwinter in cold frames. Grow 25" tall. Blooms June-July. Hardy in zones 5-9.

Camassia Grow in full sun to partial shade. Camassias are tolerant of most soil types, including heavy, wet soil. Plant 4-5" deep and 6-8" apart. Keep well-watered during the growing season. Naturalizes well. Grows 12-18" tall. Blooms in May. Hardy in zones 4-8.



Canna Start indoors about 4 weeks before outdoor planting. Lay the root horizontally in the potting soil about 1" below the surface. Plant outdoors after all danger of frost has passed and the soil has warmed. Space the plants 15-18" apart in moist, rich garden soil. Cannas love full sun and hot weather. Keep moist and fertilize at least once a month. Cannas can also be grown throughout the summer in containers. North of zone 7, dig and store the roots indoors over the winter. Hardy in zones 7-11.

Cape Lily See *Crinum 'Alfa'*, page 10.

Cardiocrinum giganteum (*Giant Himalayan Lily*) Plant the bulbs in the fall or early spring with the top of the bulb at the soil line and 5-6' apart in humus rich, deeply dug soil in partially shaded location where they won't dry out too much in summer. Mulch heavily in cold regions after planting. Bulbs die after blooming, but produce bulblets, which will flower in 3-4 years. Plant bulbs of different sizes each year to ensure blooms. Plants may need staking. Grows 3-5' tall and 1-2' wide. Blooms July-August. Hardy in zones 5-10.

Chasmanthe floribunda In the spring after the last frost, plant the corms 3" deep and 36" apart in sandy soil in full to partial sun. In cold regions, they are best planted in 8-10" containers and moved outside after all threat of frost has passed. Then prior to the first fall frost, replot and move inside. Divide corms every 2-3 years and replant in sandy soil. Grow 34-40" tall and 36" wide. Blooms July-August. Hardy in zones 9-10.

Chincherinchee See *Ornithogalum Umbellatum*, page 17.

Chinese Lantern Lily See *Sandersonia Aurantiaca*, page 18.

Chinese Sacred Lilies See indoor bulbs, *Narcissus*, page 22.

Chionodoxa (*Glory of the Snow*) In early fall, plant bulbs 2" deep and 2" apart in humus-rich soil in semi-shade. Recommended for rock gardens. Naturalize well. Grows 4-8" tall. Blooms February-March. Hardy in zones 3-8.

Chlidanthus fragrans (*Perfumed Fairy Lily*) Grow in well-drained, sandy garden soil in full sun. In early spring, plant bulbs 3" deep and 6-8" apart. Keep well-watered throughout the growing season. Allow to dry out as bulb goes dormant. In cold areas, dig bulbs and store indoors for the winter. Grows 10" tall, blooms in July. Hardy in zones 8-11.

Indoor Culture Chlidanthus makes a good potted plant. Plant 1 bulb per 6" pot, with the tip of the bulb barely exposed above the soil.

Climbing Lily See *Gloriosa Superba*, page 14.

Cobra Lily See *Arisaema candidissimum*, page 8.

Colchicum (*Autumn Crocus*) **Important-Plant Immediately.** Open carton and plant as soon as you get the bulbs or they may bloom in the carton. Plant in August or September in moist, well-drained soil in full sun to partial shade. Plant 4" deep and 6" apart. Flowers appear soon after planting. Foliage will develop in spring but will wither by early summer. Grow 4-6" tall. Hardy in Zones 4-9.

Colocasia (*Elephant Ears*) Cultural instructions are the same as Caladium but bulbs must be planted 6" deep. Excellent tub plant. Some colocasia are supplied in pots. Grows 3-5' tall. Hardy in zones 9-10.

Corn Lily See *Isia*, page 16.

Crinum 'Alfa' (*Cape Lily*) Plant in full to part sun in moist, well drained soil. Plant the bulb half out of the soil to avoid rot at the crown. Water liberally during the growing season (summer to early autumn), then encourage dormancy by allowing the soil to dry out between waterings until the foliage has died away. Then stop all watering and store the bulb indoors in a cool (not cold), dark, dry place when night temperatures drop below 50° F. Reinstigate growth in spring by starting to water them again. Height: 30-36". Blooms summer/early fall. Hardy in zones: 9-10.

Crococsmia Plant in spring in well-drained soil in full sun to light shade. After last frost, plant corms 3-5" deep and 6-8" apart. Keep well-watered throughout the growing season. In colder areas, mulch thickly or dig in fall and store indoors over the winter. Grows 2-3' tall. Blooms July-Aug. Hardy in zones 5-8.

Crococsmiiflora See *Crococsmia*, above.

Crocus Plant in fall in well-drained, sandy soil in full sun to partial shade. Plant bulbs 2-4" deep and 2-3" apart. For best effect, plant in drifts of 20 or more bulbs. Crocus naturalize well. Grows 4-6" tall.

Crocus can be successfully grown in a lawn for a spring meadow effect. Plant 1-2" deep. Hold off on mowing the lawn in spring until the crocus foliage begins to die back. Blooms February-March. Hardy in zones 3-9.

Crocus-Fall Flowering Plant before October 15th, in well-drained soil in full sun to partial shade. Plant 2-3" deep in groups of 7 or more bulbs. They naturalize well. Grows 4-6" tall. Hardy in zones 5-10.

Crocus sativus-Saffron Crocus Plant in early fall in well-drained soil in full sun to partial shade. Plant bulbs 4" deep and 4-6" apart. Label the planting so the bulbs do not get pulled up during spring weeding. Hardy in Zones 4-10. Grows 4-6" tall.

Saffron crocus bloom late in the fall. To collect the saffron, pick the stigmas as soon as the flowers open. Air dry the stigmas as quickly as possible and store in a closed container away from light or heat.

Crown Imperials See *Fritillaria Imperialis*, page 13.

Curcuma alismatifolia (*Siam Tulip/Ornamental Ginger*) Plant rhizomes 1" deep in full or partial sun in rich well-drained soil with a pH of 5-7 when soil temperature has reached 55 degrees. Water thoroughly after planting and let soil dry before watering again. It's important not to have too wet of soil at this stage or the rhizome will rot. Once full growth has begun, keep soil moist but not too wet. Follow these garden steps for either container or garden culture. Gingers are not cold hardy. Dig prior to frost in the fall or move container into a warm location. Grows 20" tall. Blooms June-August. Hardy in zones 8-10.

Cyclamen (*Hardy Cyclamen*) Plant in light shade. Cyclamen needs well-drained, moist, slightly alkaline soil. Grow Cyclamen beneath shrubs, around trees in rock gardens or mixed borders. Plant tubers with concave side up, ½-1" deep and 6-8" apart during their dormant period. Protect from harsh, heavy rains, but do not let tuber dry out. Once established, do not disturb and it will slowly multiply. Apply winter cover in cold areas. Grows 8-12" tall. Blooms September-October. Hardy in zones 5-9.

Cyrtanthus mackeni (*Yellow Clarion*) The bulbs may be planted in containers or in the garden in full sun, in the spring, after all danger of frost has passed.

Plant bulbs twice as deep as the diameter of the bulb in well-drained neutral soil. When planting in containers, the bulbs may be spaced closer for a fuller look. 'Yellow Clarion' may be left in the ground or containers in zones 10-11. In colder regions, they must be lifted prior to frost and stored in a frost-free area. Allow the foliage to ripen naturally and then remove. Grows 12" tall. Blooms July-October. Hardy in zones 10-11.

Daffodils See *Narcissus*, page 17.



Dahlias Dahlias can be started indoors in individual pots with damp peat moss and vermiculite. Care MUST be taken in transplanting them outdoors. Plant dahlias outdoors after all danger of frost has passed. Choose a sunny site with well-drained, sandy soil. Dig soil to a depth of 12". Amend soil with peat moss or compost. Replace about half the soil, then place tubers flat and cover with remaining soil. Space tubers 12-36" apart depending on variety. Water after

Dahlia Height & Bloom Time

Variety	Ht.	Blooms in:
Anemone	18-24"	July-frost
Cactus	12-45"	August-frost
Decorative	30-40"	August-Frost
Dinner Plate	36-48"	August-frost
Dwarf	12"	August-frost
Giant	16-40"	August-frost
Magic Carpet	10-12"	July-frost
Pompon	36-48"	July-frost
Dahlianovas	7-8"	July-frost

planting and not again until shoots appear. Stake plants. As plants grow, increase watering. Fertilize sparingly. Pinch and disbud dahlias for later and larger flowers. Buds tend to grow in threes; two-sided ones should carefully be pinched to develop the central bloom. This is especially important with border or pot plant dahlias.

(For clarification, see illustration on pot dahlias.) If the plants are not pinched back, they will not retain their low, compact size. An exception to this would be the Dahlianovas, which do not require pinching.

In areas with winter freeze, carefully dig the tubers in fall after the frost kills the foliage. Cut the stalk approximately 6" above the tuber. Allow tubers to dry thoroughly. Pack them carefully in dry sand, peat moss, or sawdust and store in a cool (40-45°) dry place. In the spring, separate tubers from stalk. Leave 1" of stalk attached to each tuber which must have an eye or bud to bloom. Height and bloom times listed above. Hardy in zones 8-10.

Planting Instructions for Pot Dahlias

For the best results with Pot Plant and Border Dahlias, certain instructions must be followed. Dahlias may be started indoors. Plant one clump in a 6-8" pot. Use a soil mixture of equal parts of potting soil, sand and peat moss. Good drainage is essential.

Plant with the crown slightly above the soil surface. The soil surface should be at least 1/2 to 1" below the pot rim. Do not divide roots prior to planting. See figure 1.



Figure 1

After planting, water well and continue to keep the soil moist but not wet.

When the flower buds appear, water may have to be increased due to the increased demand of the plant for water while developing buds. Do not wet the plant foliage when watering.

Fertilizer should be applied as soon as the foliage begins to appear. Slow release fertilizer (14-14-14) is recommended.

For maximum flowering, dahlia shoots must be pinched. The terminal shoot should be pinched after the 3rd or 4th pair of leaves have unfolded.

Pinch the strong shoot of a 2-shooted plant. Pinch all single shooted plants. Do not pinch 3 shooted plants, but do not allow more than 3 main shoots to develop from the crown. The pinch should remove all growth above the 3rd or 4th pair of leaves. See figure 2.

The dahlia plant should be placed outdoors after all danger of frost has passed. They must have full sunlight. If they are planted in a garden, they should be spaced 10-12" apart.



Figure 2

Dahlia imperialis (Tree Dahlia) Plant in a warm and sunny area in the garden. Plant tuber in well-drained soil, 6" deep and spaced 6-7 feet apart. Grows 20-29 feet tall, blooming in late August until frost. Hardy in zones 8-10; elsewhere dig and store in a frost-free area over the winter.



Dichelostemma Plant corms in the fall 4-5" deep and 3" apart in well-drained soil in full sun. They require excellent drainage and dry conditions after blooms. In areas with wet summers, dig after foliage fades and replant in the fall. In colder regions, mulch after fall planting. May be planted in containers in the fall in a well-draining soil with 4-5 corms per 6" container. Store in a cold frame over winter. In late winter, bring containers indoors into a cool, sunny location and keep soil moist. Grows 12-35" tall and 18-24" wide. Blooms June-July. Hardy in zones 5-7.

Dog Tooth Violet See *Erythronium*, this page.

Dracunculus vulgaris (Dragon Arum) Should be planted with the flat side of the bulb up, about 3" deep in rich, moist soil. They do excellent in the wild garden or by the waterside. They flourish in a sunny or a somewhat shady area. The bulbs should be planted 12-16" apart. Water after planting. In areas with severe frost, a winter cover is necessary, especially the first winter after planting. After flowering, it is best to top-dress the plant with top soil or other rich organic matter and cultivate into the ground around the plant. Blooms May-June. Hardy in zones 6-9.

Dragon Arum See *Dracunculus vulgaris*, above.

Drumstick Allium See *Allium*, page 8.

Dutch Iris See *Iris hollandica*, page 15.

Easter Lily See *Lilium Indoor Bulbs*, Forcing, page 22.

Egret Flower See *Habenaria radiata*, page 14.

Elephant Ears See *Colocasia*, page 10.

English Iris See *Iris*, page 15.

Eranthis cilicica (Winter Aconite) As soon as you get the corms in late summer or early fall, soak them in warm water overnight. After soaking, plant in humus-rich, well-drained soil in full sun or partial shade. Plant 3" deep and 2-4" apart. *Eranthis* naturalize well and are recommended for rock gardens or borders. Grows 2-3" tall and 4" wide. Blooms January-February. Hardy in zones 4-8.

Eremurus (Foxtail Lily) Plant in spring or fall in full sun and well-drained, rich, sandy soil. Dig a hole 5-6" deep and form a cone of soil in the center. Spread the clump of tuberous roots so the crown rests on the cone and the top of the crown is 4-6" from top of hole. Fill in with soil. Keep well-watered during the growing season. Once planted, *Eremurus* do not like to be disturbed, so mark the planting area so that you do not dig there after the foliage dies back in summer. Grow 2-3' tall and 2-3' wide. Blooms late May-June. Zones 4-8.

Erythronium (Dog Tooth Violet, Trout Lily) In early fall, plant corms 3-5" apart and 3-4" deep in well-drained, moist, humus-rich soil. Grow in light to medium shade. Mulch with organic material to conserve moisture. Water regularly during the growing season. After it blooms, do not disturb the plant. *Erythronium* naturalizes well and is effective in a woodland or rock garden. Grows 10" tall. Blooms in April. Hardy in zones 4-9.



Eucomis (Pineapple Lily) Plant the bulbs in early spring in warm areas (after last frost outdoors in cold areas or inside in pots) leaving the necks barely exposed. Grow in a pot or in the garden in well-drained, sandy, humus-rich soil in full sun or light shade. When you see growth, begin to water and feed regularly. It thrives in high humidity. To induce blooming, alternate periods of wetness and dryness. In cold climates, lift bulbs from the garden and keep indoors in pots for the winter. Grows 12-15" tall. Blooms July-August. Hardy in zones 7-10.

Fairy Lily See *Zephyranthes*, page 20.

Feather Hyacinths See *Muscari*, page 17.

Four o'clocks See *Mirabilis*, page 17.

Foxtail Lily See *Eremurus*, page 12.

Freesia Plant 2" deep and 2" apart in good, well-drained soil in sun or light shade. In warm areas, plant corms in the fall. In colder areas, plant outdoors in spring. Keep the soil moist during the growing season and fertilize monthly. They require sun and protection. Freesias do best where the nights are cool. Staking is advised to keep the stems upright. After blooming, let the foliage die back. Then lift and store the bulbs indoors. Freesias may be perennial where summers are dry and winters cool and moist and above 32°F. Grows 18-24". Blooms May-June. Hardy in zones 8-10.

Indoor Culture As a cool greenhouse or house plant, plant 6-8 corms 1" deep in a 6" pot with the pointed ends up. They do best when kept cool (50°) and in a well-ventilated area. Water lightly and do not let the plants dry out. After they have flowered, and the foliage becomes yellow, they can be dug, dried and kept for replanting the following fall.

Fritillaria imperialis (*Crown Imperial*) In fall, plant 5-6" deep and 8" apart in a well-drained, alkaline, deep, sandy loam enriched with organic matter. Plant in a lightly shaded, sheltered area. Remove the dead flower heads before they go to seed. Water deeply in spring; refrain from watering in the summer. Bulbs should be left undisturbed. Bulbs and foliage have a pungent (somewhat skunky) odor, so you may want to plant it a distance from the house. This pungent odor is a natural deterrent to rodents in the garden. Grows 3-4' tall. Blooms April-May. Hardy in zones 4-8.

Fritillaria meleagris (*Guinea Hen Flower*) In fall, plant in well-drained, alkaline, deep sandy loam amended with organic matter in a sheltered, lightly shaded area. Space 3-4" apart and 3-4" deep. Bulbs and foliage are odorless. Grows 15" tall. Blooms April. Hardy in zones 4-8.

Fritillaria michailovskyi (*Michael's Flower*) In fall plant bulbs in well-drained, alkaline, deep, sandy loam amended with organic matter in full sun to light shade. Space bulbs 4-6" apart and 4-6" deep. For best effect, plant in clusters of 7 or 9 bulbs. Mulch lightly in late fall. Fertilize when new growth appears in the spring. Grows 4-8" tall. Blooms late May-early June. Hardy in zones 4-8.

Fritillaria pallidiflora In fall, plant bulbs in well-drained, alkaline, deep, sandy loam amended with organic matter in full sun to light shade. Space bulbs 4-6" apart and 4-6" deep. Mulch lightly in late fall. Fertilize when new growth appears in the spring. Grows 6-14" tall. Blooms early spring. Hardy in zones 4-8.

Fritillaria persica (*Persian Bell*) In fall, plant in well-drained, alkaline, deep, sandy loam amended with organic matter in light shade to full sun. Space bulbs 6-8" apart and 6-8" deep. Mulch lightly in late fall. Fertilize when new growth appears in the spring. Grows to 36" tall. Blooms April-May. Hardy in zones 5-9.

Galanthus (*Snowdrops*) In early fall, plant in moist, humus-rich soil in sun to partial shade. Space bulbs 2" apart and 4" deep. Mulch lightly with shredded leaves in winter. Leave them undisturbed and they will naturalize happily without being divided. Do not fertilize. Since they are among the first bulbs up in late winter, you can plant them under deciduous trees. Plant in groups of 25 or more bulbs for best effect. Grows 6" tall. Blooms January-March. Hardy in zones 3-9.



Gladiolus Gladiolus grow best in sandy, well-drained soil rich in organic matter in full sun. After last frost, dig a trench 8" deep. For a flower border, dig a roundish or oval hole to give a more natural look than the soldier-like rows of a cutting garden. Add compost and Bulb Buddy™ to the trench, using one cup per 10' of row. Cover with 2" of soil. Firmly place bulbs on soil, pointed ends up, 6" apart. In a flower border, plant a group of at least 10 bulbs for

best effect. Cover with remaining soil. Water well and add 2" of mulch to conserve moisture and keep the roots cool. Begin planting in mid-spring and continue to plant every two weeks until mid-July for flowers throughout the summer. Bulbs will bloom from 70-100 days from planting, depending on the lateness in the season. Tall-growing varieties may need staking. Water well throughout the growing season. Fertilize when the flower spikes first appear and after the flowers are picked. Grows 3-5' tall.

Gladiolus are susceptible to thrip infestation. To avoid problems, soak the bulbs for 2-3 hours just before planting in a solution of 4 teaspoons of Lysol in 1 gallon of water. Dig up the corms 4-6 weeks after the flowers fade. Remove as much soil as possible and cut off flower stalk 1" above corm. Dry and store the bulbs indoors for the winter. Hardy in zones 8-11.

Gladiolus Byzanthinus (*Hardy Gladiolus*) In fall plant in well-drained garden soil in full sun. Plant the corms 4-6" apart in clumps approximately 3" deep. Fertilize when planting with any 5-10-5 fertilizer but avoid animal manure since it may encourage rot. In zones 2-3, mulch over the winter. Grows 15-18" tall. Blooms July-August. Hardy in zones 4-10.

Gloriosa superba 'Rothschildiana' (*Climbing Lily*) After danger of frost has passed, select a slightly to medium shady spot in the garden where a trellis or fence can support the plants as they climb up to 6'. Dig a hole at least 6" deep and amend the soil with sand, leaf mulch and peat moss. If your soil is clay dig a bigger and deeper hole, adding more sand. Plant tubers horizontally 2-4" deep and 12" apart. Cover with remaining soil. Keep well-watered until shoots appear, then keep soil moist but not soggy. After the plants bloom, carefully dig up the tubers (they may be deeper than when planted). Clean the tubers and dust with sulfur to prevent disease. Store in dry peat moss for about 3 months until the pink buds form. Hardy in zones 7-11.

Indoor Culture Plant in pots 2-4" deep in a mixture of two parts rich potting soil, one part builders' sand and one part peat moss. Place in indirect light and keep soil evenly moist. Once it begins to grow, move into more sun and increase watering. Keep the temperature below 65°. After blooming, withhold water and fertilizer, allowing the plant to go dormant.

Glory of the Snow See *Chionodoxa*, page 10.

Glory of the Sun See *Leucocoryne*, page 16.

Grape Hyacinth See *Muscari*, page 17.

Guinea Hen Flower See *Fritillaria meleagris*, page 13.

Habenaria radiata (*Egret Flower*) After all danger of frost has passed, plant bulbs 1-2" deep in rich, fertile, slightly acid, moist, well-drained loam in sun or partial shade. Work lots of peat moss into the soil. Mulch for winter protection in northern climates. Grows 12-15" tall. Blooms May-June. Hardy in zones 5-10.



Indoor Culture Excellent for pot culture. Plant 1" deep in acidic potting soil. Grow in indirect light.

Haemanthus See *Indoor Bulbs*, page 22.

Hardy Cyclamen See *Cyclamen*, page 10.

Hardy Gladiolus See *Gladiolus Byzanthinus*, this page.

Hardy Gloxinia See *Incarvillea*, page 15.

Hardy Orchid See *Bletilla*, page 9.

Hedychium (*Yellow ginger Lily*) This plant blooms in late summer and is very fragrant. Plant it 2-3" deep in part or full sun in moist soil. It must be brought indoors after the first heavy frost. The frost will kill the foliage and you can cut it away at the ground level. Gently dig the roots up and clean off excess soil. Store them in a cool dark, dry place until next spring. If they are in pots you can bring the entire pot indoors (do not water it until spring). Height: 5'-6'. Blooms summer/early fall. Hardy in zones: 9-10.

Hermodactylus tuberosa (*Snake's Head Iris*) Plant the iris tubers in the fall 3" deep and 6-8" apart in well-drained, neutral to alkaline fertile soil in full sun to a partially shaded location. Ideally planted in rock gardens or sunny borders where they'll slowly form colonies 3½' wide. Remove spent flower stems after blooming. Allow foliage to ripen before removing. Tubers die out after blooming, but produce fingerlike offsets that will bloom the following year. May also be grown in containers. Plant 3-4 tubers per 8" pot, 3" deep. Repot annually while dormant in late summer or fall. Grows 8-10" tall, 6-8" wide. Blooms February-March. Hardy in zones 4-9.

Himalayan Lily See *Cardiocrinum Giganteum*, page 10.

Hippeastrum See *Indoor Bulbs*, page 22.

Hyacinthoides See *Scilla*, page 18.

Hyacinthus (*Hyacinth*) In fall, plant Hyacinths in full sun to light shade in fast-draining, rich soil. Plant in clumps of 3-4 bulbs about 4-6" deep and 4-8" apart. Keep well-watered during the growing season. Mulch lightly for winter protection. Grows 8-12" tall. Blooms April-May. Hardy in zones 4-9.

Indoor Culture Hyacinths are one of the easiest bulbs to force. Use top size and large bedding hyacinths for indoor forcing. Plant 3-5 bulbs in an 8" pot in a good quality sandy soil so that the top of the bulb is even with the soil surface. Water thoroughly and bury pot in the garden for 3 months. They may also be kept in a cold (30-40°) dark place. Water as necessary to keep soil lightly moist. Bring plots in when there is 1-2" of growth. Gradually expose to light and warmth.

Hyacinths can also be grown on water in a hyacinth glass. Place the bulb in the top half of the glass. Fill the bottom of the glass to within $\frac{1}{4}$ " of the bottom of the bulb. Place in a cool area, 40-50°, adding water as necessary until the lower section is filled with roots. When the top growth is about 1-2" tall, move the glass to a cool, bright room. Within several weeks it will bloom.

Hymenocallis 'Harrisiana' (Spider Flower) Plant bulbs outdoors in the spring after all chance of frost has passed, 4" deep and 12" apart in well-drained, humus soil in full sun.

Remove flower stalk at its base after flowers fade. In cold regions, bulbs must be lifted in the fall prior to frost and stored in a dry, dark, frost-free location. Allow foliage to ripen before removing from the bulb. In frost-free areas, bulbs may be left in ground all year. May also be planted in 8" containers with 1 bulb per container with the bulb tip just breaking the surface. Grows 16" tall and 12-18" wide. Blooms June-August. Hardy in zones 9-10.



Incarvillea (Hardy Gloxinia) In spring, after all danger of frost has passed and the soil has warmed, choose a sheltered, sunny, warm spot with sandy, well-drained soil enriched with humus. Plant tubers 3-6" deep and 15-24" apart. Keep well watered during the growing season. Mulch deeply in later fall for winter protection. Grows 20" tall. Blooms May-June. Hardy in zones 6-10.

Indian Hyacinths See *Camassia*, page 9.



Ipheion uniflorum (Spring Starflowers) Plant bulbs in the fall 3" deep and 3-6" apart in well drained soil in full sun to light shade. Remove spent flowers and allow foliage to ripen before removing. In cold regions, mulch after the ground freezes. After 2-3 years, divide clumps and reset bulb offsets. Discard old bulbs. May be forced by planting 1" deep and 2-3" apart in 6" containers. Grows 6-8" tall and 4-6" wide. Blooms April-May. Hardy in zones 5-10.

Iris Iris are divided into two basic types; bulbous and rhizomatous. See "Perennials" section for rhizomatous Iris.

Iris hollandica (Dutch Iris) Plant bulbs in the fall 4" deep and 3-6" apart in well-drained average soil in a sunny to shaded location. They'll bloom better when planted in full sun. In colder regions, mulch after ground freezes. Allow foliage to ripen through summer and then gently remove. For greater impact, plant several bulbs in an area. They do best when allowed to form thick clumps over 3-5 years, after which flowering will diminish. Lift while dormant and remove and replant offsets that form along mature bulbs. Grows 24" tall and 12-18" wide. Blooms May-June. Hardy in zones 4-9.

Iris reticulata and danfordiae Plant in well-drained soil in full sun. Space the bulbs 3-4" apart and 2" deep in clumps of 4-6. Water well during their growth period. Mulch lightly over the winter for protection. Leave undisturbed after foliage dies back. Reticulata blooms February-March, and Danfordiae blooms late January-early February. Hardy in zones 4-9.

Ismene festalis (Peruvian Daffodil) Plant in sandy, well-drained soil in a sunny, sheltered spot. Space 6" apart and 6" deep. Keep lightly moist. Fertilize once a month. Dig before frost. Leave the roots on and store upside down in a dry medium such as peat moss or perlite. Grows 18-24" tall. Blooms June-July. Hardy in zones 8-10.

Ixia (*Corn Lily*) In late spring, plant corms 2-3" deep and 3-4" apart in sandy, well-drained soil in a sheltered area with full sun. In autumn, dig and store the bulbs indoors for winter. Grows 12-18" tall. Blooms April-May. Hardy in zones 7-10.

Ixiolirion (*Sky Blue Lily*) In fall, plant 6" apart and 4" deep in a sunny, warm, sheltered area. Fertilize lightly after planting and again in the spring. In frost area, mulch with straw or evergreen branches. Naturalizes easily. Grows 10-12" tall. Blooms May-June. Hardy in zones 5-9.

Kafir Lily See *Indoor Bulbs*. *Clivia Minata*, page 22.

Leucocoryne (*Glory-of-the-Sun*) Plant bulbs in spring after all danger of frost has passed and ground is warm. Grow in very well-drained, sandy soil in full sun to light shade. Plant corms 3-6" deep and 6-8" apart. In fall, dig and store bulbs indoors for the winter. Grows 24" tall. Blooms June-July. Hardy in zone 10.

Indoor Culture Grows well as a potted plant indoors in a sunny greenhouse. Plant 4-5 corms 2" deep in a 6" pot in a well-drained, sandy mix.

Leucojum (*Spring Snowflake*) In fall, plant bulbs in well-drained, sandy, organic loam, or any other well-drained soil in full sun to partial shade. For best effect, plant in large drifts of 12 or more bulbs, 4-5" deep and 4-6" apart. Do not disturb the bulbs after planting and they will multiply and naturalize. Grows 12" tall. Blooms end of April to early June. Hardy in zones 4-10.

Lilium (*Lily*) Plant lilies as soon as they arrive. Take care not to break off any stalks or growth that may be on the bulb. Choose a sunny spot, with light, porous, sandy soil enriched with compost. The ideal site is one where the plants get full sun at the tops and are shaded at the soil level to keep the ground moist. Plant 6-8" deep and 6" apart in clumps of 3 or more bulbs. In the spring, fertilize the bulbs monthly until the plants finish blooming. After flowering, remove only the blooms, NOT the stems or leaves. Allow the foliage to die back naturally. The stalk can be cut back carefully when the foliage has died back completely. See below for height and bloom times. Hardy in zones 3-8.



Lycoris Height & Bloom Time

Variety	Zones	Ht.	Blooms in:
<i>Albiflora</i>	7-10	18-24"	August
<i>Aurea</i>	7-10	24"	August
<i>Radiata</i>	5-10	18"	August
<i>Sanguinea</i>	7-10	12-18"	August
<i>Squamigera</i>	5-10	24"	August

Lycoris (*Magic Lily*) Plant in an open, sunny, well-drained area. Space 8" apart and 4-6" deep. Water frequently during the growth cycle. Let the bulb dry out during its dormancy in the summer. Do not disturb the bulbs after planting and mulch lightly over the winter. See above for hardy zones, height and bloom times.

Magic Lily See *Lycoris*, above.

Mariposa Lily See *Calochortus*, page 9.

Lilium Height & Bloom Time

Variety	Ht.	Blooms in:
<i>Asiatic Hybrids</i>	24-60"	Jun-Jul
<i>Aurelian Hybrids</i>	48-60"	Jul-Aug
<i>Dwarf Oriental Hybrids</i>	10-18"	Jul-Aug
<i>Henryi</i>	5 feet	Jul-Aug
<i>Longiflorum Oriental</i>	3-4'	Jul-Aug
<i>Oriental Hybrids</i>	36-60"	Jul-Aug
<i>Oriental Trumpet</i>	4 feet	Jul-Aug
<i>Speciosum Rubrum</i>	5 feet	Jul-Aug
<i>Tango Lilies</i>	30-48"	Jun-Sept
<i>Tenuifolium</i>	24-30"	Jun-Jul
<i>Tiger</i>	24-48"	Jun-Jul



Mexican Shell Flower See *Tigridia*, page 19.

Michael's Flower See *Fritillaria michalovskyi*, page 13.

Mirabilis (*Mirabilis jalapa*, *Four o'clocks*) This heirloom, tuberous perennial quickly develops into a bushy plant that is covered with fragrant, trumpet-like blossoms; Carrot-shaped, top sized tubers; 1 plant per sq. ft.; blooms mid summer to frost; overwinterize in zones 7-9, with extra winter mulch. Hardy in zones 8-10.

Monbretia Plant in spring in well-drained soil in full sun to light shade. After last frost, plant corms 3-5" deep and 6-8" apart. Keep well-watered throughout the growing season. In colder areas, mulch thickly or dig in fall and store indoors over the winter. Grows 15-18" tall. Blooms June-July. Hardy in zones 8-10.

Muscari (*Grape & Feather Hyacinth*) Plant in fall in well-drained soil in full sun to light shade 3-4" deep and 3" apart, preferably in clumps of 10-12 bulbs. Do not fertilize. They multiply freely and can be left undisturbed for years. Height depends on variety. Blooms April-May. Hardy in zones 3-9.

Indoor Culture Plant 5 or 6 bulbs in a 6" pot. Plant 1" deep and 2" apart. See "Indoor Bulbs" section, page 21, and follow general instructions for bulb forcing.

Narcissus (*Daffodil*) In fall, plant bulbs in deep, fertile, well-drained soil in full sun to light shade. Plant 6" apart and 8" deep in groups of 5, 7, 9 or more. Consider planting them under deciduous trees that will not leaf out until after the Narcissus have bloomed. Water during their growth period. After flowers bloom, let the foliage die back naturally. Once the foliage fades, cut it back. Narcissus can be left undisturbed to naturalize for years. To transplant, dig and divide the bulbs after the foliage has turned brown and replant at once. If you cannot plant bulbs immediately, store in a cool, airy place. Height depends on variety. Some species bloom in February, others March-May. Hardy in zones 3-8.

Narcissus Paperwhites See *Indoor Bulbs Narcissus*, pg. 22.

Nectaroscordum siculum Plant bulbs in the fall 4" deep and 18" apart in ordinary, well-drained soil in full sun. Bloom best when clumps are undisturbed. Readily reseeds and forms colonies. Plant dies down after flowering. Propagate by dividing the clumps in the fall or by collecting and sowing the seeds in the fall. Grows 36" tall and 24-36" wide. Blooms May-June. Hardy in zones 4-10. Mulch in zone 4.

Nerine Plant in spring in organic, well-drained soil in sunny location. Space bulbs 10-12" apart and 3" deep. Do not water until flower spike emerges, then water well and fertilize until the foliage is of good size. Cut back on water as foliage matures. When foliage dies back completely, allow bulbs to dry and rest until flower spike re-emerges. In areas with winter frost, dig and store bulbs indoors over the winter. Grows 12" tall. Blooms late fall. Hardy in zones 8-10.

Ornithogalum umbellatum (*Star of Bethlehem*) Choose a sheltered location with well-drained soil that gets full sun to partial shade. Space bulbs 2-5" apart and 4" deep in clumps of 5 or 7 bulbs. Dig bulbs and store indoors in cold winter areas. Grows 36" tall. Blooms late spring-early summer. Hardy in zones 7-10.



Oxalis (*Wood Sorrel*) Plant in spring in full sun to partial shade in well-drained soil. Space 2-3" apart and 1-1½" deep. Water well throughout the summer. Grow 6-10" tall. Blooms June-July. Hardy in zones 8-10. In cold regions, must be dug in the fall and stored in a warm, dry location.

Indoor Culture Plant 1" deep and 2" apart in good potting soil. They need at least 4 hours of direct sunlight per day. Water well and fertilize once a month with indoor plant fertilizer.

Pansies and Violas (*Viola tricolor*, *Viola x wittrockiana*) Usually sold and grown as annuals, but often overwinter dependably. Johnny Jump Ups and Violas (V tricolor) are usually hardier than the larger flowered pansies. Plant in early spring in a part shade location. Only plant in full sun in areas with cool summers. Very frost tolerant and prefers cool, moist conditions. Provide rich, moist well-drained soil. A mulch is often helpful. Deadhead regularly to ensure that plants bloom all season. Hardy in zones 4-8.

Paperwhite Narcissus See *Indoor Bulbs Narcissus*, pg. 22.

Persian Bell See *Fritillaria persica*, page 13.

Persian Buttercup See *Ranunculus*, page 18.

Peruvian Daffodil See *Ismene Festalis*, page 15.

Pineapple Lily See *Eucomis*, page 12.

Polianthes (*Tuberose*) Plant in spring after the weather is relatively warm (60° or more at night). Choose a moist, well-drained, humus-rich location in full sun. Space bulbs 8" apart and 1-2" deep. Feed after the foliage appears. Keep lightly moist. In areas of winter frost, dig the bulbs in fall before the first frost. Store them indoors over the winter. They are very fragrant; avoid planting them near other fragrant flowers; two different perfumed aromas can clash. Grows 24-36" tall. Blooms July-August. Hardy in zones 7-10.

Puschkinia libanotica (*Striped Squill*) In fall, plant in well-drained, rich, sandy soil in full sun to partial shade. Plant bulbs 3" deep and 3" apart in clumps of 10-12. Keep well-watered during the growing season. Naturalizes well if not disturbed. Grows 6-8" tall. Blooms April-May. Hardy in zones 3-10.

Ranunculus (*Persian Buttercup*) Plant in the fall or spring. In zones 6 and north, start the bulbs indoors in the spring for best results. Choose a spot in full sun to partial shade with well-drained, sandy, slightly acid soil. Before planting, soak corms for 3 to 4 hours in warm water. Plant corms with claws pointing downward, 4" deep and 4" apart in the garden or three corms 1" deep in a 6" pot. As soon as the foliage appears, fertilize weekly. *Ranunculus* like cool nights and sunny but not hot days. They grow best when the soil around the crown is dry but the roots are moist. Do not overwater. Grows 12-15" tall. Blooms June-July. Hardy in zones 7-10.

Saffron Crocus See *Crocus sativus*, page 10.

Sandersonia aurantiaca (*Chinese Lantern Lily*) After danger of frost has passed, select a slightly to medium shady spot in the garden where a trellis or fence can support the plants as they climb to 2'. Dig a hole at least 6" deep and amend the soil with sand, leaf mulch and peat moss. If your soil is clay, dig a bigger and deeper hole, adding more sand. Plant tubers horizontally 2-4" deep and 12" apart. Cover with remaining soil. Keep well-watered until shoots appear, then keep soil moist but not soggy. After the plants bloom, carefully dig up the tubers (they may be deeper than when planted). Clean the tubers and dust with sulfur to prevent disease. Store in dry peat moss for about 3 months, until danger of frost has passed, then replant in the garden. Blooms June-July. Hardy in zones 7-11.

Indoor Culture Plant in pots 2-4" deep in a mixture of two parts rich potting soil, one part builders' sand and one part peat moss. Place in indirect light and keep soil evenly moist. Once it begins to grow, move into more sun and increase watering. Keep the temperature below 65°. After blooming, withhold water and fertilizer, allowing the plant to go dormant.

Scarborough Lily See *Vallota*, page 19.



Scilla Height & Bloom Time

Variety	Zones	Ht.	Blooms in:
<i>Bifolia</i>	3-9	11-12"	April-May
<i>Campanulata</i>	4-9	12-15"	April-May
<i>Litardieri</i>	3-9	6-8"	March-April
<i>Mischelschenroani</i>	3-9	4"	March-April
<i>Nutans</i>	3-9	14-18"	March-April
<i>Peruviana</i>	9-10	14-18"	April-May
<i>Siberica</i>	3-9	6-8"	March-April

Scilla (*Squill*) Plant in fall in an area with full sun or partial shade and rich, well-drained, sandy soil. Space bulbs 3-4" apart and 3" deep in clumps of 7-12 or more. Water well during the growing season. Leave the bulbs undisturbed and they will soon naturalize. See above for hardy zones, heights and bloom times.

Siberian Squill See *Scilla siberica*, above.

Sky Blue Lily See *Ixiolirion*, page 16.

Snake's Head Iris See *Hermodactylus*, page 14.

Snowdrops See *Galanthus*, page 13.

Soleil d'Or Narcissus See *Indoor Bulbs*, *Narcissus*, pg 22.

Spanish Bluebells See *Scilla campanulaata*, above.

Sparaxis (*Wand Flower*) In late spring, plant corms 4-5" deep and 3-4" apart in sandy, well-drained soil in a sheltered area. Grow in full sun. In autumn, dig and store the bulbs indoors for the winter. Grows 10-12" tall. Blooms May-June. Hardy in zones 7-10.

Spider Flower See *Hymenocallis harrisi*, page 15.

Spider Lily See *Lycoris radiata*, page 16.

Spring Snowflake See *Leucojum*, page 16.

Spring Starflowers See *Ipheion uniflorum*, page 15.

Squill See *Scilla*, page 18.

Starflower See *Triteleia uniflora*, below.

Star of Bethlehem See *Ornithogalum umbellatum*, page 17.

Stars of India See *Achimenes grandiflora*, page 8.

Tiger Lily See *Lilium*, page 16.

Tigridia (*Mexican Shell Flower*) Plant bulbs in spring in a cool location with full sun to light shade (in hot climates) and fast-draining, sandy soil enriched with organic material. Space bulbs 6-8" apart and 3" deep. Stake if necessary. After the flowers fade, reduce water, then when foliage browns, stop watering. In zones 8-10, mulch the bulbs for the winter. In colder areas, dig the bulbs, store in peat moss, sand or sawdust in a cold, dry place. Grows 24" tall. Blooms July-August. Hardy in zones 8-10.

Tree Dahlia See *Dahlia imperialis*, page 12.

Triplet Lily See *Brodiaea*, page 9.

Triteleia Uniflora (*Star Flower*) Select a sunny location with sandy, dry, well-drained soil. Prepare the soil to a depth of 12". Plant the corms 2-3" deep and 3-5" apart. Grows 6" tall. Blooms April-May. Hardy in zones 3-9.



Tritonia corcata (*Flame Freesia*) In warm climates, plant corms in the fall 3-4" deep and 4-6" apart in moist, well-drained soil in full sun. Blooms April-May. Remove spent flowers and allow foliage to ripen. In cold regions, treat as annuals and plant corms in the spring 3-4" deep and 4-6" apart in moist, well-drained soil in full sun. Blooms June-July. Remove spent flowers. Prior to frost, lift from the garden and allow foliage to ripen. Remove dried foliage and store corms in a frost-free, cool, dry location. Divide corms in the spring and replant. May be forced in containers for early spring flowering. Grows 22-24" tall and 18-24" wide. Hardy in zones 7-10.

Tuberose See *Polianthes*, page 18.



Tulip (*Tulipa*) Plant tulips in late fall in humus-rich, sandy, well-drained soil. Grow them where they will get at least 5-6 hours of sun a day; full sun is preferable. Dig the soil to a depth of 8-12" and work in Bulb Buddy™ or other bulb food. Set the bulbs 4-8" deep and 4-8" apart, depending on size and variety. After the ground has frozen in winter, mulch with straw or hay. After flowering, remove the head of the tulip but allow the stem and foliage to die back naturally. Tulips perform best their first year; many gardeners treat them as annuals, discarding the plants after they finish blooming. Extensive testing in recent years has proven that if a slow-release fertilizer such as Bulb Buddy™ is applied, you can expect more than one year of flowers out of most varieties of tulips. Many early-flowering species, as well as Darwin Hybrid Tulips, come back year after year with no effort.

Tulips are often planted in rows, but the result is a formal look, much like soldiers lined up in ranks. For a more informal look, plant them in groups of 5-11 or more in natural swathes. The best advice we can give is "plant bouquets". Plant several different varieties of tulips throughout the garden to extend the blooming time. Hardy in zones 3-8.

In zones 8-10, refrigerate the bulbs for about 8 weeks at 40-45°. In the garden, plant the bulbs after Nov. 1; 6-8" deep in a lightly-shady area to keep the bulbs as cool as possible. Dig and discard the tulips after they bloom.

Vallota (*Scarborough Lily*) Cultural instructions are the same as *Hippeastrum*. See "Indoor Bulbs" section. The leaves will die down at the end of the growing season in fall. Do not let the pots dry out completely. Hardy in zone 10.

Wand Flower See *Sparaxis*, page 18.

Wind Flower See *Anemone De Caen*, page 8.

Winter Aconite See *Eranthis cilicica*, page 12.

Wood Hyacinths See *Scilla*, page 18.

Wood Sorrel See *Oxalis*, page 17.

Zantedeschia (*Calla Lily*) In frost-free areas, grow calla lilies in a moist, sunny to semi-shady location with soil that has been amended with a lot of organic matter. Plant the rhizomes 4" deep and 12-24" apart. Water liberally and feed monthly during the growing season. After the flowers fade, reduce the amount of water. In areas where Callas are not hardy, allow the plants to dry out. Dig the rhizomes and store in dry material for the winter. Grows 24-36" tall. Blooms December-March. Hardy in zones 9-11.

Indoor Culture Plant one rhizome 1-2" deep in a 6" pot filled with good potting soil. Water lightly and keep in a cool, shaded spot until growth begins. Then move to a sunny window where it can get at least 4

hours of sun a day. Water regularly and fertilize biweekly. Callas thrive in cool temperatures and high humidity. Rest the bulbs for three months after the foliage dies back but do not transplant out of the pot until necessary.

Zephyranthes (*Fairy Lily*) Plant in spring in full sun in well-drained, sandy soil. Space bulbs 3-4" apart and 1-2" deep. In areas where bulbs are not hardy, dig them in the fall and store them in warm, dry material for the winter. Grows 8-10" tall, Blooms June-July. Hardy in zones 8-11.

Indoor Culture Plant 5-6 bulbs 2" deep in a 6" pot. Water thoroughly. Keep in a cool, dark area until the foliage emerges. Move to a sunny location with a night temperature of 50°. After the foliage dies, do not water for 10 weeks. To induce flowering, begin the cycle again.

INDOOR BULBS

Planting in pots and forcing bulbs indoors.

Forcing bulbs indoors is a process by which you get the bulbs to flower earlier than they would if planted in the garden. When forcing, bulbs are potted, then subjected to darkness and temperatures near freezing for several months to mimic outdoor conditions. When there is sufficient root growth, they are brought gradually into the heat and light as if they were emerging on a balmy spring day. Some bulbs, like Amaryllis and Paperwhite Narcissus are not hardy outdoor bulbs and do not need to go through a cold period to force them into bloom.

For forcing, use only named varieties of bulbs and top-sized bulbs. Avoid bulb mixtures that may be suitable for naturalizing outdoors; indoors they will be disappointing. To guarantee flowering bulbs throughout the winter, choose a variety of different



bulbs, and make successive plantings through the fall.

Keep all bulbs away from apples or pineapples which give off ethylene gas that inhibits flower formation.

Bulbs as Houseplants

Several of the summer bulbs do well as houseplants. Be sure to provide at least 4 to 6 hours of sun each day, adequate humidity, and, for some bulbs, cool enough temperatures. Over-watering of summer bulbs indoors is as bad as poor drainage outdoors. Let the surface become almost dry to the touch before watering. Caladium and cyclamen are the exceptions; they need constant moisture. Use a porous soil mixture, not garden soil and place coarse drainage material in the bottom of the pot. Set the pots on trays of

pebbles with water added to increase humidity or group plants together. Most summer bulbs grown indoors require temperatures ranging from 39°F to 59°F. Even if you can only offer temperatures from 59°F to 70°F, you can still grow a wide selection of bulbs including gloriosa lily, vallota, eucomis and the amaryllis relatives. Most bulbs grown as houseplants need a rest period of at least a few weeks in winter. Water minimally, if at all, during this period.



Forceable Bulbs

Variety	Weeks of Cold	Weeks to bloom	# Bulbs in 6" Pot
Amaryllis	None	6-8	1
Chionodoxa	15	2-3	6-10
Crocus	15	2	8-12
Eranthis	15	2	8-12
Fritillaria Meleagris	15	3	5
Galanthus	15	2	6-10
Hyacinth	10-12	2-3	3
Iris Danfordiae	11-15	2-3	5-8
Iris Reticulata	15	2-3	5-8
Muscari	13-15	2-3	5-7
Narcissus	15-17	2-3	3-5
Paperwhite Narcissus	None	3-5	5-7
Puschkinia	15	2-3	8-10
Scilla	12-15	2-3	8-10
Tulip	14-20	2-3	5

Planting & Forcing Steps

A container of sunny daffodils, or cheery crocus, blooming on your windowsill in February can be a treat. In order to enjoy these beautiful blooms in winter, you must make plans in late fall. Depending on the type of bulb, it may take anywhere from 1-4 months from the time they are potted up until they bloom.

Step One Fill a pot three-quarters full with potting soil. Place the bulbs as close together as possible with pointed ends up. Gently press the bulbs into the soil so that the tips of the bulbs are about level with the rim of the pot. Once the bulbs are positioned, fill the pots with soil to within $\frac{1}{4}$ - $\frac{1}{2}$ " of the rim, leaving the tips of the bulbs exposed. Water gently until soil is evenly moist.

Step Two Now the bulbs must go into a cool, dark place to grow roots. This takes a minimum of eight weeks, averaging about 12-15 weeks (see bulb chart above). The best places for the cool period are in the refrigerator (not the crisper drawer) or in cold areas outside. It is important to remember that heat will interfere with the forcing process. An outdoor storage space must remain between 35-50°. If placed outdoors, set on good level ground, free from water, or dig a 2' trench. Line the trench with 6" of mulch or hay. Set the pots in the trench, then cover with 6-8" of chopped leaves, mulch or hay. Finally, cover with 3-4" of soil. Do not permit the pots to dry out.

Step Three Check the pots after about 8 weeks. Once the roots have developed and shoots have begun to emerge from the bulb, bring the pots gradually into the warmth and light. Start with a cool room and indirect sunlight. By the end of one week, the bulbs can be in full sun at 60-65°. Keep the soil lightly moist, and within a month you will be enjoying flowers. Once the

bulbs are in full bud, you can slow down or speed up the process by controlling the temperature – warmer temperatures make the flowers open faster, cooler temperature will make them last longer.

Step Four If you keep watering the bulbs after they have finished blooming, you can then plant them in the garden once the weather has warmed up. However, much energy has been expended by the bulbs in the forcing process and the blooms the following spring may not be as good as if you planted fresh bulbs in the fall. Tulips, especially, do not come back well after being forced. In general, the smaller bulbs, like crocus, scilla, and galanthus, are best to replant in the garden.

Varieties

Amaryllis See *Hippeastrum*.

Amazon Lily See *Eucharis amazonica graniflora*.

Blood Lily See *Haemanthus*.

Chinese Sacred Lily See *Narcissus*.

Continued on next page.

Clivia minata (*Kafir Lily*) In warmest areas, Clivia can grow outdoors. Plant 18-24" apart in partial shade in well-drained, acid to neutral soil. Grows 18-24" tall. Blooms February-May. Hardy in zones 10-11, other must plant inside.

Indoor Culture Clivia is an excellent potted plant. Plant with the root system just below the soil line in rich, well-drained soil. After planting, Clivia should not be disturbed. It is happiest when rootbound. Provide bright, indirect sunlight and good air circulation. Keep the soil moist; feed regularly. In November, when growth slows, water less frequently. Clivias can be moved outside to a shady spot for the summer.

Crocus Pot The pre-potted, pre-cooled Crocus bulbs will bloom in their attractive pot within two to three weeks after arrival. Simply water the bulbs three times a week. When blooming starts, keep the Crocus Pot in the coolest part of the room away from radiators or direct sun. You can prolong flowering by keeping the Crocus in a cool room at night. When the flowers fade, water bulbs only once every two weeks. When the weather warms in spring, remove the bulbs from the pot and plant outside. They will lie dormant during the summer and winter, then bloom again in the garden for your enjoyment the following spring.

Eucharis amazonica grandiflora (*Amazon Lily*) Plant the bulb in a rich, open soil mixture, 3-4 bulbs per 8" pot. Leave the neck of the bulb exposed. Mist frequently to maintain high humidity. Grow in bright shade with a minimum night temperature of 65-70°. For several weeks, lower the night temperature to 55-60° and cut back on water until the leaves droop. Go back to regular night temperature and water generously. This induces flowering, which will occur in several months. Keep the plant potbound for best flowering. Do not repot more than once every 2-3 years. Grows 20-24" tall. Hardy in zone 10.

Haemanthus (*Blood Lily*) Plant the bulbs in 6" containers as soon as they arrive in the spring. Set the bulb in well-drained potting soil so the bulb tip is at the soil surface. Place container in a sunny to partially shaded location and keep soil moist, but not waterlogged. Leaves and the flower stem will appear within 12-16 weeks after planting. Remove spent flower stem after blooming. In the fall, start withholding water and allow foliage to ripen before removing. Store bulb in container in a cool, dry, frost-free location over the winter. Do not repot. They grow and bloom best when pot-bound. Then, in the late spring, bring container into a cool, sunny location and begin watering. New growth will appear and the growing cycle starts all over. Grows 10-12" tall. Blooms 12-16 weeks after planting. Hardy in zones 9-10.

Hippeastrum (*Amaryllis*) Amaryllis thrive when they are potbound. Choose a deep pot that is not more than 2" wider than the bulb. Using good potting soil, plant the bulb so that the upper 1/3 of the bulb is above the soil level. Water thoroughly, then place in

full sun at room temperature (65-70°). Water only when the soil feels dry to the touch. It will bloom within 6-8 weeks. After the flower fades, cut down the flower stalk. Continue to water. Fertilize once a month. During the summer, plant the pot and bulb in the garden. In September, bring the pot and bulb indoors, and start withholding water. Let foliage dry. Store in a cool dark place with no water or fertilizer for 8-10 weeks. In mid-November, add some fresh soil and start re-watering.

Lilium (*Lily*) Use only bulbs that have been pre-cooled for pot culture. Make a light, porous potting mixture for lilies using 2 parts sandy loam, 1 part sphagnum moss and 1 part sand. Large, deep pots are essential. Plant 3 bulbs in an 8-10" pot. Deep planting is important. Put the pots in the greenhouse or bright sunny room immediately. Lilies need day temperatures of 68° or less and night temperatures of 40-50°. Do not force at temperatures higher than 70°. Fertilize with a 5-10-5 liquid fertilizer when the buds first appear and then 14 days later. Plants will flower approximately 30 days after the buds first become visible. You can then increase temperature for faster blooming or decrease temperature to slow the growth. The forced bulbs can be planted after blooming in your garden for added years of pleasure.

Narcissus (*Paperwhite, Chinese Sacred Lily, Soleil d'Or*) These tender Narcissus are not hardy outdoors in most areas, and for indoor forcing do not need a cold period. Plant the bulbs in any potting soil with the top just above the surface. Water well and keep the soil evenly moist. Place the pot in a sunny window. Flowers will appear within 4-6 weeks. Forced tender Narcissus are treated like annuals. Once they have finished blooming, they are discarded. However, in frost-free areas, these Narcissus can be grown outside. Hardy in zones 8-10.

You can also grow these bulbs in gravel, stone, sand, marbles, or other material which serves to anchor the roots. Use a decorative, shallow container without a drainage hole and place the bulbs so that the lower third of the bulb is covered with gravel or whatever material you have used. Add water to a level of the base of the bulb. Narcissus grown in this manner need a lot of water, every day.

Paperwhite Narcissus See Narcissus.

Soleil d'Or See Narcissus.

Tip: No Flop Paperwhites. Recipe for Success: Start your Paperwhite bulbs in plain old water. Wait until the stem is 1-2" long and roots have formed. Then drain the water. Replace water with a solution of 1 part gin to 7 parts water. Wait for Paperwhites to grow their stunted, stronger stems and watch them hold their heads up high.

FERNS

Shade loving perennials.

Ferns need moisture and protection from direct rays of the sun to thrive. They do best in rich, loamy soil with good drainage. Diffused light is ideal, especially during the warmer months. A northern exposure that is protected from the wind often works well.



Planting Instructions

Ferns are best planted in spring or fall. Loosen soil to a depth of 12" and amend the soil with organic material such as leaf mold. Plant the ferns so the roots are covered with about 2" of soil. Space ferns at about 15" apart, allow 24" for larger varieties. Throughout the summer, keep the bed mulched. Keep watering well into November. In late summer and fall do not

remove any dead fronds; they act as natural insulation for the crowns during the winter. After a hard frost, cover lightly with leaves or evergreen boughs and do not remove until all danger of frost has passed.

Varieties

Adiantum pedatum (*Maidenhair Fern*) Plant in light shade to bright light (no direct sun) in well-drained, organic soil. Deciduous. Grows 1-2' tall. Hardy in zones 3-8.



Athyrium filix femina (*Lady Fern*) Plant in partial sun to medium shade. It is tolerant of all but very dry or very wet soils. Deciduous. Grows 2-3' tall. Hardy in zones 3-8.

Athyrium niponicum (*Japanese Painted Fern*) Plant in part to full shade for best color. The soil should be well-drained; however, it should be planted in a location that maintains moisture during the heat of summer. Also does well in containers, planted 8" deep. Deciduous. Grows 3-4' tall. Hardy in zones 3-8.

Demnstaedra punctilobulba (*Hay Scented Fern*) Plant in spring or fall in partial shade in moist, well-drained, slightly acidic soil. Deciduous. Tolerates wide range of growing conditions. Grows 2-3' tall and 2-3' wide. Hardy in zones 3-8.

Dryopteris marginalis (*Leatherwood Fern*) Plant in light shade in rich, light soil of any type. Semi-evergreen. Grows 2-3' tall. Hardy in zones 3-8.

Dryopteris spinulosa (*Toothed Wood Fern*) Plant in partial shade in rich, moist soil. Semi-evergreen. Grows 1-2' tall. Hardy in zones 3-8.

Onoclea sensibilis (*Sensitive Fern*) Plant in sun or light shade in slightly acid, moist soil. Deciduous. Grows 12-18" tall. Hardy zones 3-8.

Osmunda cinnamomea (*Cinnamon Fern*) Plant in partial sun to light shade in ordinary garden soil. It grows happily in swampy or dry areas. Deciduous. Grows 1-2' tall. Hardy in zones 3-8.

Osmunda regalis (*Royal Fern*) Plant in full sun (if close to water) to partial shade in moist, slightly acid soil. It thrives in wet, boggy, swampy areas. Deciduous. Grows 3-4' tall. Hardy in zones 3-10.

Polystichum acrostichoides (*Christmas Fern*) Plant in spring or fall in partial to full shade in moist, fertile, well-drained soil. Evergreen. Grows 2-3' tall and 2-3' wide. Hardy in zones 3-9.

Pteritis nodulosa (*Ostrich Fern*) Plant in light shade in rich, moist soil. Deciduous. Grows 4-5' tall. Hardy in zones 3-8.

PERENNIALS

The backbone of the flower garden.

Perennials are among the most rewarding of all garden plants. They have long been considered the backbone of the flower garden. Their popularity continues to grow as gardeners discover the innumerable varieties with their range of colors, sizes, forms and blooming times. There are perennials suitable for almost any spot in the garden, from tall flowering perennials for the sunniest part of the garden to low-growing perennials that provide a bright spot in a dark, shady area.

Perennials do not provide an instant garden, but, once established, continue to perform in the garden for a number of years. As tempting as it may be to space perennials closer than recommended, refrain from doing so. Otherwise, you will just have to dig them up and replant them in a year or two when they are crowding each other out.

With some careful planning and preparation, your perennial garden will produce amazing results from a relatively small financial investment. It is important to remember that any new perennial planting is an investment for the future. **Few perennials will properly bloom or develop to their full potential their first year in the garden.** However, they will come back the next year and in following years in all their perennial splendor.

A perennial garden can be a fun challenge. Unlike many annuals, no single perennial gives a continuous show of color (from flowers) from spring to fall. A careful selection of perennials is necessary to achieve a continuity of bloom. Include a range of bulbs and a few annuals and you will have flowers from early spring through the summer and well into fall.

As with any plant, it is of utmost importance to choose the right perennial for the site. A sun-loving perennial will grow straggly in the shade, likewise a shade-loving plant will be blasted in full sun. Choose low-growing plants for the front of the garden, and tall plants for the back. Occasionally plant heights can be confusing. Some plants, like *Heuchera*, have foliage that is relatively low to the ground with flowers up to 30". Yet, because the flowers are on airy sprays, you can plant *Heuchera* in the foreground without obliterating the view of plants behind. Look also to the foliage to provide form, color, contrast and textural interest when the plants are not in bloom.



When planning your garden, whether you are making a new garden or just adding some perennials to an existing garden, there are several basics to remember.

Most perennials need at least one square foot of garden space per plant. It may look like a lot of space at first, but the plant will fill out in time. Plant like the professionals, in groups of 3, 5 or 7. A single plant is not enough to make a good showing.

Plant your perennials as soon as you receive them. Be careful when handling the plants so that the roots do not dry out and break. Take the time to plant your perennials right. Make sure the soil is the type required. You can always amend the hole for the particular plant to suit it; however, you cannot easily turn a shady spot into a sunny one, nor readily make a sandy area rich and moisture-retentive. Dig a hole large enough to accommodate all the roots comfortably. Spread the roots outward as well as downward so that they can start to grow and establish themselves. If the perennial has a large crown, set the crown on a little mound of firm soil in the center of the hole, allowing the roots to trail down. Always plant the perennials at the same depth at which they were growing. Fill in around the plant with soil, gently firming with the palms of your hands to eliminate any air pockets, but not so heavily as to compact the soil. Mulch with several inches of organic mulch to conserve water and keep weeds from growing.

How to Plant Different Types of Bareroot Plants

Iris divisions

Plant rhizomes horizontally with the tops of the rhizomes above the soil level. Press soil firmly around the roots to remove the air pockets.

Dicentra, Paeonia, Platycodon Roots

Plant about 2" deep so that the tips of the new eyes are just below ground level.

Chrysanthemum, Dianthus, Phlox, Campanula, etc.

Plant so that the crowns of plants with fibrous root systems are just above the surface of the soil.

Althaea, Gypsophila, Hibiscus, etc.

Plant perennials with long tap roots so that the crowns are just below soil level.

Some plants require staking to support the weight of their flower heads without drooping, or to keep tall flowering spikes from being broken by wind or rain. It is easier to place the stake or support hoop when planting, avoiding possible injury to a larger plant.

Once the plants start growing, water when necessary. Fertilize sparingly. Keep a close eye out for insect infestation or disease and treat immediately. Deadhead or cut back the flowers after they fade. This often encourages a second flush of bloom and keeps the plant looking neat. After the first frost, cut back all



the dead stalks and foliage to about 4". In cold winter areas, perennials benefit from mulching. Once the weather is consistently cold, mulch with straw, salt hay or leaves to prevent winter injury caused by alternate freezing and thawing of the ground. If the fall has been dry, water the garden well before mulching.

Most perennials need to be divided every few years to generate new growth and to keep them from becoming overgrown and crowded. Dividing is usually done in spring, unless otherwise noted. Replant one division where the original plant was, and use the other divisions in other parts of the garden. Friends will often be glad to help with this garden chore, especially if they are repaid with divisions to take back to their own gardens.

PLANTING DEPTH: If planting depth is not indicated, the perennial root should be planted just beneath the soil surface. Dig an adequate hole for your perennial root, spread the roots, and allow 1½-2" of soil about the crown.

Varieties

Acanthus (*Bear's Breech*) Plant in full sun in well-drained, ordinary soil. A mixture of compost and sand is preferred. They do not like heavy clay or loam. Once planted, do not disturb. They become established slowly. If transplanting is absolutely necessary, it should only be done in February and March. Grows 3-4' tall. Blooms July-August. Hardy in zones 6-10.

Achillea (*Yarrow*) Yarrow thrives in poor or light, well-drained, dry soil in full sun. Plant horizontally, 1-2" below the soil line, with any green growth above soil level. Allow 1-2' between plants. Stake if planted in a windy place. Divide in spring or fall. Grows to 36" tall with an 18" spread. Blooms June-September. Hardy in zones 3-9.

Aconitum (*Monk's Hood*) Grow in partial shade in rich, moist, slightly acid, well-drained soil. It will grow in full sun if the soil is moist. Space plants 12-18" apart. Do not disturb the roots. Stake tall flower spikes. All parts of the plant are poisonous if consumed. Grows 24-48" tall with a 12" spread. Blooms June-September. Hardy in zones 3-8.

Acorus (*Sweet Flag*) An ideal plant for planting on the edge or submerged into a pond, but not deeper than 8". Plant in plastic or earthenware container in heavy top soil. Cover the plant with growing medium unless green growth is showing. Any growth should be exposed to the air. Water thoroughly after planting. Let plant grow about 4" tall before submerging the pot into the pond. These plants can also be planted into the ground as long as there is an abundance of moisture. In cold areas, plants should be protected from frost by applying a layer of straw or leaves. Grows 36" tall. Blooms in the summer. Hardy in zones 4-11.

Actaea See *Cimicifuga*.

Agapanthus (*Lily of the Nile*) Thrives in deep, rich, well-drained, moist soil in full sun to light shade. In zones 8-10, plant in the ground, allowing 2' between plants. In colder areas grow in large containers. It flowers more heavily as it becomes rootbound. Keep well-watered during the growing season; cut back on water in fall and winter. Drought-tolerant once established. Divide only when absolutely necessary. Does not like having its roots disturbed. Grows 18-36" tall. Blooms summer to early fall. Hardy in zones 6-10.

Agastache Plant in spring or fall in full sun in moist, well-drained average soil. Space plants 18-24" apart. After 3-4 years, divide plant in spring or fall. Remove spent flower stems after blooming. Grows 24" tall and 18-24" wide. Blooms July-August. Hardy in zones 5-9.

Ajuga (Bugleweed) Plant 12" apart in shade in any well-drained soil. Spreads rapidly to form a 4-6" tall groundcover. Blooms in spring. Hardy in zones 4-9.

Alcea See *Althaea rosea*, below.

Alchemilla Mollis (Lady's Mantle) Plant in rich, moist soil. Grows best in partial shade, but will tolerate full sun. Grows 18" tall with 24" spread. Blooms June. Hardy in zones 3-9.

Alstroemeria (Peruvian Lily) Plant 12" apart in deep, rich, organic, well-drained soil in full sun. Water well during growing season. Fertilize occasionally with liquid fertilizer. Grows 18-36" tall. Blooms July-September. Hardy in zones 7-10.

Althaea rosea (Hollyhock) Plant 16" apart in clumps of 5 or more plants for presentation. Grow in full sun in well-drained, neutral to slightly alkaline soil. Choose a sheltered location or stake the flower spikes to avoid wind damage. Good air circulation helps prevent powdery mildew on the leaves in summer. Grows 4-7' tall. Flowers July-August. Hardy in zones 4-8.

Anemone Japonica (Japanese Anemone) Plant in light sun to partial shade in a moist, rich, well-drained soil in a protected location. Plant about 2" below soil level. Space plants 2' apart. Mulch lightly in early winter for added protection. Grows 24-30" tall. Blooms September to frost. Hardy in zones 5-8.

Aquilegia (Columbine) Plant in moist, well-drained soil enriched with organic matter in partial shade to full sun. Plant 12-18" apart. To prolong the flowering period, cut off all spent flowers. Grows 24-30" tall, depending on variety. Blooms in May-June. Hardy in zones 3-9.

Arisarum Very small rootstock which does best in the shade. Plant in early spring, a ½" below the soil surface in a mixture of humus and sand. Keep moist but do not overwater. The plant will go dormant in mid-summer and will re-appear in early spring. Because of the size of the rootstock many gardeners prefer to start the plant in a 4-5" pot and transplant it into the garden once the plant has started to germinate. Grows 6" tall. Blooms April-May. Hardy in zones 5-9.

Artemisia schmidtiana (Silver Mound) Plant in well-drained, ordinary soil in full sun. Will not tolerate humid or moist conditions. Space plants 18" apart. Grown for its silvery foliage, not flowers. Drought-tolerant. Grows 12" tall with a rounded form. Hardy in zones 3-9.

Aruncus dioicus (Goat's Beard) Plant in rich, moist soil in full sun to partial shade. Grows 4-6' tall, depending on variety. Blooms June-July. Hardy in zones 3-8.

Asclepias (Butterfly Plant) Plant in well-drained, sandy or gravelly soil in full sun to light shade. Plant the root vertically so that the eye is 1-2" beneath the soil surface. Space plants 18" apart. Water sparingly. Drought-tolerant. Clumps can remain undisturbed indefinitely. Grows 18-36" tall. Blooms June-July. Hardy in zones 3-9.

Aster Stokes See *Stokesia*, page 38.



Astilbe (Spirea) Plant in deep, organically-rich, well-drained, moist soil in partial shade. It will grow in full sun in moderate climates, but does not tolerate hot summer temperatures. Space 18-30" apart. Fertilize in spring. Divide every three years. Grows 18-60" tall. Blooms June-August. Hardy in zones 4-8.

Astrantia (Masterwort) Plant in rich, evenly moist soil in full to partial shade. Space 12-18" apart. Grows 24-36" tall. Blooms June-Sept. Hardy in zones 4-8.

Aubrieta (Purple Rock Cress) Plant in light, well-drained soil in full sun to partial shade. Space 12" apart. Shear after flowering to keep the plant from becoming straggly. Grows 6" tall. Blooms April-June. Hardy in zones 4-8.

Aurina saxatilis (Basket of Gold) Plant in very well-drained, poor soil in full sun for compact, neat plants. If planted in rich soil, the plant tends to have an untidy habit. Space 12" apart. Grows 8-10" tall and 24" wide. Blooms April-May. Hardy in zones 3-10.

Autumn Joy See *Sedum spec.*, page 38.

Baby's Breath See *Gypsophila paniculata*, page 30.

Bachelor Button See *Centaurea*, page 27.

Balloon Flower See *Platycodon grandiflorus*, page 36.

Baptisia (Blue Wild Indigo) This native perennial thrives in both sun and part shade. It prefers moist soil but can also tolerate drier soils if it is given enough irrigation to establish a good root system. It is not uncommon for the plant to be slow to establish and to only create one or two flowering stalks for the first couple of years. Usually, however it will experience a growth spurt in its third year and then grow quickly. It will die back to the ground in autumn. Height: 35-45". Blooms in Summer. Zones: 3-9..

Bat Flower See *Tacca*, page 38.

Bearded Iris See *Iris germanica*, page 32.

Bee Balm See *Monarda*, page 35.

Belamcanda (Blackberry Lily) Plant in full sun to full shade, in rich, well-drained soil. Plant roots about 1" below soil level. Space 12" apart. Grows 24-30" tall and 30" wide. Blooms June-August, seed heads of interest in late summer and fall. Hardy in zones 5-8.

Bell Worts See *Uvularia grandiflora*, page 39.

Bethlehem Sage See *Pulmonaria*, page 37.

Blackberry Lily See *Belamcanda*, above.

Black-Eyed Susan See *Rudbeckia*, page 37.

Black Iris See *Iris chrysographes*, page 31.

Black Mondo Grass This is a shade loving dwarf perennial with grassy foliage (although it is not a true grass and is more closely related to Lilies). It can tolerate part sun but full sun will scald the foliage. It thrives in moist soils (even heavy clay) and will need extra moisture to perform well in drier soils. It is mostly evergreen and will not need to be cut back in winter, although very hard winters or very dry and hot summers will sometimes damage the foliage to the point where it will look better if sheared back to within a few inches of the ground and allowed to regrow. Height: 6-8". Hardy in zones: 5-9.

Blazing Stars See *Liatris*, page 33.

Bleeding Hearts See *Dicentra*, page 28.

Bluebells, Virginia See *Mertensia*, page 34.

Blue Bonnet See *Lupinus*, page 34.

Blue Danube See *Stokesia*, page 38.

Blue Wild Indigo See *Baptisia*, page 26.

Blue Fescue See *Festuca glauca*, page 29.

Blue Lilyturf See *Liriopse spicata*, page 34.

Blue Oat Grass See *Helictotrichon sempervirens*, page 30.

Blue Sea Holly See *Eryngium*, page 29.

Brunnera macrophylla (Forget-Me-Not) Plant in fertile, moist soil in partial shade to full sun. Space 24" apart. Water well and cut back after flowering to encourage a second blooming. Divide in spring. Grows 12-15" tall. Blooms May-June. Hardy in zones 3-8.

Bugbane See *Cimicifuga*, next column.

Bugleweed See *Ajuga*, page 26.

Butterfly Plant See *Asclepias*, page 26.

Calamagrostis acutiflora (Feather Reed Grass) Plant in full sun to light shade. Prefers moist, well-drained, fertile soil, but will tolerate heavier clay soils and drier sites. Fertilizer may be required to produce maximum height. Low fertility will result in shorter plants. Blooms June-July. Hardy in zones 5-8.

Campanula (Bellflower) Plant in spring or fall in full sun to full shade in well-drained humus soil. Space plants 12-20" apart. After 3-4 years, divide plant in spring or fall. Remove spent flower stems after blooming. Grows 12-20" tall and 12-18" wide. When grown in the shade, plants will be taller than those grown in full sun. Blooms July-August. Hardy in zones 3-10.

Candy Lily See *Pardancanda norisii*, page 36.

Cardinal Flower See *Lobelia fulgens*, page 34.

Carex (Sedge) Excellent, low maintenance ground-cover for hot, dry areas of the garden. Plant in any soil in full sun to partial shade; space approximately 8" apart. Grows 9-12" tall. Hardy in zones 5-9.

Cat Tail See *Typha*, page 39.

Centaurea (Bachelor Button) Plant in well-drained, slightly alkaline soil in full sun. It tolerates dry soil, but cannot tolerate soggy soil in winter. Space 24" apart. Most striking when planted in bold clumps of 3-5 plants. Grows 24-30" tall. Blooms June-July. Hardy in zones 3-10.

Chelone obliqua (Snakehead, Turtlehead) Plant in rich, moist soil in partial shade. It thrives near a pond or stream. Space 24" apart. Grows 24-36" tall. Blooms August-September. Hardy in zones 7-9.

Christmas Rose See *Helleborus*, page 30.

Chrysanthemum (Shasta Daisy) Plant in rich, very well-drained soil in full sun. Space 18-24" apart. Keep watered and fertilize regularly throughout the growing season. Deadhead to encourage second flush of bloom and to keep the plant looking neat. Divide in spring or fall every 2-3 years to keep plants vigorous and compact. Grows 12-16" tall. Blooms July-August. Hardy in zones 4-9.

Cimicifuga (Bugbane) Plant in deep, well-drained, humusy soil in full sun to shade. Space 24" apart. Rarely needs staking despite its height. Grows 4-6' tall. Blooms September-October. Hardy in zones 3-9.

Cinquefoil See *Potentilla*, page 37.

Clustered Bellflower See *Campanula*, above.

Columbine See *Aquilegia*, page 26.

Commelina (*Mexican Dayflower*) Plant in well-drained soil in full sun to partial shade. Space 12-18" apart. Grows 12-18" tall. Flowers in summer. Completely hardy in zones 8-10. In zones 6-8, mulch well for winter protection. In colder areas, dig and store in sand or sawdust in a cool dry place over the winter.

Coneflower See *Echinacea*, page 29.

Convallaria (*Lily of the Valley*) Plant in very early spring or fall in rich, well-drained soil in partial to full shade. Plant the fleshy rhizomes ("pips") horizontally about 1" deep and 4-6" apart. Mulch heavily in fall with compost or well-rotted manure. Divide only when flowering poorly—a good indication of overcrowding. Grows 6-8" tall. Blooms May-early June. Hardy in zones 3-9.



Coral Bells See *Heuchera*, page 31.

Coral Iris See *Iris foetidissima*, page 32.

Coreopsis (*Golden Daisy*) Plant in well-drained, ordinary soil in full sun. Space 12-24" apart. Plants are slow to appear in spring; be patient. Grows 12-18" tall. Blooms all summer to fall. Hardy in zones 3-10.

Coronilla varia (*Crownvetch*) Plant in poor, dry soil in partial shade to full sun. Will grow in virtually any soil. Space 24" apart. Spreads rapidly, chokes out weeds, and is good to control erosion on slopes and roadsides. Grows 10-18" tall. Blooms May-June. Hardy in zones 3-9.

Cortaderia selloana (*Pampas Grass*) Plant in fertile, very well-drained soil in full sun to partial shade. Space 36" apart. Some flower plumes will appear the first summer, the second year is spectacular. Water only in spring. Keep soil dry the rest of the growing season. In late winter, cut the plant to the ground. Be careful, leaf edges are very sharp. In zone 7, tie clump up in fall and mulch well. Grows 8-12' tall. Blooms late summer to fall. Hardy in zones 7-10.

Corydalis 'China Blue' Plant in partial shade in either spring or fall. Prefers evenly moist, well-drained, slightly acidic soil. Space plants 12-14" apart. Blooms all summer in regions with cool summers. Otherwise, it will bloom early summer and again in the fall. Grows 12" tall and 8-10" wide. Hardy in zones 5-7.

Cosmos atrosanguineus Plant in full sun in the spring in well-drained, fertile soil. Space plants 24-36" apart. Hardy in zones 7-10 only. Elsewhere dig and store in a frost-free area or treat as an annual and replant with new plants. May be planted in containers. Plant 3 per 10-12" container with well-drained potting soil. Keep soil moist, but not water-logged. Grows 24-36" tall and 24-36" wide. Blooms July-Sept.

Cote d'Azur Pinks See *Saponaria*, page 37.

Crambe cordifolia (*Giant Gypsophila*) Plant in deep, well-drained, moderately alkaline soil in full sun. Space 3-6" apart. May require staking. Grows 8-10' tall. Blooms June-July. Hardy in zones 6-10.

Cranesbill See *Geranium*, page 30.

Crownvetch See *Coronilla varia*, on this page.

Cushion Spurge See *Euphorbia characias*, page 29.

Daylily See *Hemerocallis*, page 31.

Delphinium Plant in moist, well-drained soil in full sun to partial shade. Space 24" apart. Protect from the wind. Delphiniums do not do well in hot areas with long summers. Stake plants to support tall flower spikes. Secure stakes in at least 12" of soil. Fertilize regularly during the growing season. Cut down the flower spike after it blooms and it may rebloom in fall. Mulch well over the winter. Grows 24-72" tall and blooms June-Sept, depending on variety. Hardy in zones 3-7.

Dianthus Plant in poor, very well-drained soil in full sun. Space 12" apart. Drought tolerant. Well suited for a rock garden. Grows 8-10" tall. Blooms summer. Hardy in zones 3-10.

Dicentra (*Bleeding Heart*) Plant in well-drained, humusy soil, in partial to full shade. It cannot tolerate constantly moist soil. May tolerate full sun in cool areas. Space 12-18" apart. Grows 18-36" tall. Blooms May to early June, depending on variety. 'Luxuriant' flowers spring to fall. *Spectabilis* varieties' foliage dies back in midsummer. Hardy in zones 3-9.

Digitalis purpurea (*Foxglove*) Plant in moist, porous soil enriched with organic matter in full sun to partial shade. In hot areas, shade the plants lightly. Space 12-18" apart. Cut down flower spike after it blooms and it may rebloom. After the ground freezes in winter, mulch to prevent crown rot. Grows 48-60" tall. Blooms May to early June. Hardy in zones 4-9.

Dodecatheon (*Shooting Star*) For all species, plant in a site with some protection from the afternoon sun that provides consistently moist, but not wet, soil conditions. Plant with the crown just below the surface; you may want to cover it with a bit of organic litter or moss, and water well. Once established, the crown will divide many times over and develop into a relatively dense clump producing many flower stems. Clumps can be divided in the fall by digging out the mass of crowns and roots and gently pulling apart the crowns and replanting them separately. Grows 18-20" tall. Blooms May-June. Hardy in zones 5-8.

Dragon's Blood See *Sedum spec.*, page 38.

Dwarf Banana See *Musella*, page 35.

Echinacea (*White Black-Eyed Susan, Pink Black-Eyed Susan, Coneflower*) Plant in well-drained, sandy loam in full sun or partial shade. Easy to grow in most soils. Drought tolerant. Space 18-24" apart. Grows 18-36" tall. Blooms July-September. Hardy in zones 3-9.

Echinops (*Globe Thistle*) Plant in full sun to part shade in the spring or fall in well-drained, acidic, loamy soil. Space plants 3-4' apart. Blooms July to first fall frost. Grow 36-48" tall and as wide. Hardy in zones 4-9.

English Ivy See *Hedera helix*, page 30.

English Lavender See *Lavandula*, page 33.

Epimedium (*Barrenwort*) Prefers cool shady areas; tolerates dry soils. Plant in a mixture of compost and sand. Space 8-12" apart. Beautiful plant to use as groundcover in rock garden or border. Flowering height 10-15". Hardy in zones 4-9.

Eryngium (*Blue Sea Holly*) Plant in well-drained soil in full sun. Prefers poor soil to rich soil. Space 18-24" apart. Mulch with gravel around the crown to avoid winter wetness. Do not disturb plant once established; divide only when necessary. Grows 18-36" tall, depending on variety. Blooms July-frost. Hardy in zones 4-7.

Euonymus fortunei (*Purple Winter creeper*) Plant in well-drained soil in full sun to full shade. Will grow in almost any site. Space 12" apart. Grows 12" tall. Flowers inconspicuously in spring, but grown for its evergreen foliage as a groundcover. Hardy in zones 3-9.

Eupatorium maculatum atropurpureum (*Joe Pye Weed*) Plant in full sun in spring or fall in moist, well-drained, loamy soil. Space plants 4-5' apart. Blooms in July-August. Naturalizes well. Grows 4-5' tall and just as wide. Hardy in zones 4-7.

Euphorbia characias (*Cushion Spurge*) Plant in full sun to partial shade in any ordinary garden soil. Excellent for use in the perennial border or in a patio container. The milky-looking sap that this plant exudes is very acrid and poisonous. Great care should be taken that the sap does not touch any broken skin. Hardy in zones 5-8.

Evening Primrose See *Oenothera*, page 32.

Feather Reed Grass See *Calamagrostis acutiflora*, pg 27.



Ferns See *Ferns*, page 23.

Fescue See *Festuca glauca*, below.

Festuca glauca (*Blue Fescue*) Plant in light, well-drained soil in full sun. Space 8-12" apart. Cut plant back to ground level in early spring as new growth begins to emerge. Drought resistant. Grows 10" tall. Blooms late summer, but as an ornamental grass it is grown for its foliage. Hardy in zones 5-9.

Fiesta Daisy See *Gaillardia aristata*, below.

Filipendula purpurea (*Meadowsweet*) Plant in very moist soil in partial shade. Will tolerate full sun as long as the soil is moist. Thrives when planted beside a stream or pond. Mulch well in winter in cold areas to protect the roots which are close to the soil level. Grows 24-36" tall. Blooms July-September. Hardy in zones 3-9.

Forget-Me-Not See *Brunnera macrophylla*, page 27.

Fountain Grass See *Pennisetum*, page 36.

Foxglove See *Digitalis purpurea*, page 28.

Foxtail Lily See *Eremurus*, page 12.

Fuchsia Plant in well-drained, moist, fertile soil in full sun to light shade. Space 24-36" apart. Pinch plant when young to achieve a bushy shape. Prune as necessary in spring, removing any dead wood and cutting back last year's growth to 2-3 buds. Grows up to 6' tall. Blooms June-August. Hardy in zones 6-10.

Funkia See *Hosta*, page 31.

Gaillardia aristata (*Indian Blanket, Fiesta Daisy*) Plant in poor, very well-drained soil in full sun. Space 18" apart. Drought tolerant. Well suited for a meadow or wildflower garden. Grows 8-10" tall. Blooms summer. Hardy in zones 3-9.

Gaura lindheimeri Plant in late summer-fall in full sun in well-drained, fertile soil. Space plants 36" apart. Due to its long taproot, it is very tolerant of hot, humid and dry conditions and needs only occasional deep watering in extremely dry periods. Also, it does not like to be disturbed once established. Grows 2-4' tall and 2-3' wide. Blooms June-October. Hardy in zones 5-9.

Gay Feather See *Liatis*, page 33.

Gentiana Plant in sun or partial shade, by carefully spreading the roots and positioning the top of the plant approx 1/2" below the soil line. They prefer lime-free soil. Carefully water in after planting. They need perfect draining. Plants must have water sparingly but often. Gentiana is an excellent rock garden plant. Once established they do not like to be disturbed. Grows 14-20" tall. Blooms July-September. Hardy in zones 6-8.

Geranium (*Hardy Geranium*, *Cranesbill*) Plant in ordinary, well-drained soil in full sun to shade. In warmest areas, plant in partial shade. Space 18-24" apart. Divide in spring or fall when necessary. Grows 6-30" tall, spreading 18-36", depending on variety. Blooms May-September. Hardy in zones 3-8.

German Iris See *Iris germanica*, page 32.

Giant Gypsophila See *Crambe cordifolia*, page 28.

Giant Hardy Phlox See *Phlox paniculata*, page 36.

Globeflower See *Trollius*, page 39.

Globe thistle See *Echinops*, page 29.

Goat's Beard See *Aranuncus dioicus*, page 26.

Golden Daisy See *Coreopsis*, page 28.

Golden Japanese Forest Grass This plant thrives in part to full shade in moist soils. Although it will survive in warmer regions, it does not like high heat and humidity and will eventually look very sparse in those conditions. It does not like extremes of soil types... neither too wet nor too dry. Adding a slow release high nitrogen fertilizer every spring will help promote good foliage growth. The grass will die back to the ground in winter. Height: 12-24". Hardy in zones: 5-9.

Golden Moss See *Sedum spec.*, page 39.

Gooseneck Loosestripe See *Lysimachia clethroides*, pg 34.

Gunnera Allow at least 4-6' of open space for this plant to grow. Plant in a moist, semi-shady area. Entire root system should be planted in a humusy soil about 1" below the soil line. Do not let the soil dry out. Grows 10' tall. Blooms June-August. Hardy in zones 7-10; plant needs some winter protection in zone 6 or colder by applying a layer (approximately 6") of straw or leaves. Will do excellent near ponds or streams.

Gypsophila paniculata (*Baby's Breath*) Plant in free-draining, slightly alkaline soil in full sun. Space 48" apart. Strong staking (two-tiered rings do well) to support the large sprays of flowers which tend to become top-heavy. In areas with long growing season, cut the plant back after it flowers (for you to harvest the flowers for drying) to encourage a second flush of bloom. Once established, do not disturb. Grows 18-36" tall. Blooms June-August. Hardy in zones 3-8.

Gypsophila Giant See *Crambe*, page 28.

Hardy Carnation See *Dianthus*, page 28.

Hardy Fuchsia See *Fuchsia*, page 29.

Hardy Geranium See *Geranium*, above.

Hardy Hibiscus See *Hibiscus moscheutos*, page 31.

Hedera helix (*English Ivy*) English Ivy is a woody, evergreen climber with perennial stems. Rootlets along stems cling to any rough surface. When used as a ground-cover, the evergreen leaves form a dense carpet. Runners climb through masonry surfaces. It grows well in both alkaline and acidic soils but prefers rich, moist, organic, well-drained soil. Adaptable to different levels of light, from full sun to deep shade. It is a good idea in cold climates to protect vines from winter sun and wind. Prune at any time to control size and increase bushiness. Space at least 1-3' apart. Hardy in zones 3-9.

Helianthus Plant in an open, sunny spot in sandy soil. This is a drought tolerant plant. Plant entire root system 1/2" below the soil line. Pack soil tightly around the roots and water thoroughly. Limit transplanting as they do not like to be moved. Grows 7' tall. Blooms August-October. Hardy in zones 6-9.

Helictotrichon sempervirens (*Blue Oat Grass*) Plant in full sun in well-drained soil. Ideal when planted in groups, spacing the plants 18-36" apart. Grows 12-18" tall, blooming in summer. Hardy in zones 4-9.

Helleborus (*Lenten Rose*, *Christmas Rose*, etc.) Plant in deep, rich, moist, slightly alkaline soil in full sun to partial to full shade. Space 18-24" apart. Very long-lived perennial that does not like its roots disturbed. Divide in fall only when necessary. Roots are brittle and easily damaged. All parts of the plant are poisonous if ingested. Wear gloves when handling the plant; susceptible people may get dermatitis from contact with the plant. Grows 8-30" tall. Blooms Dec.-May, depending on variety. Hardy in zones 4-8.



Hemerocallis (Daylilies) Plant in fertile, well-drained loam in full sun to light shade. Daylilies will grow in most soil types with adequate drainage. Space 24-36" apart. One of the easiest perennials to grow. Fertilize lightly in spring when plant begins to grow. Water deeply once a week in hot weather. Deadhead daily to keep the plant looking neat. Divide in spring or fall when clumps become overcrowded, usually in 3-4 years. There are hundreds of varieties of daylilies that grow in a range of colors (except blue and pure white), forms and sizes. By choosing at least several that bloom at different times, and with different colors and heights, you can have a colorful garden from late spring to fall. Grows 12-48" tall. Blooms June to fall, depending on variety. Hardy in zones 3-9.

Heuchera (Coral Bells) Plant in well-drained soil enriched with a lot of organic matter. In areas with hot summers plant in partial shade. Space 12-18" apart. In cold climates, mulch after the ground has frozen to control heaving of the roots. Divide in spring when bloom diminishes and crown becomes woody, usually every 4-5 years. Grows 12-20" tall. Blooms May-September, depending on variety. Hardy in zones 3-10.

Heucherella A hybrid between Heucherella and Tiarella. Comines the flowering habits of the Heuchera with the heart shaped, low growing Tiarella foliage. Plant in partial shade, away from hot mid-day sun. Use a humus-rich soil in a well drained area. Plant the crown of the plant even with the soil line and water regularly to initiate growth. Excellent plant for rock gardens or woodland ground cover. Grows 12-20" tall. Blooms April-May. Hardy in zones 4-9.

Hibiscus moscheutos (Hardy Hibiscus, Rose Mallow) Plant in moist, rich soil in full sun to very light shade. Space 36" apart. Grows 36-48" tall. Blooms (with huge flowers) July-August. Hardy in zones 5-9.

Himalayan Blue Poppy See *Meconopsis*, page 34.

Hollyhock See *Althea rosea*, page 26.

Hollyhock, Miniature See *Sidalcea*, page 38.

Hosta (*Funkia*, Plantain Lily) Plant in moisture-retentive, humusy soil in dappled shade. Few varieties tolerate sun while most will grow in full shade. Space 18-36" apart. A very long-lived perennial that rarely needs to be divided. Grown for their handsome foliage, hostas are the backbone of most shade gardens. Grows 18-36" tall, depending on variety. Blooms summer. Hardy in zones 3-9.

Houttunymia cordata Plant in moist to boggy soil in full sun to shade. Space 18" apart. Plant spreads quickly to form a dense groundcover. Leaf color is more vibrant in full sun. Grows 6-9" tall. Blooms June-August. Hardy in zones 3-8.

Indian Blanket See *Gaillardia aristata*, page 29.



Iris Types

Bearded Iris Characterized by broad leaves, fleshy rhizomes and a beard or pattern of hairs on the falls (down turned petals). This group includes Bearded Iris (also called German Iris), dwarf, border, flag and Louisiana Iris.

Beardless Iris Characterized by having narrower leaves, thick rhizomes, and smooth falls. Included are Siberian Iris, Japanese Iris and many species Iris.

Crested (Evansia) Iris Characterized by their slender rhizomes and cockscomb-like crests on the falls. Included are Iris Cristata and Iris Tectorum.

Iris Iris can be divided into two major types; bulbous and rhizomatous types. See Iris in the "Bulb" section for culture of the bulbous types. The rhizomatous types can further be divided into three groups as listed above.

Iris chrysographes (Black Iris) Plant in neutral to slightly acid soil enriched with moisture-retentive humus in full sun to lightly dappled shade. Space 36" apart. Water deeply in periods of drought. Divide in late summer or fall when clumps become crowded. Grows 12-24" tall. Blooms June. Hardy in zones 4-9.

Iris cycloglossa See instructions for *Iris oncocyclus*, pg. 32.

Iris dardanus See instructions for *Iris oncocyclus*, pg. 32.

Iris, Dwarf See *Iris pumila*, page 33.

Iris ensata (Japanese Higo Iris) Plant in slightly acid to neutral, moisture-retentive soil in full sun to partial shade. This Iris is happy in shallow standing water. It cannot tolerate hot, dry conditions. Plant rhizomes about 2" deep and 18" apart. Divide every 3-4 years as plants become crowded. Divide after flowering or in fall. Replant the divisions immediately; do not let them dry. Grows 24-36" tall. Blooms July, the last of the Iris to bloom. Hardy in zones 4-9.



Dividing Bearded Iris

Most bearded Iris need to be divided every 3-5 years.

A. Prune Iris in late summer or early fall when the foliage starts to fall over (if this has not been done earlier). With a sharp knife, cut the foliage 8-10" above the soil level. Trim the plant into a fan shape.



B. Carefully dig up the old clumps. Divide rhizomes with a sharp knife. To avoid spreading disease, dip the knife in rubbing alcohol or a 20% solution of household bleach between each cut. Discard the oldest (center) part of the rhizome. Check for evidence of disease or borers. Destroy (do not compost) any infested rhizomes.

C. Make sure each new division has a strong root section and a single fan of leaves. Dust the cut surface with powdered sulfur and allow to dry for 1-2 days. The sulfur acts as a fungicide and helps avoid problems with disease and pests.



D. Replant the horizontal rhizome with the top $\frac{1}{2}$ - $\frac{1}{3}$ of the rhizome showing above the soil. Plant with the fan of the leaves pointing in the direction you want the plant to grow.

Iris foetidissima (Coral Iris) Plant in spring in dry to damp soil in full sun to shade. Amend the soil with a bit of lime and humus. Space 24" apart. Water deeply during periods of drought. Grown for its showy seed pods in fall. Evergreen foliage is malodorous when crushed. Grows 18-30" Blooms June. Hardy in zones 3-9.

Iris germanica (Bearded or German Iris) Plant in late summer or fall, in free-draining soil, in full sun or partial shade. Plant horizontal rhizomes so that the top $\frac{1}{2}$ - $\frac{1}{3}$ is above the soil level. In hot areas, plant the rhizomes just below the surface and grow in light shade. Space 12-24" apart. Water deeply during periods of drought. After the flowers have faded, cut back the flowering stem and trim the foliage into a fan shape about 12" tall. Grows 30-36" tall. Blooms May. Hardy in zones 4-10.

Iris, Japanese See *Iris ensata*, page 31.

Iris pallida Plant in well-drained soil in full sun or partial shade. Space 24" apart. Grown as much for their striking variegated foliage as their fragrant blooms. To divide, follow instructions (above) for bearded Iris. Grows 18-24" tall. Blooms June. Hardy in zones 4-9.

Iris oncocyclus Plant the rhizomes in late summer or fall in full sun in well-drained fertile soil. Place the rhizomes horizontally so the top $\frac{1}{2}$ is above the soil line, similar to bearded Iris. Space 12-24" apart. After the flowers have faded, cut back the flower stem and trim the foliage into a fan shape about 12" tall. Grows 24" tall. Blooms April-May. Hardy in zones 3-9.

Iris pseudacorus (Yellow Water Iris) Plant in moist, rich soil in partial shade. Space 18" apart. Grows to 48" tall. Blooms May. Hardy in zones 4-9.

Iris pumila (*Dwarf Iris*) Plant in well-drained, limy soil in full sun or partial shade. Space 12" apart. Avoid high nitrogen fertilizer. To divide, follow instructions (above) for bearded Iris. Grows 8-16" tall. Blooms April-May. Hardy in zones 4-9.

Iris siberica (*Siberian Iris*) Plant in neutral to slightly acid soil enriched with moisture-retentive humus in full sun to lightly dappled shade. Space 36" apart. Water deeply in periods of drought. Divide in late summer or fall when clumps become crowded. Grows 36-42" tall. Blooms June-July. Hardy in zones 3-9.

Iris spuria Choose a sheltered, warm location with well-drained, neutral to slightly alkaline soil in full sun to partial shade. Plant the rhizomes horizontally, about 2" deep. Fall planting is preferable, and spring planting is all right. Do not disturb the rhizomes once planted. Dividing the rhizomes is rarely needed, and it takes several years for the plants to recover from any disturbance. Fertilize by mulching with well-rotted manure or compost. Grows 18-20" tall. Blooms June-July. Hardy in zones 5-9.

Irish Moss See *Sagina*, page 37.

Ivy See *Hedera*, page 30.

Jacob's Ladder See *Polemonium caeruleum*, page 37.

Japanese Higo Iris See *Iris ensata*, page 31.

Joe Pye Weed See *Eupatorium maculatum atropurpureum*, pg 29.

Kniphofia uvaria (*Red Hot Poker*, *Tritoma*) Plant in good, well-drained soil enriched with humus in full sun. Plant 2-3" deep and 24" apart. Protect from intense sun. Once established, it does not like to be disturbed. It rarely requires division; when necessary divide in spring. In cold areas use a heavy winter mulch of leaves or salt hay, or protect the plant by tying the foliage over the crown. Grows 24-30" tall. Blooms June-July. Hardy in zones 6-9.

Lady's Mantle See *Alchemilla mollis*, page 26.

Lamium Excellent groundcover perennial that thrives in difficult areas where little else will survive. Grows best in partial to deep shade, but will grow in

sun if adequate water is provided. Will tolerate poor soil and dry conditions. Spreads quickly. Grows 6-8" and blooms in May-June. Hardy in zones 3-8.

Lavandula (*English Lavender*) Plant in well-drained, sandy soil in full sun. Soil that is too fertile makes the plant less hardy. Space 18-24" apart. Prune back old and dead wood in spring. Plants will last for several years with little care. As the center of the plant begins to die back, dig it up and replace with new plant. Mulch in winter in cold areas. Grows 12-20" tall. Blooms July-August. Hardy in zones 6-9.

Lavatera Plant in average garden soil in full sun. Lavatera can tolerate dry sandy soil, wind, and salty air, making it suitable as a seaside planting. Space 36-48" apart. Grows 4-5' tall. Blooms June-frost. Hardy in zones 5-10.

Lavender See *Lavandula*, above.

Lenten Rose See *Helleborus*, page 30.

Leucanthemum superbum

See *Chrysanthemum*, page 27.

Liatris (*Gay Feather*, *Blazing Star*) Plant in fertile, sandy, well-drained soil in full sun to partial shade. Will not tolerate wet soil in winter. Drought-resistant. Space 18" apart. Divide in early spring. Grows 48-60" tall. Blooms July-August. Hardy in zones 3-9.

Ligularia stenocephala Plant in deep, rich, moist soil in full sun. In hot areas, grow in partial shade. Well suited for a bog garden, yet can grow in ordinary garden soil if kept moist. Do not let the soil dry out. Water deeply during periods of drought. Keep well mulched with organic material; this serves as a natural fertilizer. Grows 36-48" tall. Blooms July-August. Hardy in zones 4-9.

Lily of the Nile See *Agapanthus*, page 25.

Lily of the Valley See *Convallaria*, page 28.



Iris Basics

Several basic do's and don'ts apply to most of the rhizomatous Iris. Exceptions are noted in each variety description.

- Plant Iris in full sun.
- Plant Iris in well-drained soil.
- Plant the rhizomes horizontally; leaves go up, roots go down. Fertilize lightly in the early spring.
- Never plant rhizomes more than 1" deep.
- Do not mulch over the rhizomes.
- Do not apply fertilizer directly to the rhizome.

Lily, Plantain See *Hosta*, page 31.

Lilyturf See *Liriope spicata*, below.

Limonium latifolia (Sea Lavender, Statice) Plant in well-drained soil in full sun. Space 18" apart. Salt tolerant and drought resistant, this is a good seaside plant. Grows 18-20" tall. Blooms May-July. Hardy in zones 3-10.

Liriope spicata (*Lilyturf*) Plant in fertile, moist soil amended with organic matter in full sun to partial shade. Space 18" apart. Cut back the grass-like foliage in early spring to encourage new growth. Divide in spring when necessary. Grows 10-15" tall. Blooms Aug.-Sept. Evergreen foliage. Hardy in zones 4-10.

Lobelia fulgens (Cardinal Flower) Plant in rich, moist soil in full sun to partial shade. Grows well planted by a stream or pond. Space 12" apart. Grows 24" tall. Blooms June-August. Zones 4-9. 'Russian Princess' is hardy in zones 3-9, using a good winter mulch.

Loosestrife, Gooseneck

See *Lysimachia clethroides*, below.

Lousiana Iris See *Iris ensata*, page 31.

Lungwort See *Pulmonaria*, page 37.



Lupinus (*Lupine, Blue Bonnet*) Plant in rich, well-drained, slightly acid soil in full sun to partial shade. Space 12-18" apart. Mulch well to conserve moisture. Lupine is not tolerant of hot summers. Water deeply during periods of drought. Stake tall-growing varieties. Cut back spent flower stalks to encourage a second bloom. Once planted, lupine does not transplant well. Grows 12-36" tall, depending on variety. Flowers May-June. Hardy in zones 4-8.

Lysimachia clethroides (*Gooseneck Loosestrife*)

Plant in moist soil in full sun to partial shade. To control invasive tendency, plant in drier soil. Space 36" apart. Grows 36-48" tall. Blooms July-August. Hardy in zones 4-10.

Mallow See *Malva 'Primley Blue'*, below.



Malva 'Primley Blue' (*Mallow*) Easily grown in full sun to partial shade and may be planted in either spring or fall. Suitable for any well-drained soil and is very drought tolerant. Self-sows readily. Space plants 24-36" apart. Grows 24-36" tall and as wide. Blooms July through first fall frost. Hardy in zones 3-9.

Masterwort See *Astrantia*, page 26.

Meadow Rue See *Thalictrum*, page 38.

Meadowsweet See *Filipendula purpurea*, page 29.

Meconopsis Plant in partial to full shade in acid soil. Grow in cool, loose and humid soil. Plants self-sow their seeds for second-year bloom. Keep soil moist around plants. Grows 25-30" tall. Blooms June-Aug. Hardy in zones 6-8.

Mertensia (*Virginia Bluebells*) Plant in acidic, humus-rich soil in partial to full shade. Space 18" apart. The foliage dies back in the heat of the summer. Grows 12-24" tall. Blooms April. Hardy in zones 3-8.

Mexican Dayflower See *Commelina*, page 27.

Miniature Hollyhock See *Sidalcea*, page 38.

Miscanthus sinensis (*Zebra Grass*) Plant in well-drained soil in full sun. Space 36-48" apart. This ornamental grass is grown for its tall, variegated foliage rather than for its flowers. Foliage fades to wheat color in fall, persists through winter. In early spring, cut the plant down to the ground before new growth begins. Grows 6-8' tall. Blooms late summer to fall. Hardy in zones 4-9.

Monarda (*Bee Balm*) Plant in rich, moisture-retentive soil in full sun to partial shade. Space 18" apart. Foliage fragrant when touched. Divide in spring every 2-3 years. Cut plants back hard in the fall. Grows 36-48" tall. Blooms July-August. Hardy in zones 4-10.

Monk's Hood See *Aconitum*, page 25.

Mouse Plant See *Arisarum*, page 26.

Musella (*Musa*) Fast growing plant for sunny or partially shady gardens. Give rich soil, feed heavily and the plant will grow to a large plant and spread by suckers or underground roots to form a clump. Large long leaves may get damaged by wind so a somewhat protected spot is preferred. Remove all foliage after first frost and protect plant from severe frost with a layer of straw or leaves. Plant is attractive around swimming pools. Can be grown in large tubs so that they can be moved indoors during winter. Grows 48-60" tall. Blooms June-September. Hardy in zones 7-10.

Nymphaea (*Water Lilies*) Plant in a 6" or larger open container such as an open wire pot or a plastic netted pot. Use a heavy, humusy potting medium. Cover entire root with the potting medium and cover the top of the pot with approximately ½" of gravel to keep the medium in the pot once it is submerged into the pond. Water thoroughly after planting. It might be a good idea to keep the pot above water until you see some growth develop. Once there is a sprout of 1" or more, the pot is ready to be submerged into the pond. Do not place the pot deeper than 24". Once the water lily has been placed in the pond, it can stay in the same spot during the winter. Fertilize with special water garden tablets which can be purchased at your local garden supply store. Hardy in zones 4-8.

Oenothera (*Evening Primrose*, *Sun Drop*) Plant in well-drained, ordinary garden soil in full sun to partial shade. It will not tolerate rich or poorly drained

soil. Space 24" apart. The varieties that flower during the day are sundrops. Others, which open in the evening and close in the morning, are evening primroses. Divide in spring when necessary. Grows 6-10" tall. Blooms June-September. Hardy in zones 5-10.

Omphalodes *Starry Eyes* Plant in the spring or fall in partial shade in moist, humus soil. Will tolerate dry, shaded locations. Space plants 10" apart. Grows 10" tall and as wide. Blooms April-August. Hardy in zones 3-6.

Oriental Poppy See *Papaver Orientale*, page 36.

Paeonia (*Peony*) Plant in deep, well-drained soil enriched with plenty of well-rotted manure or compost in full sun. In warmest areas, shade the plants from intense summer sun. Thrives in areas with long, cold winters and mild summers. Space 24-36" apart. Plant the fleshy roots so that the eyes are no more than 1-2" deep. Support plants and their heavy blooms with hoop-type stake. You may notice ants on the flower buds; it is a symbiotic relationship and does not hurt the plant. Water deeply in periods of drought. Grows 36-48" tall. Blooms May. Hardy in zones 3-9

Paeonia suffruticosa (*Tree Peony*) Not a perennial, but a small shrub. Plant in deep, well-drained, slightly alkaline, sandy loam enriched with abundant organic matter in light shade to full sun. Midday sun can quickly fade the flowers. Shelter from wind. Space 36-48" apart. Prepare soil to a depth of 24". Look at the plant; where the branch meets the root system should be even with the soil surface. The woody stem should be above the soil line. Mulch with organic material in hot, dry areas. Avoid mulch in humid areas as it may encourage fungus diseases. Branches laden with flowers may need support. Grows 3-6' tall with an equal spread. Blooms May-June. Hardy in zones 3-9.

Painted Daisy See *Chrysanthemum*, page 27.



Pampas Grass See *Cortaderia selloana*, page 28.

Panicum virgatum (Switch Grass) Plant in full sun in moist, fertile soil (although this plant will adapt to a wide range of soil conditions). Space plants 20-40" apart. Excellent spreading perennial, growing 4-5' tall with flowers blooming in fall. Ideal for the back of the perennial border. Hardy in zones 4-9.



Papaver Orientale (Oriental Poppy) Plant in deep, rich, fertile, very well-drained soil in full sun to partial shade. It is especially important that the soil is not water-logged in winter; that spells death to the roots. Space 24-36" apart. Once planted, do not disturb. The long taproots can easily break. Intolerant of hot humid conditions; thrives in areas with cool summers. For best effect, plant in groups of no more than three. Foliage dies back soon after plant flowers. Grows 30-36" tall. Blooms May-June. Hardy in zones 3-7.

Pardancanda norisii (Candy Lily) Plant in sunny location in sandy soil. Plant entire rootstock about 1/2" below the soil line. Space 12" apart. Water after planting. Iris-like foliage. Perennial plant will produce flower stalks of 24-36" tall with flowers of many different color combinations. Blooms summer; seed heads of interest in summer and fall. Hardy in zones 5-8.

Pasque Flower See *Pulsatilla vulgaris*, page 37.

Pennisetum (Fountain Grass) Plant in moist, well-drained soil in full sun to light shade. Will grow in almost any soil, except those that are poorly drained. Space plants 24-36" apart. Flowers bloom in summer, with seedheads that remain well into the winter months. Develop into mounds approximately 30-36" tall. Hardy in zones 5-9.

Penstemon Digitalis Prefers full sun to partial shade and fairly rich, light, free-draining soil. Benefits from the addition of mason's sand or leaf mold to heavy soils. Allow 18" to 24" between plants. Hardy in zone 3-9.

Penstemon glaber Plant in spring or fall in full sun in well-drained soil. It is important that the soil is well-drained, otherwise it will rot. Space plants 36-48" apart. Grows 48-60" tall and just as wide. Blooms June to first fall frost. Hardy in zones 5-9.

Peony See *Paeonia*, page 35.

Periwinkle See *Vinca minor*, page 39.

Perovskia (Russian Sage) Plant in well-drained, ordinary garden soil in full sun. Space 18-24" apart. Stake plant to keep it from sprawling. Cut plant to ground level each spring to encourage strong stems and good flowering. Grows 2-5' tall, depending on variety. Blooms August-September. Hardy in zones 5-9.

Persicaria Persicaria (Red Dragon) Should be grown in cool, fertile, moist soil in sun or partial shade, and may crowd out other plants, so take care when selecting a site. P. virginiana 'Painter's Palette' is particularly susceptible to slug and snail damage, so it would be wise to take the necessary precautions against these pests. In addition, this variety should be grown in a location with shelter from strong wind. To propagate, divide plants in spring, removing any old or diseased growth. Grows 20-25" tall. Blooms July-August. Hardy in zones 4-10.

Peruvian Lily See *Alstroemeria*, page 26.

Phlomis tuberosa Plant in either spring or fall in full sun to part shade in a well-drained, sandy loam soil that is low in fertility. Plants grown in rich soil will have weak stems. Space plants 4-6' apart. Remove spent flowers after blooming. Grows 6' tall and 4-5' wide. Blooms July-August. Hardy in zones 4-10.

Phlox paniculata (Giant Hardy Phlox) Plant in humus-enriched, moist, well-drained soil in full sun to partial shade. Space 24" apart. In spring, thin new shoots to 4-6 stems. Deadhead to keep the plant vigorous. Water deeply during periods of drought. Avoid wetting the foliage; plant is susceptible to powdery mildew. Divide plants every 2-3 years in early fall. Replant only small, strong outer divisions. Grows 36-60" tall. Blooms June-September. Hardy in zones 3-8.

Physostegia virginiana (Obedient Plant) Plant in moist, slightly acidic soil in full sun to partial shade. In partial shade, plant in drier soil. Space 18" apart. Divide every 2-3 years. Grows 24-36" tall. Blooms August-September. Hardy in zones 4-9.

Pickereel Rush See *Pontederia*, page 37.

Pink Black-Eyed Susan See *Echinacea*, page 29.

Plantain Lily See *Hosta*, page 31.

Platycodon grandiflorus (Balloon Flower) Plant in moist, well-drained soil in full sun to partial shade. Space 12" apart. Slow to start growing in the spring. Be sure to mark its location so you do not accidentally dig it up during spring cleanup. Grows 24-36" tall. Blooms late spring to early fall. Hardy in zones 3-9.

Polemonium caeruleum (*Jacob's Ladder*) Plant in cool, moist soil in partial shade. Grow in full sun only in areas with moderate summers. Space 24" apart. Divide carefully in spring when necessary; avoid damaging the brittle stems. Grows 18-30" tall. Blooms May-June. If the weather is cool, the blooming period may extend well into summer. Hardy in zones 4-8.

Polygonatum (*Solomon's Seal*) Plant in moist, humus-rich, woodland-type soil in partial to full shade. Space 12-24" apart. Blooms May-June. Hardy in zones 4-9.

Polygonum Plant in moist, fertile soil in full sun to partial shade. Grow in full sun only in areas with cool summers. Space 24" apart. Keep well watered to encourage long period of flowering. Grows 36-48" tall. Blooms July-October. Hardy in zones 5-9.

Pontederia (*Pickereel Rush*) An ideal plant for planting on the edge of ponds or to be submerged into a pond, but not deeper than 8". Plant in plastic or earthenware container in heavy top soil. Cover the entire plant with growing medium unless green growth is showing. Any growth should be exposed to the air. Water thoroughly after planting. Let plant grow to about 4" tall before submerging the pot into the pond. These plants can also be planted directly into the ground as long as there is an abundance of moisture. In cold areas, plants should be protected from frost by applying a layer of straw or leaves. Hardy in zones 3-11.

Poppy See *Papaver orientale*, page 36.

Potentilla (*Cinquefoil*) Plant in lean soil in full sun. Tolerant of wide range of soils, it thrives in dry, infertile soil. Rich soil results in unwanted, soft, leafy growth. Space 12-24" apart. Grows 12-24" tall, depending on variety. Blooms April-September. Hardy in zones 3-7.

Prairie Mallow See *Sidalcea*, page 38.

Primula (*Primrose*) Plant in rich, moisture-retentive soil in part to full shade. It is intolerant of hot, dry summers. Space 12" apart. Mulch in summer to keep soil cool and conserve moisture. Grows 6-10" tall. Blooms April-May. Hardy in zones 5-8.

Pulmonaria (*Bethlehem Sage, Jerusalem Sage, Lungwort*) Plant in cool, moist soil in partial to full shade. Grows well under deciduous trees. Intolerant of full sun. Space 18" apart. Grows 9-24" tall. Flowers throughout the spring, depending on variety. Hardy in zones 3-8.

Pulsatilla vulgaris (*Pasque Flower*) Plant in the spring or fall in full sun in well-drained, fertile soil. It is one of the earliest perennials to bloom in the spring. In warmer climates, it will benefit from additional water and partial shade. Fairly tolerant of drought in cooler climates. Space plants 12-14" apart. Remove spent flowers after blooming. Grows 9-12" tall and 12" wide. Blooms in March-April. Hardy in zones 5-7.

Purple Fire Salvia See *Salvia nemerosa*, below.

Purple Winter Creeper See *Euonymus fortunei*, page 29.

Quamash See *Camassia*, page 9.

Red Hot Poker See *Kniphofia*, page 33.

Rock Soapwort See *Saponaria*, below.

Rose Mallow See *Hibiscus moscheutos*, page 31.



Rudbeckia (*Black-Eyed Susan*) Plant in moderately fertile, well-drained soil in full sun to partial shade. Space 18" apart. Divide in spring every 3-4 years. Grows 24-36" tall. Blooms July-September. Hardy in zones 3-9.

Russian Sage See *Perovskia*, page 37.

Sage, Bethlehem or Jerusalem See *Pulmonaria*, on this page.

Sagina (*Irish Moss*) Irish Moss forms a lush 1" green carpet of moss-like foliage. Good for sunny or shady areas. Flowers bloom on short 2-4" stalks. Great for rock gardens and planting between stepping stones and walkways. Stays green all year. Plant roots just below soil level. Blooms June-August. Hardy zones 4-8.

Salvia nemerosa Plant in well-drained, fertile soil in full sun. Space 18-30" apart. Divide only when the center of the plant begins to look thin. Grows 12-24" tall and blooms June-frost, depending on variety. Hardy in zones 4-9.

Saponaria (*Cote d'Azur Pinks, Soapwort*) Plant in average, well-drained soil in full sun to partial shade. Space 36" apart. Semi-evergreen, trailing foliage on *Saponaria ocyroides*. 'Alba Plena' has an upright habit. Shear hard after flowering to encourage neat habit and new growth. Grows 4-10" tall, depending on variety. Blooms May-June. Hardy in zones 3-7.

Scabiosa (*Pincushion Flower*) Plant in well-drained, slightly alkaline soil in full sun. Will not tolerate hot, humid climates. Space 12-24" apart. Will continue to flower if faithfully deadheaded. Divide when flowering becomes sparse. Grows 12-18" tall. Blooms summer to frost. Hardy in zones 3-9.

Sea Holly See *Eryngium*, page 29.

Sea Lavender See *Limonium latifolia*, page 34.

Sedge See *Carex*, page 27.

Sedum spec. (*Stonecrop*) Plant in lean, fast-draining soil in full sun. May tolerate light dappled shade. Water sparingly. Space 18" apart. Drought tolerant. Grows 6-24" tall and blooms summer to early fall, depending on variety. Hardy in zones 3-10, depending on variety.

Shasta Daisy See *Chrysanthemum*, page 27 or *Leucanthemum*, page 33.

Shooting Star See *Dodecatheon*, page 29.

Siberian Iris See *Iris Siberica*, page 33.

Sidalcea (*Miniature Hollyhock*, *Prairie Mallow*) Plant in deep, fertile, loamy soil in full sun to shade. Space 12-18" apart. For best effect, plant in groups of 5-7 or more. Stake tall-growing varieties. Cut back after flowers fade to encourage a second flush of bloom. Grows 24-36" tall. Blooms June-October. Hardy in zones 5-9.

Silver Lace Vine See *Polygonum*, page 37.

Silver Mound See *Artemisia schmidtiana*, page 26.

Snakehead See *Chelone obliqua*, page 27.

Solomon's Seal See *Polygonatum caeruleum*, page 37.

Speedwell See *Veronica*, page 39.

Spiderwort See *Tradescantia*, on this page.

Spirea See *Astilbe*, page 26.

Statice See *Limonium latifolia*, page 34.

Stokesia (*Stoke's Aster*) Plant in average, well-drained soil or sandy loam in full sun. Cannot tolerate wet soil in winter. Space 12-18" apart. Mulch lightly in winter in cold areas. Divide in spring when necessary. Grows 12-24" tall. Blooms July-fall. Hardy in zones 5-9.

Stonecrop See *Sedum spec.*, above.

Sundrop See *Oenothera*, page 35.

Sweet Flag See *Acorus*, page 25.

Sweet William See *Dianthus*, page 28.

Switch Grass See *Panicum virgatum*, page 36.

Tacca (*Bat Flower*) A tropical plant which needs plenty of space and must be watered regularly. Grow in sunny, warm and fertile regular garden soil. Plant rootstock upright with the crown barely covered by garden soil. Keep soil moist at all times. In cooler areas, plants

can be grown in large tubs so that they can easily be moved to a frost free area in winter. Grows 36" tall. Blooms summer. Hardy in zone 10.

Tall Hardy Phlox See *Phlox paniculata*, page 36.

Thalictrum (*Meadow Rue*) Plant in moist, well-drained, humus-enriched soil in full sun to partial shade. In hot climates, shade and mulch plants. Space 18-24" apart. May need staking in unprotected areas. Grows 60" tall. Blooms summer. Hardy in zones 3-5.

Thymus Member of the mint family. An evergreen shrubby perennial, ideal for rock gardens and low foundation planting. Plant only grows up to 6" tall. Before planting, soak roots for 60 minutes. Plant in a sunny location. Pack ordinary garden soil tight around roots and water well after planting. Once established, plant is rather drought resistant. Grows 2-4". Blooms June-July. Hardy in zones 3-8.

Toad Lily See *Tricyrtis*, below.

Tradescantia (*Spiderwort*) Plant in well drained, ordinary to poor soil in full sun to partial shade. Space 18-24" apart. Water only as needed. Drought tolerant. To control excess growth, starve the plant. Never fertilize. Cut back hard in summer to encourage a more tidy growth habit and to encourage flowering in fall. Grows 18-24" tall. Flowers June-October. Hardy in zones 3-9.

Tree Peony See *Paeonia suffruticosa*, page 35.



Tricyrtis (*Toad Lily*) Plant in slightly acidic, deep, moist, humusy soil in part shade to full sun. In colder areas plant in sun to guarantee blooming before frost. Space 18" apart. Never let the roots dry out. Mulch well to conserve moisture. Water deeply during hot weather. Divide only when necessary. Does not like to be disturbed. Grows 24-36" tall. Blooms August-September. Hardy in zones 4-8.

Tritoma See *Kniphofia uraria*, page 33.

Tritonia Plant in well-drained, fertile soil in full sun. Space 5" apart and plant 3-4" deep. Grows 12-24" tall. Blooms early to mid-summer. Hardy in zones 8-

11, elsewhere dig in winter and store in cool, dry, well-ventilated area.

Trollius (*Globeflower*) Plant in moist soil in full sun to partial shade. Good for boggy areas. Space 12" apart. Grows 18-24" tall. Blooms June-August. Especially long blooming if kept deadheaded. Hardy in zones 3-10, depending on variety.

Turtlehead See *Chelone obliqua*, page 27.

Typha (*Cattail*) Ideal plant for planting on the edge of ponds or submerging into a pond, but not deeper than 8". Plant in plastic or earthenware container in heavy topsoil. Cover the entire plant with growing medium unless green growth is showing. Any growth should be exposed to the air. Water thoroughly after planting. Let plant grow to about 4" tall before submerging the pot into the pond. Can also be planted directly into the ground as long as there is an abundance of moisture. In cold areas, protect plants from frost by applying a layer of straw or leaves. Hardy in zones 2-11.

Uvularia grandiflora (*Bell Worts*) Plant in partial to full shade in moist, rich, organic soil, 1" deep and space 1' apart. Uvularias have a creeping rootstock, forming nice clumps. Grows 20" tall. Blooms April-June. Hardy in zones 4-9.

Verbascum Plant in the spring or fall in full sun to partial shade in any well-drained, average soil. However, they will adapt to wet or cold growing conditions. Space plants 18-24" apart. Remove spent flowers to encourage reblooming. Grows 2-3' tall and 18-24" wide. Blooms June-July. Hardy in zones 3-9.

Veronica (*Speedwell*) Plant in average, moist, well-drained soil in full sun to partial shade. Space 12-18" apart. Do not plant in rich soil or plant will become weak and sprawl. Divide every 3-4 years. Grows 12-24" tall. Blooms June-September, depending on variety. Hardy in zones 4-9.

Vinca minor (*Periwinkle*) Plant in well-drained, fertile soil in sun or shade. Space 12" apart. Keep watered throughout the growing season. Grows 4-10" tall. Blooms early summer, but grown for its evergreen foliage as a vigorous groundcover. Hardy in zones 4-9.

Viola cornuta (*Violet*) Plant in organically rich, moisture-retentive soil in partial shade. Space 12" apart. Fertilize in very early spring. Mulch to conserve water and keep roots cool. Grows 8-10" tall. Blooms April-May. Hardy in zones 4-9.

Virginia Bluebells See *Mertensia*, page 34.

Water Lilies See *Nymphaea*, page 35.

White Black-Eyed Susans See *Echinacea*, page 29.

Wintercreeper See *Euonymus fortunei*, page 29.

Yarrow See *Achillea*, page 25.

Yellow Water Iris See *Iris Pseudacorus*, page 32.

Yucca filamentosa This plant does best in a warm spot in the garden planted in full sun. Plant a single root or a small group of 2 or 3, spacing the roots 3 ft. apart, in well-drained, sandy soil. Grows 25-30" tall. Blooms June-August. Hardy in zones 5-10.

Zebra Grass See *Miscanthus sinensis*, page 34.

ROSES, SHRUBS & VINES

Potted or bare-root shrubs and vines can be planted as soon as you can work the soil in early spring. If you are unable to plant immediately, open the box to expose the stems but do not remove the wrapping around the roots because this helps preserve moisture. Store plants upright in a cool, humid, dimly lit location until planting. Prior to planting, remove all packaging material, soak the entire plant, stems and roots in a pail of water for several hours. Never expose roots to the sun or permit them to dry out. Trim off any broken roots or branches before planting.

Plants that are leafed out or growing when received should be hardened off before planting outside if it is very cold in your area. Either gradually acclimatize the plant to outside conditions, or plant outside and cover to protect from frost if necessary.



Planting Roses & Shrubs

Choosing the Site

Roses require full sun, at least eight hours a day, preferably in the afternoon. Choose an open site where breezes will blow through the foliage. This will aid in drying the foliage, preventing many fungal and viral diseases. Ideally roses should be planted away from other trees and shrubs that compete for water and nutrients. Take note of the mature size of the rose or shrub, and allow room for growth. Snow provides excellent insulation for even the most tender plant, so consider a spot where snow may gather naturally. The site should be well-drained. If water tends to puddle in the area, either choose a different site, or raise the bed by at least 2" by adding organic matter.



The Soil

Roses and most shrubs like a rich, loamy soil. Loam soil is basically a good combination of sand, clay, organic matter, and silt. Ensure that soil is not too high in any one of these components. Most commonly, soil may be too high in clay. In this case, add $\frac{1}{2}$ by volume ($\frac{1}{2}$ by volume in extremely heavy clay soils) of humus material such as compost, peat moss, leaf mold, or well-rotted manure. A yearly application of a top dressing of well-rotted manure or kitchen compost is advised. Soil should be only slightly acidic, about pH 6-6.5. If soil is alkaline, use peat moss as humus material. If pH is below 5.5, use something other than peat moss as humus material, and condition soil with lime at a rate of up to 5lbs/100ft². Some shrubs require different pH levels. Please check individual listings.

Pre-Plant Pruning of Bare-Root Roses

A hard pruning of bare root roses helps to concentrate the roses, energy on growing new shoots. First, prune all stems down to about 6-8". The cuts should be made at an outward facing bud; the buds will appear as small bumps that unfurl into leaves (not the thorns!) Find a bud that is on the outside of the shrub, facing away from the center. This is where new growth will emerge, ensuring that the rose will grow outward leaving an open center. Cut just above the bud, on a slight diagonal. Now, look closely at the center of each stem, called the pith. It should be quite white or green. If it appears dark or yellow, continue pruning down to outward facing buds until white pith is reached. There may be one or more dead stems; do not worry. Remove them and more energy will be put into the remaining stems. Now look for stems that may be rubbing against one another. The weaker of the two should be removed. Prune root tips back to white tissue to encourage branching.

Pre-Plant Pruning of Bare-root Shrubs

Before planting shrubs, any broken or damaged branches can be removed. If two stems are rubbing together, remove the weaker one. Prune root tips back to white tissue to encourage branching.

Planting

Dig a hole that is about 18"x18" or at least 6" wider and deeper than the roots themselves. Sometimes roots will grow only in one direction, so dig an oval-shaped hole to suit. Dig a round hole if roots spread in all directions. Mix in some organic matter with the soil from the hole. A handful of bone meal will aid in root development. Lay a stick across the hole to determine exactly where the surface level will be. Make a small mound of soil on which to sit the rose and spread out roots, combing out the roots with fingers to keep them from crossing. Place the rose so that the bud union is 4" below soil level in zones 1-3, 3" below the soil in zone 4, and about 2" below the soil in zones 5+. This is approximate; generally, the harsher the climate, the deeper the bud union should be buried.

NOTE: Leaving the bud union exposed will produce more growth during the growing season. If the bud union is left exposed, the graft must be buried by mounding soil up over it in late fall. (Most shrubs are not grafted. In this case, just plant the crown, the spot where the roots meet the stems at ground level)

Fill the hole about $\frac{3}{4}$ full. Use feet to pack down soil and water. After water has soaked in, fill hole and repeat packing and watering. This will ensure that there are no air pockets around the roots. Create a 'catch-basin' around the edge of the hole to catch water. Water again the following day with a water-soluble 10-52-10 fertilizer (the high middle number aids

in root development), or water with manure or compost tea. Mulching halfway up the stems for the first couple of weeks will prevent drying out. Water and fertilize this way once a week for the next three weeks.

Sweating Roses after Planting

Important! Roses are best planted in early spring when it is still cool. If roses are received when daytime temperatures are consistently above 60°F, follow these guidelines. If it is still cool, leave the graft union exposed so that warmth can help buds break. Whatever the temperature, plant as soon as possible.

Bare-root roses are dormant when shipped, and they must be protected from drying out until the roots become established. The greatest danger of drying, and thus dying, occurs during warm sunny weather. Therefore, it is necessary to completely cover the exposed canes with a mound of loose organic mulch, wood shavings, compost, peat moss, or sphagnum moss after planting. This is called 'sweating' your roses and is especially important if it is already very warm when the roses are received.

This covering will protect the canes from drying out while the roots are becoming established. In two to three weeks, sometimes longer, shoots will begin to emerge through the mounding material. It is then safe to gradually remove the mounding material by carefully pulling it away or by washing it away with a hose. Water newly-planted rose bushes often to ensure that they get a good start.



Many bare-root shrubs, such as Burning Bush, Lilac, Weigela, etc. can benefit from 'sweating', especially if your days are warm and sunny at planting time. It certainly would do no harm. You may have to remove the mound of material sooner, since shrubs often leaf out quickly.

Special Care for Tree Roses

Tree Roses often take extra time to leaf out after planting. It is important to prevent the top stems from drying out during this time. Placing a moist burlap sack over the branches will encourage bud break and prevent dehydration. Keep the sack moist and check often. Once leaves start to appear, remove the sack. If planting in pots, they should be at least 14" in diameter.

General Care of Roses & Shrubs



Watering

Roses require a lot of water. Reduce the need for water by mulching and making a 'catch-basin'. Once roses are established, only water during very dry spells. For the first year, a good rule of thumb is about one gallon per foot per week. Roses that are dry heading into the winter will not fare out very well. Give a good soaking about 2-4 weeks before the ground freezes. It is better to give infrequent, deep watering than frequent, light watering. Avoid getting water on the leaves. Dry leaves prevent the spread of viral and fungal disease. Water early in the morning to allow the leaves to dry off before evening.

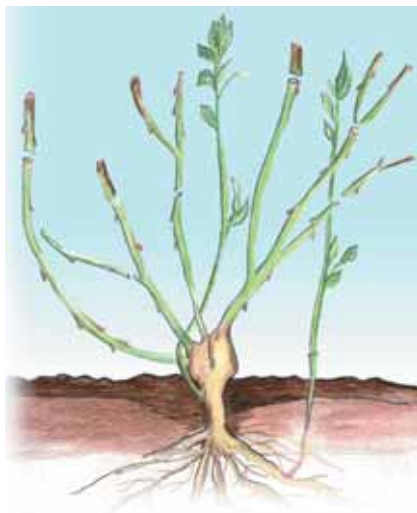
Most shrubs benefit from receiving at least 1" of water per week during the first season. Once established, most shrubs are quite drought tolerant, but are more productive and healthier if watered during dry spells.

Weeding

Keep the soil bare or mulched around roses and shrubs. Turf grasses and weeds are heavy competitors for water, nutrients and even sunlight. These mulched borders (shrub/tree circles) also protect new shrubs from grass-trimmer damage and will make it harder to accidentally mow them. These grass-free areas are especially important during the first 2-3 years, when the plant is becoming established. Organic mulches (shredded bark, bark nuggets, compost etc.) make weeding easier, retain moisture and look attractive.

Fertilizing

Ideally, most of the 'food' needed by roses and shrubs should come from the soil. A yearly topdressing of well-rotted manure or garden compost will keep the soil high in nutrients. Use a slow-release fertilizer designed for roses, or simply use an all-purpose, balanced water soluble fertilizer three times, in May, June and July. Fertilize more often with manure tea or fish emulsion if desired. If conditions are dry during fertilization period, give a good watering, then fertilize the next day. Do not fertilize after the end of July as the plants need this time without food to prepare for winter.



Pruning Roses

Every time a cut is made, it will affect the growth and overall health of the rose. All cuts, regardless of their reason, should be made in the same manner. Cuts should always be made at an angle, just above an outward facing bud. This directs the growth of the rose away from the center of the bush, preventing crossed and crowded branches, which can cause disease. All roses benefit from being pruned once a year. First, remove dead or dying, damaged branches, and the weaker of two stems that are rubbing against one another. This essential pruning can be done through-

out the year as damage occurs. One-time flowering roses should be pruned only immediately following the blooming period. All other roses can be pruned either in the early spring or in the fall. Pruning in spring takes place when the leaves start to unfurl, before they are fully opened. The advantage to pruning in the early spring is that winter-killed stems can be removed at this time. Often, after pruning in the fall, roses will still need pruning. Pruning in fall takes place after the leaves fall off. The advantage to pruning in the fall is that there is a shorter bush to mulch, and there will be no swaying branches to be caught in the wind. Once the rosebush is three or four years old, it is a good idea to remove $\frac{1}{4}$ to $\frac{1}{2}$ of the oldest, thickest canes. Prune them off at ground level in the spring to stimulate the growth of new canes, which will produce more flowers. Prune tender roses down to 1' in the fall, or just remove the dead branches in the spring.

Suckers

Included in the pruning regime, attention should be taken to remove 'suckers'. Suckers are unwanted growth coming from the rootstock. Check to see if the rose is on its own root. If it is not, any shoots coming from below the bud union will not have the characteristics of the rose itself and should be removed. They will be characteristic of the rootstock rose, which, if left, may eventually take over as the rootstock rose is often a more vigorous growing rose. Watch for suckers on top grafted tree roses as well. Remove any growth from below the bud union.

Deadheading

Deadheading is by no means necessary, but it will result in more blooms, and in one-time flowering roses, will improve the appearance of the rose. Deadheading is the removal of spent blooms. To deadhead properly, make the diagonal cut down to the first outward facing full leaf (a full leaf will have five leaflets). With Floribundas, cut off the whole cluster of blooms at once. Do not deadhead after August; the production of seed helps to prepare the rose for dormancy. Of course, many varieties, especially Rugosas, are known for producing abundant hips. If you want hips, do not deadhead.

Pruning Shrubs

The above guidelines usually apply to pruning shrubs as well. Please also refer to the individual information for each specific shrub starting on page 44 Flowering shrubs can have faded flowers removed anytime after blooming.

Fall Care

Ideally, all fallen leaves should be cleaned up. Destroy any diseased leaves to prevent over-wintering of fungal and viral diseases. Water heavily a few weeks before the ground freezes unless it has been a very wet fall. This could be anywhere from October to December, depending on when winter arrives in the planting location.

Winter Care

All grafted roses, no matter how hardy, should ideally have the bud union buried. After a few good frosts, mound garden soil (taken from elsewhere in the garden) up over the bud union, at least 2" deep, or 4" in very cold zones. The bud union may have been buried at the time of planting. Many roses are very hardy, but if they are in a very exposed site, or if the garden is in a very cold zone, provide winter protection. Tender roses must be protected during the cold winter months. It is a good idea to protect Brownell, Hybrid Teas, Floribundas, tender Climbing Roses, Miniature Roses, English Roses, and Polyantha Roses this way anywhere. In colder zones this may be tried with the hardier roses as well, especially the first winter. After a few good frosts, mound soil over each bush to at least 9" above the level of the soil. Bring this soil from elsewhere in the garden: do not use soil from around the rose. If possible, shovel fresh snow over tender plants. Snow is an excellent insulator, but do not use hard snow, or snow that has salt in it. If there is a wet, heavy snowfall, remove snow from branches as much as possible to prevent breaking. After the ground has frozen, cover with 6" of straw, corn stalks, or any other coarse material. This is to keep the ground frozen and to avoid early thaws and flash freezes in late winter. As soon as the weather warms in spring, remove straw and extra soil gradually.

Flowering shrubs, trees or vines which are marginally hardy in the planting area should be protected the same way a tender rose is protected.

Climbing Roses

These roses have very long growing canes with many side branches. Plant the roses 6' apart. Plant hardy climbing roses in the same manner as other roses. The canes can be trained to grow upright on poles, fences, stone walls or trellises. Tie canes to the support with a soft, flexible material that will not damage the canes. For the first 2-3 seasons, prune only to remove deadwood. In future years prune repeat bloomers like 'William Baffin' and 'Henry Kelsey' in early spring when they are dormant. Hardy climbers such as these need not be removed from the trellis in the fall. Mound soil over the crown for winter protection in a very cold zone. More tender climbers such as 'Don Juan' and 'Golden Showers' may be removed from the trellis (a thorny business!), laid flat and covered with soil for the winter. Alternatively, they can be wrapped in burlap and stuffed with straw.

Rose Hedges

Many Rugosas or Explorer roses make excellent informal hedges. Some favorites are 'FJ Grootendorst', 'The Hunter', 'John Davis', 'Adelaide Hoodless', 'Blanc Double de Coubert', 'Champlain', 'Bonica' and 'Therese Bugnet'. Rose hedges should be pruned in early spring when dormant. Remove stray branches at any time. Be sure to keep the base of hedges wider

than the top to allow light to reach the bottom stems. Generally, space plants 1/2-2/3 the mature plant width apart, depending on how fast the hedge should fill in.

Shrub Hedge

Any shrub or small tree can be used to make a hedge, but of course some are better than others. Spiraea make excellent, fast growing, low to medium-height hedges, as do forsythia and Potentilla. Lilacs, Weigelas, and Burning Bush can also be used. Make selection based on how tall the hedge should be, how fast it should grow, and of course, what kind of look you want. Generally space plants 1/2-2/3 the mature plant width apart, depending on how fast the hedge will fill in.

Growing Roses in Containers

Many roses bloom all season and are perfect for growing in containers. Even miniature roses can be grown in window boxes or hanging baskets. Add cascading lobelia or ivy to the pots for a breathtaking display. Remember to check moisture levels every day. Large pots will not dry out as fast. Use good quality potting soil, not garden soil. Fertilize every week with a balanced water-soluble fertilizer at 1/4 the recommended strength. Please keep in mind, however, that roses in containers are not winter hardy. At the end of the season protect potted roses for the winter. Roses can be transplanted into the garden about a month before soil freeze-up. Miniature roses may be brought indoors lots of light i supplied. Alternatively, provide winter protection by either burying pots in the garden and covering the tops with leaves or straw, or store pots in an unheated garage or basement. Make sure they are watered well before storage and that the temperature remains close to 32°F without freezing.

Patio Tree, Standard and Weeping Standards Protection

These top grafted roses require special winter protection in most climates. If they are grown in pots (minimum of 16" in diameter), store the potted plants in a cold, but frost-free room/building for the winter. (See above for information on growing roses in containers) If planted in the garden, either pry the root ball out of the ground and lay the standard flat and mound with soil, or dig a trench in a vegetable garden and bury the standard flat, about 6-8" deep. Wrap the standard in burlap to help keep it clean if desired. Prune top, bushy part of tree rose to maintain a uniform rounded or symmetrical shape. When planted either in the garden or in containers, be sure to protect the standard from strong winds and use a strong stake.



Varieties

Angel Trumpets (*Brugmansia*) If planting in a container, be sure that both the plant and the container can hold up under windy conditions. Be sure to leave room at the top of the container so it can be watered thoroughly. Water Angel Trumpets daily during the hot summer months. The ideal way to grow an Angel Trumpet is into a larger size tree, fertilizing every 2-3 weeks, which provides the most blooms. Common fertilizer 17-17-17 is a good choice for container plants, while 15-15-10 can be used for plants in the ground. Although these plants prefer full sun, giving the plant some shade during the hot part of the day is a good idea. A word of caution; although these plants are from the same family as tomatoes, potatoes and petunias, they are extremely toxic and should be kept out of reach of children and pets.

Barberry (*Barberis thunbergii*) Grown for attractive foliage which is deer resistant. Beware of sharp thorns when working with barberry! Great as a hedge, barrier or specimen. Plant 1½' to 4' apart depending on variety. Prefers moist, well-drained soil and provides best color in full sun, but light shade is fine. Pruning is not necessary, but remove ⅓ of growth in spring or fall to reshape and stimulate new growth. Drought tolerant. Hardy in zones 4-8.

Burning Bush (Dwarf) (*Euonymus alatus 'Compactus'*) The dwarf burning bush can eventually grow to 10' high if unpruned, but is easily kept at 4'. Leaves turn scarlet red in fall. Grow in full sun for best foliage color. Prune in early spring to keep shrubs bushy. Cut back by at least ⅓ and remove any damaged branches. Mulch and water during dry spells. Can be sheared and shaped into a formal hedge. Hardy to zone 3, if snow cover is provided.

Butterfly Bush (*Buddleia davidii*) Plant in full sun either spring or fall in well-drained, fertile soil. Plant 8' apart. In cold regions, the tops may freeze back to the ground. Simply remove the tops in early spring to be rewarded with multitudes of new shoots and blooms in the summer. In warmer climates, prune out older-woody stems to encourage vigorous new stems. Hardy in zones 5-9.

Caryopteris (*Caryopteris x clandonensis 'Blue Mist'*) Unusual flower color and season of bloom, which extends from late summer to frost. Requires the good drainage of sandy soils. Prefers full sun, or partial shade. Mulch root area heavily after soil freezes. Blooms on new shoots. Prune in late winter, early spring. Unless pruned each spring, the bush becomes twiggy and bears small flowers, so early in the spring, cut last season's growth back to 1". Remove all dead, weak, or crowded shoots. If top growth is killed by frost, or to rejuvenate, cut back all old growth to the soil line to encourage new branches. Grows 3-4' in height and width. Hardy in zones 5-9.

Chocolate Vine (*Akebia quinata*). Grows quickly to 20-30' and will cover almost any structure, no matter how large. This twining vine needs narrow lattice or a wire fence on which to climb. Flowers appear in spring. Adaptable to sun, shade, drought or moisture. Can be used as a ground-cover. Will need pruning in spring to keep it in bounds. Hardy in zones 4-8.

Clematis Plant in fertile, cool, moist soil in full sun. Space 24-36" apart. Keep the soil lightly and evenly moist. Clematis prefers an even moisture level—not too wet or too dry. It needs to have its roots shaded. Do this by planting annuals or shallow-rooted perennials nearby. Clematis is shallow-rooted; take care when cultivating nearby. Provide support (trellis, fence, post, arbor, or allow to clamber through shrubs and trees like climbing roses or apple trees) for the vines to climb. Never use bark or leaf mulch in summer which can promote Clematis wilt. Vine grows 8-12' or more. Blooms June and again in September. Hardy in zones 4-8, depending on variety.

Cotoneaster, Cranberry (*Cotoneaster apiculatus*) Pink blooms in spring, dense shiny green foliage turning red/purple in the fall and red berries on dense arching branches. Prefers full sun to part shade, and well-drained average soil. Grows 3' tall and 5' wide. Pruning is not necessary unless drastic reshaping is needed. Hardy in zones 4-7.

Dutchman's Pipe (*Aristolochia macrophylla*) This vigorous, climbing, twining vine can grow 20-30' high. Bears unusual flowers in summer. Grow on sturdy lattice or wire support. Attractive to birds and butterflies. Thrives in any soil that is relatively moist and well-drained and in full sun or part shade. Water during dry periods. Hardy in zones 4-8.

Elderberry (*Sambucus nigra*) Flowers cover the plant in late midsummer. Edible dark purple berries attract

songbirds in late summer and fall. Grow in sun for the best color, but does quite well in filtered shade. Prefers fertile, moist soil, but is very drought-tolerant once established. Grows 8' high and wide, but can be easily kept smaller. Prune hard in late to early spring before the leaves appear. Hardy in zones 3-8.

Forsythia (*Forsythia x 'Northern Gold'*) Grows 7' tall and wide covered in bright yellow flowers in very early spring. Prefers full sun or very light shade. Prune after flowering by at least $\frac{1}{2}$ and remove a few of the oldest, thickest stems each year. Hardy to zone 3 with protection. Flower buds will not survive above the snow line in zones 3-4, so cover with snow if possible.

Ground Cover Rose This plant is very disease-resistant, tolerates poor soils and thrives in full sun or partial shade. Will tolerate full shade. Ideal for bedding or mass plantings as well as a groundcover and container plant. Grows 15-24" tall. Blooms June-September. Hardy in zones 4-9.

Honeysuckle, Climbing (White: *Lonicera japonica 'Halliana'*, Orange: *Lonicera x brownii 'Dropmore Scarlet'*, Pink/Yellow: *Lonicera x heckrottii 'Goldflame'*) Grows in full sun to partial shade. Honeysuckles will perform best in moist soils; however, all honeysuckles are somewhat drought tolerant. Prefers well-drained, slightly alkaline soils. Attaches by twining stems to whatever is nearby. Provide a support and when too large, prune back to main stems. Remove climber from its supports to see if the main stems are very thick and old. If so, cut them back to the vigorous young shoots near the bases of the stems. If the main stems are only a few years old, retain them and remove all lateral growth. Then tie the pruned vine back into position on its supports. Can grow up to 18' high and 5' wide. Hardy in zones 5-8.

Hops Vine (*Humulus lupulus*) Can reach heights of 25' in a single season but will die back to the crown each fall. The soil should be tilled to create a weed-free area. Plant in early spring once the threat of frost is gone but no later than May. Work soil into a fine, friable condition prior to planting. In cold climates, plant in pots and transplant in June. Plant in deeply-worked, well-drained, sandy loam soil at least 3' apart. Requires frequent light watering during the first year while the plant is establishing its root system. In July, the lowest 4' of foliage and lateral branches can be removed to aid in air circulation and reduce disease development. In August, allow additional bottom growth to remain to promote hardiness of the crown and plant vigor for following year. Fertilizers rich in potassium, phosphate, and nitrogen should be applied 2 or 3 times each year between March and mid-July. If manure or compost is applied around the hop plant, fertilizer applications may be reduced accordingly. Hardy in zones 5-8.

Hummingbird Vine (*Campsis radicans*) Plant with crown at soil level in any well-drained soil. Tolerates poor soil and restricted roots. Provide a very sturdy,

large support. Vigorous clinging (attaches by aerial rootlets to any rough surface) climber up to 30'. Blooms in late summer to autumn on new growth. Prune regularly in spring. Will overtake other plantings if not controlled. Very easy, fast growing vine. Hardy in zones 4-9.



Hydrangea Plant in either spring or fall in full sun to full shade locations. Space 6' apart, depending on variety and pruning. They may be pruned immediately after blooming as flower buds are formed on previous season's growth to maintain a specific height. Prefer moist, well-drained soil which has been amended with peat moss, leaf mold etc. Flower color for blue, pink and red varieties is strongly affected by the soil pH and the amount of aluminum in the soil. 'Nikko Blue' prefers acidic soils with a pH range of 5.0 to 5.5, while a pH of 6.0 to 6.5 and higher is best for pinks and reds. Aluminum sulfate may be added to soils and an acidic fertilizer may be applied in early spring to improve coloration. Hardy in zones 3-9. In cold regions, flower buds may freeze without some protection.

Kiwi, Arctic Beauty (*Actinidia kolomikta*) Commonly called Kiwi Vine, this low maintenance plant can reach heights of 15' to 40' with a 6' to 10' spread. Plant in full sun to partial shade in average, medium-wet, well-drained soil. Properly pruned vines will remain more compact and will bear somewhat larger fruit. The vines can, however, be grown quite satisfactorily without care. In most cases the vines produce only male or only female flowers. Only female plants will produce fruit, but male vines are usually needed for pollination. A few selections produce both female and male flowers and will self-pollinate. Even with self-pollinating selections, however, it is best to include a male pollinator in the planting to assure good pollination. If growing only for ornamental foliage, consider planting only male plants. Under favorable conditions, the vines can yield heavy crops of fruit. Hardy in zones 4-8.



Lilacs Plant in a location that provides at least 6 hours of strong sunlight and good drainage. Give them plenty of room, as some lilacs grow 12' tall and wide. In a hole wider than the root ball, plant at the same soil level and in container level it was received in (be sure not to bury the trunk or stem). To fill in around the plant, using a mix of compost and a little peat moss. One suggestion would be to add a bit of lime, as lilacs enjoy sweet soil. Keep the lilac well watered, but not wet. As the lilac grows and blooms, trim off spent flowers before they seed to enhance newer blooms. Hardy in zones 3-7.

Lonicera Plant in either spring or fall in full to partial sun. This honeysuckle is adaptable to any soil condition as long as it is well-drained, as they detest "wet feet". Space plants 4-10' apart. Provide strong support for their vigorous, upward-climbing habit. Prune after blooming. If drastic pruning is needed, do not hesitate to prune back to ground level in the early spring, as they will quickly rebound with renewed vigor. Grows 10-20' tall. Hardy in zones 3-9.

Magnolia (*Magnolia stellata* and *Magnolia x 'Anne'*) Grow magnolias in partial shade; morning sun with afternoon shade is best. Select a very sheltered location between buildings or among large evergreens where snow collects. Magnolias set their flower buds for the next year in late summer, and these buds are more tender than other parts of the shrub. Star magnolia will bloom profusely only if protected during cold, dry winter weather. A warm spell in March may signal buds to break dormancy; frost afterwards will kill buds. Prune immediately after flowering for shape and size. Magnolias often drop all their leaves at once on a calm day; leave in place and lightly cover with mulch to keep soil fertility high. Blooms in early spring before leafing out. Slow growing. Can grow up to 20' high, but expect a smaller size in cold climates. Hardy in zones 4-9.

Maiden Hair Tree (*Ginkgo biloba*) Fan-shaped leaves turn a lovely bright yellow in autumn. Prefers full sun and sandy, moist soil, but will adapt to almost any situation. A very durable, pest-free tree that is tolerant of salt, heat and pollution. Grows 20-50' high and 10-13' wide. Ginkgo gets better with age, so be patient. It is common for Ginkgos to reach 1000 years of age. The oldest Ginkgo in China is 3500 years old! Provide adequate water and fertilizer. Prune only in spring, if necessary. Hardy in zones 4-8.

Mandevilla A tender, woody vine for full sun or partial shade. Start indoors in a 6" pot using moist potting soil. Move outside after all danger of frost is gone. Ideal for containers with the use of a trellis. When potted, plants should be fertilized. When planted in the garden, space 3-4' apart. Blooms July until frost and can reach a height of 10-12' when shoots are not directed. Hardy in zones 9-11; elsewhere treat as an annual or cultivate in containers so it can be overwintered indoors.

Maple, Japanese Red (*Acer palmatum 'Atropurpureum'*) This maple can be trained as a single-stemmed tree or a multi-stemmed shrub. Reddish-purple leaves turn blazing red in autumn. Usually grows 10' high and wide but can get 25' tall with age. Prefers full sun to partial shade and moist, organic, rich, well-drained soil. Prune only to accent natural shape. Hardy in zones 4-9 in a sheltered spot.

Maple, Red (*Acer rubrum*) Excellent specimen or shade tree. One of the first trees to change color in autumn; dark green leaves usually become brilliant red. Grows 12-15" per year. Plant in full sun and rich, well-drained, slightly acidic soil. Prune only to retain natural shape. Usually grows 40' high by 30' wide. Hardy in zones 3-9.

Metasequoia glyptostroboides (*Dinosaur Tree*) This tree thrives in moist, even wet soils, but is also tolerant of dry soils if given enough irrigation to establish a good root system in its early years. Plant this tree in full or part sun where it has plenty of room to grow up and out. Once established it will grow very quickly, eventually reaching 80' or more in height and 40' or more in width. It is deciduous – meaning that it will lose its leaves in winter. Height: 75'-100'. Hardy in zones: 4-8.

Mockorange (*Philadelphus x virginialis 'Minnesota Snowflake'*) Plant in full sun or part shade in well-drained soil. Mockorange needs annual pruning to keep it tidy. Prune after flowering as it blooms on last year's wood. Remove all dead wood and weak growth. Then cut back oldest stems to where young shoots are growing. Very old branches can be cut right down to ground level. Aim to have no branches that are more than five years old. Mockorange blooms spectacularly for several weeks in late spring to early summer. Grows about 6' high and wide. Hardy in zones 4-9.

Mountain Ash, European (*Sorbus aucuparia*) Dark green, turning reddish in fall with orange-red berries that are attractive to birds. The odor of its white spring flowers is objectionable to some and should be considered when placing this tree near a walkway. Best used as a specimen plant. Upright when young and spreading at maturity, the Mountain Ash is a vigorous and rapidly growing tree and can reach heights of 25-40' and widths of 16-25'. Plant in a cool, moist location with full sun to partial shade. Prefers well-drained, slightly acidic soils with a pH of 3.7 to 7.3. Prune tree as needed to remove damaged wood. Hardy in zones 3-7.

Passion Flower, Hardy (*Passiflora incarnata*) Plant in full sun to partial shade in a protected location, and mulch heavily, especially in colder climates. Top growth can be killed back by frost, but 'pops' back to life in the spring. Passion flowers, also called Maypops, are easy to grow and will adapt themselves to most well-drained soils but will benefit by the addition of compost to the planting hole. During the growing season, the soil should be kept evenly moist, to ensure good flowering and growth. Apply a balanced (10-5-20) fertilizer in the early spring, and then again six to eight weeks later. Begins to bloom in July and continues until frost. The vigorous vines can easily grow up to 15' in a season, with a 2' to 3' spread. The fruit produced by this plant is an oval berry, a little larger than a chicken egg. Passion fruit is edible, but seedy. It can be used to make jelly, but its best usage may come from being a food source for several species of butterfly and hummingbirds. Hardy in zones 6-9.

Peashrub, Siberian (*Caragana Arborescens*) Very hardy and fast growing. Grows 15-20' high with a spread of 12-18' but easily pruned to any size. Makes an excellent, fast-growing, thick hedge, spaced 2-4' apart. Prefers well-drained soil and full sun. Tolerates, salt, drought, poor soils, cold and wind. Hardy in zones 2-7.

Plum, Pink Double (*Prunus triloba* var. *Multiplex*) Also known as Flowering Almond. Plant in full sun to partial shade; best flowering occurs in full sun. Best grown in moist, fertile, well-drained loams. Needs regular pruning to remove dead wood and to maintain form. Prune if necessary immediately after blooming in mid-spring. The most flowers appear on one to three year old wood, so regularly remove old wood. Blooms around the same time as Forsythia. Leaves turn yellow to bronze in the fall. Grows 10-15' in height. Hardy in zones 3-9.

PolYGONUM aubertii (*Silver Lace Vine*) Plant in poor soil in full sun to light shade. Space 36-48" apart. Fast-growing vine can become weedy in rich soil. Provide a fence, wall or trellis for support. Drought tolerant. Grows to 25'. Blooms late summer to fall. Hardy in zones 4-9.

Porcelain Vine (*Ampelopsis brevipedunculata*) Vigorous, woody, tendril-climbing vine which is somewhat similar in habit to wild grape vines and will typically grow 15-25'. Showy fruits appear in late autumn. May be invasive in really warm climates. Will grow in any soil, except those that are permanently wet. Best fruiting occurs in full sun, but this vine does fine in partial shade. Hardy in zones 4-8.

Potentilla (*Potentilla fruticosa*) Bears bright flowers all summer. Grows 2' high and 2-3' wide. Prefers full sun or light shade. Very drought-tolerant and adaptable to most soils, but performs best when soil is evenly moist. Prune in late fall or early spring, just as leaves begin to appear. Cut back by at least a third each year. Overgrown shrubs can be cut back by half or more. Hardy in zones 3-9.

Privet (*Ligustrum amurense*) Used almost exclusively to form hedges because of their dense foliage and rapid growth. Can reach heights of 8' to 12' with a spread of 6' to 8'. Bears white flowers in late spring-early summer followed by non-edible berries. Plant in any good, slightly wet, garden soil in partial shade to full sun. They tolerate a wide pH range and do not seem troubled by the pollution that plagues most plants in urban settings. Plant 1' to 2' apart. Prune privet hedges after they have flowered; thereafter, prune them an additional 3 or 4 times during the course of the summer. Privet hedges will fill in better if they are pruned frequently. Hardy in zones 4-9.

Purple Smoke Bush (*Cotinus Dark Leafed*) Tall shrub, growing 4-6' tall, blooming in June-September. Should be planted in full sun to partial shade in normal to dry soil, spacing 7' or more apart. The name "Smoke Bush" comes from the soft look of the mass of fruiting panicles in summer. Hardy in zones 5-8.

Redbud, Eastern (*Cercis canadensis*) Flowers appear in the spring before leaves appear. Long seed pods and yellow foliage in autumn. Plant in full sun to partial shade. Does well in many soil types, except permanently wet soils, but prefers moist, well-drained, deep soils. Keep vigorous with regular watering and fertilizing. The seed pods attract wildlife. Grows 20-25' high and wide. Hardy in zones 4-9.

Russian Olive (*Elaeagnus angustifolia*) Russian olive is an excellent windbreak and wildlife tree for high wind areas. It is extremely tolerant of most environmental factors. Can be made into a hedge by planting 10' apart in a row. Russian Olive is low in water requirements and displays a high tolerance for salt and alkali. Grows well in hot-dry sites. Plant in full or part sun in any good, well-drained soil. Avoid clay or waterlogged soils and do not fertilize. Height and spread 20' to 30'. Hardy in zones 3-8.

Sambucus An ornamental plant that can be grown as a shrub or cut back each year and used as a bold perennial. Plant in somewhat moist, average garden soil in full sun to partial shade. Plant 48" apart. Blooms summer. Grows 8-12' tall. Hardy in zones 4-9.

Silver Lace Vine (*Polygonum aubertii*) A rampant, twining vine that is very adaptable, and can tolerate dry soil. Aromatic, greenish-white blossoms open in late summer to fall. Requires little care except pruning in spring. Can be cut back severely if it is overgrowing the space. Can be trained on a trellis. Sometimes called 'mile-a-minute plant', Silver lace vine grows quickly, sometimes up to 25' in a single year! Tolerant of drought and seaside conditions. Plant 3-4' apart, in full sun to partial shade. Hardy in zones 4-8.

Snowball Bush (*Viburnum opulus* 'Roseum') Also known as European Snowball. Grows in full sun to partial shade. Prefers a moist location and adapts to most soils. Prune in early summer, after its flowering has finished. The large spherical flowers open apple green and then turn white. Cut flowers for bouquets when they are still slightly green and they will last for two weeks. Thin out older stems to rejuvenate the shrub and keep it looking tidy. Grows 8-10' tall and wide. Hardy in zones 2-9.

Spirea (*Spiraea japonica* & *Spiraea x bumalda*) Grows 2-4' tall and wide. Blooms throughout summer and often into fall. Prefers sun to light shade. For the best foliage color, plant in full sun. Prune in late winter or early spring. Cut back by at least 1/3 each year. Remove finished flowers in summer. Severe pruning can rejuvenate older, leggy shrubs. Hardy in zone 3-9, with protection.

Spirea, Bridalwreath (*Spiraea x vanhouttei*) Compact, bushy, deciduous shrub with slender, arching shoots. Bowl-shaped white flowers are borne in dense clusters, up to 2" across, in early summer. Prune immediately after blooming is finished by selectively removing old wood right to the ground. Easy to grow in average, well-drained soil and flourishes in full sun or partial shade. This shrub grows rapidly and makes an excellent hedge or screen. Grows 6' high, 5' wide. Hardy in zones 4-8.

Tropaeolum tuberosum Plant in full sun to partial shade in normal to poor garden soil. Roots should be planted 3-4" deep and spaced 4' apart. Will need a trellis or other type of support as the plant matures. Blooms in summer, growing to a height of 2'. Hardy in zones 7-11; elsewhere dig and store in a frost-free area.

Trumpet Vine (*Campsis*) Plant in rich soil in full sun. Space 48-60", although usually one plant is sufficient. Provide support for this climbing vine. To promote flowering and to keep to a desired height, prune back sharply in late fall or early spring. Grows to 30' tall. Blooms summer. Hardy in zones 5-9.

Virginia Creeper (*Parthenocissus quinquefolia*) Grow in any fertile, well-drained soil in shade or sun. Virginia Creeper has root like tendrils with discs that attach themselves to any non-smooth surface, even brick. Can be allowed to climb rough-barked trees,

but avoid allowing to grow into treetops, where smothering can occur. Very vigorous grower. Can be considered invasive if planted in the wrong place. Prune in spring or summer back to main stems to thin out, or prune hard down to 12" to keep under control. Grows to almost any height, several stories high. Hardy in zones 4-9.

Weigela florida 'Variegata' (*Variegated Weigela*) Plant in full sun to partial shade in either spring or fall in well-drained soil. Very adaptable to any soil conditions. Very tolerant of air pollution. Prune after flowering if needed. Blooms April. Grows 4-6' tall and 6-8' wide. Hardy in zones 4-9.

Willow (*Salix*) Excellent hedging plants or for contrast in a shrub bed. Grows 3-4' high and wide. Space 2' apart as a hedge. Plant in full sun in any loose, organic soil. Does well in moist soils. Not invasive. Prune yearly to keep bushy and dense. Hardy in zones 3-9.

Wisteria Wisteria plants require regular pruning and the support of a very sturdy arbor, pergola or trellis. When deciding on a location for planting, please consider the potential size and strength of this plant. A location that provides full sun and well-drained soil would be ideal. The pH level of the soil before planting Wisteria should range between 6.0 and 7.0 (Test kits are available in most garden stores). If the pH level is too low, add some lime according to package directions. If the level is too high or acidic, adding natural materials such as pine bark or needles, additional manure and peat will help lower the acidity. Plant Wisteria at the same depth as was planted in the container received in. Water the base and the surrounding areas immediately after planting. Fertilizer should be applied once a year, until the plant reaches a desirable size. It may be necessary to trim off the runners once a month to keep them under control. With yearly care and control, the plant will grow to a beautiful flowering vine.



FRUITS & VEGETABLES

Eat the fruits of your labor.

There is nothing more rewarding than growing your own fruits and vegetables and being able to eat the fruits of your labor. Once your package has arrived, open it immediately and remove any plants from plastic bags. If any items have plastic around the root balls, leave this on until planting because it helps preserve moisture. These are live plants and proper care must be taken to ensure health until ready for planting. Keep the plants moist and cool. Our fruits and vegetables are shipped in a dormant form so they can be transplanted outdoors once the soil can be worked in the spring. Light frosts will not damage the plants. If you are unable to plant immediately, the plants can be stored for a short period of time in a cool, dark location that will not freeze. They should also be kept moist, but not wet. An unheated garage, refrigerator, or cold cellars are ideal locations.



Varieties

Asparagus Plant in well-drained, neutral soil in full sun. Asparagus grows in the same place for many years, so proper preparation of the asparagus bed is essential. Till the soil to a depth of 24", mixing in as much organic matter (compost and well-rotted manure) as possible. Dig a trench 8-10" deep and 10-12" wide. Space the crowns 12" apart with their roots well splayed out at the bottom of the trench. Cover with several inches of soil. Once the shoots begin to emerge, add more soil to the trench until, as the stems grow, the trench is filled. Mulch with 4-6" of organic material to conserve moisture and provide nutrients. Each spring, fertilize with a balanced, organic fertilizer. Once established, asparagus needs only moderate watering during the growing season. As tempting as it may be, do not harvest any asparagus stalks the first year. The second year harvest just a few stalks. The third and subsequent years, harvest stalks until they start thinning to less than 1/2" in dia. Always cut the stalks; do not break them off or risk injuring the crowns. In areas of the country with cold winters, wait to cut down the plants until early the following spring. In warmer areas, cut back the foliage when it browns. Hardy in zones 2-8.

Blackberries All brambles require deep, well-drained soil high in organic matter. Choose any sunny location that has good air circulation and water drainage. Keep the roots moist until planting time. Cut plants back to 6" and place them in a hole at the same depth they grew in the nursery. Space blackberries 2' apart in rows 7' apart and provide a trellis for the trailing types. Water heavily and mulch to reduce weeds. Do not let the canes produce fruit the first year. These summer-bearing berries produce fruit on the second year canes. In the

fall of the second year, prune spent canes to the ground and thin others to 4 canes per foot of row. Cut off suckers that grow outside the rows. Trim the remaining canes to 7'. This is a woody rambling vine that can be trained on an arbor or support. Generally hardy zones 7 to 10, although some varieties are more cold hardy.

Blueberries Blueberries must be planted where they have full sun for most of the day, well-drained, sandy, and acidic soil (pH of 4.5 to 5.5), that is high in organic matter. Plants have shallow root systems; keep the roots cool and moist. Space plants 4' apart in rows that are 7' apart and set plants at the same depth they grew in the nursery. Plants benefit greatly from a heavy mulch to conserve moisture and a yearly pruning of the mature plants. Southern types are hardy zone 7-10 while Northern types are hardy zone 3-7.

Garlic Plant in humusy, fertile, slightly acidic, well-drained soil in full sun. Bulbs grown in shade will be smaller. Break garlic into individual cloves and plant in the early fall or early spring. Plant 2-3" deep with pointed end up, allowing 3-6" between bulbs. Fertilize with compost tea or fish emulsion. Keep plant well-watered and mulched.

In summer, when the foliage begins to yellow, stop watering. Break the tops over at the base to speed up the drying process. When the plant tops are brown and dry, gently pull the bulbs from the ground. Dry in the sun for several days. Braid or tie the garlic bulbs in bundles and dry them in a dark area with good ventilation. In the spring, shoots and flower stems can be used like chives. This is a perennial bulb that is best planted in fall for harvest in spring. Hardy zones 3 to 9.

Grapes Grapes prefer fertile, well-drained soil and a site that offers full sun, good air circulation, with protection from wind, and late spring frosts. Grapes like a moderately acidic soil, (pH 5.5 to 6.0) with fair amounts of organic material or compost. Set plants 8' apart in rows that are 10' apart. After planting, grapes should be fertilized every 3-4 weeks with a well-balanced fertilizer. Pruning should be done in winter when plants are dormant, but not when it becomes too

cold. Canes that have borne fruit should be pruned back sharply. Remove the old canes coming from the main stem and leave 4 new canes. The new canes should be cut back to 6-8" and 3 or 4 buds. These buds will produce the new shoots that bear leaves and grapes the following summer. Four of these new shoots will be used to repeat the same fruiting and pruning process the following winter. This is a woody vine. Hardy zones 3 to 5, although some varieties are more heat tolerant.

Figure 1

PRUNING GRAPES

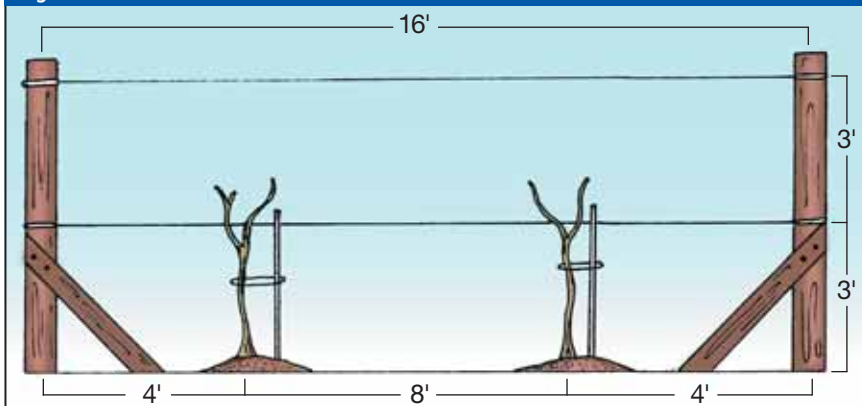


Figure 2

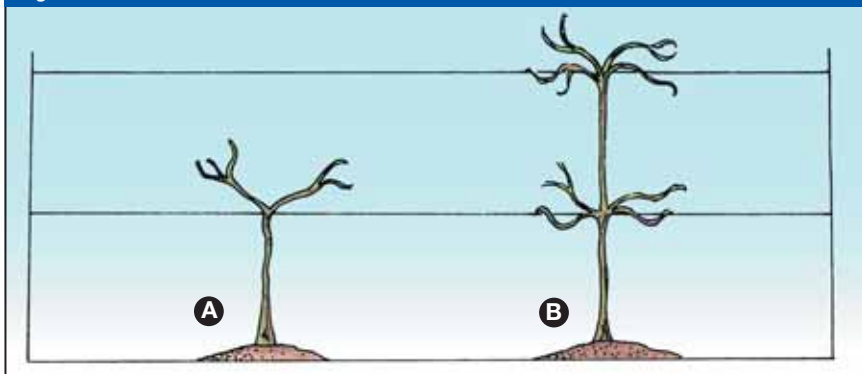
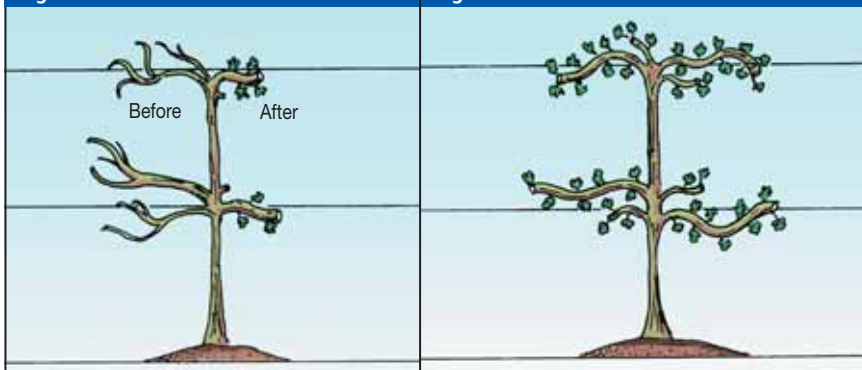


Figure 3

Figure 4



Horseradish Plant in the spring as early as the soil can be worked. Soil should be prepared in the fall so that it is deeply dug, loose and amended with organic matter. Place the roots 18-24" apart in shallow trenches, with the top end slightly elevated. Cover with a 4-5" deep ridge or mound of soil. Plants grow 2-2½' tall, and the roots make their greatest increase in size during the cooling weather of fall. Water thoroughly if plants wilt during hot weather, especially in late summer-early fall.

Harvest the roots as needed anytime from late fall, after a hard frost, until growth starts in the spring. Production is better if the plants are divided and replanted yearly, but plants will survive indefinitely without any care. Small pencil-sized roots may be saved from harvesting and replanted in the spring. Hardy zones 2-7, although it will survive warmer regions, it is not a great performer in those regions.

Onion Sets Plant onions in rich, well-drained, pliable soil in full sun. Plant sets 1" deep, spaced 2" apart. As they grow, thin out every other one. Use the thinnings as scallions (actually true scallions are bunching onions). Keep well weeded, watered and fertilized for maximum bulb production.

Pull onions to use fresh as you need them. To store onions, allow the tops to fall over naturally, then gently bend over any other upright stalks. After 2 days, pull the onions and set them on the ground to dry. If the weather is wet, bring them into a dry, well-ventilated space and place them on mesh or old screens to dry. Onions that still have green stems should be used first as they will not keep. Once onions have thoroughly dried, either braid the bulbs and hang or store in mesh bags (old pantyhose work well) or ventilated boxes. This is an annual plant. Hardy zones 3-9.

Growing Great Grapes

Site Selection: Choosing the right spot for any long-lived perennial plant is important. More so with grapes as the right site will help reduce disease problems and ensure fruit for many years to come. The 4 factors are: 1) Soil Drainage - grapes do not like wet feet, so avoid sites where the soil is heavy or water sits for any amount of time; 2) Air movement - Good air circulation will reduce disease problems; 3) Avoid frost pockets - plant grapes in an area where they will not be exposed to late spring frosts; 4) Sun exposure - grapes like full sun.

Soil Preparation: Since this will be the permanent home for the grape it is important to properly prepare the soil before planting. Grapes like a moderately acidic soil (between pH 5.5-6.0) so liming is not generally required unless your soil is very acidic. Grapes are not heavy feeders, but working some compost into the soil should help them get a good start.

Planting: Space grapes 8' apart in rows 10-12' apart. The soil should be lightly packed around the plant and well-watered until the grape begins to grow. They can be fertilized 3-4 weeks after they are planted with a balanced fertilizer.

Pruning: Since grapes can be very prolific and only bear fruit on 1-year-old wood, they need to be pruned and trained to bear an abundant harvest. The process below describes a common pruning method called the 4 arm Kniffen system, but the principles can be applied to any form. This system involves using galvanized steel wires spaced 3' apart on posts 16' apart. Grapes should be pruned in late winter, early spring before the buds have begun to grow.

Year 1: In the first year's growth, the grapes should be tied up to a stake and only the strongest 2 shoots allowed to grow. (Figure 1)



Year 2: Select the stronger of the two canes to be the main trunk of the grape. If the cane has only reached the first wire, then restrict it to shoots (Figure 2A). If it has reached the top wire, then once the shoots begin to grow, remove all but the strongest 4-5 at each wire. These will be the arms of the grape vine. (Figure 2B)

Year 3: At each wire, select the strongest cane going in each direction and prune to 3-4 buds in each cane. (Figure 3) These will provide the fruiting wood for the next year.

Year 4 and beyond (Figure 4): Finally the first fruiting year has arrived. Select the stronger cane at each wire and prune to 6-10 buds each. This cane will bear the grapes. Also leave one shoot in each direction pruned to 2-3 buds. This will supply next year's fruiting canes and is called a spur. The fruit should be harvested in the fall. The color will change before the grapes are ripe, so a taste test is the best way to know when they are ready.

In future years, prune back the previous year's wood and select a new fruiting branch and spur.

Onion Plants Plant immediately upon arrival. Do not leave bare root. Plant in good garden soil. with optimal drainage. Plant in rows, 2-3" apart. Press soil very tightly around roots. Water thoroughly after planting. This is an annual plant. Hardy zones 3-9.

Potatoes Early, midseason and late varieties may be planted in early spring when soil has dried and warmed. One of the earliest vegetables to be planted in the spring, do not be in a hurry to plant in March. Potatoes will rot if weather turns cold and wet after planting. Soil should be rich in organic matter and deeply worked in the fall prior to spring planting.

Plant seed pieces, making sure each piece has at least one good "eye", 3-4" deep in furrows and 10-12" apart. Cover seed pieces with soil. Rows should be 24" apart. After the potatoes break the surface, gradually build up a low ridge of loose soil by cultivation and hoeing toward the plants. This ridge, which may become 4-6" high by summer, reduces the number of green tubers which are not edible.

Harvest potatoes after the vines have died. Because tubers develop 4-6" beneath the soil surface, a shovel or spading fork is suggested for digging potatoes. Be careful not to spear or cut the potatoes during harvest. In early summer, small "new" potatoes may be dug while the main harvest will be in late August or September.

Store potatoes in a dark, humid room with a temperature between 38-40°. Check periodically for spoilage. Temperatures below 38° cause internal damage. Potatoes can be grown in zones 3-9. Gardeners in zone 3-5 should plant in spring 2-3 weeks before the last frost. Gardeners in zones 6-7 should plant in late winter and gardeners in zones 8-9 should plant in fall and harvest in spring.

Raspberries Raspberries are a bramble fruit and should be treated the same as blackberries. Plants are more erect than blackberries so they do not require support. Space red and yellow varieties 2' apart in rows that are 4-5' apart. The black and purple varieties should be spaced 3' apart in rows 7-8' apart. Plant the black and red varieties 300' apart to prevent the spread of disease.

Little thinning is needed until plants have been in the ground a few years. When thinning brambles, leave the thickest canes and remove the thinnest. Prune the red and yellow varieties back to 8-12 buds on a cane, leaving the thickest canes at least 4-6" apart in the spring. Remove the fruiting canes after the harvest. Prune black and purple varieties when new growth starts in the spring, leaving 10-15 buds per cane and 4-5 canes per clump. Encourage branching by pinching back the tips of black raspberry plants in late summer. With the reds, remove suckers rather than canes from the original plants. This is a woody rambling vine that can be trained on an arbor or support. Hardy zones 2-7, although some varieties are more heat tolerant.

Rhubarb Plant the hardy perennial roots in full sun in early spring, as soon as the soil can be worked, with the crown bud 2" below soil surface. Soil should be pre-

pared in the fall prior to spring planting by incorporating organic matter in the soil and loosening the soil to a depth of 10-12", and making sure it drains well. Space plants 36-48" apart with rows 3-4' apart. Keep watered during periods of drought and mulch to keep weeds down and conserve soil moisture. Fertilize with a high nitrogen fertilizer in late June.

Do not harvest during the first year after planting. Harvest sparingly the second year, and by the third year, a full harvest may be enjoyed. To harvest, pull the leafstalks from the plant and trim off the leaf blades. Do not eat the leaf blades as they contain large amounts of oxalic acid. Remove only 1/3 of the leafstalks from a plant at any time. Remove flower stems during spring and summer to extend the harvesting season. Once they flower, do not harvest until the following year. This is a perennial plant. Hardy zones 3-8, although it will survive warmer regions, it is not a great performer in those regions.

Shallots Plant in rich, humusy, well-drained soil in full sun. In spring, 2-4 weeks before last frost date, plant sets directly in the garden, 1" deep, allowing 4-6" between bulbs. Mulch and water regularly to promote good bulb formation. Side-dress with compost or well-rotted manure. Each set will form 8-10 shallots.

When the tops have dried, pull up the plants. Dry the bulbs in a sunny, well-ventilated place. Store the bulbs either by hanging in a cool, dry place or, after cutting off the stems, storing in mesh bags. This is an annual plant. Hardy zones 3-9.

Strawberries Upon arrival, plants may look "dead" because of storage. Soon after planting, the plant will sprout with new healthy leaves. Plant in well-drained, slightly acidic, rich soil amended with plenty of organic material. Grow in full sun. Soak the roots before planting for several hours in tepid water. Plant so the crown is just at soil level, not under the soil, with the roots well buried in soil. Spread the roots out so that they form a circle going down into the soil. Space crowns 12" apart. Mulch the plants well with compost or well-rotted manure. Keep well-watered, especially for the first 6-8 weeks after planting, until the plants become established.

The first year, prune off all spring flowers of garden strawberries. For everbearing varieties, let the fall flowers go to fruit. Garden strawberries spread by runners. For larger berries, prune back all but a few runners. You do need some runners to fill in as older plants die.

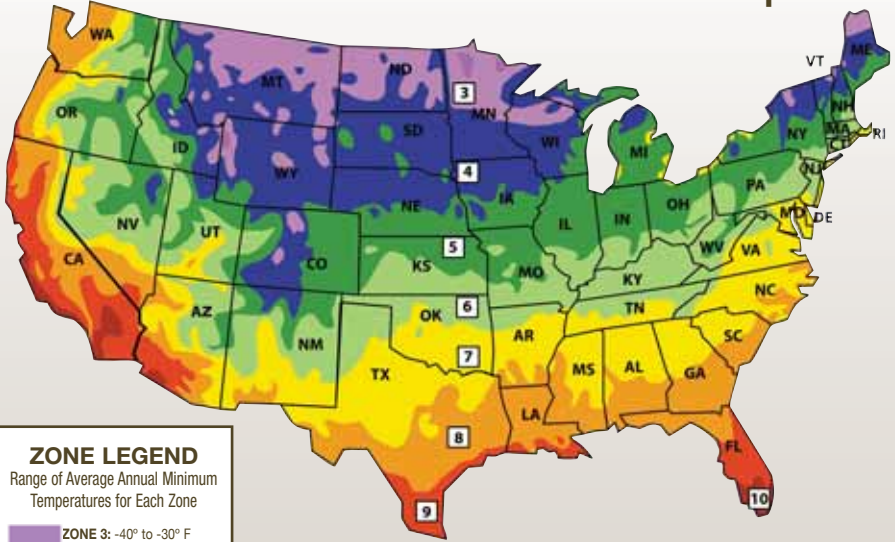
In cold climates, cover strawberries with a heavy straw mulch for the winter. Do not remove mulch until after the last hard freeze.

Garden strawberries need to be picked every day as they ripen. Override berries will simply rot on the vine. Pluck strawberries so the stem and cap remain attached. A mature strawberry plant can yield about 1 pint of berries per season. Hardy zones 3-9. In cool regions strawberries should be planted in spring. In warm regions they should be planted in fall for spring harvest.

Abyssinian Gladiolus	8	Bluebells, Virginia	27	Cortaderia	28	Fiesta Daisy.....	29
Acanthus	25	Blue Bonnet	27	Corydalis	28	Filipendula	29
Achillea	25	Blue Danube	27	Cosmos	28	Forget-Me-Not	29
Achimenes	8	Blue Fescue	27	Cote d'Azur Pinks.....	28	Forsythia	45
Acidanthera	8	Blue Lilyturf	27	Cotoneaster, Cranberry	44	Fourain Grass	29
Aconitum	25	Blue Oat Grass	27	Cotinus	47	Four O'Clocks	13
Acorus	25	Blue Sea Holly	27	Crambe	28	Foxglove	29
Actaea	25	Blueberries	49	Cranesbill	28	Foxtail Lily.....	13
Adiantum	23	Blue Wild Indigo.....	27	Crinum 'Alfa'	10	Freesia	13
Agapanthus	25	Brimeura	9	Crocsmia	10	Fritillaria	13
Agastache	26	Brodiaea	9	Crocsmiiflora	10	Fuchsia	29
Ajuga	26	Brugmansia	44	Crocus pot	22	Funkia	29
Alcea	26	Brunnera	27	Crocus	10	Gaillardia	30
Alchemilla	26	Buddleia	44	Crocus, Fall Flowering	10	Galanthus.....	13
Allium	8	Bugbane	27	Crocus, Sativus	10	Garlic	49
Alocasia	8	Bugleweed	27	Crown Imperials	10	Gaura	30
Alpine Hyacinth	8	Burning Bush	44	Crownvetch	28	Gay Feather	30
Astroemeria	26	Butterfly Bush	44	Curcuma	10	Gentiana	30
Althea	26	Butterfly Plant.....	27	Cushion Spurge	28	Geranium, Hardy	30
Amarcrinum	8	Caladium	9	Cyclamen	10	German Iris	30
Amaryllis Belladonna	8	Calamagrostis	27	Cyrtanthus	10	Giant Allium	8
Amaryllis	21-22	Calla Lily	9	Daffodils	11	Giant Gypsophila	30
Amazon Lily	21-22	Calochortus	9	Dahlias	11	Giant Hardy Phlox	30
Anemone blanda	8	Camassia	9	Dahlia Imperialis	12	Gladiolus	13-14
Anemone Japonica	26	Campanula	27	Daylily	28	Globeflower	30
Angel Trumpet	44	Campsis	44	Delphinium	28	Globe Thistle	30
Aquilegia	26	Candy Lily.....	27	Dennstaedtra	23	Gloriosa	14
Arisaema	8	Canna	9	Dianthus	28	Glory of the Snow	14
Artemesia	26	Cardinal Flower	27	Dicentra	28	Glory of the Sun.....	14
Artisarum	26	Cardiocrinum	10	Dichelostemma	12	Goat's Beard	30
Arum	8	Carex	27	Digitalis	28	Golden Daisy	30
Aruncus	26	Caryopteris	44	Dodecatheon	29	Golden Jap. Forest Grass	30
Asclepias	26	Cat Tail	27	Dog Tooth Violet	12	Golden Moss	30
Asparagus	49	Centaurea	27	Dracunculus vulgaris	12	Gooseneck Loosestrife	30
Aster	26	Chasmanthe	10	Dragon Arum.....	12	Grapes	50
Astilbe	26	Chelone	27	Dragon's Blood	29	Grape Hyacinth	14
Astrantia	26	Chincherinchee	10	Drumstick Allium	12	Grande Cover Rose	45
Athyrium	23	Chinese Lantern Lily.....	10	Dryopteris	23	Guinea Hen Flower	14
Aubrieta	26	Chinese Sacred Lily.....	22	Dutchman's Pipe	44	Gunnera	30
Aurina	26	Chinese Sacred Lilies	10	Dutch Iris	12	Gypsophila	30
Autumn Crocus	8	Chionodoxa	10	Dwarf Bannana	29	Habenaria.....	14
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Hardiness Zone Map



ZONE LEGEND

Range of Average Annual Minimum Temperatures for Each Zone

	ZONE 3: -40° to -30° F
	ZONE 4: -30° to -20° F
	ZONE 5: -20° to -10° F
	ZONE 6: -10° to 0° F
	ZONE 7: 0° to 10° F
	ZONE 8: 10° to 20° F
	ZONE 9: 20° to 30° F
	ZONE 10: Above 30° F

Using the Zone Map Plant hardiness is very important to growing success. Check the map to determine which hardiness zone you live in and use that number as a reference when choosing plants. You'll find the zone designations in the green bar of each plant description in the catalog. A variety marked Zones 3-8 should grow and thrive in Zones 3,4,5,6,7 and 8.

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