INSTRUCTIONS FOR PLANTING AND CARE

FALL 2006

It's best to plant your bulbs soon after you receive them, but if you must wait, store them in a cool, dry place. See page 2.

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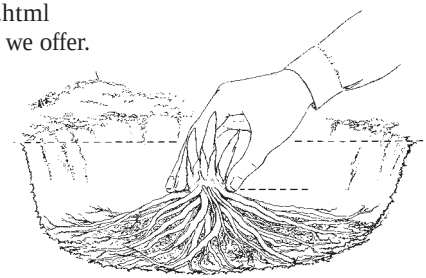
Please read through this booklet before you plant and keep it for future reference. Our goal is to provide you with top-quality plants and bulbs and the information you need to be successful with them.

Visit our Gardening Help link http://www.whiteflowerfarm.com/grow.html for complete instructions for the plants we offer.



Planting is simple if you follow a few basic steps described inside this booklet. For plants that we ship bareroot, see page 15. For plants that arrive in pots of various sizes, see page 16.

White Flower Farm

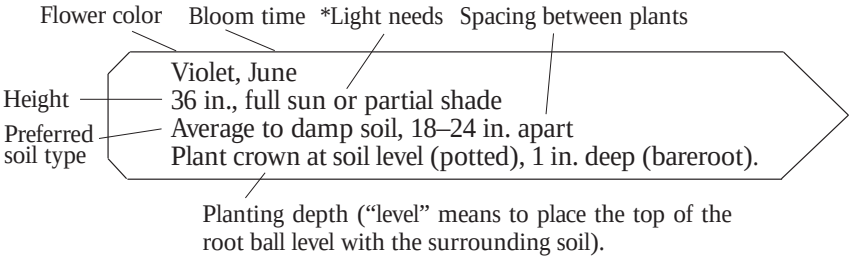
PLANTSMEN SINCE 1950

whiteflowerfarm.com

OUR GUARANTEE

We ship high-quality, true-to-name plants and bulbs, delivered at the correct time for planting in your area. Clear instructions for planting and care are included (also available on our Web site). We guarantee your complete satisfaction.

The White Flower Farm Plant Label



* Full sun = At least 6 hours of direct sun each day (the more the better).
Partial shade = Direct sun for 3–4 hours and shade the rest of the day.
Shade = Bright reflected light but little or no direct sun.

INSTRUCTIONS FOR BULBS

WHEN YOUR ORDER ARRIVES

Examine the contents immediately. If you have questions about your order or the health of your bulbs, please call our Customer Service Department at 1-800-411-6159. Please note that blue or green surface mold is not uncommon and will not affect the performance of your bulbs. If your bulbs are firm, you can plant with confidence.

We recommend that you plant all of the bulbs in your order right away, following the planting instructions below. The sooner you plant them, the sooner they will put down roots. Prompt planting is especially important in cold climates. Bulbs that are not well established before the ground freezes are unlikely to survive winter.

If you can't plant right away, be sure to open the bags or boxes in which bulbs are shipped to allow air to circulate around the bulbs. Many bulbs (see pp7–12 for exceptions) will keep for 1–2 weeks if stored dry at room temperature or a bit cooler. Storing bulbs for longer than 2 weeks may impair flowering or result in death. **Please note: Bulbs cannot be stored for months (or over the winter) before planting.**

PLANTING AND CARING FOR BULBS

Light needs. Most bulbs flower best in full sun (6 hours or more of direct sunlight per day) but tolerate light shade. Early bloomers (those that flower before the end of May here in Litchfield, Connecticut) can thrive under deciduous trees, provided root competition is not too severe and the bulbs receive at least a half day (3–4 hours) of sunlight after the trees leaf out.

Soil needs. With very few exceptions (most notably Camassia, *Fritillaria meleagris*, and Leucojum), bulbs require soil that drains well the year round. To improve the drainage of heavy soil, dig in organic matter such as compost, aged manure, leafmold, peat moss, or (in the South) shredded pine bark. If you garden in very heavy clay, consider constructing raised beds to provide well-drained conditions.

Prechilling bulbs in mild-winter areas. In parts of the country where winters are mild, certain bulbs may not receive enough natural cold to stimulate proper growth and flowering. We recommend treating these as annuals and replacing them with new bulbs every year. Check with your local USDA Cooperative Extension Service to find out whether any bulbs require prechilling before planting in your area. Place the bulbs in a refrigerator, away from fruits and vegetables (these produce ethylene gas, which can harm the embryonic flowers inside the bulbs). Make sure the bulbs remain dry. The usual prechilling time is 8–10 weeks at 40–45°F. Once the bulbs are removed from cold treatment, plant them right away. Bloom occurs about 6–8 weeks after planting. Discard the entire plant after bloom.

Planting. Bulbs are easy to plant. With a trowel or a bulb planter, dig a hole to the depth indicated on the plant label or in the charts that follow (use the label, which is 6in long, as a rough measuring stick). Set the bulb in the hole with the roots or the remnants of roots pointing down. (Some bulbs—*Hyacinthoides hispanica*, for example—don't have visible roots but have a pointed or tapered top, which should be planted facing up.) After you've placed the bulb in the hole, fill the hole with soil and water thoroughly.

Watering. Although there may be no signs of life above ground, bulbs begin sending out roots soon after planting—as long as the soil is sufficiently moist. Unless you expect a soaking rain within a day or two of planting, we recommend that you water thoroughly after you plant. Water newly planted bulbs again only if rainfall is scarce. Once established, most bulbs want ample moisture—½ to 1in of rain per week—while in active growth (which begins in fall, slows or stops in winter, and resumes in late winter or early spring) and require soil that is on the dry side during summer dormancy. Do not plant bulbs near soaker hoses or sprinklers.

Fertilizing. The best time to fertilize bulbs is in fall, when they are sending out new roots. The next best time to fertilize is in early spring, just as the foliage begins to push through the soil. Heavy feeders such as Lilies and hybrid Tulips perform best if fertilized in both fall and spring. We recommend using a slow-release fertilizer formulated especially for bulbs, such as a granular Daffodil fertilizer. It's an easy matter to apply the fertilizer to the surface of the soil above the bulbs after planting and then every fall thereafter. We do not recommend using bone meal. It contains only one primary nutrient (phosphorus) and attracts dogs and rodents, which may dig up the bulbs.

Bloom time. The bloom times printed on our labels are typical of bulbs grown in Litchfield, Connecticut. Where spring comes earlier, bloom will generally be earlier. Likewise, in colder climates, flowering will be delayed. Please note that the first spring after planting, most bulbs (particularly those imported from cool-summer climates such as those of Holland and England) bloom later than established bulbs of the same variety. This is not unusual. In subsequent years, they will bloom at the appointed time.

Dormancy. Most of the bulbs we offer go dormant within about 8–12 weeks after flowering. The period between the end of flowering and the withering of the foliage is crucial to the future vigor of the plant. If you cut, fold, or braid the leaves before they have yellowed and collapsed, you may prevent the bulb from storing the energy required to bloom the following year. You can hide curing foliage by interplanting bulbs with leafy perennials such as Hostas, Daylilies, and Ferns or with annuals or ground covers. If you plant bulbs in a lawn, do not mow the grass until the bulb foliage begins to yellow.

Transplanting and dividing. The best time to move or divide bulbs is when their foliage has all but withered, signaling the end of active growth. Lift them with a digging fork or a spade, taking care to avoid injuring the bulbs, and replant them immediately at the same depth and about three times their diameter apart.

Winter protection. In Zone 6 (–10°F) and colder, all bulbs planted at a depth of less than 6in benefit from winter protection. The purpose of winter protection is to prevent bulbs from being heaved out of the ground by the alternate thawing and freezing of the soil in winter. To prevent heaving, put a 4–6in layer of loose organic material such as straw, oak leaves, or evergreen boughs (cut into 1–2ft lengths) over the ground after the ground freezes (generally in December here in Litchfield). Remove this winter cover gradually in late winter or early spring. See Tall Bearded Iris on pp21–22 for special instructions.

Pests. Bulbs as a group are not much troubled by insects or diseases, but in some areas, bulbs, foliage, or flowers may be eaten by rodents or deer.

FORCING COLD-HARDY BULBS

Many spring-flowering bulbs can be tricked or "forced" to bloom indoors in winter, providing color and fragrance when few plants are stirring outdoors. "Rooting time" refers to the amount of time during which cold-hardy bulbs must be kept cold (about 40°F) and moist before they can be brought into bloom. Please see p6 for instructions on forcing Paperwhite Narcissus.

Containers and potting mix. You can use any pot you like to hold bulbs for forcing, as long as it allows room for root growth—about 3–4in of space below the bulbs. If you choose a pot without a drainage hole in the bottom, you'll have to water your bulbs very carefully; bulbs sitting in soggy potting mix soon rot. Consider using a ceramic pot if you're forcing tall Daffodils or Tulips. They may topple if grown in plastic pots.

We recommend that you force bulbs in a soilless potting mix (available at garden centers and hardware stores). A soilless mix holds moisture but allows excess water to drain away readily.

Potting the bulbs. To pot the bulbs, begin by placing potting mix in a plastic tub or bucket. Slowly add water and stir until the mix is moist but not soggy. Add moistened mix to the container until the container is about ¾ full. Set the bulbs with the roots down on top of the mix (or on their sides if you can't tell which end is up). Space the bulbs much more closely than you would in the garden; they should almost touch. Then add more mix. Cover small bulbs completely with a ½in layer of mix; cover larger bulbs up to their necks, leaving the tips of the bulbs exposed. Water thoroughly after potting.

Recommended Rooting Times for Cold-hardy Bulbs (in weeks)					
Anemone blanda	8–10	Hyacinthus	12–14	Narcissus	12–14
Chionodoxa	10–12	Dwarf Iris	10–12	Miniature Narcissus	10–14
Crocus	8–10	Leucojum	8–10	Scilla	10–12
Galanthus	10–12	Muscari	8–10	Tulipa	14–16

Chilling the bulbs. To force cold-hardy bulbs into bloom, you must first encourage them to produce new roots by keeping them cold and moist for a period of time that varies by type of bulb (see table above). The ideal rooting temperature also varies, but most bulbs flower best if stored at 40–60°F for the first 3–4 weeks after potting, then at 32–40°F for the balance of the cooling period—a shift that mimics the drop in soil temperature outdoors as fall turns to winter.

The easiest way to chill bulbs is to put them outdoors and let nature do the rest. To insulate the bulbs from rapid changes in air temperature and from freezing cold, bury the pots in a pile of dry leaves held in place by a plastic tarp or in a pile of mulch, such as bark or wood chips, and cover the pile to prevent the formation of a frozen crust. You can also chill bulbs in a cold basement, an unheated garage (provided the temperature doesn't fall below freezing), or a refrigerator. In such locations, it may be difficult to arrange for the shift in temperature described above, but most bulbs will root properly if the temperature does not stray too far above or below 40°F during the rooting time.

If rodents have access to your bulbs, they will devour all except varieties that are poisonous or distasteful to them (such as Narcissus). Protect potted bulbs with steel mesh.

Please note that moisture is as important as temperature in the successful chilling of bulbs. Check the potting mix in the pots every few weeks and water thoroughly when the surface of the mix is dry to the touch.

Toward the end of the recommended rooting time, begin checking the pots for signs that the bulbs have rooted. If you see fleshy white roots poking through the drainage holes in the bottom of the pots, the bulbs are usually ready to bloom. If you don't see roots, give the bulbs more time in cold storage. Don't judge readiness by the appearance of shoots from the tops of the bulbs; without roots, the bulbs won't flower properly.

Once the bulbs have rooted, you don't have to bring them out of the cold immediately. Most tolerate extra chilling time, allowing you to orchestrate a succession of winter bloom.

Bringing the bulbs into bloom. When the bulbs have rooted, bring the pots out of cold storage and set them in a bright window in a cool room (one where the temperature stays below 65°F). Bright light will help keep the leaves and flower stems compact; in weak light, they tend to flop. You are likely to find that the bulbs have produced white shoots during cold storage. Sunlight quickly turns them green.

Keep a close eye on the moisture needs of the bulbs as they send up leaves and flower stems. Initially, the bulbs probably won't need to be watered more often than once a week (if that much), but by the time they bloom, you may need to water them every day or two.

Most bulbs will bloom 2–5 weeks after they come out of the cold, heralding spring with their bright colors and sweet fragrances. Duration of bloom varies with the type of bulb and the variety but is generally shorter than you'd expect of bulbs in the garden. Warm

temperatures and low humidity indoors speed the decline of the flowers. Keeping the pots out of direct sunlight and moving them to a cool room at night helps prolong bloom.

When the blooms fade, we recommend that you toss the bulbs on the compost pile. If you keep them in a sunny window and continue to water them, forced bulbs can be planted in the garden after the threat of hard frost has passed, but they won't bloom well again for at least 2 years. It's better, in our view, simply to buy enough bulbs for planting indoors and out.

Forcing Hyacinths without soil. Hyacinth bulbs can be forced in pebbles and water, or in glass jars. They still require a cool rooting period if forced this way. Special forcing glasses, in use since Victorian days, are shaped like an hourglass and keep the bottom of the bulb dry—only the bulb's roots reach down into the water. If you are using pebbles in another type of container, follow the directions for potting under "Forcing Paperwhite Narcissus" below. Then place the forcing glass or container in a dark, cool area (under 50°F) for 4–8 weeks. Check the water level occasionally and add more water as necessary, keeping the water level below the bottom of the bulb. When roots have developed and the leaves begin to grow, it is time to move the bulb into a bright window in a cool room (one where the temperature stays below 65°F). Bulbs forced in water can be planted in the garden after the threat of hard frost has passed, but they won't bloom well again for at least 2 years.

FORCING PAPERWHITE NARCISSUS

Force Paperwhites in potting mix as you would cold-hardy bulbs but with one important difference: Paperwhites do not require chilling at refrigerator temperatures to produce roots. Just pot the bulbs as recommended on p4 and set the pots in a cool (50–60°F is ideal), dark place. Water thoroughly when the surface of the potting mix is dry to the touch, but not more than once a week until the bulbs begin active growth. When you see roots poking through the drainage holes (usually in about 3 weeks), move the pots to a sunny window. The bulbs typically will bloom 3–5 weeks later.

Paperwhites can also be forced to bloom in bowls of water with nothing but pebbles to support the bulbs. Put a 2–3in layer of pebbles, such as pea stone or marble chips, in the bowl. Set the bulbs on top of the pebbles. Then fill in with more pebbles, leaving the top ⅓ of the bulbs exposed. Add enough water to create a reservoir for the roots, but take care to keep the bases of the bulbs above water level. If they sit in water, the bulbs will rot. In an opaque container, keeping the roots wet and the bulbs dry requires some guesswork. After potting, set the bulbs in a cool, dark place as directed above. Check the water level often to be sure the bulbs don't dry out.

Due to insufficient light, Paperwhites forced indoors may topple. Support them with bamboo stakes and twine or Bulb Supports (available at garden centers).

If you don't want to start your Paperwhites right away or you want to hold some in reserve for a staggered display, store them in a dark place at a temperature of 60–70°F. If stored too warm, the bulbs will produce weak, spindly growth and may flower poorly. Open the bags or boxes to allow air to circulate around the bulbs.