



HOW TO GROW BULBS

When it comes to producing color early in the season, you can't beat spring-flowering perennial bulbs. If cared for properly, they'll come back year after year from a single fall planting, providing many blooms for your investment.

For midsummer color, you can plant tender bulbs of tropical perennials such as gladiolas, cannas, and dahlias. You need to dig up these tender bulbs and store them in the fall, then replant them after the danger of frost has passed in the spring. Each year they multiply, so you have even more to plant the next year. Bulb is a term that loosely describes a variety of fleshy, underground organs that some plants use to store energy over winter to fuel growth in spring. Plants that use these special organs are sometimes called geophytes. They include:

- True bulbs - Energy stored in modified leaves, called scales. Examples include onions, lilies, daffodils, and tulips.
- Corms - Energy stored in a modified, swollen stem. Examples include crocus and gladiolas.
- Tubers - Energy stored in thickened underground stem. Examples include caladium, and (in the culinary world) potatoes.
- Rhizomes - Energy stored in underground stems that grow horizontally through the soil. Examples include bearded irises, lily of the valley, and orchids.
- Tuberous roots - Energy stored in large, fleshy roots. Examples include dahlia and anemones.



daffodil



Caladium



Iris



Dahlia

Bulbs have many advantages:

- Spring-flowering bulbs are the earliest plants to bloom, with snowdrops and winter aconites flowering in early March in much of New York.
- You can plant a variety of spring-flowering bulbs to flower from very early to late spring, providing a nearly continuous sequence of bloom. Snowdrops and aconites are soon followed by crocuses, scillas, and chionodoxas. Then come hyacinths, daffodils, and tulips. You can plant tender bulbs or other annual flowers to fill in spaces left after the foliage of spring-flowering bulbs dies back to the ground.
- Centuries of breeding have provided many bulbs with exceptionally showy flowers.
- Bulbs are versatile. There is a type for any almost any location. You can make mass plantings in solid beds or plant drifts of bulbs around perennial borders or rock gardens. Bulbs are attractive along paths and walks, around pools, or in front of foundation plantings. Many spring-flowering bulbs can be naturalized in woodlands, fields, or even lawns.

Helping You Put Knowledge to Work

Site and Soil

Most spring-flowering bulbs do well the first year regardless of where they are planted. Most of what they need to thrive is packaged right in the bulb. For bulbs to come back and flower in subsequent years, you need to pay careful attention to the site and soil.

Most bulbs need well-drained soil. (*Camassia* is an exception that does well in wet, almost swampy areas.) Do not plant bulbs in areas where there is standing water, especially during the spring thaw. Most bulbs need full sun -- at least 5 to 6 hours of direct sun daily-- if they are to thrive from year to year. For best flowering, 8 to 10 hours of sun is even better.

Planting bulbs beneath large trees is seldom a good idea because of the dense shade and competition from tree roots. Daffodils, other early-flowering bulbs, and even some early-flowering tulips may be exceptions. While they still face competition from the tree for nutrients and water, they have a chance to photosynthesize before the leaves return to the tree and shade them out. If deer are a problem where you garden, choose species that deer tend to avoid. For example, deer love tulips but generally do not eat daffodils.

Because spring-flowering bulbs will grow in the same spot for several years, it's very important to do a good job of soil preparation before planting, keeping in mind the importance of good drainage. Tender summer bulbs also need well-prepared soil to thrive.

Contact your local Extension office for information about how to test your soil to find out your pH and nutrient levels. They may suggest a more complete soil test from the Cornell Nutrient Analysis Lab. Follow the directions on your soil test report about adding lime to increase pH or adding fertilizer to correct nutrient deficiencies. Start preparing soil in summer for fall planting of spring-flowering bulbs. For tender summer-flowering bulbs, prepare soil the previous fall or in early spring. Spade or loosen the soil 8 to 12 inches deep. (The site should be level or gently sloped to keep soil from eroding.) Add organic matter (such as well-rotted manure) at a rate of about 3 bushels per 100 square feet and work it into the top 8 inches of soil. This is especially important for improving drainage in heavy clay soils. Avoid fresh manure as it may injure bulbs. Apply about 1 pound per 100 square feet of low-nitrogen fertilizer such as 5-10-5 or 5-10-10 or an equivalent organic source and work it into the top 4 to 6 inches of soil.

Planting Options

The best time to plant hardy spring-flowering bulbs in New York is late summer to early fall, though the time frame varies around the state:

- In Zone 4 and 5, plant by late September to early October.
- In Zone 6, plant by mid-October.
- In Zone 7, plant by early November.
- In protected areas in the New York metropolitan area, plant by early December.

Plant hardy fall-flowering bulbs (such as colchicum) in August. Treat tender summer-flowering bulbs like annual flowers. Plant them after the danger of frost has passed in late spring.

When purchasing spring-flowering bulbs, size matters. Bigger bulbs produce bigger plants. Avoid bulbs that are soft, moldy, bruised, or show other signs of damage or disease. If the papery skin (like an onion's) is loose or torn, it usually won't affect the bulb unless the bulb has been otherwise damaged. In fact, removing skin from the bottom of tulip bulbs may help them root faster if you are late planting them. If you can't plant your bulbs soon after purchase, store them in a cool (60 degrees F to 65 degrees F) place to keep them from drying out.

Before planting bulbs, carefully note which end is up. It's usually pointed, compared with the root end which looks like the base of an onion. (Even bulbs planted upside-down usually come up.)

Plant tulips and daffodils so that their tops are about 5 inches below the surface of the soil. (Plant tulips slightly deeper in sandy soils.) Plant smaller bulbs (such as scillas, chionodoxas, grape hyacinths and snowdrops and any others that are 1 inch or less in diameter) so that their tops are about 2 to 3 inches below the soil surface. (As a general rule plant bulbs so that the soil above the top of the bulb is about twice the diameter of the bulb.)

Space large bulbs about 4 to 6 inches apart. This provides them with enough space to grow for two or three years before they need to be divided. Space crocuses and grape hyacinths about 2 to 3 inches apart. Space smaller bulbs 1 to 2 inches apart. For naturalized plantings, space daffodils at least 10 inches apart and set small bulbs at a rate of about 20 per square foot. Smaller bulbs are much more effective when planted in masses rather than individually.

In light sandy soils, you can use the dibble method to plant: Make a small hole with a pointed stick, press the bulb down into the hole, and cover with soil. But with heavier clay soils it's important to loosen the soil beneath the bulb so that the roots can easily penetrate the soil. To plant individual bulbs, use a trowel to dig a small hole to the appropriate depth and loosen soil in the bottom of the hole. For group plantings, excavate a larger area to the correct depth with a shovel and loosen the soil. Gently snuggle the bulbs into the loosened soil at the bottom of the hole, then cover with soil.

Some gardeners add fertilizer to the bottom of the hole. If you do, work it in well and add a layer of soil above this before planting the bulbs so they do not come into direct contact with the fertilizer.

Water thoroughly after planting. Cover plantings with 2 to 4 inches of mulch to protect the bulbs from cold and keep the soil from heaving or drying out. If mice are a problem, place wire mesh over beds until the ground freezes to prevent them from digging out bulbs. To discourage squirrels, place chicken wire over plantings. The bulbs will grow up through the chicken wire in spring. Tender summer-flowering bulbs are planted in much the same way, only in late spring. Spacings vary depending on species.

Caring for Bulbs

Most spring-flowering bulb care is aimed at helping the plant store energy in the bulb so that it will overwinter and bloom again the following year.

Deadheading

After flowers on spring-flowering bulbs fade, remove them so the plants don't invest energy in developing seeds. You want them putting their energy back into the bulb. **Do not remove foliage** until it turns yellow and dies back naturally. For tulips and daffodils, this may be as late as mid-July. Cut off foliage at ground level and remove it to prevent disease. Take as few leaves as possible if cutting blooms to bring inside. The traditional English gardening practice of bunching and tying leaves reduces their exposure to the sun during a critical time when they need maximum exposure to sun.

Watering

Rain usually provides sufficient water for spring-flowering bulbs. But they benefit from thorough watering during prolonged dry spells, even after flowering.

Fertilizing

Avoid high-nitrogen fertilizers on spring-flowering bulbs. When plants are in bloom, apply about 2 pounds of 5-10-5 or 5-10-10 per 100 square feet. Scratch it into the top inch of soil, avoiding contact with foliage and roots.

Staking

Some tall, heavy-flowered plants may require staking for support. Be careful not to damage the bulbs when inserting stakes.

Mulching

Cover spring-flowering bulb plantings with 2 to 4 inches of organic material after cold weather arrives in fall. Avoid unshredded leaves because they can mat down tightly. Remove the mulch in early spring.

Dividing

After several years, daffodils and some other species form clumps of multiple bulbs. The size of their flowers and length of their stems decreases as the bulbs become overcrowded. Wait until after the foliage dies, then dig up the bulbs, separate them, and replant them with wider spacings. You can replant them immediately after you dig them in June or July, or you can wash off excess soil, dry them, and store them in shallow boxes in a cool, dry, airy place until fall planting time. Replant only the largest bulbs in your flower beds. Plant the smaller bulbs in a nursery bed for a season or two until they reach flowering size.

Dig up tender summer bulbs after their foliage dies or is killed by frost. Clean off excess soil and store in a cool (60 degrees F to 65 degrees F), dry place over winter. Avoid storing bulbs at temperatures below 50 degrees F or above 70 degrees F.

Large hybridized tulips tend to bloom well the first year but generally decrease in size rapidly in following years. Species tulips, on the other hand, may last many years.

This publication contains pesticide recommendations. Changes in pesticide regulations occur constantly, some materials mentioned may no longer be available, and some uses may no longer be legal. All pesticides distributed, sold, and/or applied in New York State must be registered with the New York State Department of Environmental Conservation (DEC). Questions concerning the legality and/or registration status for pesticide use in New York State should be directed to the appropriate Cornell Cooperative Extension Specialist or your regional DEC office. **READ THE LABEL BEFORE APPLYING ANY PESTICIDE.**

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<http://www.gardening.cornell.edu/homegardening/scene5eb9.html>