



Bulbs and Other Rooting Structures

Most people use the term *bulb* to refer to plants that have underground, fleshy storage structures. But, only some of the plants commonly called bulbs actually are bulbs. The definition of a bulb is any plant that stores its complete life cycle in an underground storage structure.

The primary function of these underground storage structures is to store nutrient reserves to ensure the plant's survival.

Bulbs or bulb-like plants are usually perennials. They have a period of growth and flowering. This is followed by a period of dormancy when they die back to ground level at the end of each growing season. For spring bulbs, the end of the growing season is in late spring or early summer. Spring bulbs start to grow again in the fall and flower the following growing season.

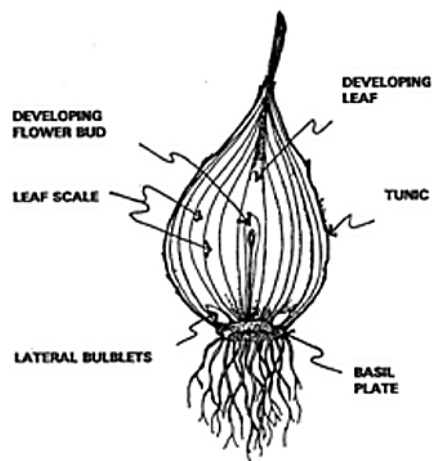
Bulbs can be grouped into five types of storage structures: true bulbs, corms, tubers, tuberous roots and rhizomes. A sixth category called *fleshy roots* has been added in this fact sheet for the purpose of showing the structure. Daylilies and peonies, which are popular among gardeners, are examples of fleshy root bulbs.

True Bulbs

The true bulb has five major parts. It contains the basal plate (bottom of bulb from which roots grow), fleshy scales (primary storage tissue), tunic (skin-like covering that protects the fleshy scales), the shoot (consisting of developing flower and leaf buds), and lateral buds (develop into bulblets or offsets). True bulbs are divided into two types: *tunicate bulbs* and *imbricate bulbs*.

A tunicate bulb has a paper-like covering or tunic that protects the scales from drying and from mechanical injury. Good examples of tunicate bulbs include tulips, daffodils, hyacinths, grape hyacinths (*muscari*), and alliums.

TUNICATE BULB

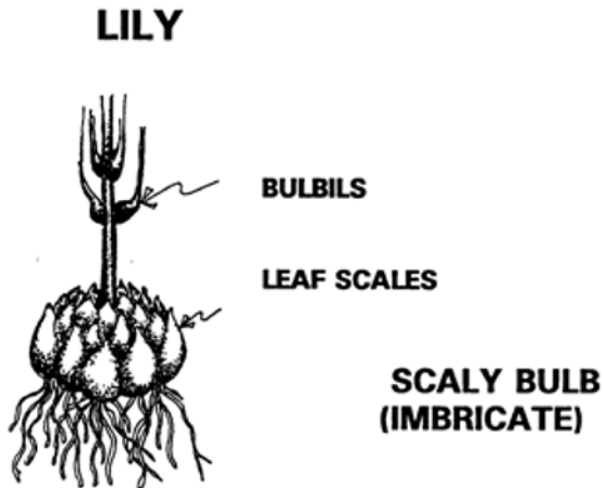


Many plants, such as daffodils, form new bulbs around the original bulb. These bulbs, called offsets, develop from buds within the base of the mother bulb and produce new plants. When these bulbs become overcrowded, the flowers start to diminish in size. This is an indication that it is time to dig up and divide the bulbs.

DAFFODILS



The imbricate bulb does not have the tunic (papery covering) to protect the fleshy scales. Imbricate bulbs must be kept constantly moist before planting so they are not injured by the scales drying out. An example of the imbricate bulb is the lily.



Lilies can be propagated from bulbils that develop in the leaf axils of the plant. They can also be propagated from bulblets that develop at the base of fleshy lily scales if maintained in a moist sand medium. It takes longer than one year for the bulbils or bulblets to become flower size.

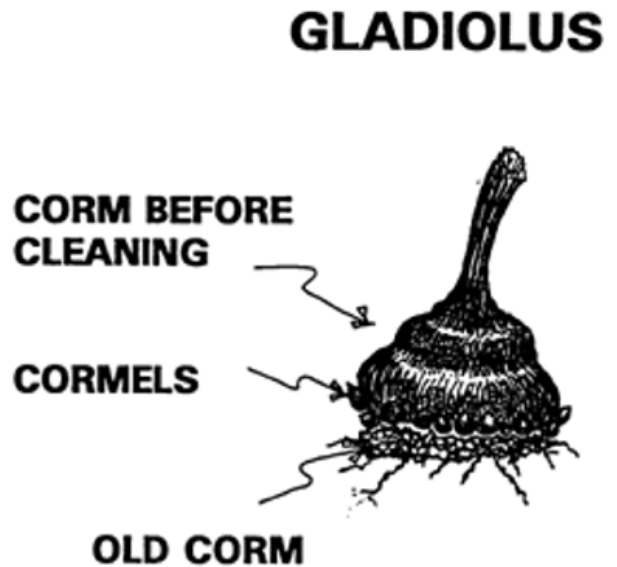
LILY STALK



Corms

A corm is a swollen stem base that is modified into a mass of storage tissue. A corm does not have visible storage rings when cut in half. This distinguishes it from a true bulb.

The corm contains a basal plate (bottom of bulb from which roots develop), thin tunic, and a growing point. Examples of plants that develop from corms include gladiolus, crocus, and autumn crocus.



When gladiolus corms are dug in the fall, sort them into two groups: well-developed corms, to be stored for replanting, and poorly developed corms to discard. The newly dug bulbs will have cormels that are pea size formed around the top of the old corm. The remains of the old corm will be directly beneath the newly formed bulb. When the bulb is cleaned up and the old stem removed, the growing point of the bulb will be evident. The cormels can be saved and replanted in the back of the garden until they reach flowering size.

Tubers

A tuber differs from the true bulb and the corm by not having a basal plate from which roots develop and not having a protective tunic covering.

The caladium tuber has buds scattered over the tuber surface from which shoots and roots develop.

Examples of plants that develop from tubers include caladiums, oxalis and anemones, and the common vegetable, the potato. (The potato does flower.)

Tuberous Roots

The tuberous root differs from other root structures by the nutrient reserves being stored in an actual root instead of an enlarged stem.

The dahlia reproduces from buds at the top end of the root or base of the stem.

DAHLIA

BUDS AT TOP

TUBER



The tuberous root of a dahlia should not be divided before placing in storage in the fall but should be divided at planting time. The root should be divided into sections with an eye bearing portion of the stem left with each section of the root.

The tuberous-rooted begonia reproduces from buds on top of the round, flat tuber.

TUBEROUS BEGONIA

TUBER



Rhizomes

Rhizomes differ from other storage structures by growing horizontally under the surface of the soil. On some plants, this type of rooting structure can be very invasive.

The iris is propagated by cutting the rhizomes into sections, leaving a fan of leaves with each section of root.

IRIS



RHIZOMES

**PLANT
STEMS**

The lily-of-the-valley rhizome spreads horizontally underground and produces “pips,” which develop into new plants. This plant is increased in the landscape by digging in the fall and removing pips with developed roots for replanting.

LILY-OF-THE-VALLEY



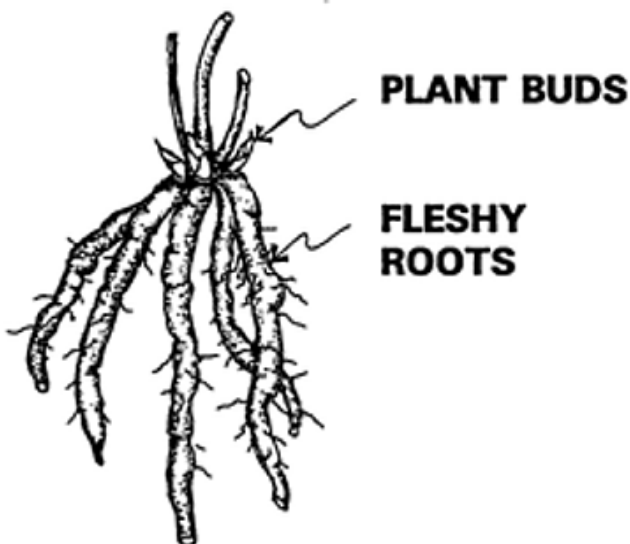
Pip

Fleshy Roots

Plants that have fleshy roots store nutrient reserves in the fleshy roots. Both peonies and daylilies can be propagated by dividing.

For peonies, divide the root clumps in the fall, leaving at least three crown buds with each clump.

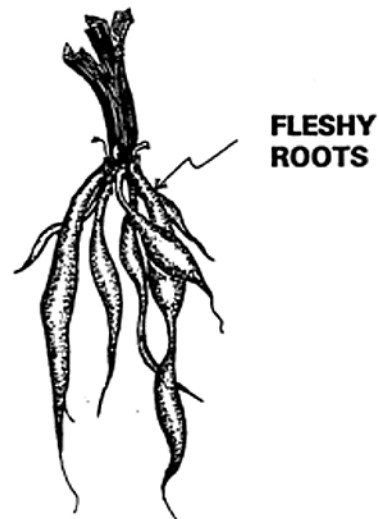
PEONY



The daylily can be divided in the fall or spring into plantlets with a single fan of leaves.

The daylily has a fleshy root system with some varieties having what might be considered a Rhizome-type root system. Daylilies are hardy herbaceous plants with a perennial growth habit. They have clumps of rich green, smooth foliage that dies back during the winter.

DAYLILY



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