

The Beauty of Bulbs

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In general, ‘bulbs’, or more properly, geophytes are easy plants to grow, requiring full sun, good drainage and moderately fertile soils. Geophytes are defined as any non-woody plant with an underground storage organ. These storage organs contain carbohydrates, nutrients and water and allow the plant to endure extended periods of time that are not suitable for plant growth. Types of Geophytes include:

Bulb – Swollen leaves or leaf stalks, attached at the bottom to a modified stem called a basal plant. The outer layers are modified leaves called scales. Scales contain necessary foods to sustain the bulb during dormancy and early growth. The outermost scales become dry and form a papery covering or tunic. At the center are developed, albeit embryonic flowers, leaves and stem(s). Roots develop from the basal plate. Examples are *Tulipia* (Tulip), *Narcissus* (Daffodil), and *Allium* (Flowering Onion).

Corm – A swollen stem that is modified for food storage. Eyes or growing points develop on top of the corm. Roots develop from a basal plate on the bottom of the corm, similar to bulbs. The dried bases of the leaves form an outer layer, also called the tunic. Examples include *Crocus* and *Erythronium* (Dog Tooth Violet).

Tuber – Also a modified stem, but it lacks a basal plate and a tunic. Roots, shoots and leaves grow from eyes. Examples are *Cyclamen*, *Eranthis* (Winter Aconite) and *Anemone* (Wind Flower).

Tuberous Roots – These enlarged storage elements resemble tubers but are swollen roots, not stems. During active growth, they produce a fibrous root system for water and nutrient absorption. Buds for new growth form at the junction of the previous years’ stem and the tuberous root. Examples are *Dahlia* and *Eremurus* (Desert Lily).

Rhizomes – An enlarged horizontal stem which usually is normally underground, but can occur on the soil surface as well. Examples are Cannas and Iris.

Geophytes with large underground structures of one inch or better are termed ‘Major Bulbs’. Tulips, Daffodils and Hyacinths are good examples. ‘Minor Bulbs’ have underground structures smaller than one inch. Examples are *Galanthus*, *Crocus* and *Chionodoxa*. Both major and minor types of bulbs can be accommodated in the mixed border or in meadows. In perennial borders, use clumps of the larger (major) bulbs such as *Allium*, *Narcissus* or *Camassia* (American Potato). The smaller (minor) bulbs reseed and are easily disturbed during division of the perennials. This ability to reseed makes them good candidates for naturalizing in areas of the garden that will not be disturbed, including areas beneath shrubs and in lawns. If planting into lawns, select the earliest blooming bulbs or corms, such that the foliage will have withered by mid-May (permitting the lawn to be cut by the over anxious male in the family!).

In general, ‘bulbs’ should be planted to a depth of 3x the diameter of the bulb. If the bulbs are planted too shallow, they will produce many bulbets (small bulbs) or cormels (small corms) which will be too small to produce flowers. This is the primary reason for the complaint: “The

flowers on my bulbs have gotten smaller” or “They only produce green foliage and not flowers!”. As a primary rule, bulbs are best transplanted before the old foliage has vanished or as early as possible in later summer or early fall. The major bulbs can be deadheaded in order to extend bulb life (*Alliums*) or improve appearance (*Narcissus* and *Tulips*). Minor bulbs should be allowed to seed. Although unsightly, do not remove the bulb foliage until after it has completely yellowed. Otherwise, the flowering potential will be reduced in future years. Many bulb seeds have a small white sugary appendage called an elaiosome. Ants are attracted to this appendage which usually has aromatic compounds and is rich in sugars, amino acids and oils. Ants will carry off the seed and consume the elaiosome or feed it to the developing young. They will either just drop the seed if it is not in the ant hill or discard it in their various ‘Compost bins’. In this manner, the seeds are distributed far and wide and the plants naturalize!

Bulbs grow best in areas with very little summer rainfall, with the most significant rainfalls beginning in October and ending in May. Drainage is usually good to excellent, with most soils having a neutral to alkaline pH. To grow bulbs to their best, these conditions should be duplicated as much as possible. Many of the early spring bulbs can be grown (and with luck, naturalized) in shrub borders or mixed borders beneath leggy and still slumbering deciduous shrubs. Before the shrubs leaf out, there is adequate sun for the bulbs to flourish. As the foliage begins to emerge on the shrubs, the bulbs are entering summer dormancy. Plus, the area beneath the shrubs is usually dry in the summer, creating the proper conditions for the bulbs to thrive. *Narcissus* is best grown in areas with full sun, since this foliage does not become dormant until mid to late June. They are among the easiest major bulbs to grow, since their native growing areas of Spain and Southern France have climatic conditions similar to NJ.

Most bulbs are generally inexpensive. A benefit since bulbs should be planted in large sweeps for the best possible impact in the Gardens. However, when you venture into the world of the bulb specialties and request that unique new or little requested cultivar, the cost of the bulbs skyrocket and are truly only attractive to the collector. However, many of the more common bulbs are inexpensive and are easily obtained through various catalogues, garden centers and autumn (spring) plant sales.

White

Allium ‘Mt. Everest’ (Mt. Everest Onion) – Large globes of 4” diameter white flowers, reaching 30-36” tall. Full sun, well drained soils.

Anemone blanda (Pasque Flower) – White, pink or blue daisy flowers in April, growing to a height of 6-8”. Full sun and excellent drainage is best, although I have seen them growing in more water retentive soils. Soak tubers for 6-8 hours before planting for the best results. Excellent for naturalizing!

Galanthus elwesii (Giant Snowdrops) – Large pendant flowers, 1 ½” long by 1” wide. Prefers a well drained soil and full sun while in leaf. The foliage is a dull green. Since the foliage goes dormant in mid-May, plants can be grown under the shade of trees and shrubs. Is best if the soils do not totally dry out in summer. *Galanthus* means mild flower. Snowdrop is derived from the term *Schneetrophen*, which were supposedly pendant or eardrops popular in what is now Germany during the 16th and 17th centuries.

Galanthus nivalis (Snowdrops) – Usually the first flower of spring! The 6-8” tall white flowers start to appear in late February or early March. Self-sows over time and is easily grown in sun or shade. Looks spectacular naturalized in the lawn.

‘Flora Plena’ – The anthers are petaloid and thus, no seed is produced. The flowers are slightly showier since the extra ‘petals’ increase the diameter of the flower to over 1 inch.

Galtonia candicans (Summer Hyacinth) – White flowers in July and August, growing from 2-4’ tall. Full sun, most soils that are of a relatively good fertility level. Has a reputation for being short lived in the U.S., but will live for 2-4 years or longer if properly watered and fertilized. *Galtonia* is native to South Africa. Sir Francis Galton (1812-1911) travel and wrote in South Africa. He is remembered in history for promoting the fingerprint method for personal identification!

Gladiolus murielae, formerly *Acidanthera bicolor* var. *murielae* (Abyssinian Gladiolus) – Hardy to zone 7, this corm is best lifted each fall and replanted in May or June in a sunny, well-drained garden location. The white and purple blotched blooms appear approximately 6-8 weeks after planting, which allows for a staggered bloom schedule if the planting times are staggered. Flower stems grow to 2’ tall. Great in the mixed border.

Hymenocallis occidentalis var. *occidentalis* (Woodland Spiderlily) – Native from North Carolina south to Florida and west to Indiana, this North American native starts to push foliage in early spring but does not bloom until late July and August. The white flower appears very similar to that of a Daffodil, but the petals or perianth is more strap-like. Best in moist soils in light shade, although it is tolerant of average garden soils.

Leucojum aestivum ‘Gravetye Giant’ (Summer Snowflake) – White dangling bells with green markings in late April/early May, growing to a height of 12-18”. Full sun to partial shade. Will tolerate inundated soils to well-drained soils. Best in soils that remain moist in the spring. Plants have proven to be deer resistant!

Yellow

Allium moly (Lily Leek) – Reputed to bring good luck, since in the Odyssey Lily Leek provided Ulysses with protection. Plant in a sunny, well-drained location. The flower is a yellow umbel up to 2” in diameter which appears in May. Blooms about the same time as Lavender and makes for a nice combination planting. Long lived and quickly multiplies. Native to Spain, the Pyrenees and the Mediterranean.

Eranthis cilicica (Winter Aconite) – Introduced from Smyrna in 1892. It blooms later than *Eranthis hyemalis*, as well as having smaller leaf segments, larger flowers and purple flower stems (not green) when compared to its better known cousin.

Eranthis hyemalis (Winter Aconite) – Yellow buttercup flowers in late February into early March which sits atop the foliage like a frog upon a lily pad. Height of 4-6” in bloom, extending to 6-10” after bloom. Foliage goes dormant in mid-May. Soak tubers for 3-4 hours before planting. Best luck for transplanting is during bloom or while in leaf.

Erythronium americanum (Dogtooth Violet) – Native to the East Coast of North America, this corm enjoys moist (not boggy) soils conditions and light shade. Not a heavy bloomer.

Erythronium x ‘Pagoda’ (Dogtooth Violet) – A cross between *E. californicum* ‘White Beauty’ and *E. tuolumnense*. Much larger flowers that appear consistently each year makes it more ornamental than the above. Same cultural conditions.

Red

Arum italicum (Italian Arum) – A white spathe flowers appear in late April into May, which are replaced by stalks of orange fruits in July. Foliage is broad and marbled with white venation. Foliage appears in the fall, persists through winter and flushes again in spring with the new foliage. Best in shade and in a protected area so the foliage does not become tattered by winters’ stresses. Does well in average to slightly moist soils.

Purple

Allium aflatunense (Persian Onion) – Purple flowered umbels in May into June on 24-30” stems. Interesting seed heads from June into July. Full sun, well-drained soils are necessary. An interesting species epithet as well!

‘Purple Sensation’ – Deeper purple flowers.

Allium christophii (Star of Persia) – Similar to the above, but blooms in early June with light purple flowers on 18-20” stems. Full sun, good drainage.

Allium sphaerocephalon (Drumstick Allium) – 2” oval flowers on 3’ stems appear in early July. Plants are great worked in with shorter ornamental grasses and perennials. Grow in full sun in well-drained soils.

Bulbocodium vernalis (Spring Meadow Saffron) – Pinkish purple flowers growing to 4” tall appear in late February. Flowers appear with 3 dark purple pointed leaves at the base followed by tidy green foliage to 10” long. Differs from the similar appearing *Colchicum* since it blooms in spring and the floral segments remain separated down to the ovary and do not form a Perianth tube. Provide full sun in moist, but well-drained soils. Found in the Pyrenees and Central Alps in mountain meadows that are moist. An excellent plant but severely underused.

Colchicum ‘The Giant’ (Autumn Crocus) – Displays large lilac (who would have guessed) flowers in September into October. The large and coarse foliage appears the following spring and looks great until it begins to go dormant in June, when it becomes a large yellow/brown mass! Does very well in NJ and increases freely.

‘Waterlily’ - Double pink flowered form.

Cyclamen hederifolium (Hardy Cyclamen) – WOW, a great plant that deserves to be in every garden! Foliage resembles that of English Ivy, often with bold silvery mottling, and appears in September, persists through winter and goes dormant in late May or June. Pink flowers develop in September, often before the foliage, and last until the second or third killing frost of November. Forms from the Aegean islands usually have fragrant flowers. Flowers reach a height of 4-6”, grows 2-5” tall. They thrive where they receive filtered afternoon sun. I have had them thrive on the North side of a deciduous shrub,

with the seedlings spreading downhill under the shrubs. Plant in an area that is moist during the fall, winter, and spring, yet dry in summer.

‘Alba’ – White flowered form.

Gladiolus communis subspecies *byzantinus* (*Gladiolus byzantinus*) (Hardy Gladiolus) – The books say that it is hardy to zone 7, but I have grown the plant in zone 6 for a number of years with no problem. It has been planted and reappears outside of Holly House at Rutgers Gardens since 1997! Plant the corms 6” deep in moist soil that is either full sun or partial shade. Foliage is narrower than the hybrids and reaches 2’ tall. Flowers are maroon to red on 6-12 flowered racemes in mid to late June. Foliage goes dormant by mid-August. New corms are produced beneath the older, and the bulbs appear to gradually pull themselves deeper into the soil.

Lycoris squamigera (Autumn Lycoris, Resurrection Lily) – Narcissus-like foliage appears in the spring and goes dormant come mid-June. In late July or August pink flowers appear in umbels of 3-8 flowers atop 2’ scapes. The flowers typically have an overtone of blue in the throats. *Lycoris* was named after a beautiful Roman actress, who was reputed to be Mark Anthony’s mistress! And here you thought that the plant families were not promiscuous!

Blue

Chionodoxa luciliae (Glory of the Snow) – Attractive blue flowers with white centers in March, and as is true of the early bloomers, it will grow well in full sun or under deciduous trees/shrubs. Self sows and naturalizes with abandon. *Chionodoxa luciliae* variety *gigantea* has larger flowers.

‘Alba’ – White flowers in April.

Crocus speciosus (Autumn Crocus) – Blue flowers in October. Grassy foliage appears in late March and persists through May.

Crocus tommasinianus (Tommasini’s Crocus) – Often referred to as Crocus Tom! Found growing on limestone hills in Dalmatia, plants bloom in late February into early March. The straight species is one of the best for seeding and naturalizing into lawns or under trees. The foliage is very slender and does not stand out in turf. Seeds are produced close to the ground, and will not be removed if mown before the split open. Flowers of species are lavender-blue, while those of ‘Barr’s Purple’, a selection are lilac mauve.

Ipheion uniflorum (Spring Star Flower) – Sweetly scented, small, light blue 1” diameter flowers appear in April into May. The foliage emerges during the previous November and overwinters. Unlike the pleasant fragrance of the flowers, the foliage has a fragrance akin to a skunk!

Muscari armeniacum (Grape Hyacinth) – A cluster of blue, grape-like flowers hug the top two or so inches of the flower stem in April. The bulbs produce multiple offsets and naturalize well. Round linear foliage appears in November.

Muscari latifolium (Grape Hyacinth) – A flower typical of Grape Hyacinths, but the foliage is broader and more attractive and the florets fade from light blue at the base to dark blue near the top.

Puschkinia scilloides (Striped Squill) – A great plant for naturalizing. The flowers appear in March and consist of six inch tall clusters of light blue flowers, with each flower having 6 petals with a central dark blue stripe down the center of each petal.

Hyacinthoides hispanica formerly *Scilla hispanica* (Wood Hyacinth) – Ideal for naturalizing in woodland area, the strap-like foliage gives rise to 12” tall spikes of blue, pink or white flowers in May.

Puschkinia scilloides var *libanotica* (Striped Squill) – Upwards of 12 or more light blue, 3/8” diameter flowers appear upon 6-8” tall stalks in late March into April. The center of the petal has a dark blue line, giving the flower a more pronounced blue appearance. Plants will naturalize freely and easily in meadows or even maintained turf.

Scilla siberica (Siberian Squill) – Dark blue ½” wide flowers appear on 8” stems in March. Self-seeds well and, as is typical of many minor bulbs, grow well in sun or deciduous shade. It is often confused with *Chionodoxa*, but is easily discerned by the hanging flower and absence of a central white marking while those of *Chionodoxa* face upwards.

‘Alba’ – The flowers are white and are slightly smaller in size than their blue cousins. They also bloom slightly later. They seed true.

Scilla mischtschenkoana (Squill) – Similar in appearance to *Puschkinia*, but the slightly larger in all regards. Plants bloom in late February to early March, about 2 weeks prior to *Puschkinia*. The light blue flower petals have a darker blue mid-vein. Plants go dormant by mid-May and consequently, it can be situated in a location that receives heavy shade beginning in early to mid-May.

Narcissus

Narcissus (Jonquil, Daffodil) – The common name of Jonquil refers to the genus *Juncus* (the Rushes) due its rush-like foliage. It is presently applied to dwarf, small cupped *Narcissus* with slender or rush-like foliage and to the species *Narcissus juncifolius*. The common name of Daffodil is used to describe all other types of *Narcissus*. The *Narcissus* flower is divided into the cup (also called the corona) and the outer segments called the Perianth. The corona is an appendage or extrusion of the inner side of the corolla (all the petals are collectively called the corolla) and separates the stamens (containing the anthers and pollen) from the carpels (the stigma and ovaries). A Perianth is a combination of the petals and the calyx (the outer covering of a bud is composed of modified leaves, each called a sepal and collectively a calyx). Based upon the size and shape of the Perianth and the corona, *Narcissus* was divided into 11 Classes or Divisions in 1950 and modified in 1977 to include the color of the corona.

Narcissus bulbocodium (Hoop petticoat *Narcissus*) – A species *Narcissus*, with rush like foliage to 15” tall. The foliage is present nearly year round, often vanishing from July until September. Flowers are produced in April into May on 10-12” stems. Flowers have a much reduced (nearly invisible) Perianth and the cup is expanded, resembling a petticoat. For those uninformed males (I had to look this up in the dictionary too), a petticoat is a dress, often pleated and worn as an outer dress or underskirt, a little shorter than the outer clothing. The genus *Narcissus* requires reasonable drainage but needs

consistent rainfall throughout the year. As a species, it will produce viable seed so do not deadhead as it will slowly self-sow. Plant 4-6 bulbs to a hole for a better initial show.

Narcissus 'February Gold' (February Gold Cyclamineus Daffodil) – A cyclamineus daffodil (Division VI) with a long trumpet and reflexed petals (perianth segments). February Gold' rises 14-16" tall in spring. It is noted for early to mid-spring bloom appearing as early as February in zone 7. Each flower features a bright yellow trumpet and slightly reflexed bright yellow petals. 'February Gold' was reportedly hybridized by de Graaff in Holland in 1923 (*N. cyclamineus* X *N. pseudonarcissus*).

Narcissus 'Thalia' (Thalia Triandrus Daffodil) – This triandrus daffodil (Division V) rises to 12-14" tall and features petite, very fragrant, outward-facing, bell-like, pure white flowers, with slightly reflexed petals. The flowers always face the sun, so for a proper display, the bulbs should be planted such that the viewer is in-between the sun and the plant!

Tulipa

The Tulip is in the family Liliaceae with about 75 species. It is native to the Iberian Peninsula and Northern Africa, through Greece, the Balkans, Turkey and Iran, north to the Ukran and into Northwestern China. Tulips were at the heart of the first financial bubble to collapse, as many Dutch businessmen speculated on the future price of Tulips during the winter of 1636-1637 to a point far beyond what any bulb was worth – 40 bulbs in 1635 were selling for 100,000 florins, while a skilled laborer might make 150 florins a year!

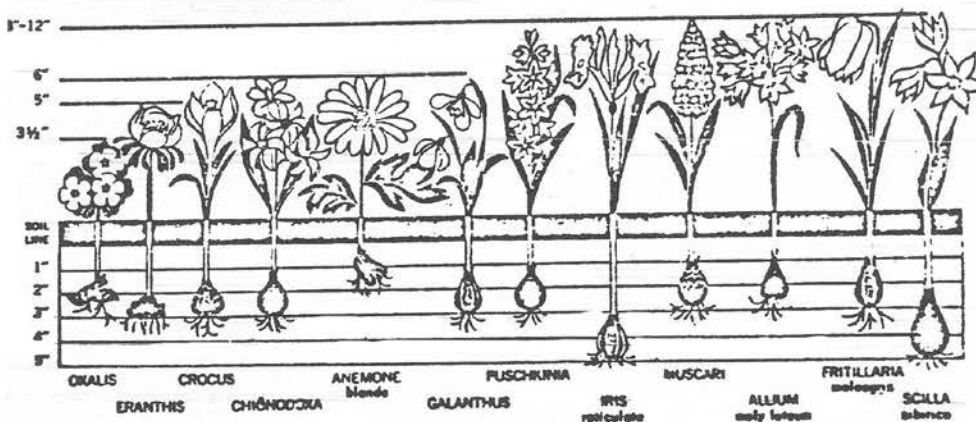
Tulipa acuminata (Fire Flame Tulip) – Unique for the long point petals which are red at the tips and bright yellow at the base.

Tulipa clusiana var. *chrysantha* (Tulip) – Yellow center with bright red coloration to the outside of the outer petals. Slender, bluish green foliage. A long lasting plant in the Garden.

Tulipa 'Little Princess' - A cross between *T. hageri* and *T. aucheriana*, this dainty, scented tulip is light orange with a white-edged, black center. Blooming in early May, the foliage is small and delicate. It has not only lasted, but actually increased in size over the past 12 years in the Gardens.

Tulipa tarda (Tulip) – Divided into 15 groups or divisions, depending on the shape and bloom time of the flower or the heritage of the plant. *Tulipa tarda* is a low growing species tulip (Division 15), native to rocky subalpine meadows in central Asia. Each flowering stem typically produces a cluster of 3-6 upward-facing flowers measuring 2.5" across individually, that are white with a yellow eye. Flowers appear on 4-6" stems in April to early May in NJ. Fully open flowers have a broad star-like appearance. Glossy green leaves to 5" long go dormant by late June. Full sun is best on either a slopping soil or a gritty, sandy soil that promotes good drainage.

Minor Bulb Planting Guide



Depth of Planting

Ground

