

A WORD OR TWO ABOUT GARDENING

Ornamental Bulbs for Miami-Dade

The present article is the first of a series on bulbs for Miami-Dade landscapes. There is a loose connection to three preceding articles on drought tolerant plants to the extent that bulbs are a means of surviving adverse conditions (drought as well as temperature extremes). Bulb is often used as a catch-all name to describe true bulbs as well as all underground food/water storage organs including corms, tubers and rhizomes. Some authors classify all such plants as geophytes, while others restrict the term to those growing in a basically arid environment and survive by developing below ground swollen stems/tubers.

For the most part true bulbs and corms are restricted to three families of petaloid monocotyledonous plants: **Amaryllidaceae**, **Iridaceae** and **Liliaceae**. A true bulb comprises a **basal plate**, a short compressed stem from which roots and which also possesses embryonic shoot or flower tissue. These latter are enclosed in a succession of **fleshy scales**. Each scale is either a highly modified leaf or swollen leaf base and contains food reserves to support the growth of above ground plant parts (leaves, stems and flowers). Bulbs can be either **tunicate**, or **non-tunicate** (scaly). The former are covered with an outer papery coat (tunic) to help prevent loss of moisture, with the scales tightly appressed making them difficult to separate (e.g., onions or daffodils). Scaly bulbs have exposed scales (e.g., true lilies, *Lilium* sp.), which detach easily (necessitating careful handling), and dry out more readily.

Based on how tunicate bulbs replicate three types can be discerned: **tulips** form new bulbs (offsets) in scale axils, with the mother bulb either rapidly dying or declining over time as food reserves are withdrawn by the developing daughter bulbs. **Daffodil** (*Narcissus* spp.) bulbs are perennial with a growing point (terminal bud) in the center developing into a new bulb (scales, leaves and eventually a flowering stem). Successive new bulbs progressively push older scales to the periphery, which eventually dry to form the tunic. As well as new bulbs derived from the terminal bud, lateral bulbs can be initiated in the leaf axils and axils of innermost scales. The original terminal bud therefore gives rise to a cluster of bulbs in various stages of development, some of which may become detached.

Amaryllis (*Hippeastrum*) is a third type; like *Narcissus* it is also in the Amaryllidaceae and is also perennial. However it is composed solely of swollen leaf bases, and produces new bulbs only from the terminal bud. (Note: in some descriptions members of the Amaryllidaceae are retained in the family Liliaceae; most authorities treat them as a separate family). Of the three bulbs referred to above only *Hippeastrum* spp. are suitable as landscape plants in south Florida. Tulips and daffodils need exposure to cold winter temperatures in order to flower. For gardeners in warm winter climates this is difficult to accomplish and for tulips even where adequate chilling is possible the results can be poor. Modern hybrid tulips are usually replanted each year; species tulips, which are not as showy and not as widely planted, can be left in the ground for several years.

This article is restricted to the **Amaryllidaceae**, a family of plants found mostly in warm to tropical climates and among which are the two most popular true bulbs grown in Miami-Dade: landscapes: **Hippeastrum** and **Crinum**. These are described below; subsequent articles will review other amaryllids including *Hymenocallis* (spider lilies) as well as some of the more uncommon true bulbs, plus corms, tubers and rhizomes. Almost all amaryllids produce flowers (often in multiples) on a **leafless stem** termed a **scape**. Since it is difficult to distinguish true petals from the surrounding sepals, the outer parts of the flower (the floral envelope) are often referred to as the **perianth**. Those parts of the perianth that are free are termed **lobes** (or in some descriptions **tepals**). To the casual observer enjoying the beauty of the open blooms they simply look like flower petals!

Hippeastrum spp. are commonly referred to as **amaryllis**, not to be confused with the **Amaryllis spp.** of which the belladonna lily (*A. belladonna*) is most widely grown. Flowering in late summer this is quite popular in California but is unsuited to south Florida's wet summers.

Amaryllis is surely both the easiest and most rewarding of the true bulbs to grow in a Miami-Dade landscape. Native to S. America, most plants now in cultivation are hybrids, the majority derived from crosses involving **H. vittatum**, a species found in the Peruvian Andes. Of these the first successful cross (with **H. reginae**, the Mexican lily), occurred in England at the turn of the 18th Ct producing a hybrid (**H. x johnsonii**) commonly known as **St. Joseph's lily**. The flowers are delicately scented, bright scarlet with white streaks and a green base. Though not as showy as the larger flowered modern hybrids, and much slower to adapt to container culture, it is especially suited to landscape use where, compared to most modern hybrids, it multiplies rapidly. St. Joseph's lily is the hardiest of the amaryllis hybrids (survives outdoors to at least zone 7) and in warm winter climates such as south Florida can remain more or less evergreen for much of the year. Well worth trying in local landscapes, it is available from some specialist mail order growers.

Most of the modern amaryllis hybrids, either dry bulbs or potted have been developed in The Netherlands (**Dutch hybrids**). Derived initially from *H. x johnsonii*, more recent crosses involve **H. papilo (butterfly amaryllis)**, a Brazilian species that is an impressive landscape plant in its' own right. The flower lobes are sharply acuminate, lime green to cream with bold maroon stripes and a median maroon blotch. Flowering occurs earlier than for hybrids, between late fall to late winter; it also differs in being synanthous (flowers and foliage appear together), and also in producing viable seed (self pollinating). Increasingly popular are **S. African hybrids**, most of which derive from *H. reginae*, a species that has adapted especially well to South African conditions. For the holiday season these latter hybrids are available earlier in the season than Dutch Hybrids, and take less time to flower (within 4-6 weeks of planting) so can be in bloom by Thanksgiving. Compared to Dutch hybrids, African bulbs are smaller but still produce multiple scapes. These are shorter (about 12") but sturdier and foliage is present at the same time the plant is in flower. Dutch hybrids don't usually produce foliage until after flowering ceases. South African hybrids are of very limited availability and usually sell out quickly.

Don't be disappointed if you have difficulty locating an amaryllis you admired in a floral arrangement. Some amaryllis hybrids are more suited to the cut flower trade and make inferior container/landscape plants. There are however many Amaryllis hybrids that are ideal for landscape use, available in a wide variety of colors (white as well as various shades of pink, red and orange), with many bi-colored and a few multi-colored cultivars and picotees. Flowers can range in size from dwarf (extremely floriferous) which make excellent bedding plants, to large with spectacular 8-10" flowers (newly planted bulbs take 7-10 weeks before blooming). There are cultivars sold as double, even triple flowering (12 and 18 lobes respectively, stamens replaced by petaloid lobes). Among some popular selections are '**Apple Blossom**' (white with soft pink streaks); '**Bolero**' (pastel pink to red); '**Lion**' (bright red); '**Double Record**' (double white with red streaks) '**Lady Jane**' (double, apricot/white); '**Orange Sovereign**' (S. African, peach to bright orange); '**White Dazzler**' (all white). '**Pink Floyd**' is a recent introduction (one of several **trumpet amaryllis**) with up to 6 small, slightly fragrant, trumpet shaped flowers per stem, each flower raspberry pink with thin white stripes; '**Amputo**' has pure white flowers with a green throat. '**Cybister amaryllis**' were originally developed by a southern California grower from *H. cybister*, a Bolivian species, each scape bearing 4-6 flowers with unusually thin, brightly colored lobes. At first glance they could be mistaken for gaily colored spider lilies; '**Lima**' has purplish red lobes, '**Emerald**' greenish white lobes with thin red stripes and '**Ruby Meyer**' bright scarlet and yellow lobes.

In Miami-Dade, **amaryllis** bulbs can be used **outdoors** as spring flowering herbaceous perennials or as indoor container plants (see the earlier publication 'Your Miami-Dade Guide to Holiday Plants'). They are an eye-catching addition to the landscape, easy to maintain, requiring little maintenance and with only one drawback – expense. A single hybrid amaryllis bulb sells from \$9-25 (with higher prices forecast), though they will last for many years if planted in a suitable site, and slowly form offsets. The principal reason for the high price is that they produce few offsets and it takes 3 years for these daughter bulbs to reach flowering size.

To compensate for this low rate of natural increase, **amaryllis** is also **propagated by chipping**. This involves first cleaning a healthy bulb of all loose soil, removing the tunic then cutting back the stem and slicing off most of the roots, without damaging the basal plate. The bulb is then cut into 8 – 16 vertical segments (chips), each of which must contain a portion of the basal plate, using a sharp knife swabbed with alcohol. The chips are then soaked for 20 minutes in a dilute fungicide solution (e.g., Consan 20), dried on clean paper towels and placed in just-moist vermiculite (use disposable gloves when handling chips). Keep covered with clear plastic at about 70°F for 8 – 12 weeks, after which time tiny bulbs (bulblets) should form in between the scales. Each bulblet with its portion of the basal plate still attached can then be carefully potted up and after 3-4 years it should be of flowering size.

For landscape use a group of 10 -15 of the smaller South African hybrid amaryllis can be used as bedding plants for spring flowering, or some of the larger Dutch hybrids can be set out in front of the shrub border. Plant in an **organically enriched soil** (added sphagnum peat or garden compost) or grow in a raised bed using a soil

based potting mix; to both add sufficient **coarse sand** (not play sand) to produce a moist but crumbly soil mix. **Bone meal** is widely used (as a source of phosphorous) when planting bulbs in order to promote development of a vigorous root system. Too liberal use of bone meal is claimed by some gardeners to induce dogs to engage in frantic digging! Alternatively incorporate an **organic fertilizer** such as Bulbs Alive into the soil before planting.

In Miami-Dade choose a site that receives **light dappled shade** throughout the day or partial shade from hot afternoon sun. Too much shade will interfere with blooming and in day long hot sun, flowers fade more rapidly and foliage can become discolored. For a holiday amaryllis that has finished flowering, carefully transplant in late January. **New bulbs** can be planted from late fall into early spring at 12” intervals with the top of the shoulder exposed, and watered-in such that soil is barely moist. Once top growth is seen increase watering gradually to ensure an evenly moist soil. Avoid planting bulbs in the rainy season as they are at more risk of rotting. Provide monthly, light applications of a 9/9/6 (or similar) bulb special or an organic (slow release) fertilizer such as Bulbs Alive when in active growth.

Occasional **pest problems** include aphids, spider mites and mealybugs; during summer, maggots of the narcissus bulb fly can be a far more serious threat - infested bulbs usually rot. Bulbs should be left in the ground for several years before lifting (amaryllis resents root disturbance), though sickly specimens can be lifted during late summer/early fall (once foliage dies back) and inspected. Amaryllis leaves and stems can develop bright purplish red spots or steaks. This is usually due to some localized tissue injury – however if the spots enlarge and have a definite margin suspect red blotch, a fungal disease due to *Stagonospora curtisii*. Contact the Miami-Dade Extension Office for further information.

There is a rare and exceedingly expensive flowering bulb from Brazil known as the **blue amaryllis** but it is not a *Hippeastrum* being the sole member of a related genus (*Worseleya procera*, syn *W. reyneri*). Growing from a large round to pear shaped bulb the top tapering to a 3-5' pseudo-stem (formed from sheathing leaf bases), leaves are mid green with a bluish tinge, thick, with a pronounced downward curvature. Up to 14, large, trumpet-shaped flowers are borne in an umbel atop a thick peduncle, each bloom lilac to a light iridescent blue. Raised from seed, when available, it is difficult to grow and strictly for container use only. It is essential to provide a very coarse, fast draining but moist, growing medium (orchid-like) plus year round, moderately warm temperatures, and bright light (little if any direct sun). Spectacular when in bloom, but definitely for the enthusiast only!

Crinum lilies (*Crinum* spp.) are the most common bulb forming plants in Miami-Dade landscapes. Crinums often develop exceptionally large bulbs, and differ from *Hippeastrum* in having a much longer neck made up of sheathing leaf bases (sometimes referred to as a **pseudostem**). **Leaves** are at least 2-3', linear or wider, strap like (lorate), thick and usually arranged in a rosette. The **scape** is solid (cf. hollow scape of *Hippeastrum*), emerging at an angle to one side of the leaves; the flowers tubular with six lobes usually recurved, white (often either flushed or banded red to purple). Flowering occurs in spring or throughout warmer months of the year, depending on species/cultivar.

Crinums should be planted, with the bulb shoulders just visible, in an organically enriched, moist, but free draining soil (see amaryllis above, including fertilizer use). Established clumps with large bulbs are sufficiently drought tolerant to require water only during extended periods of hot dry weather. Some species, such as *C. jagus* (**St. Christopher lily**) and *C. moorei* (**Natal lily**) need shade, and for most crinums some partial shade is preferable, especially from hot afternoon sun – other crinums once well established, such as *C. asiaticum* and *C. zeylanicum* can be grown in full sun. During the cool months of winter, little if any water should be required, especially if top growth dies back. Most of the tropical species grown locally are evergreen, however African crinums (see below) are from arid to seasonally wet/dry climates and usually become leafless during the dry season (winter in Miami-Dade). Those from arid climates are better grown in non-glazed ceramic containers (i.e., as for succulents). Crinums, as with amaryllis, resent root disturbance; transplanted bulbs can take 2-3 years before flowering. It is advisable to stake scapes on those crinums with especially large flowers.

Propagation of garden crinums is by means of offsets however most true species, certainly those from Africa, are known to produce few if any offsets and these need to be raised from seed. It is now believed that cultivated crinums sold as true species e.g., *Crinum bulbispermum* that produce offsets are in fact hybrids. If you are interested in raising species crinums you should at a minimum purchase seed grown material.

The most widely used crinum locally is *C. asiaticum* (**giant crinum**, also known as **poison bulb** though all crinums are poisonous). Several varieties are known, varying in size though all develop into large plants. Bulbs on mature plants can weigh up to 10 – 20 lb with a long pseudo stem (to 5'), bearing a crown of leaves to 4-6'; a 2' scape bears up to 40 fragrant white flowers. Individual flowers have linear (long, thin) lobes and resemble those of true spider lilies (*Hymenocallis*). This is a tough plant that adapts well to coastal sites and has even been used locally in highway medians. There is a confusing array of *C. asiaticum* hybrids, some formerly regarded as distinct species, often of uncertain provenance. *Crinum* '**Queen Emma Supreme**' (may be listed as *C. augustum* 'Queen Emma Supreme') is now thought to be a cross with *C. angustum*. The leaf bases are purplish, the flower lobes white with a purplish red median stripe. There are a number of other red pigmented crosses involving *C. asiaticum*: e.g., *C. augustum* (now *C. x augustum*, sometimes commonly listed as the milk and wine crinum) with purple and white flowers and *C. amabile* with red and pink flowers, believed to be a cross with *C. zeylanicum* (*C. x amabile*, misleadingly known as the giant spider lily). Offered locally as *C. procereum* '**Splendens**', this is a selection of *C. asiaticum* with striking red foliage. There are other cultivars of *C. asiaticum* with golden yellow, bronze as well as variegated foliage.

As the name suggests the Florida native **swamp lily** *C. americanum* prefers wet to moist, organically enriched soils; under such conditions it can readily spread via stolons (underground stems). Exhibiting excellent tolerance to salt, swamp lily is a good choice for poor draining coastal sites with brackish water. Where soil is not constantly wet to moist (most local residential yards) provide some light shade.

Flowers are fragrant with narrow white lobes and are followed by a three-celled capsule containing a few large seeds which readily germinate. From tropical S. America *C. erubescens* is somewhat smaller than *C. americanum* with similar flowers on a reddish scape. It is also stoloniferous and favors wet soil, but adapts more readily to drier conditions. More commonly grown in the upper half of peninsular Florida, *C. zeylanicum* the **milk and wine lily** is a non-native species (tropical Asia/E. Africa) with attractive flowers (lobes white with a wine colored median stripe) which has contributed to several striped hybrids. The foliage can appear limp and unattractive, plus the plant may become weedy. Escapes are occasionally found locally, usually along canal embankments.

Crinum bulbispermum is another extensively hybridized species, but differs from *C. asiaticum* in being more or less deciduous and hardy throughout Florida (and much of the rest of the south east). It is the largest of the commonly grown African crinums, where it is often found in areas bordering streams/rivers that become seasonally inundated. Locally it benefits from more shade and is less tolerant of drought than *C. asiaticum*. Flowers can vary from white to various shades of red, the color intensifying in response to increasing temperatures. An early cross with *C. mooreii* (*C. x powellii*) has pale to mid pink trumpet-shaped flowers; '**Album**' is a white flowering selection and '**Roseum**' a widely available pink, and in the view of some, inferior selection. There are many other hybrids involving *C. bulbispermum*; one of the most popular is '**Ellen Bousanquet**' with broad fleshy leaves and burgundy, trumpet-shaped flowers. This and many other *Crinum* species/cultivars are available from specialist growers.

Some of the other more interesting African species include *C. kirkii* - white flowers having a prominent red stripe, *C. macowanii* - larger white flowers, with broader lobes striped pink on the outside (this is reported to be one of the easier species crinums for use in landscaping). *Crinum graminicola* also has white flowers with a deep purplish median stripe – it is very showy but slow to flower. Finally *Crinum jagus* has attractive, stiff, upright foliage and open, cup-shaped flowers with pure white lobes; shade is essential with this species (dappled shade to bright light). This is a variable species with regard to appearance and fragrance - flowers of some specimens have an intense vanilla fragrance, in others it is barely noticeable. Like amaryllis, crinums are expensive, even more so when purchasing seed grown species or some of the more recently developed hybrids. If you do not wish to commit yourself to this expense, crinums such as *C. asiaticum*, *C. bulbispermum* and their hybrids are large enough to be used singly as specimen plants. A final reminder – both crinums and amaryllis are poisonous, the bulbs most definitely are not edible.



Hippeastrum 'Double Record' a double amaryllis