

ANNUALS IN THE FLORIDA LANDSCAPE WHY FAILURES OCCUR AND HOW TO OVERCOME THEM

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Abstract. Florida's mild climate in winter and tropical environment in summer is ideal for growing annuals. However, annuals are used minimally or not at all in residential and commercial landscapes. One reason for annuals limited use in landscapes is that many people have experienced repeated failures. Some aspects of why failures are experienced and how to avoid these problems are discussed.

Annual flowering plants with their seemingly infinite variety of flower color and form will fit into almost any landscape situation. They provide that pleasant touch of color to an often drab landscape. Annuals planted in containers can also add a splash of color to a porch, deck or patio area. They can also be enjoyed as fresh, or in some cases, as dry cut flowers. Consequently growing annuals can be a very rewarding hobby. These colorful annuals can greatly enhance the beauty of commercial landscapes, condominiums, shopping centers, and public and private enterprises in Florida. Yet, a large number of Florida's private and commercial establishments, including the average private home, use annuals sparingly or not at all.

Why then, in Florida with its year round sunshine and long growing season, are annuals not used more. One reason it seems is that many people have experienced dismal failures. This paper discusses some of the possible reasons that contribute to these failures and offers suggestions on how to overcome the problems.

Myths About Growing Annuals

Myth #1 Annuals should be grown using the same guidelines, timing and culture as recommended by recognized experts in this field from northern states. A majority of homeowners, ground maintenance personnel and commercial bedding plant producers are transplants from other states. Consequently, their ideas for growing annuals in Florida are often based on their success following the recommendations of experts from other areas. A tremendous amount of literature, including books, pamphlets and fact sheets, on gardening activities report myriads of success stories and countless recommendations on how to grow annuals successfully. The problem, however, is that the majority of these gardening tips and information are not applicable to Florida conditions. Many gardeners fail to realize that Florida's climate and soil conditions are different from other states. This has led Florida plant experts to divide the state into 3 sections (north, central and south Florida) for growing annuals.

When using recommendation from other areas failures may occur. Often it is due to overfertilization, since most Florida soils are sandy and have special fertilizer requirements. For example, in Florida 3 to 4 applications of 1 lb. of 6-6-6 per 100 ft² is sufficient, while 1 application of 3 lb. of 6-6-6 per 100 ft² is recommended somewhere else. Improper planting time, insects and diseases are other factors that are often misunderstood in Florida.

Another important misconception is the growers expectations that annuals planted in the spring will grow for the remainder of the year. After all, Florida has a mild climate

and hard freezes are hardly expected, especially in South Florida, therefore annuals should grow year round. Actually the truth is that there are few annuals that can be grown successfully all year in Florida due to vast differences in climatic conditions in the fall, winter, spring and summer. Therefore proper selection of annuals for specific seasons of the year becomes extremely important if success is to be guaranteed.

Myth #2 Annuals can be grown anytime of the year after the last frost in North Florida and all year in South Florida. The notion that tender annuals can be successfully grown at any time after the last frost in spring, as is the custom in the North, is not applicable to growing annuals in Florida. Although the central and southern parts of Florida are relatively free of hard freezes in winter, which facilitates growing virtually all year, the climatic conditions vary with the season. Fall in many counties in central and south Florida are the best season to grow most annuals. Moderate day temperatures combined with the cool nights result in conditions that are ideal for many annuals. In spring and early summer when day and night temperatures are increasing rapidly, another group of annuals should be grown. Finally, during the hot and humid summer season with high day and night temperatures and torrential rains another group of annuals should be selected that will tolerate these conditions. Although the total growing days per year may be 365 days in central and south Florida, the specific growing conditions for certain fall, winter, spring or summer annuals may be quite short. Presently, a single species that will grow satisfactorily all year cannot be recommended. Although conditions appear ideal for longer survival, optimal environmental conditions are in fact shorter when peak performance is considered. Annuals in Florida should be used for only one season and replaced at least 3 or 4 times during the year for best results.

Myth #3 Annuals can be grown with little regard to placement in the landscape and/or irrigation water quality. Florida growers face problems that are not found in many other states. For example, a large portion of the population lives in close proximity to the shoreline where there are water problems. Many wells contain appreciable amounts of soluble salts that are harmful when the water is used for irrigation. Certain annuals e.g. petunias (*Petunia hybrida* Vilm) and pansies (*Viola tricolor*) are sensitive to high salt levels and will not thrive or may even be killed. Fertilizer applications on a regular basis combined with these high concentrations of salt in the irrigation water only aggravate the problem.

Another factor that is equally as important, but often ignored, is sensitivity of many annuals to salt spray from the ocean. Impatiens and pansy, for instance, do not thrive or grow properly in areas where frequent salt sprays are experienced. Unfortunately, there is little data available on the salt tolerance of most annuals. New cultivars are constantly being introduced and regrettably most of these new introductions have not been tested under the unique environmental conditions found in coastal Florida.

Myth #4 Annuals can be watered by overhead irrigation. Another problem contributing to failures in growing annuals is the fact that annuals are treated like woody ornamentals and turf with regard to irrigation practices. Overhead irrigation can be devastating to some annuals and should be avoided when possible. Flowers are usually more tender than the foliage and are easily damaged. Some an-

nuals, such as geranium, are so tender that even fine water droplets from overhead irrigation or rain will destroy and shatter the petals. Annuals in full bloom irrigated overhead are also more prone to disease infestations such as *Botrytis* (gray mold). Species that are somewhat tolerant of overhead irrigation are given in Table 1.

Table 1. Sensitivity of annuals to overhead irrigation.

| Tolerant to overhead irrigation | Sensitive to overhead irrigation |
|-----------------------------------------------------------|--------------------------------------------------------|
| Alyssum <i>Lobularia maritima</i> (L.) Desv. | Canna <i>Canna generalis</i> L. H. Bailey |
| Ageratum <i>Ageratum mexicanum</i> Sims | Delphinium <i>Delphinium elatum</i> L. |
| Asters <i>Callistephus chinensis</i> (L.) Nees | Digitalis <i>Digitalis purpurea</i> L. |
| Balsam <i>Impatiens balsamina</i> L. | Geranium <i>Pelargonium hortorum</i> L. H. Bailey |
| Begonia <i>Begonia semperflorens</i> Cultorum Hort. | Gerbera <i>Gerbera jamesonii</i> H. Bolus ex. Hook. f. |
| Blue Salvia <i>Salvia farinacea</i> Benth. | Marigold <i>Tagetes</i> spp. L. |
| Browallia <i>Browallia speciosa</i> Hook | Ornamental Pepper <i>Solanum pseudocapsicum</i> L. |
| Celosia <i>Celosia argentea</i> L. | Petunia <i>Petunia hybrida</i> Hort. Vilm.-Andr. |
| Coleus <i>Coleus blumei</i> Benth. | Phlox <i>Phlox drummondii</i> Hook. |
| Cornflower <i>Centaurea cyanus</i> L. | Poppy <i>Papaver nudicaule</i> L. |
| Cosmos <i>Cosmos bipinnatus</i> Cav. | Primula <i>Primula malacoides</i> Franch. |
| Crossandra <i>Crossandra infundibuliformis</i> (L.) Nees | Rudbeckia <i>Rudbeckia hirta</i> L. |
| Dahlia <i>Dahlia pinnata</i> Cav. | Snapdragon <i>Antirrhinum majus</i> L. |
| Dianthus <i>Dianthus chinensis</i> L. | Vinca <i>Catharanthus roseus</i> L. |
| Dusty Miller <i>Senecio cineraria</i> DC. | Zinnia <i>Zinnia elegans</i> Jacq. |
| Exacum <i>Exacum affine</i> Balf. f. | |
| Gazania <i>Gazania ringens</i> (L.) Gaerth | |
| Holly Hock <i>Althea rosea</i> L. | |
| Impatiens <i>Impatiens wallerana</i> Hook. f. | |
| Lantana <i>Lantana camara</i> L. | |
| Lisianthus <i>Lisianthus grandiflora</i> Hook. | |
| Nicotiana <i>Nicotiana grandiflora</i> Moore | |
| Pansy <i>Viola tricolor</i> L. | |
| Portulaca <i>Portulaca grandiflora</i> Hook. | |
| Salvia <i>Salvia</i> spp. L. | |
| Shasta Daisy <i>Chrysanthemum maximum</i> Hort. | |
| Strawflower <i>Helichrysum bracteatum</i> (Venten.) Andr. | |
| Torenia <i>Torenia fournieri</i> Linden ex. E. Fourn. | |
| Verbena <i>Verbena x hybrida</i> Voss | |

Myth #5 *We can't go wrong buying known and tested named cultivars of annuals, especially those that have received national recognition and awards.* Annuals are tested in more than 2 dozen All America Trial Gardens in the United States, however, Florida is not included in these test sites. When many of these recognized superior annuals are grown in Florida's sandy soils and humid weather conditions, they do not necessarily perform in the same manner.

Myth #6 *Organic and plastic mulches should be used to moderate soil temperature, conserve moisture and prevent weeds from becoming established.* Mulch, organic or inorganic, is used mainly to reduce weed populations in cultivated areas. Organic mulch can also be used to conserve moisture and keep the soil surface cool during summer and inorganic mulch can be used to warm soil during winter. However, mulch has disadvantages, especially opaque (black), white or clear plastic. Black plastic absorbs heat during the day and summertime day temperatures of 114 to

117°F have been recorded on annual flower beds 1 to 6 inches above the mulch. This will literally burn annuals or at least retard their growth. White or clear plastic causes a greenhouse effect beneath the plastic cover during the day as heat is absorbed and trapped underneath the plastic, heating up the soil surface rather than cooling it. It is better if these plastic mulches are covered with a layer of organic mulch, to avoid the heat build up problem. During the wet spring and summer months organic mulches hold moisture around plants and results in more disease problems. In central and south Florida, organic mulches such as cypress bark are less of a problem in winter because there is little rainfall and the ambient humidity is low. Thus mulches act to conserve moisture and retain humidity around the plants and are beneficial during the winter months only.

Myth #7 *To reduce cost of plant material, small seedlings available in cell packs, market packs or handy flats should be used instead of larger plants in bigger containers.* Transplants from cell packs or market packs are not the best choice. Petunias or any other annual purchased in 4-inch pots would be better. The larger plants establish rapidly and bloom in the shortest period of time. Weed problems are also reduced since by the time the weed seeds germinate, much of the soil surface is already shaded by the rapidly growing transplants. Plants from cell packs and market packs are initially cheaper to purchase but take longer to become established, which often cuts short the optimal flowering period. Plants grown in small containers do not take off as rapidly as those in larger containers because very small containers restrict the root system and results in water stress.

Myth #8 *Annuals can be grown anywhere in the landscape regardless of light exposure.* In Florida, the climatic conditions vary and light intensities in winter and spring vary from 6000 to 10000 ft-candles on a given bright day. When annuals that grow best in partial shade are planted in fall or winter under full sun, they thrive and perform beautifully but they may not do as well in the same location during spring or summer due to the higher light intensities and temperatures. Impatiens is a good example of a species that does very well under full sun in south Florida if planted in late fall or winter but has serious problems when planted in late spring or summer in the same area. Another problem frequently encountered is planting annuals in heavy shade. Annuals such as impatiens and crossandra do best under partial or full shade but thus far, there are no annuals that bloom profusely under heavy shade.

Myth #9 *Annuals should be fertilized only at transplanting.* Although it is customary to fertilize annuals only at transplanting, it is not the best method under Florida conditions. Generally, Florida soils are sandy and have very low cation exchange and moisture retention capacities. Northern recommendations for fertilizing annuals often result in excessive fertilization for many Florida soils and result in salt burned plants. Annuals in Florida should be fertilized sparingly at transplanting and then every 3 to 4 wk during their life cycle. The amount of fertilizer used in Florida should only be 1/2 or 2/3 of the recommended for other areas of the country.

To provide the best show of annuals in Florida, annuals should be replaced 3 times a year rather than planting them just once in spring or late winter each year. Growers and landscapers should adapt to Florida growing conditions and use Florida's climate to their advantage. Recognizing some of the pitfalls mentioned in this paper is a step toward success for year round use of annuals in Florida.