

Table 7. Growth and performance of petunia cultivars in 4-inch pots at the Gulf Coast Research and Education Center, Bradenton, Fla. 17 Sept. through 19 Nov. 1984.

Petunia type and cultivar	Days to flower ^{x,y}	Height at flower ^y (inches)	Flower diameter ^x (inches)	Plant height in November ^x (inches)	Plant spread in November ^x (inches)	Rating in November ^w		
						Overall	Floriferousness	Habit
Floribunda								
Summer Madness	27.3 de ^y	3.6 fg	2.4 g-i	10.4 ab	16.7 a-c	2.8 b-e	1.8 a-d	3.0 b-d
Grandiflora								
Challenger Mix	41.3 ab	4.9 c-g	3.3 b-e	7.3 d-f	16.9 a-c	2.8 b-e	2.0 a-c	2.9 b-d
Cloud Mix	37.8 a-d	5.8 b-e	3.7 ab	9.0 a-e	19.5 a	3.5 ab	2.5 a	3.5 a-c
Crockett's Victory White	33.5 a-d	4.9 c-g	3.8 a	6.9 ef	17.8 a-c	3.6 ab	2.0 a-c	4.0 ab
Double Sure	28.3 c-e	4.8 c-g	3.6 a-c	8.8 a-e	20.3 a	2.9 b-d	1.3 cd	3.3 b-d
Flash Formula Mix	39.3 a-d	5.6 b-e	3.5 a-d	8.4 b-f	17.9 a-c	3.1 bc	2.0 a-c	3.3 b-d
Magic Mix	44.8 ab	5.8 b-d	3.0 d-f	7.5 d-f	16.8 a-c	2.0 d-f	1.8 a-d	2.0 de
Old Glory Mix	20.0 a-c	6.5 bc	3.0 d-f	8.8 a-e	16.8 a-c	2.3 c-f	2.0 a-c	2.3 c-e
Penny Candy	43.3 ab	5.4 b-g	2.3 g-i	6.8 ef	18.0 a-c	2.3 c-f	1.5 b-d	2.4 c-e
Postilion Mix	38.8 a-d	5.6 b-f	2.8 e-g	7.3 d-f	19.0 a	3.0 b-d	1.5 b-d	3.0 b-d
Sails, Pastel Pink	44.8 ab	5.1 b-g	3.5 a-d	6.3 f	18.0 a-c	2.3 c-f	1.5 b-d	2.1 de
Suburban White	32.8 a-d	4.2 d-g	3.3 b-e	7.9 c-f	18.6 ab	2.9 b-d	1.5 b-d	3.3 b-d
Multiflora								
Blue Cheer	20.0 e	3.5 g	2.2 hi	9.9 a-c	14.5 c	3.1 bc	1.3 cd	3.5 a-c
Dwarf Resisto Mix	43.5 ab	4.3 d-g	2.1 i	6.7 ef	18.4 ab	1.8 ef	1.0 d	2.1 de
Popeye	33.3 a-d	3.8 e-g	2.3 g-i	7.9 c-f	15.1 bc	1.5 f	1.3 cd	1.5 e
Snowdrift	45.5 a	7.0 b	3.1 c-f	8.6 b-e	19.9 a	2.9 b-d	1.5 b-d	3.1 b-d
Stoplight	32.0 b-d	4.4 d-g	2.7 f-h	9.4 a-d	19.0 a	3.0 b-d	2.0 a-c	3.3 b-d
Victory	27.5 c-e	4.0 d-g	2.7 f-h	7.1 d-f	20.1 a	3.0 b-d	2.3 ab	3.1 b-d
Yellow Ribbon	42.5 ab	9.3 a	1.9 i	10.9 a	19.3 a	4.2 a	1.8 a-d	4.5 a

^xFrom transplant date, 17 Sept. 1984. (Sown 2 Aug. 1984).

^yFlowering equated to the first open blossom.

^w15 Nov. 1984.

^w19 Nov. 1984. Rating scale for overall and habit: 1 = excellent, 3 = acceptable, 5 = poor. Rating scale for floriferousness; 1 = excellent, 2 = acceptable, 3 = poor.

^wMean separation within columns by Duncan's multiple range test, 5% level.

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GROWING ANNUAL FLOWERS SUCCESSFULLY IN FLORIDA

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with a rainbow of flower colors, he usually will be a confirmed annual flower gardener.

Timing

Additional index words. annuals, herbaceous flowering plants.

Abstract. Growing annuals successfully with respect to fertilization, irrigation, timing, and cultivar selection critical for Florida climatic conditions is discussed. Planting and removal dates for successful year round flowering of selected annuals are presented.

Growing annuals in Florida can be both challenging and rewarding. Annual flower gardening in Florida requires some basic cultural knowledge for success, but the results will more than justify the effort spent. Growing annuals in Florida requires more attention to detail due to the seasonal variations in climate in different locations throughout the state. Once a gardener has experienced the pleasures of growing annuals and has been rewarded

Seasons of the year are a significant factor in determining how well annuals will survive when planted in certain areas in Florida. In early spring and late fall, nights are relatively cool, whereas high day temperatures, heavy rains, and high relative humidity are typical during summer and early fall. Consequently, it is somewhat difficult to select annuals that will perform well under these climatic extremes. It is for this reason that methods for growing annuals in Florida have to be modified to facilitate selecting the best period of the year in which to grow them, since most printed information has been obtained from growing experiences in more temperate climates. The duration of optimum performance of annuals growing in Florida is often shorter than in temperate regions, and therefore more precise planting schedules and plant selection must be worked out. It is possible to have annuals in bloom all year in most areas of Florida if they are replanted three times annually. Allowing annuals to remain in beds too long results in unsightly flower beds. Selection and timing are the most important aspects of growing annuals in Florida. Table 1 lists planting and removal dates of an-

Table 1. Annual flower planting and removal guide for North, Central and South Florida.⁷

Common and/or scientific name	Cold tolerance	North Florida		Central Florida		South Florida	
		Planting date	Removal date	Planting date	Removal date	Planting date	Removal date
<i>Ageratum</i> (<i>Ageratum houstonianum</i> Mill.)	Tender	Mar 15	July	May 1-15	July	Oct 1-Mar 1	June
<i>Alyssum</i> (<i>Lobularia maritima</i> L.)	Tender	Mar 15	July	Feb 15-Mar 15	July	Oct 1-15, Mar	Mar
<i>Amaranthus</i> (<i>Amaranthus caudatus</i> L.)	Tender	Mar 30	Sept	Mar 15-30	July	Feb 1-Mar 11	June
Asters (<i>Callistephus chinensis</i> (L.) Nees)	Tender	Mar 15	July	Feb 15-28	June	July-Aug, Mar 1-15	First Frost
Baby's Breath (<i>Gypsophila paniculata</i> L.)	Hardy	Feb 15-Mar 15	June	Feb-Mar	June	Oct-Feb	July
Balsam (<i>Impatiens balsamina</i> L.)	Tender	Mar 15-30	Aug	Mar 1-30	July	Aug-Dec	May-June
Begonia, tuberous (<i>Begonia tuberhybrida</i> Voss)	Tender	Mar 1-15	June	Feb 15-28	May	Mar 1-30	June-July
Begonia, wax (<i>Begonia semperflorens cultorum</i> Hort.)	Tender	Mar 15-30	Sept-Oct	Feb 15-28	Sept	Oct-Jan	Apr-May
Browallia (<i>Browallia speciosa</i> Hook.)	Hardy	Mar 1-15	Aug	Feb 15-28	Aug	Sept-Nov	Aug
Calendula (<i>Calendula officinalis</i> L.)	Hardy	Feb-Mar	June	Nov-Feb	June	Oct-Feb	July
Carnation (<i>Dianthus chinensis</i>)	Hardy	Nov-Feb 28	June	Nov-Feb 28	May	Nov-Feb	May
Celosia (<i>Celosia argentea</i> L.)	Tender	Mar 15-July	Seed set	Mar-July	Seed set	Oct-Jan 15	Apr
Coleus (<i>Coleus hybridus</i> Voss.)	Tender	Apr-Aug	Oct	Apr-Aug	Oct-Nov	Feb-Sept	Seed set
Cosmos (<i>Cosmos bipinnatus</i> Cav.)	Tender	Mar 15	Aug	Mar	Aug	Mar-Sept	First Frost
Crossandra (<i>Crossandra infundibuliformis</i> (L.) Nees)	Tender	May-July	Oct	Apr-July	Oct	Mar	July
Dahlia (<i>Dahlia pinnata</i> Cav.)	Tender	Mar 15-30	Aug	Mar 1-15	Aug	Mar-Aug	Nov
Foxglove (<i>Digitalis purpurea</i> L.)	Hardy	Sept-Dec	July	Sept-Oct	July	Sept-Dec	July
Dusty miller (<i>Senecio cineraria</i> DC)	Tender	Feb-Apr	Sept	Feb-Apr	Aug	-Not Recommended-	
Exacum (<i>Exacum affine</i> Balf. f.)	Tender	Mar-July	when overgrown	Mar-July	when overgrown	Oct-Mar	Aug
Gaillardia (<i>Gaillardia x grandiflora</i> Van Houtte)	Semi-Hardy	Mar-May	Aug	Mar-May	Aug	Feb-Oct	when overgrown
Gazania (<i>Gazania ringens</i> (L.) Gaenta)	Semi-Hardy	Mar-May	Nov	Feb 15-May	Nov	Oct-May	Aug
Geranium (<i>Pelargonium x hortorum</i> L. H. Bailey)	Tender	Mar-Apr	July	Feb-Mar	July	Nov-May	Nov
Hollyhock (<i>Althea rosea</i> L.)	Tender	Mar 15-June	First Frost	Feb 15-July	First Frost	Oct-Mar	June
Impatiens (<i>Impatiens wallerana</i> Hook. f.)	Tender	Mar 15-July	First Frost	Mar 1-July	First Frost	Aug-Sept	First Frost
Kalanchoe (<i>Kalanchoe blossfeldiana</i> Poelln)	Tender	Apr-July	First Frost	Apr-Sept	First Frost	Sept-June	First Frost
Lobelia (<i>Lobelia erinus</i> L.)	Tender	Mar 15-Apr	Aug	Feb 15-Apr	Aug	Sept-Dec	First Frost
Marquerite daisy (<i>Chrysanthemum frutescens</i> L.)	Tender	Feb 15-Apr	June-July	Feb-Apr	June-July	Sept-Feb	July
Marigold (<i>Tagetes</i> spp. L.)	Tender	Mar 15-May	3-4 mo after planting	Mar-Aug	3-4 mo after planting	Oct-Feb	June
Mums (<i>Chrysanthemum x morifolium</i> Ramat. L.)	Hardy	June-July	Apr	Jun-July	Apr	Feb-Dec	3-4 mo after planting
Nicotiana (<i>Nicotiana grandiflora</i>)	Tender	mar 15-july	Aug-Sept	Mar-July	Aug-Sept	Oct-May	Aug
Ornamental pepper (<i>Solanum pseudo capsicum</i> L.)	Tender	Mar-July	Oct	Mar-July	Oct	Nov-May	Nov
Pansy (<i>Viola wittrockiana</i> Gams.)	Hardy	Oct-Feb	June	Oct-Feb	May	Mar-Aug	Nov
Penta (<i>Penta lanceolata</i> Forssk.)	Tender	Mar-May	Leaf Disease	Mar-May	Leaf Disease	Oct-Jan	Apr
Periwinkle (<i>Catharanthus roseus</i> L.)	Tender	Mar-July	When undesired	Feb 15-July	When undesired	all year	Leaf Disease
Petunia (<i>Petunia x hybrida</i> Hort. Vilm)	Hardy	Oct-Feb	May-June	Oct-Feb	June	all year	When undesired
Phlox (<i>Phlox drummondii</i> Hook.)	Hardy	Mar-Apr	Aug	Feb-Apr	Aug	Sept-Feb	May
Rose moss (<i>Portulaca grandiflora</i> Hook.)	Tender	Apr-July	First Frost	Apr-July	First Frost	Oct-Mar	July
Rudbeckia (<i>Rudbeckia hirta</i> L.)	Hardy	Mar-Apr	Aug	Mar-Apr	Aug	Mar-Aug	First Frost
Salvia (<i>Salvia</i> spp. L.)	Tender	Mar 15-Aug	Deteriorated	Mar 1-Aug	Deteriorated	Feb-Mar	July
Shasta daisy (<i>Chrysanthemum maximum</i> Ramond, not Hort.)	Hardy	Oct-Dec	July	Oct-Dec	July	Feb 15-Dec	Deteriorated
Snapdragon (<i>Antirrhinum majus</i> L.)	Hardy	Oct-Feb	June	Oct-Feb	May	-Not Recommended-	
Statice (<i>Limonium sinuatum</i> (L.) Mill.)	Hardy	Feb 15	June	Dec-Jan	June	Oct-Feb	Apr-May
Strawflower (<i>Helichrysum bracteatum</i> (Ventem) Andr.)	Tender	Mar 15	Aug	Feb	July	Sept-Jan	May
Sweet Williams (<i>Dianthus barbatus</i> L.)	Hardy	Mar-Apr	Aug	Mar-Apr	Aug	Nov-Feb	June
Thunbergia (<i>Thunbergia alata</i> Bojck)	Tender	Apr-May	First Frost	Mar-May	First Frost	Oct-Mar	July
Torenia (<i>Torenia fournieri</i> Linden Ex. E. Fourn.)	Tender	Mar 15-June	Leaf yellow	Mar 1-June	Leaf yellow	Feb-Apr	First Frost
Verbena (<i>Verbena x hybrida</i> Voss.)	Hardy	Mar-May	When undesired	Feb 15-May	When undesired	Oct-Apr	When undesired
Zinnia (<i>Zinnia elegans</i> Jacq.)	Tender	Mar-Apr	Leaf disease	Feb-Mar	Leaf disease	Oct-Feb	Leaf disease
				Aug-Sept			

⁷Several plants included are perennials but can be grown as annuals.

nuals that have proven to be adaptable to Florida's growing conditions.

Fertilization

Florida's sandy soils, although suitable for growing annuals, usually have inadequate fertility levels. Hence biweekly applications of 1 lb./100 ft² of 6-6-6 or 8-8-8 fertilizer will help to maintain desired levels of fertility. If this cannot be done, the annuals should have at least a monthly application of fertilizer (2 lb./100 ft² of a 6-6-6 or 8-8-8). Repeated applications of fertilizers are encouraged during the rapid growing stage of plants, especially during the season when frequent heavy rains are experienced, or if overhead irrigation is used. Application rates can be reduced during the colder season when heavy rains become less of a problem. In the past few years, slow release fertilizers have been developed for use by home gardeners, and although these fertilizers are more expensive, they fulfill a need and help by reducing the frequency of application. If these slow release materials are used, then one application prior to or at planting (as recommended by the manufacturer) should be adequate to carry plants through one growing period (3-4 months). Growing annuals in Florida's sandy soils is similar to growing plants in sand or gravel culture, and excessive application of fertilizers or lack thereof results in less than desirable plants and reduces the aesthetic appeal. For the most part, mistakes made in this regard are much more pronounced than when plants are grown in loamy soils.

Irrigation

Annuals are often irrigated by an overhead system which irrigates the lawn and the landscape plants at the same time. This is rather unfortunate since overhead irrigation can be detrimental to a majority of annuals (i.e., geraniums, celosias, marigolds, gerberas, verbenas, petunias, phlox, portulacas, cannas, snapdragons, strawflowers, and pentas). During the fall and spring season when the weather is predominantly cool with minimal rainfall, the majority of annuals perform at their best, especially when irrigated by means other than overhead. It is worth the effort to install a simple tube or drip irrigation system where only the soil or the lower leaves of the plants are wetted and flowers are not disturbed by splashing water from the irrigation system. Some annuals such as begonias, pansies, coleus, caladiums, impatiens, and New

Guinea impatiens will tolerate overhead irrigation, but the majority of annuals do better if they are not irrigated in this manner.

Cultivars

The subject of which varieties of annuals to use is another important aspect to growing in Florida. Industry annually selects new cultivars and introduces them into the trade. Those that have won national awards and acclaim are widely advertised to induce consumers to use them. Unfortunately, all of these are tested and evaluated in areas of the United States where environmental conditions are different from those of Florida. No other area in the U.S. resembles or even comes close to Florida in terms of climate and soil. Because of this, only the varieties offered by Florida growers which have been proven to be winners when grown in Florida should be used.

The mature height of specific cultivars also needs to be given serious consideration. Near beach front areas, for example, where plants are often grown without wind protection, annuals in the 12- to 16-inch height range should be selected since they are able to tolerate prevailing high winds. When plants are grown in protected areas, plant height is not a limiting factor, and annuals can be selected on other criteria. Also, due to the sandy nature of our soils, compact, dwarf annuals usually will not tolerate the heavy rains where the constant beating of loose sand particles on the lower leaves reduces the plant's visual appeal. Generally, the best cultivar selections of dwarf annuals are those plants that reach 12 inches at maturity. Other aspects of cultivar selection include tolerance to salt, salt spray, and poor quality irrigation water. At the present time, there is only a limited amount of information available on the sensitivity of various annuals to these factors.

Low Maintenance Annuals

There are some perennials that can be grown as annuals with somewhat less maintenance than true annuals. These perennials are those that can be classified as the true tropicals and can be grown in late spring, summer and early fall without being replaced at the start of a new season. In addition, these plants are more tolerant to rain. Examples of low maintenance annuals and plants that may be treated as annuals are caladiums, coleus, impatiens, wax begonias, golden shrimp plant, crossandras, and torenias. The choices are limited, but they are all readily available.