

**Crop: Caladium**  
**Scientific Name: *Caladium bicolor* (Araceae)**

**I. Introduction**

- A. The caladium originated in the humid, tropical area of Peru and the Amazon River district of Brazil.
- B. Potted Caladium plants are becoming more popular with the northern customer.
- C. The caladium is often a lawn and garden specimen in the south. Environmental conditions limit northern production to potted plants mainly for Easter and Mother's Day.

**II. Cultivars, Clones, Breeding, Development**

- A. Two species are in production: *C. bicolor* (Fancy leaf) and *C. picturatum* (strap or Lance leaf). *C. picturatum* has narrower leaves, can tolerate higher sunlight intensities and is generally shorter than *C. bicolor* varieties.
- B. Production of *C. bicolor* is much greater than *C. picturatum*.
- C. Many varieties of caladium are available. The following is a list of some good varieties.
  - 1. *C. bicolor*
    - a. White
      - (1) 'Candidum'. White leaf with green netted veins, narrow green border. Medium height the most important cultivar.
      - (2) 'Candidum Junior'. White leaf with green midribs - shorter than 'Candidum'.
      - (3) 'White Christmas'. White leaf with more prominent green midribs than 'Candidum'. Medium height.
      - (4) 'Aaron'. White leaf changing to light green with a dark

green border. The white midribs extend to the margin.  
Tall.

- (5) 'June Bride'. White with thin green border and almost translucent.
- (6) 'Mrs. F.M. Joyner'. White with pink hue and scarlet midrib.

b. Pink

- (1) 'Carolyn Whorton'. Coral-rose pink with darker veins and an irregular green border. Tall.
- (2) 'Fanny Munson'. Bright pink with darker veins, may turn greener with maturity-medium. Good in sun.
- (3) 'Pink Cloud'. First, leaves with wide green border which changes to a mottled pink with maturity. Tall.
- (4) 'Dr. Grover'. Transparent pink with dark green border and bright red veins.
- (5) 'Lord Derby'. Transparent rose, dark ribs and green border.
- (6) 'Pink Beauty'. Pink leaves with green border.

c. Red

- (1) 'Poecile Anglais'. Centers are deep crimson with a metallic green margin. Leaves are waxy and wavy. Medium height.
- (2) 'Freida Hemple'. Red heart shaped leaves with a thin green margin. Bushy and dwarf. All purpose. Good in sun.
- (3) 'Postman Joyner'. Dark red centers, glossy with a wide green border. Bushy. Medium height.
- (4) 'Ithacapus'. Deep red with bright red spots.

- (5) 'Crimson Wave'. Crimson red with dark green border.
  - (6) 'Fire Chief'. Crimson heart, green border and green splotches.
- d. Bronze
- (1) 'Mrs. Arno Nethling'. Mostly white leaf turning bronzy and pinkish with a narrow green border and bright red midribs. Medium height.
  - (2) 'Texas Beauty'. Bronze green leaf spotted with heavy pink zonations. Dwarf.

### III. Flower Induction Requirements

- A. Caladiums are produced for the colorful foliage and flower induction is not a concern in commercial production.

### IV. Environmental Requirements

#### A. Light

1. Each cultivar has its own optimum light intensity. However, 5,000 foot candles ( $1,000 \mu\text{mol s}^{-1}\text{m}^{-2}$ ) is the average.
2. Conover and Poole (1973), found that 'Candidum' grown under 5,000 foot-candles (60% shade in Florida) and 7,500 foot-candles (40% shade) produced the highest grade plants.
3. Insufficient light decreases leaf size, plant height and ultimately grade.
4. Excessive sunlight is more detrimental than low light because it reduces coloration (the result of chlorophyll covering other pigments), stunts plants, shortens leaf length, and greatly reduces quality.

#### B. Temperature

##### 1. General

- a. The critical temperature to remember is  $21^{\circ}\text{C}$  ( $70^{\circ}\text{F}$ ). Forcing

below this temperature delays shoot emergence and greatly slows growth.

2. Tuber Storage

- a. Tubers should always be stored at temperatures above 21°C (70°F). Fastest sprouting occurs when stored at 27-29°C (81-85°F) and at 90% relative humidity.
- b. Marousky and Raulston (1974) found that tubers stored at 32°C (90°F) for seven weeks sprouted earlier, while tubers stored at 4°C (40°F) and 10°C (50°F) had chilling injury and failed to grow upon planting.

3. Forcing

- a. Forcing temperatures from planting until the first leaf has expanded should be maintained at 27-32°C (80-90°F).
- b. Temperatures can be raised to 32°C (90°F) during forcing to increase top growth, but such temperatures reduce root growth which can result in permanent damage to plants during periods of water stress.
- c. Marousky and Raulston (1974) found 27°C (80°F) to be optimal during forcing.
- d. After leaf out, temperatures can be lowered to 21°C (70°F).
- e. Plant outdoors when the temperature is above 18°C (65°F).

C. Water

1. Plants never should be allowed to wilt as irreversible damage is likely to occur.
2. Good drainage is necessary to prevent tuber rot and decay.
3. Waterlogging should be avoided to prevent rotting.
4. Nutrients are easily leached from the media by the large amount of water required.

## D. Nutrition

1. Plants should be fertilized regularly especially if tubers are scooped or inverted when planted.
2. Leaf size is not influenced by fertilizer rate.
3. Conover and Poole (1975) recommend 6 kg Osmocote (14-14-14) per cubic meter of medium (6 oz/ft<sup>3</sup>) or 1 teaspoon per 15 cm (6 inch) pot.
4. If Osmocote is not used, feed weekly with 100-200 nitrogen and potassium.
5. Excess nitrogen may cause undesirable green leaves (over production of chlorophyll).

## E. Gases

1. Relative humidity during storage has been shown to influence future growth of the plant.
2. High relative humidity (90% or more) during tuber storage is critical to reduce tuber weight loss. Faster sprouting and larger number of leaves per tuber will result after storage at proper environmental conditions.

## V. Cultivation

### A. Propagation

1. Propagation of caladium is primarily by tubers but plants are available by seed. Production of seed is relatively new and is done either directly from seed or by purchasing seedlings.
2. The fleshy tuber (underground stem) is cut into pieces and replanted (much like a potato) in the spring.
3. Most propagation is in Florida and California.
4. In field production of tubers, plants mature in August. They are dug and cured in open containers to dry. Tubers then spend 6 weeks in a

forced air building to cure. After curing, tubers are often dipped in or dusted with a fungicide solution.

5. Tubers are graded according to size. The number 1 size is 2.5-3.8 cm (1 1/2 - 2 1/2 inches) in diameter, the Jumbo size is 5-6.3 cm (2 1/2 - 3 1/2 inches) in diameter and the Mammoth size is 9 cm (3 1/2 inches) or larger in diameter.
6. During curing, storage, and handling, the environment should be controlled to prevent chilling injury, drying out, fresh weight loss, fungal growth, etc.
7. New crop tubers are usually available in December but with proper storing can become available virtually anytime for planting.

**B. Media and Planting**

1. Tubers are graded by size.

GRADE	SIZE
Super Mammoth	4.5 inches 11.5 cm or greater
Mammoth	4.5 - 3.5 inches 11.5 - 9.0 cm
Jumbo	3.5 - 2.5 inches 9.0 - 6.5 cm
#1	2.5 - 1.5 inches 6.5 - 4.0 cm
#2	1.5 - 1.0 inches 4.0 - 2.0 cm

2. Tubers can be stored in peat beds (much like tuberous begonias), Jiffy pots, or may be planted directly into the finishing pot.
3. Planting medium should be high in organic material (peat) and with good drainage.

4. Various techniques are employed to increase the number of shoots from each tuber.
  - a. Large tubers can be cut like a pie, allowed to suberized, be placed back together and then planted.
  - b. Most tubers have a main "eye". When removed, apical dominance is reduced and more shoots develop. Removal is accomplished by "scooping" the bud out before planting or upon sprouting of the primary "eye".
  - c. Tubers can be planted upside down. This produces more, even aged sprouts. Height is reduced but a bushier, fuller plant is obtained. Production time, however, is longer.
  - d. Tubers can be soaked in 2000 ppm ethephon for 2 hours to increase the number of shoots from each tuber. Results are variable and cultivar dependent.
  - e. Several, smaller sized tubers can be planted to get in a pot to yield fuller pots which are salable at an earlier date.
5. Tubers should be planted 2-3 cm (1 inch) deep.
6. The number of tubers per pot is determined by the pot size and desired final plant size. Usually 1 mammoth or jumbo tuber, 3 #1's, or 4-5 #2's are planted per 6 inch pot. One #1 or 2 #2's can also be planted per 4 inch pot.

C. Spacing

1. Small plants can be spaced pot to pot. When plants get larger, pots should be spaced to allow good air movement.

D. Support

1. None

E. Pinching

1. Only as mentioned in V.B.3.b. above for apical bud removal.

F. Disbudding

1. None

#### G. Growth Regulators

1. Soaking tubers in 2,000 ppm Ethephon for 2 hours has no effect on forcing time but results in more uniform plants with up to twice the number of shoots. Results however, are variable and cultivar dependent.

### VI. Problems

#### A. Insects

1. Caladiums do not, in general, have serious insect pest problems. However, root aphids and mealy bugs may feed on tubers during storage. Mites, aphids, mealy bugs, white flies, red spider mites, and lepidopterous larvae may feed on the leaves.

#### B. Diseases

1. Tubers can be attacked by many pathogens. They include *Fusarium* spp., *Rhizoctonia*, *Sclerotium*, *Erwinia* and other decay type fungi.
2. A fungicide dip at 50°C (122°F) for 10-30 minutes prior to planting controls most of the diseases mentioned above.
3. The tubers should be inspected upon arrival. Tubers with discolored areas or white chalky substances on the surface should be discarded. Removal of infected areas is ineffective as mycelial growth penetrates throughout the tuber.
4. Dasheen Mosaic Virus (DMV) has been found in many caladium varieties. A DMV infected plant may show no symptoms but has 30% to 50% lower yield.

- C. Many root knot nematodes have been found associated with caladium in Florida. Symptoms are discolored, decayed, galled or deformed roots and stunted growth. Hot water treatments and chemicals yield good control.



## VI. Scheduling

Growing Time For Cultural Segment	Cultural Procedures	Night Temperature
	Plant	27-32°C (80-90°F)
1-8 weeks	↓	
	Sprouted	21-27°C (70-80°F)
6-8 weeks	↓	
	Sales	