

Crop: Fuchsia
Fuchsia x hybrida (Onagraceae)

I. Introduction

- A. Fuchsia or Ladies' eardrops is grown for its showy pendulous flowers which vary in color from solid to combinations of white, red, pink, or purple.
- B. Fuchsias are produced and marketed as hanging baskets, potted plants, bedding plants or as novelties in a tree-like shape. The major production item is hanging baskets.

II. Species, Cultivars, Breeding, Development

- A. The genus *Fuchsia* consists of about 100 species of woody shrubs or trees.
- B. *F. x hybrida* is the result of a cross between *F. fulgens* and *F. magellanica*.
 - 1. *F. fulgens* is a 120-180 cm (4-6 feet) tall shrub which originated in Mexico.
 - 2. *F. magellanica* originated from Chile and Argentina and is a shrub that may grow up to 350 cm (12 feet) high.
- C. Many varieties are available with upright or trailing growth habits.
 - 1. 'Beacon', 'Black Prince' and 'Winston Churchill' are examples of cultivars with upright growth.
 - 2. Cultivars with trailing growth are 'Dark Eyes', 'Starry Trail' and 'Swingtime'.

III. Flower Induction Requirements

- A. Most fuchsia cultivars are long day plants and initiate flowers under photoperiods of 12 hours or longer. A few cultivars are day neutral. Eventually flowering will occur under continuous short days in a greenhouse environment in these cultivars.

- B. Most varieties can be induced to flower when 2 leaf pairs are fully developed.
- C. The number of long days required to initiate a flower vary amongst the cultivars from 5 to 25 days. Since flowers develop from newly formed lateral buds, continuous long days under natural short day conditions are necessary for continuous flowering.
- D. The terminal bud remains vegetative in any photoperiod.
- E. Light intensity influences the response to photoperiod. At intensities below 475 foot-candles ($100 \mu\text{mol s}^{-1}\text{m}^{-2}$) the plant may be day neutral. For optimum flower induction by long days, 8 hours at 900 foot-candles ($180 \mu\text{mol s}^{-1}\text{m}^{-2}$) is required.

IV. Environmental Requirements

A. Light

1. Long days for flower initiation under natural short days can be provided by day extension or night interruptions (from 10 p.m. to 2 a.m. with incandescent lamps at 10-20 foot-candles).
2. For optimum number of flowers, an intensity of 900 foot-candles for 8 hours a day ($180 \mu\text{mol s}^{-1}\text{m}^{-2}$) is required.
3. Shading is required during spring and summer to facilitate temperature control.

B. Temperature

1. Optimum vegetative growth occurs at 20-26°C (68-75°F).
2. The growth is poor below 15°C (59°F) or above 30°C (80°F).
3. Flower initiation occurs at similar rate under temperatures from 15°C (59°F) to 26°C (79°F). Although, the most suitable temperature is 21-23°C (70-73°F).
4. Optimum temperature for flower development is 23-26°C (73-79°F).

C. Watering

1. Plants should be kept evenly moist. Special attention needs to be directed towards watering during periods of stress, such as low light conditions or high temperatures.

D. Nutrition

1. Fuchsias have high fertilizer requirements. A constant liquid feed of 250 to 300 ppm nitrogen and potassium give good result in soil-less media.

V. Cultivation

A. Propagation

1. Cuttings from vegetative stock plants root better than cuttings from reproductive stock plants.
2. Maintain the stock plants vegetative by short days (less than 12 hour light) and keep the temperature below 21°C (70°F).
3. Take 7-8 cm (3 inch) long terminal cuttings with 2-3 pairs of mature leaves and stick in a well drained medium with pH 6-6.5.
4. During rooting, maintain 20-22°C (68-70°F) media temperature and short days.
5. Rooting takes about 3 weeks.

B. Planting and Media

1. Media should retain moisture but drain well.
2. Upright varieties may be planted with 1 cutting in 10-13 cm (4-5 inch) pots or vigorous growing varieties in 15 cm (6 inch) pots.
3. Three to five cuttings are used for 25 cm (10 inch) hanging baskets.

C. Spacing

1. The plants can initially be grown pot to pot. Suitable final spacing of 4 inch pots is 2-2.5 plants per ft².
2. Fuchsia hanging baskets are often placed above the traditional production area where the light conditions are good.

D. Pinching

1. Plants are pinched to 4-5 leaf pairs by removing 1-2 cm (1/2 - 1 inch) of stem tissue.
2. Fuchsia produced as potted plants receive 1 pinch. Large hanging baskets may require pinching several times.
3. For Mother's day sales, pinch 8-9 weeks before sales. For May 30 sales, pinch 7-8 weeks before sale.

E. Support

1. Not needed in hanging baskets, as plants are trailing.
2. Depending on variety, staking may be required in potted plant production.

F. Growth Regulators

1. In Europe, the most commonly used growth regulator for fuchsia height control is daminozide (B-9) at a rate of 3,000 - 4,000 ppm.
 - a. The first B-9 application is made at an early growth stage. When new shoots first can be seen on unpinched plants or when the shoots are 1-2 cm (1/2-1 inch) on pinched plants.
 - b. A second B-9 treatment is required 10-14 days after the first treatment.
2. Ancymidol (A-Rest) as a foliar spray at 25-50 ppm or a drench at 0.25-0.5 mg per 15 cm (6 inch) pot will control height. In addition, more flowers may develop.

3. Cycocel can be used as a spray or a drench. The time of application is similar to the suggested plant stages for B-9 applications. Recommended spray rate of cycocel is 3,000-4,000 ppm.
4. Ethephon (Florel) gives increased branching and flowering shoots, smaller leaves, shorter internodes, may cause flower abortion and eliminates the need for pinching. Apply as foliar spray at 500 ppm when 4-5 leaf pairs have developed.
5. The more recently introduced growth regulator Bonzi (Paclobutrazol) is also effective as a spray at 25-40 ppm.
6. Gibberellic acid has been used to hasten the production of pot-grown tree fuchsias. Several sprays at 200-400 ppm to young, unpinched plants decrease production time by promoting elongation. Staking is necessary.

VI. Problems

A. Insects

1. White fly is the most common pest on fuchsia.
2. Aphids cause curling of the leaves and can seriously damage the crop.
3. Thrips, mealybugs, spider mites and scales can also attack fuchsia.

B. Diseases

1. Fuchsia rust can cause serious loss during propagation and production. Some varieties are resistant to rust.
2. Good air circulation, adequate spacing and good sanitation are practices to observe for preventive control of *Botrytis* blight (*Botrytis cinerea*).
3. Root rot (*Pythium* spp.) can be a problem when the media is kept too wet.
4. *Verticillium* wilt may also develop if the plants are kept too wet.

VII. Harvesting, Handling, and Marketing

- A. The plants are sold in full bloom.

VIII. Scheduling

Growing Time for Cultural Segment	Cultural Procedure	Temperature
	Propagate Cutting	20-21°C (68-70°F)
4-6 weeks	↓ V	
	Transplant and pinch	20-21°C (68-70°F)
1-4 weeks	↓ V	
	Begin long days	Day: 21°C (70°F) Night: 18°C (64°F)
8-9 weeks	↓ V	
	Flower	