Section 11

Crossandra

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The crossandra, *Crossandra infundibuliformis* (L.) Nees., is appropriately named the firecracker or flame flower due to its short, dense spikes of orange, yellow, red, salmon-pink, or pink flowers. The individual flowers are a corolla composed of a slender tube which flares and forms a 1.5-inch-wide lip with five rounded lobes. Plants can grow to 3 feet tall. Crossandra is also grown for its smooth, dark green leaves (Figure 11-1). The crossandra is in the *Acanthaceae* Juss. family and comes from southern India and Ceylon.

Although it's a minor crop, crossandra is an excellent plant to provide variety for major spring holidays, and for large dish gardens and baskets. While it is mainly used as a 4- to 5-inch pot plant, it can also be grown in larger pot sizes and as a bedding plant in the southern United States. Asexually propagated cultivars include the Florida series, which is touted as being more cold tolerant than other varieties and is available in four colors: red, red-orange, yellow, and orange. 'Tropic Flame' is a seed-propagated cultivar with orange flowers.

Seed packets contain 4,000 seeds per ounce (140 seeds/gram). Seeds should be lightly covered with 0.125-inch of media. Germination is slow and sporadic even at 80 to 85°F; seedlings emerge over a three- to four-week period. Germination can commence within 10 to 14 days at the optimum day/night temperatures of 85/70°F.

Typically, growers prefer to buy plugs or liners that have been propagated asexually. Tip cuttings from vegetative shoots root in three to four weeks with a rooting hormone when propagated directly into plugs or liners. The media temperature should be 75°F, with day/night air temperatures of 85/70°F. Light intensity is reduced to 1,500 to 1,800 footcandles. Propagation is easier and faster under opaque white plastic tents in the summer or clear plastic in the winter.

Once rooted, high nutrition, warm temperatures, and long summer days are conducive to flowering. In Danish greenhouses, flowering occurs naturally from March to September. Regardless of the photoperiod, flowering generally occurs 100 to 105 days after liners are planted into final pot sizes.

Figure 11-1. Crossandra.

In the United States, temperature recommendations are 78 to 82°F during the day and 70°F at night for six weeks after propagation, then 65°F nights. In Denmark, the most rapid flowering occurs at 75°F; however, when light intensities are low, high plant quality occurs at 66/55°F day/night air temperatures with a media temperature of 72°F. Plants will die at constant temperatures of 45 to 55°F after six weeks.

Recommended light intensity during production is 3,000 to 3,500 footcandles. Growth is adequate between 2,600 and 3,000 footcandles. Below 1,800 footcandles, growth is slow. During summer, 30 percent shade is recommended.

Plants should not be overwatered, because the roots are susceptible to *Rhizoctonia*. However, lack of water can cause the leaves to burn. Humidity should be 70 percent to 80 percent during early growth or for the first six weeks, then reduced to 30 percent to 50 percent for later growth.

A high nutrient regime is used to stimulate vegetative growth when cuttings root. A constant liquid fertilizer of 200 ppm N from a complete fertilizer is recommended. Magnesium, iron, and manganese are critical nutrients and should not be overlooked.

Pasteurized media is essential for propagation and for production. A medium with good water-holding capacity, good drainage, and a pH of 6.2 to 7.0 is acceptable.

Sprays of B-Nine (daminozide) or A-Rest (ancymidol) in recirculating nutrient solution will reduce internode elongation and increase branching without flowering delay. The most commonly-used plant growth retardant is B-Nine applied as a 2,500-ppm spray two weeks after plants have been pinched or when the new axillary shoots are 1.5 to 2 inches long. Retardants may not be required with high summer light levels.

If commercially propagated as liners, crossandra are held pot to pot until shipped, after which they are transplanted into 4-, 4.5-, 6-, or 8-inch pots. Spacing can be done as needed or after five or six weeks, before leaves overlap. Final spacing should be 6.5 by 7, 7 by 7, 9 by 9, or 12 by 12 inches for 4-, 4.5-, 6- or 8-inch pots, respectively. One plant per pot is used for the smaller pots, two or three plants per 6-inch pot, and three plants per pot for the larger pots.

Plants should be pinched three weeks after final potting, allowing five to six leaves to remain on the plant. To ensure plant shoot uniformity, one should start with uniform cuttings (length and node number) and leave uniform node numbers after pinching. No disbudding is required.

Only 12 to 14 weeks are required for production from liners; producing liners from rooted cuttings will add an extra six to seven weeks (Table 11-1). Production from seed has the disadvantage of requiring up to 31 weeks to obtain a marketable plant (Table 11-2, page 58).

Whiteflies, spider mites, and aphids can be problems in production. *Rhizoctonia* and *Thielaviopsis* (black root rot) can be problems during and after propagation. Liners purchased from specialists should not be planted too deep, because *Rhizoctonia* and *Pythium* can develop.

Cold stress occurs at temperatures below 50°F, and plants will die from injury. Lack of flowering can occur if light levels fall below 1,800 footcandles.

Crossandra must be shipped and stored at 50 to 55°F. At low temperatures of 40°F, the leaves turn black; however, shipping temperatures above 65°F also can cause damage. A crossandra in flower can last up to a month with adequate light of 1,000 footcandles and care. Crossandra is sensitive to ethylene, and flower buds abscise. Research shows that STS sprays of 0.4 to 0.5 milliMolar can be used to extend longevity of the flowers. This has not been cleared for this use in the United States.

Table 11-1. Sample schedule for production of *Crossandra* as a potted flowering plant from cuttings.

Cultural Step	Production Time (weeks)	Temperature (°F)
Root cutting in plugs or 2-inch pots	3-4	Day: 85 Night: 70 Medium: 72
Growing on	3	Night: 70-75
Transplant to final pot	3	Night: 70-75
Pinch	3-4	Night: 72
B-Nine application	2-3	Night: 70
Flowering Finish	7	Night: 70
Total time	18-21	

Table 11-2. Sample schedule for production of Crossandra as a potted flowering plant from seed.

Cultural Step	Production Time (weeks)	Temperature (°F)
Germinate seed	2-4	Day: 85 Night: 70 Medium: 72
Transplant to plugs or 2-inch pots	3	Night: 70-75
Growing on	10	Night: 70-75
Transplant to final pot	3-4	Night: 72
Pinch	2-3	Night: 72
B-Nine application	7	Night: 70
Total time	27-31	

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