

**Cultural Information for:** Celosia Dragon's Breath™ Red Annual  
**Common Name:** Celosia  
**Botanical Name:** Celosia argentea plumosa  
**Seed Count:** 37,000-48,000/ounce 1,300-1,700/gram  
**Optimum Germination Temperature:** 70-75°F / 21-24°C  
**Optimum Growing Temperature:** 65-75°F / 18-24°C  
**Optimum pH:** 5.8 – 6.2  
**EC – Plug:** 0.26 – 0.75 mmhos/cm (1:2) / 0.76 – 2.0 (SME)  
**EC – Finishing:** 0.76 – 1.25 mmhos/cm (1:2) / 2.1 – 3.5 (SME)

**Plug Stage – 5 weeks (288 / 12 x 24 tray)**

**Stage 1 (days 1-10)** - Sow seeds in a well-drained soil mix and cover lightly with medium vermiculite or media. Provide a soil temperature of 77°F/25°C. Germination occurs in 7 to 10 days. Since the root system is very delicate, sowing directly into plug cells is recommended over sowing into open flats.

**Stage 2 (days 11-20)** - After seedlings emerge, place flats in a well-ventilated area and reduce the temperature to 65-70°F/18-21°C during the day and 61-65°F/16-18°C at night. Fertilize plugs with 50-100 ppm N. Over watering will promote disease; especially damping off and botrytis.

**NOTE:** Celosia requires long day conditions (> 14 hours) in the plug stage to maintain vegetative growth and avoid premature flower budding.

**Stage 3 (days 21-28)** - Maintain good air circulation. Celosia is sensitive to day length and any type of stress; like water, low temperature or root banding. Avoid stressing the plugs with low fertilizer or moisture, which promotes premature budding and stunted growth later in production.

**Stage 4 (day 29-35)** - Plugs are ready for transplanting. It is best to handle Celosia by the leaves when transplanting to ensure that no damage occurs to the delicate root system. Also, avoid deep transplanting to prevent rhizoctonia. Do not delay transplanting. Holding the plugs too long in the plug tray will stunt future development of the plant and might cause premature budding.

**Finishing**

**Media:** Select a well-drained media with little or no starter charge.

**Temperature:** Maintain the plants between 65-75°F/18-24°C.

**Light:** High light, full sun is best.

**Growth Regulator:** A-Rest, B-Nine, Bonzi, Cycocel, Sumagic and Topflor are effective. Do not pinch.

**Fertilization:** To promote bright red foliage, avoid excess nitrogen and phosphorus which promote green leaves; especially when planted in the landscape. Apply 100 ppm N biweekly for strong growth. *Adequate potassium is necessary since a deficiency results in weaker stems and abnormal shaped flowers.* Therefore, a high potassium formulation, such as 15-3-20 or 15-5-30, works well and is highly recommended. Alternate with 15-0-15 or 15-5-15, if needed, to supply calcium and magnesium.

**Photoperiod:** Dragon's Breath™ Red is an obligate short-day plant and is best sown in early April (Northern Hemisphere) under increasing day length to promote sufficient vegetative growth prior to the start of short days in mid-June. If sowing under short days, provide long day conditions (>14 hours) with either night interruption or day length extension (10 pm – 2 am) to promote vegetative growth until the desired plant height is achieved.

**Flowering for late summer/fall finish dates**

To flower under natural long-day conditions of summer (>12 hours of day-length), Dragon's Breath Celosia requires less than 11 hours of day-length. Begin short days (<11 hours) two weeks after transplanting for 21 – 28 days by black-clothing the crop. If possible, finish crop outside to lower the Average Daily Temperature. Ideal ADT range is 68 - 72°F (20 - 22°C). Provide shade at >80°F.

**Flowering:** Plants set out early in the garden with unimpeded root growth will flower in late summer as the days shorten. Container grown plants initiated with 3 weeks of short days will continue to flower in the container, even under long days, but if planted in the ground will revert to vegetative growth under long days.

**Disease/Insects:** Celosia is susceptible to botrytis, downy mildew, rhizoctonia, aphids and thrips.

**Culture Watch Points:** Boron deficiency causes deformed foliage and a witch's broom effect. Celosia is sensitive to vaporized gases of certain herbicides like methylurea, methoxy, dichlorophenyl and dichlorobenzonitrile. Avoid low temperatures (under 61°F/16°C).

**Late Spring – Summer Scheduling:**

Sow	Transplant	Container	Sell
Early April	Early May	Packs	Early June*
Early April	Early May	6 inch/15 cm	Mid-June*
Early May	Early June	10 inch/25 cm.	Late-August

\*Vegetative stage without flower formation

**Landscape:** Celosia Dragon's Breath™ Red is ideal for planting outdoors. Highly prized for its attractive red foliage from sowing through flowering. Space 16 inches/40 cm. apart. To avoid stem rot, mulch should not contact the plant stem (rhizoctonia). *Night lighting, from streetlights and parking lots, inhibits flowering. Although plants may eventually flower due to age*

*All information given is intended for general guidance only and may have to be adjusted to meet individual needs. Cultural details are based on North America conditions and Sakata cannot be held responsible for any crop damage related to the information given herein. Application of recommended growth regulators and chemicals are subject to local and state regulations. Always follow manufacturer's label instructions. Testing a few plants prior to treating the entire crop is best.*