



# Garden Mums—General Culture

*Chrysanthemum x morifolium*

Dümmen Orange provides the brightest cultivars that require less effort for growers while providing high value with various colors. Key strategies include varieties that match growers’ requirements, proper lighting, and sufficient fertilization at the correct stage. The following guide is a list of recommendations for growing high quality garden mums.



Suggested spacing recommendation

| Pot Size       | Plants Per Pot | Spacing (on center)  |
|----------------|----------------|----------------------|
| 6 in. (15 cm)  | 1              | 16-20 in. (41-51 cm) |
| 8 in. (19 cm)  | 1              | 18-24 in. (46-61 cm) |
| 10 in. (22 cm) | 1 to 3         | 22-26 in. (88-66 cm) |
| 12 in. (30 cm) | 3 to 4         | 26-30 in. (66-76 cm) |

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## STICKING

|                           |                                                                                                                    |
|---------------------------|--------------------------------------------------------------------------------------------------------------------|
| Rooting Hormone?          | Optional with 1200-1500 ppm IBA                                                                                    |
| Direct Stick Instructions | Do not stick cuttings too deep, 1"-1.5"<br>Consistency helps with overall crop performance and rooting uniformity. |
| Misting Instructions      | Keep leaves coated and turgid (without saturating the media) until callus formation                                |
| Rooting Humidity          | 100% 0-7 days, reduce to 75% by day 14                                                                             |

## PROPAGATION SIZES

Direct stick, 36, 50, 72, 84, 105, or 200

## FERTILITY

|                   |                                                                                                    |
|-------------------|----------------------------------------------------------------------------------------------------|
| Fertilizer Rate   | 50 ppm N with 17-5-17 until callus forms<br>150-300 ppm N with 17-5-17 or 20-10-20 to charge media |
| Long-Day EC Range | Moderate (0.8-1.5 mS via SME)                                                                      |
| pH Range          | 5.8-6.2 (5.3-6.6 acceptable)                                                                       |

## TEMPERATURE

|                   |                                              |
|-------------------|----------------------------------------------|
| Average Soil Temp | 70-74°F (21-23°C)                            |
| Average Air Temp  | 72-76°F (22-24°C), maintain over 68°F (20°C) |

## IRRIGATION

|                                     |                                                                                    |
|-------------------------------------|------------------------------------------------------------------------------------|
| Irrigation Frequency (after day 14) | Level 3: Avoid allowing cuttings to wilt, keep media moderately moist at all times |
|-------------------------------------|------------------------------------------------------------------------------------|

## LIGHT

|                                       |                                                                                                                                 |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Vegetative Photoperiodic Requirements | Long Day >16+ hours                                                                                                             |
| Supplemental                          | To prevent premature bud set, provide long days using a 4-hour night interruption from 10pm-2am at a minimum of 10 fc (108 lux) |
| Benefits From Shade?                  | Keep light levels below 4200 fc (45000 lux) until callus forms. Full sun conditions should persist thereafter                   |

## PINCHING

Dümmen Orange garden mums are all selected for no pinch production

## POTENTIAL DISEASES

*Pythium, Fusarium, Botrytis, Rhizoctonia, Septoria, Alternaria, powdery mildew*

## POTENTIAL PESTS

thrips, aphids, mealy bugs, mites, leafminers

## GROWTH REGULATION

No growth regulation necessary if transplanted on time.

## TIPS

Place cuttings in cooler upon arrival at 46-50°F (8-10°C).  
If nighttime temperatures fall below 68°F (20°C), apply Ethephon (3.9%) at 500 ppm once roots are about 1 inch (2.5 cm) in length (around day 10)

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## FERTILITY

Fertilizer Rate

**85-125 ppm N constant feed with 17-5-17 is recommended  
150-175 ppm N for bark based media due to increased fixation of N**

- For leaf expansion without elongation, make 1-2 applications of 300 ppm N from ammonium nitrate, potassium nitrate, calcium nitrate, or 15-0-15 \*Return to 85-125 ppm N constant feed after size increases.
- For overall plant sizing increase, make 1-2 applications of 300 ppm N from 20-10-20 \*Return to 85-125 ppm N constant feed after size increases.
- After a heavy rain, immediately recharge the soil. No need to wait for the soil to dry.
- If liquid feed isn't available, slow release can be used. Follow label instructions along with soil and water analysis. Liquid feed can be used as a supplement to slow release as needed.

Short Day EC Range

**Moderate-High (1.0-2.5 mS via SME)**

pH Range

**5.8 - 6.2 (ideal) 5.3 - 6.6 (acceptable)**

## TEMPERATURE

Day Temperature

**76-84°F (24-29°C)**

Night Temperature

**69-74°F (21-23°C)**

## IRRIGATION

Irrigation Frequency

**Level 3: Keep media moderately moist at all times**

- Avoid salt build up by always soaking pots through until they are leaching water.
- Evaluate your finish area to make sure there are no low spots where plants can sit wet to avoid root rot issues.
- Drip tape or irrigation tubes are preferred with the added benefit of preventing high winds from knocking over the pots.
- Overhead watering increases the chances of leaf-spotting foliar diseases such as bacterial leaf spot, botrytis, septoria and alternaria.

## LIGHT

Vegetative Photoperiodic Requirements

**Long Day >15+ hours (to avoid early bud set)**

Flowering Photoperiodic Requirements

**Short Day**

Supplemental

**Short days are required for bud set, only light to maintain vegetative growth**

Benefits From Shade?

**No, full sun is important to produce strong plants**

## PINCH INSTRUCTIONS

Do not pinch. Dümmen Orange garden mums are selected for a round shape without pinching in every variety.

## POTENTIAL DISEASES

*pythium, fusarium, botrytis, rhizoctonia, septoria, alternaria, powdery mildew*

## POTENTIAL PESTS

thrips, aphids, mealy bugs, mites, leafminers

## GROWTH REGULATION

- Daminozide (85%) (B-Nine®, Dazide®) or Paclobutrazol (0.4%) (Bonzi®, Piccolo®) can be used for height control if needed. Follow label for rate guidelines.
- Daminozide (85%) and paclobutrazol (0.4%) will delay flowering if applied after buds are pea-sized.
- Late season paclobutrazol (0.4%) sprays can be used to hold crops at a desired height, but with the risk of flower delay.

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TIPS

- Additional micronutrients from a balanced blend should be added to the fertilizer solution to deliver about 1 ppm Iron, 0.5 ppm Zinc, 0.25 ppm Copper, 0.25 ppm Boron, and 0.1 ppm Molybdenum.
- Heat delay can occur when daytime temperatures surpass 90°F (32°C) and/or when night temperatures surpass 77° (25°C). This is a general guideline and will differ based on cultivar and growing environment.
- In shaded production, ensure black cloth is pulled after sun is low to avoid heat buildup; evening or prior to sunrise is preferred.
- Plants not subjected to growth regulator will elongate about 1 inch (2.5 cm) per week following the start of short days. Plant height (including the height of the pot) should be about 60% of the final height at the start of short days and reproductive development.
- Early bud set can occur from several environmental impacts. Most commonly light or temperature.
- Vegetatively growing plants require a minimum of 15 hours of continuous light to avoid early bud set. Check light levels in your area when moving plants to outdoor fields to ensure you have 15+ hours of day length.
- Cool night temperatures is the most common cause of early bud set. Maintain nights >65°F (18°C) to avoid temperature induced early bud set.
- Cool night temperatures during finishing can increase color intensity.

Chances of early bud set due to environmental factors

|       | >15 hours light | <14.5 hours light |
|-------|-----------------|-------------------|
| >65°F | Low             | Moderate          |
| <65°F | Moderate        | High              |

Florel® (*Ethephon*) can be a tool to help with stretches of cool nights during vegetative growth period.

- Keep *Ethephon* solution in the acidic range (pH 4.0-4.5) to prevent chemical deactivation.

Depending on the cultivar, *Ethephon* applications alone under short days and/or low temperatures may not be adequate to prevent early bud set.

- Pre-mixed blends of GA4A7, 6-BA (Fascination®, Fresco®) can be tank-mixed at rates of 1:100 (GA4A7, 6-BA to *Ethephon*) to avoid brittle plants and overly compact plant habit.

All applications should stop 2 weeks prior to pulling shade cloth or 5-6 weeks prior to ship.

Suggested *Ethephon* (Florel®) application rates

| Temp (°F ) | Rate (ppm) | Frequency (days) | Facination®/Fresco® |
|------------|------------|------------------|---------------------|
| 65+        | 500        | 7-10             | 0                   |
| 55-64      | 50-750     | 5-7              | *                   |
| 54-        | 750-100    | 5                | *                   |

When under short days, apply *Ethephon* at higher suggested rate. Fascination®/Fresco® should be tank-mixed with *Ethephon* at a ratio of 1:100

0 = Fascination®/Fresco® application suggested, \*=Fascination®/Fresco® application necessary  
Some varieties are more sensitive to *Ethephon* at high rates