

## Pot Chrysanthemum

### Description

**Name:** Chrysanthemum

**Family:** Chrysanthemum x morifolium

**Series:** ChryDance



### Product use

**Use:** Pot plant

**Exposure:** Full sun

### Technical recommendations

The chrysanthemum are short day plants (SD) which means that the plant starts its bud/flower development as soon as the nights become longer (> 13,5h) than the day. There are two periods in the growing process:

- *Long day/vegetative stage.* This period determines the final size and diameter of the plant
- *Short day/ generative stage.* A dark period of at least 13,5h out of 24h is necessary for flower initiation.

#### **Starting from unrooted cuttings (URC)**

Stick the cuttings upon arrival. Pot mums are usually stuck directly into the final pot

General requirements for the rooting process:

- Rooting media temperature: 20-22 °C
- Rooting hormone, optional 1200-1500 ppm IBA
- Long day conditions
- From day 0 to 7<sup>th</sup> Relative humidity 90-95% and from day 8 to 13<sup>th</sup> from 90% to gradually 65%
- Shade. First week keep maximum 20-25Klux when temperature rise above 24°C. Second week the cuttings should be shaded if they are starting to wilt and temperature rise above 24-26°C.

#### **Starting from rooted cuttings (RC)**

If you receive RC:

- Make sure pot media well watered with evenly moist throughout the entire pot
- Plant RC immediately upon arrival
- Plant rooted cuttings RC deep enough to cover so the bottom 2-3 leaves with soil. The shoots emerging from the covered nodes will provide additional support to the plant.
- During the first days after planting, do not let the plants to dry out. If necessary, spray them with fresh water to prevent wilting.

#### **Cuttings per pot**

Plant the cuttings in a ring near the outside edges of the pot at slight out-ward- facing angle and space equally apart. No cuttings are need it in the center of the pot.

## Technical recommendations

Pot size cm	Number of cuttings	Vegetative period (weeks)	Spacing. Plants /m <sup>2</sup>
10 – 11	1 - 3	1 - 3	37-47
12	3	3 - 4	22-25
14	3 - 4	4 – 5	12-16
16	4 - 6	5 - 6	9-7



From the rooting period to the start of the short day, plants can be kept pot to pot.

### Pinching

Plants have to be pinched to encourage lateral branching to produce high amount of flowers. Plants are ready to pinch when the roots are reaching the bottom and sides of the pot. Under normal conditions the plants should be ready to pinch 15-25 days after sticking the URC. When pinching, remove the top 1,5-2 cm of the tip, leaving 4-7 leaves.

### Substrate

Use a well-drained, disease-free, soilless medium with a good structure and pH 5.8-6.2.

### Fertilizer

Start feeding when first roots become visible. As a general rule, use a complete balanced fertilizer 2-1-2 NPK + microelements at 0,1-1,2 gr/l, pH 5,8- 6,2 in every watering until flower buds are well developed and show the first color. Then use only clear water until the end of the crop. Monitor pH, EC and NO<sub>3</sub> of the media periodically and adjust fertilizer program accordingly.

### Temperature

After rooting, keep night temperatures 16-18°C to promote growth and day temperatures 19-22°C. During the final growing stage (2-3 weeks before sales), it is recommended to lower the night temperatures 14- 16°C and day temperatures to 16°–18°C to enhance flower color and the shelf life. A large, positive difference (DIF\*), promotes longer internodes and taller plants.

### Watering

Never allow the plants to wilt during the early stages. Provide regular watering preferably early in the morning. Media should be allowed to moderately dry between irrigations to prevent diseases and promote stronger growth. Recommended irrigation methods are drip irrigation, ebb and flow and capillary mats.

### Light levels

During propagation keep light levels < 25 Klux until callus is formed, the full sun. Low light levels promote stem stretch, soft plants and reduced plant quality.

### Photoperiod control

Long days are needed to generate vegetative growth and sufficient long days must be provided to obtain the proper finished plant size. Long days should always be provided during propagation. Pot mums generally require night lighting during the initial stage of the growing schedule. The number of long days required will depends on variety, pot size and growing conditions. Long-day conditions require a minimum of 100 lux (2.0 w/m<sup>2</sup>) of light at plant level during the middle of the night. Do not allow more than 7h of continuous darkness to occur before to or during the lighting period. As an example, the artificial long day can be supplied by lighting plants from 22:00h to–2:00h.

## Technical recommendations

Short days, minimum 13,5 h uninterrupted total darkness is needed to initiate the flowering process. From approximately September 20 until March 20, the days are naturally short enough to induce flowering. Crop scheduled to flower from mid-November until late April only require natural short days. Crops scheduled to flower from early May until early November need artificial short days to produce flower.

Tips to produce a Pot Chrysanthemum under artificial short day program:

- The short-day treatment must be done each day from the start of short days until flower color shows in the flower buds.
- Cover the plants with a blackcloth for at least 13,5 hours a day. There different options depending on the temperature and weather conditions.
  - 1/ pulling the blackcloth before the sun sets and opening after sunrise (19:00 h – 7:00 h)
  - 2/ pulling blackcloth early in the morning rises and opening late morning (5:00 h – 10:00h) when the afternoon temperatures are high. Under hot summer conditions, another option is to open the blackcloth to release heat after it is dark and close it again before sunrise.
- Light intensity under the blackout must be < 2 Lux.
- High or low t° during obscuration can influence the reaction time
- Plants can bloom under natural conditions in October if planted early enough

### Growth Control

Growth can be regulated by proper planting dates, pot size, space and water/ fertilizer management. As a growth regulator (PGR), Daminozide 85% (Dazide/Alar/B-nine) is the most commonly use. Application frequency and dose depends on variety, weather conditions, stage and growth rate. Don't start the applications too late. Applications can start before pinch or after pinch when new shoots are 1-2 cm long. Subsequent applications can be made every 7-20 days depending on the growth. The last application should be done before the bud shows color to avoid negative effects on flower formation or color. Most of our varieties are naturally compact and they need a very low PGR's applications.

As a guideline:

With moderate growth : use 0- 1 times Daminozide 85% at 2-4 gr/ l spray

With strong growth : use 1-3 times Daminozide 85% at 2-4 gr/ l spray

Best is to use Daminozide when it's cloudy or in the evening.

These recommendations for plant growth regulators should be used only as general guidelines.

Growers must trial all PGR under their conditions and follow the registration uses of each chemical in their country.

### Pest and diseases:

Chrysanthemum is sensitive to various pest. Aphids, thrips, leaf miners, caterpillars, spider mites and white fly are the most common pest. Start with clean material a well disinfected facilities together with a proper pest management program using different control strategies: exclusion, monitoring, biological and chemical control, are the best tools to control these pests.

Chrysanthemum is also sensitive to several diseases like, Rhizoctonia, Pythium, Botrytis, White rust, Sclerotinia, Septoria, Verticillium, Fusarium and some viruses like TSWV and Stunt virus. Disease management should be addressed by sanitation strategies, environmental conditions control, biological and chemical control.

For the chemical control, follow the registration uses of each product in each country.

# Cultural recommendation

## Crop Schedule\* Under natural day length conditions

For finish plant from November to April

Pot size cm	Long Days from sticking URC	Short Day (depending on variety RT)
13 - 14	3-3,5 weeks	7-10 weeks
10,5 - 12	2- 2,5 weeks	7-10 weeks

For finish plant from May to October

Pot size cm	Long Days from sticking URC	Short Day (depending on variety RT)
13 - 14	2-2,5 weeks	7-10 weeks
10,5 - 12	1- 2 weeks	7-10 weeks

\* This is a reference time schedule that can vary depending on the variety, growing conditions and region. Schedule start from RC. For further information on each variety, ask your Selecta One agent or technical department

## Crop Schedule\* Under photoperiodic control

For finish plant from November to April

Potting	Pinch week
27	29 -32
28	30
29	31

\* This is a reference time schedule that can vary depending on the variety, growing conditions and region. Schedule start from RC. For further information on each variety, ask your Selecta One agent or technical department

**NOTE:** Growers should use the information presented here as guidelines only. Selecta One recommends that growers conduct a trial of products under their own conditions. Crop times will vary depending on the climate, location, time of year, and greenhouse environmental conditions. It is the responsibility of the grower to read and follow all the current label directions relating to the products. Nothing herein shall be deemed a warranty or guaranty by Selecta One of any products listed herein