

<b>Cultural Information for:</b>	Platycodon Astra	Perennial
<b>Common Name:</b>	Balloon Flower	
<b>Botanical Name:</b>	Platycodon grandiflorus	
<b>Seed Count:</b>	27,000 /ounce	950 /gram
<b>Optimum Germination Temperature:</b>	68-72 °F / 20-22 °C	
<b>Optimum Growing Temperature:</b>	60-68 °F / 16-20 °C	

### Plug Production – 5 weeks 200 (10 x 20) tray

**Stage One** (days 1-10) Sow four seeds into a 200 deep plug cell filled with a well-drained peat based mix and having a pH of 5.5-6.0 and an EC of 0.5 mmhos (2:1 dilution). Optimum germination temperature is 68-72°F/20-22°C. The goal is 3+ seedlings.

**Stage Two** (days 11-20) After emergence, reduce the temperature to 65-68°F/18-20°C and provide good air movement. Fertilize at 50-75 ppm N using a well-balanced calcium nitrate based formulation. Apply HID lighting when the light level is less than 2,000 foot candles/22,000 lux.

**Stage Three** (days 21-30) Maintain optimum air temperature and increase the fertilizer rate to 150 ppm N. Optimum EC level is 0.8-1.0 mmhos. Allow the plants to dry slightly between irrigations to maintain a healthy root system. An application of B-Nine® (daminozide) at 2,500 ppm/0.25 % may be needed.

**Stage Four** (days 31-35) The plugs should have well formed roots and are approaching transplant stage. Reduce fertilizer to tone the plants.

### Transplanting to flower – 9-11 weeks

**Potting:** Select a well drained peat mixture with a pH of 5.5-6.0. A coarse peat mixed with 20% sharp sand is ideal. Place one multi-plug per 4- 5 inch/10-12 cm pot and 2 multi-plugs per 6 inch/15 cm pot. Avoid planting too deep.

**Temperature:** After transplanting grow at 64-67°F/18-19°C to establish. After spacing, the temperature may be lowered to 59-61F/15-16C.

**Lighting:** Platycodon grows best between 3,000-5,000 foot candles / 32,000-54,000 lux. Once established, plants will tolerate higher light / full sun. For northern Europe (above latitude 45°) provide long day conditions (14-16 hours) for transplants between weeks 5 - 27 using either night interruption or day length extension.

**Fertilizer:** Constant liquid feed with a balanced calcium nitrate-based fertilizer at 250-300 ppm N promotes good root development. Optimum EC is 1.5-2.0 mmhos. Reduce the fertilizer to half when flower buds are visible. Allow the media to dry slightly between watering as excessive moisture causes root rot. However, avoid wilting which causes yellowing of the leaves.

**Growth Regulation:** Apply B-Nine (daminozide) at 500-1,500 ppm / 0.05-15% 1-2 times per week, or as needed, until flower buds show color. To avoid tip burn, water plants prior to application. Morning application is best. Except for Astra Pink, begin applications in the first week after planting. Pink needs control only in the final production stage to avoid flower stem stretch. Bonzi® (paclobutrazol) is effective at 2 - 2.5 ppm but stop at visible bud. Less PGR is required in plastic houses and for outdoor production due to better light diffusion. **Plants should not be pinched.**

Season	Times per week to apply B-Nine
Winter	1 time per week
Summer	2-3 times per week

**Watering:** Provide even moisture and do not allow plants to become too dry; especially during chemical growth regulation, as this will result in yellowing of the foliage.

### Spacing:

Container size	Recommended spacing*
4 inch / 10.5 cm	3 per square foot / 30-36 per square meter
5 inch / 12 cm	2 per square foot / 22 per square meter
6 ½ inch / 17 cm	1 per square foot / 10 per square meter.

**\*keep pot tight weeks 1-4**

**Timing:** Astra will flower in 105-114 days. The early development is slow. Producing under warmer temperatures accelerates development.

Sow	Potting	Flowering	Total
Early Feb.	Mid-March	Late May	14-16 weeks
Mid-March	Late April	Late June	13-15 weeks
Mid April	Late May	Late July	12-14 weeks
Late May	Early July	Mid-September	13-15 weeks

**Note:** Platycodon Astra may be produced for spring sales or year round as an indoor pot plant. It may also be sown in early summer for fall sales. It is best to sow seed at least 12 weeks prior to first frost to allow the plants to establish in the garden before winter. In general Astra is hardy to -10°F/-23°C.

*“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 American 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.”*