

Aster tongolensis Wartburg Star

(*Aster tongolensis*)

Germination

- Time of radicle emergence: 5-7 days
- Pretreat the seed at 40°F (5°C) for 2-3 weeks before sowing.
- Soil temperature 65-70°F (18-21°C).
- Keep the media evenly moist but not saturated.
- Do not cover or bury the seed.
- Light is not necessary for germination until radicle emergence.
- Soil pH 5.5-5.8 and soluble salts (EC) less than 0.75 mmhos/cm (2:1 extraction).
- Aster is very sensitive to high salts, particularly high ammonium, during germination.
- Keep ammonium levels less than 10 ppm.

Plug Production

STAGE 1 - Time of radicle emergence (5-7 days)

- Pretreat the seed at 40°F (5°C) for 2-3 weeks before sowing.
- Soil temperature 65-70°F (18-21°C).
- Keep the media evenly moist but not saturated.
- Do not cover or bury the seed.
- Light is not necessary for germination until radicle emergence.
- Soil pH 5.5-5.8 and soluble salts (EC) less than 0.75 mmhos/cm (2:1 extraction).
- Aster is very sensitive to high salts, particularly high ammonium, during germination.
- Keep ammonium levels less than 10 ppm.

STAGE 2 - Stem and cotyledon emergence (9-14 days)

- Soil temperature 60-65°F (16-18°C).
- Reduce moisture levels once radicle emergence occurs! Allow the soil to dry out slightly before watering for best germination and rooting.
- Gradually increase light intensity to 500-1000 foot-candles.
- Keep soil pH 5.5-5.8 and EC less than 0.75 mmhos/cm.
- Keep ammonium levels less than 10 ppm.
- Begin fertilizing with 50 75 ppm N from 14 0 14 or a calcium/potassium nitrate feed once cotyledons are fully expanded.
- Alternate feed with clear water.
- Irrigate early in the day so foliage is dry by nightfall to prevent diseases.

STAGE 3 - Growth and development of true leaves (7-14 days)

- Soil temperature 60-62°F (16-17°C).
- Allow the soil to dry thoroughly between irrigations but avoid permanent wilting to promote root growth and control shoot growth.
- Gradually increase light intensity to 1000-1500 foot-candles.
- Maintain soil pH 5.5-5.8 and EC less than 1.0 mmhos/cm.
- Increase feed to 100 150 ppm N from 20 10 20 alternating with 14 0 14 or other calcium/potassium nitrate fertilizer.
- Fertilize every 2 3 irrigations.
- If using 15-0-15 supplement with magnesium 1 2x during this stage, using magnesium sulfate (16 oz/100 gal) or magnesium nitrate. Do not mix magnesium sulfate with calcium nitrate as precipitate will form!
- Use DIF whenever possible, especially the first 2 hours after sunrise, to control plant height.
- Chemical growth regulators are not needed at this stage.

STAGE 4 - Plants ready for transplanting or shipping (7 days)

- Soil temperature 55-60°F (13-16°C).
- Allow soil to dry thoroughly between irrigations.
- Gradually increase light intensity to 1500-2500 foot-candles.
- Maintain soil pH 5.5-5.8 and EC less than 0.75 mmhos/cm.
- Fertilize with 14 0 14 or calcium/potassium nitrate feed at 100 150 ppm N as needed.

JANUARY SOWING

- Seed sown in January will be ready for sale in late April to early May.
- Plants will bloom the same season they were sown.

JUNE - AUGUST SOWING

Plants sown in June - August will bloom the following May to June.

TEMPERATURE

30-35°F (-1-2°C)

TRANSPLANT

Transplant into pots around September 15.

OVER WINTERING

- Over winter the plants until spring in an unheated greenhouse or cold frame.
- The root system should be developed throughout the soil volume prior to over wintering.
- Pots should be packed as close together as possible.
- If plants are over wintered outside, cover the plants with a thick layer of mulch.

FERTILIZATION

Fertilization during dormancy will not be necessary.

SEPTEMBER - OCTOBER SOWING

Plants sown in September - October will bloom the following May to June.

TEMPERATURE

35-40°F (2-4°C)

TRANSPLANT

- Transplant to packs in early November.
- Transplant into pots in February.

OVER WINTERING

- Plants are grown at 35-40°F (2-4°C) for 12-14 weeks.
- Perennials grown at this time will compete with other crops for greenhouse space.

FERTILIZATION

Fertilize at 75-100 ppm N from 15-0-15 every other irrigation.

Growing On to Finish

TEMPERATURE

Night: 55-60°F (13-16°C)

Day: 60-65°F (16-18°C)

LIGHT

- Maintain medium light intensity, around 1500-4000 foot-candles.
- Long days, lighting from 10:00 pm to 2:00 am, are required for vegetative growth.
- Short days, 12-14 hours depending on variety, are

required for flowering.

MEDIA

Use a well-drained, disease-free soil-less medium with a medium initial nutrient charge and a pH 6.0-6.5

FERTILIZATION

- Fertilize every other irrigation with 15-0-15 at 150-200 ppm nitrogen.
- Maintain medium electrical conductivity around 1.0 mmhos/cm (using 1:2 extraction).

CONTROLLING HEIGHT

- Once plants are rooted to the sides of the containers they can be allowed to wilt prior to irrigation to provide some height control.
- Height can also be controlled by withholding fertilizer, especially phosphorous and ammonium-form nitrogen.
- Aster are responsive to day/night temperature differential (DIF), and are shorter with a negative DIF.
- A-Rest, B-Nine, or Bonzi can be used to control height.

Post Production Care

TEMPERATURE

- Aster should be displayed in a cool, below 70°F (21°C), shady location.
- Optimum conditions may be difficult to maintain, especially if plants are displayed outside.
- Using a negative DIF will help keep the plants short and of high quality.

LIGHT

Asters prefer full sun to part shade.

COMMON PROBLEMS

Insects: Aphids, Slugs, Thrips, Whitefly

Diseases: Botrytis, Powdery mildew, Rhizoctonia, Rust

