

Sunflower Prado

(*Helianthus annuus*)

Germination

- Time of radicle emergence (5-7 days)
- Soil temperature 68-72° F (20-22° C).
- Keep media evenly moist but not saturated.
- Cover the seed with coarse vermiculite.
- Light at 100-400 foot-candles will improve germination uniformity and seedling quality.
- Light is not required for germination until radicle emergence.
- Soil pH 5.5-6.2 and soluble salts (EC) less than 0.75 mmhos/cm (2:1 extraction).
- Sunflower 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)

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STAGE 2 Stem and cotyledon emergence (5-7 days)

- Soil temperature 68-72° F (20-22° C).
- Reduce moisture levels once radicle emergence occurs! Allow the soil to dry out slightly before watering for best germination and rooting.
- Keep soil pH 5.8-6.2 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 (10-14 days)

- Soil temperature 65-68° F (18-20° C).
- Allow the soil to dry thoroughly between irrigations but avoid permanent wilting to promote root growth and control shoot growth.
- Maintain soil pH 5.8-6.2 and EC less than 1.5 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.
- A-Rest, B-Nine, and Bonzi are all effective at controlling height of sunflower.

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

- Soil temperature 60-65° F (16-18° C).
- Allow soil to dry thoroughly between irrigations.
- Maintain soil pH 5.8-6.2 and EC less than 1.0 mmhos/cm.
- Fertilize with 14-0-14 or calcium/potassium nitrate feed at 100 150 ppm N as needed.

Growing On to Finish

TEMPERATURE

- Night -- 65-68° F (18-20° C)
- Day -- 70-75° F (21-24° C)
- To prevent branching, keep plants at temperatures above 60° F (16° C)

LIGHT

- Maintain light levels as high as possible while maintaining moderate temperatures to promote

- strong, vigorous growth.
- Growing plants under 14 hour days will accelerate flowering.

LIGHT

Sunflower can be displayed in full sun.

MEDIA

Use a well-drained, disease-free soil-less medium with a medium initial nutrient charge and a pH 5.8-6.2.

FERTILIZATION

- Fertilize every other irrigation with 15-0-15 alternating with 20-10-20 at 200-250 ppm nitrogen.
- Maintain medium electrical conductivity around 1.5 mmhos/cm (using 1:2 extraction).
- Increase feed at flower bud elongation to prevent leaf chlorosis.

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.
- Sunflower are responsive to day/night temperature differential (DIF), and are shorter with a negative DIF.
- A-Rest, B-Nine, and Bonzi are effective for sunflower height control.
- Do not apply plant growth regulating compounds after buds are visible.

Post Production Care

TEMPERATURE

Optimum temperatures for sunflower:

- Night -- 65-68° F (18-20° C)
- Day -- 70-75° F (21-24° C)
- 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.

