

Tuberous Begonia Illumination

(*Begonia x tuberhybrida*)

Germination

- Time of radicle emergence (7-10 days)
- Soil temperature 75-78°F (24-26°C).
- Keep media very moist, near saturation. Do not allow the media to dry out at all during this stage.
- Do not cover or bury the seed.
- Light at 100-400 foot-candles may be beneficial for germination.
- Soil pH 5.5-5.8 and soluble salts (EC) less than 0.75 mmhos/cm (2:1 extraction).
- Tuberous begonia 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 (7-10 days)

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STAGE 2 - Stem and cotyledon emergence (7-14 days)

- Soil temperature 70-72°F (20-22°C).
- Keep moisture levels uniformly moist. Do not allow to dry down or seedlings will stall out.
- Begonia seedlings have a shallow root system at this stage.
- Keep soil pH 5.5-5.8 and EC less than 1.0 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.
- Begonias will stall out if fertility is too high or too low.
- 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 (28-35 days)

- Soil temperature 68-72°F (19-22°C).

- Allow the media to dry thoroughly between irrigations after the first true leaf is fully expanded. This promotes root growth and controls shoot growth.
- If HID lighting is not available, provide night interruption lighting of 50 foot-candles to prevent tuber formation.
- Light intensity above 2500 foot-candles will stall seedling growth.
- Too low light will cause seedlings to be lush and stretched.
- maintain soil pH 5.5-5.8 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!
- Be careful not to burn foliage when feeding. Rinse foliage off immediately with clear water, or feed late afternoon or on cloudy days.
- Use DIF whenever possible, especially the first 2 hours after sunrise, to control plant height.
- B-Nine and Cycocel are effective in controlling height of begonias. Begonias are very sensitive to Bonzi. Do not even get any spray drift on begonias!

STAGE 4 - Plants ready for transplanting or shipping (7-14 days)

- Soil temperature 60-62°F (16-17°C).
- Allow soil to dry thoroughly between irrigations.
- Maintain soil pH 5.5-5.8 and EC less than 1.0 mmhos/cm.
- Begonias can tolerate light above 2500 foot-candles at this stage.
- 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 (18-19°C)

Day: 68-75°F (19-24°C)

Avoid temperatures below 50°F as tuber formation increases at low temperatures.

LIGHT

- Tuberous begonias grow best in reduced light conditions.
- Green leaf varieties tolerate higher light conditions.
- Reduce light to 1500-2500 foot-candles for variegated varieties.
- Reduce light levels as the temperature rises.
- Tuberous begonias are long day plants.
- Tubers form when day length is less than 12 hours.
- Once tubers form, flowering stops and plants go dormant.
- HID or incandescent light for 16-18 hours per day until April 1 is required to promote growth.

MEDIA

Use a well-drained, disease-free soil-less medium with a medium initial nutrient charge and a pH 5.5-6.2.

FERTILIZATION

- Fertilize every other irrigation with 15-0-15 alternating with 20-10-20 at 100-150 ppm nitrogen.
- Maintain medium electrical conductivity around 1.5 mmhos/cm (using 1:2 extraction).
- Excessive ammonia will promote large leaves which exhibit foliar necrosis.

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.
- Tuberous begonias are responsive to day/night temperature differential (DIF), and are shorter with a negative DIF.
- B-Nine and Cycocel are effective in controlling height of begonias. Begonias are extremely sensitive to Bonzi, do not even get any spray drift on begonias!

Post Production Care

TEMPERATURE

Optimum temperatures for Tuberous Begonia:

Night: 65-68°F (18-19°C)

Day: 68-75°F (19-24°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.



LIGHT

Tuberous begonia prefer partial shade to shade.

COMMON PROBLEMS:

INSECTS: Mealy bug, Thrips, Whitefly

DISEASES: Botrytis, Powdery mildew, INSV/TSWV
Foliage necrosis