

Growing Guide for: Greenhouse Transplants
Crop: Tomato
Botanical Name: Lycopersicum esculentum
Average Seed Count 12,500 sds/ounce 440 sds/gram
Seed Forms Raw Untreated, Raw Treated, Primed*, Pelleted*, Primed & Pelleted*
 *Subject to lead times & minimums

GREENHOUSE PLUG PRODUCTION

Approximately 3-4 weeks (288 cell tray)

STAGE 1: GERMINATION & RADICLE EMERGENCE

3-5 Days

Sow seeds in disease-free media & cover approximately ¼" with medium vermiculite; light is not necessary for germination until radicle emergence.

pH: 5.8 - 6.2

EC: < 0.5 mS/cm

Humidity: 100% until radicle emergence, then 40-50%

Media Temperature: 70-80°F / 21-27°C

Moisture: level 5 (saturated) until radicle emergence, then water to level 4 (wet) and dry to level 3 (moist).

Notes: Keep ammonium levels to less than 10ppm, as tomatoes are sensitive to high salts during this period.

STAGE 2: STEM & COTYLEDON EMERGENCE

6-8 Days

Place trays in well-ventilated greenhouse.

pH: 5.8 – 6.2

EC: .75 – 1.0 mS/cm (at first true leaf stage)

Media Temperature: 68-72°F / 20-22°C

Moisture: Alternate between levels 4 and 3.

Light Levels: 1000-2000 fcs

Fertilizer: Begin feeding approximately every other watering with a well-balanced calcium/potassium nitrate-based formulation at 50-75 ppm N.

STAGE 3: BULKING STAGE

7-9 Days

pH: 5.8 – 6.2

EC: .75 - 1.0 mS/cm

Media Temperature: 62-65°F / 16-18°C

Moisture: Alternate between level 4 and 2 (medium) – Seedlings can slightly 'flag', but should not wilt.

Light Levels: 1500-2500 fcs.

Fertilizer: Drench at least once a week with a well-balanced calcium/potassium nitrate-based formulation at 75-100 ppm N.

STAGE 4: TRANSPLANT OR PLUG SHIPPING STAGE

7-10 Days

pH: 5.8 – 6.2

EC: .75 - 1.0 mS/cm

Media Temperature: 62-65°F / 16-18°C

Moisture: Alternate between levels 4 and 2 – Seedlings can slightly 'flag', but should not wilt.

Light Levels: 1500-2500 fcs.

Fertilizer: Tomato seedlings can develop rapidly at this stage. Fertilize with lower levels of nitrogen and phosphorous to avoid excess growth and stem stretch.

GROWING ON (FINISHED PRODUCTION)

Approximately 4-11 weeks, depending on finished pot size and variety. (See 'Scheduling' chart below)

pH: 5.8 – 6.2

EC: .75 - 1.0 mS/cm

Media Temperature: 65-70°F / 18-21°C for day and 62-65°F / 17-18°C for night

Moisture: Alternate between levels 3 and 2 - Seedlings can slightly 'flag', but should not wilt.

Light Levels: 2500-5000 fcs.

Fertilizer: Weekly applications of a well-balanced calcium/potassium-nitrate based fertilizer, 100-150 ppm N.

SCHEDULING

Container Size	Total Crop Time	Finished Product
606 cell pack	7 weeks	Sold green
4 inch / 10 cm.	8 weeks	Sold green
6 inch / 15 cm	10 weeks	Sold with immature fruit (may require staking)
1 gallon / 4 liter	14 weeks	Sold with mature fruit (requires staking for shipping)

Plant Height Controls: The use of chemical plant growth regulators (PGR's) is not recommended on tomato plants. Utilize moisture, temperature, and fertilizer levels to maintain height and stretch control.

Common Greenhouse Diseases & Pests: Botrytis, Fusarium, Pythium & Phytophthora ; Whiteflies, Aphids & Thrips

OTHER TIPS

- **Plant Height Controls:** The use of chemical plant growth regulators (PGR's) is not recommended on tomato plants. Excessive growth can be controlled, however, through environmental means:
 - Day/night temperature differential (DIF) – Beginning in Stage 3 of plug production, plants can be grown with a zero or negative DIF (day temperature = or < the night temperature) to control height.
 - Light intensity – Lower light intensity will cause plants to stretch, so maximizing light levels through proper management of greenhouse roofing and addition of supplemental lighting will provide height control.
 - Nitrogen manipulation – Reducing or withholding nitrogen availability during portions of the watering/fertilizing regime will slow plant growth if needed.
 - Moisture stress – If plant root systems are well-established and fully formed along the sides of the containers, plants can be allowed to dry out more fully before irrigating. Care must be taken, though, to not damage through over-stressing.
- **Greenhouse Diseases:** Multiple blights, molds, mildews, root rots and wilts, in addition to Bacterial Leaf Spot, Tobacco Mosaic Virus and Tomato Spotted Wilt Virus can be problems in greenhouses. Good sanitation (through disinfecting and sterilizing equipment and materials) and proper growing culture (like rogueing diseased plants and monitoring greenhouse humidity levels) will aid in keeping plants healthy. As a disease prevention measure, irrigate early in the day to allow plants to thoroughly dry before nightfall.
- **Greenhouse Pests:** Whiteflies, Aphids & Thrips. Regular, often, and careful inspections for pests are essential in becoming aware of infestations early. Since chemical control choices are more limited for greenhouse use, integrated control measures should be implemented before pest populations become too large.
- **Container Sizes:** Sakata Home Grown offers tomato varieties that are appropriate for sale in varied pot sizes. Most varieties can be grown as young plants in cell packs and 4 -6" pots for customers to transplant into their gardens. Determinate and indeterminate types can also be grown in gallon pots (some with fruits beginning to form) for later garden planting.

Larger decorative 14-18" patio pots supported with cages or stakes are best used with determinate varieties (although some indeterminate types will work in this application, particularly if they have shorter internodes). Most large, more aggressive indeterminate types are best sold in pots that will be transplanted into the ground by the customer.

'Red Robin', our dwarf determinate cherry-fruited variety, is also appropriate for hanging baskets and smaller decorative patio pots, reaching a mature size of 7-10".

For more information on specific varieties, visit our website at www.sakatavegetables.com.