



Integrated Plant Growth Facility

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Tomato Plant Care Protocol

Growth Conditions:

The recommended temperature for growing tomatoes is as follows: Daytime temperature of 77oF with relative humidity of at least 35%; evening temperature of 65oF with relative humidity of 45%. The supplemental lighting period is 6:00am to 8:00pm, for a 14 hour day length.

Potting Media:

Pro-Mix HP

Water/Fertilizer:

Clear, tempered water is used Tuesday, Thursday, and weekends. Use Peters 15-16-17 fertilizer water Monday, Wednesday, and Friday. The electrical conductivity (EC) of fertilizer should be 1.2-1.5 (EC Fert Water – EC Clear Water = 1.0), approximately 200ppm Nitrogen . Apply Calcium/Magnesium/Iron treatments every two weeks (Botanicare Cal-Mag Plus). The current Cal-Mag application cycle is the first and the fifteenth of each month. The rate of application is 5ml per gallon of water. Mix in a large water container and pour into 750ml containers for each plant application.

**Pruning:**

Pruning is usually done once a week. Suckers will be removed to promote growth of fruit. Also, prune flower clusters to two or three for growth of large fruit. Remove lower leaves as plant continues to grow. This will allow for proper dry down of the pot and root ball. This will also improve air flow and reduce the occurrence of powdery mildew.

Staking/Caging:

Stake the tomato when young with a small stake. Tie white string around the stake and tomato plant loosely. This will allow for support and future stem growth. Once the plant is secured to a stake, cover with a cage. This will support straight growth of the stem and support of the cage when the plant reaches maturity.

Spacing:

Space containers and plants to allow for adequate air flow between rows. Spacing should let light shine between plants to reduce plants stretching for light. Proper spacing will reduce the threat of powdery mildew and other pathogens. The recommended space between rows is 3.5 feet. If using a bench brace to stabilize tomato plants, the recommended space between pots is three per brace.

Sanitation:

The recommended crop rotation is three to four months. This will ensure only healthy tomato plants are producing fruit. Older plants that are kept five to seven months increase the chance of attracting insects and diseases. The greenhouse floors are to be kept clean of debris and plant matter. The use of cages and braces will be done once cleaned and sanitized to reduce the threat of tomato virus and diseases. When tools are used to prune plants they must be clean before use. Only use the designated tools and do not take something from another greenhouse to bring it in with tomatoes. The trash can will be kept empty to prevent attracting insects to the dead plant material.

**Cuttings:**

The recommended time for making cuttings is early morning before the heat of the day. When cuttings are taken, apply rooting hormone to the base and place in Oasis growing medium wedge. The material should be watered and very moist. When the desired cuttings are taken, place them in the mist bench in G10-A immediately. Once the cuttings have grown to the appropriate size, remove from the mist bench and place in desired pot. It is critical to work with a sense of urgency to reduce transplant shock. Do not leave plants in the potting room for long periods of time.

If the cutting was grown in a growth chamber under a dome the plant should be repotted and placed back into the growth chamber to acclimate for one week. After one week, the cutting can be moved to the greenhouse. Taking a cutting from a growth chamber directly to a greenhouse is not recommended because this can result in transplant shock.

Pest Management:

Scouting will be done to inspect for insect populations and plant diseases. The most common tomato problems are white fly and powdery mildew. Powdery mildew is preventable by pruning and properly spacing plants. Spraying pesticides in the greenhouse will be done by the greenhouse staff. Emails will be sent to all researchers to inform of the temporary closure of the greenhouse.

Care must be taken to prevent TMV infection. Gloves should be worn while, or hands washed thoroughly before and after, working with plants. Sterilize instruments with bleach before and after working with plants, and always sterilize instruments between sampling multiple plants. Anyone working with solanaceous species should refrain from tobacco use before handling plants. Access may be restricted to houses containing TMV-sensitive plants.