Greenhouse Tomato Trellising and Pruning Recommendations

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Season-long crop maintenance is necessary for indeterminate greenhouse tomatoes to support plant health and ensure good yields. Trellising vines, as well as pruning suckers and lower leaves, helps improve air circulation, support the weight of the plants and fruits, balance vegetative versus reproductive growth, and maintain overall good hygiene in the greenhouse. Keeping the fruit off of the soil also makes them easier to pick and decreases the number of blemishes.

The hanging string method, sometimes called the stake-and-wire method, is the most common approach for trellising indeterminate greenhouse tomato varieties. It involves vertically training the vines onto strings suspended above the plants and limiting the plant to a small number of main vines, also known as leaders.

Basket weaving is more commonly used for determinate tomatoes. Although basket weaving can also be used with indeterminate varieties, it is more challenging because of how tall and long they can grow under greenhouse conditions. Basket weaving also restricts airflow, which can promote the development of foliar disease in protected culture. We recommend the hanging string method for indeterminate tomatoes grown indoors.

TRELLIS SET UP:
The trellis infrastructure is a crucial part to being successful with the hanging string method. You will need to suspend strings from a support system of wires that runs parallel to your rows and is at least 7 feet above the ground. It is best to set up a trellis prior to planting to avoid disturbing the plants once they are established.

Materials:

- Tall posts, if you will not be attaching the trellis directly to a greenhouse or tunnel frame
- Wire, preferably 12 gauge
- Clamps or other devices to secure wire
- Twine, Rollerhooks, or Tomahooks

Trellis Support Structure:
If your greenhouse frame can support the full weight of a mature crop, you can attach the wire directly to the purlins of your greenhouse. This approach generally affords the most vertical space for the crop to grow. However, you should expect the bearing load on the wire to be about 15 pounds per linear foot, or 3 tons for 600 plants.

If you are not using the frame of your greenhouse or high tunnel, you will need to construct tall posts at the ends of, and potentially within, your rows to attach the wire to.

Posts should be able to accommodate the plants' height plus an additional 18 inches to be driven into the ground. Steel T-posts or U-posts, or chain-link toprail are good options, as are wooden posts. For selecting wooden posts, cedar or hardwood can normally be reused beyond one season if sanitized before each subsequent season with either a chlorine solution or other suitable disinfecting agent. Avoid using CCA-treated ("pressure-treated") stakes or other supports.

Drive the posts 18 inches into the ground, no more than 20 feet apart in the row. End posts should be further strengthened by anchoring with wire or an extra stake.

Typically, tomato plants are grown with 2 rows per bed, with 2 feet between the row to facilitate lowering and leaning the plants later in the growing season. Leave 5–6 feet between beds to allow convenient maintenance and harvesting.

Wire and String Installation:
To install the wires, stretch them tightly between the opposite ends of your support structure, either the greenhouse purlins or posts, over where you plan to have your rows and secure with clamps or other devices. You will need to install one wire for each row of tomatoes. Securing the wire at additional intervals between ends will increase the rigidity.

The number of strings suspended from the wire will depend on the number of leaders you maintain per plant — typically 1 or 2 in greenhouse production; for more information on the number of leaders, please refer to the "Pruning Suckers" section. You will need to hang 1 string per leader in each row. The string should at least be long enough to reach the bottom of each plant with some slack, or longer if you plan to lower and lean your crop as it grows. Twine made of natural materials may degrade and break before the season is over, so it is advisable to use twine that is recommended for greenhouse production.

Secure the string to the wire with a slip knot, leaving excess string at the top if you plan to lower and lean, or alternatively use spools of string suspended from crop support devices such as Rollerhooks® or Tomahooks which can simply be slipped over the wire.

TRELLISING:
After transplanting, loosely tie the twine or string around the base of the plant. If the knot is too tight it can cut into the plant as it grows. Tomato trellis clips, which are designed to encircle the stem and clamp onto the string, can be used instead of a knot.

Always clip the string around the stem just below a leaf branch that has fully elongated. A still-developing leaf branch will continue to have the internode space elongate and the clip will need to be readjusted for proper support.

If growing on 2 leaders, place a clip just below where the 2 leaders branch. Each leader will need to be trained onto its own string.

Additional clips should be placed every 12 inches on the stem, as the plants grow.

If you do not wish to use trellis clips, the twine or string can simply be wrapped around the plants' stem. Be sure to wrap the string in the same direction each time.

PRUNING SUCKERS:
To balance reproductive and vegetative growth, large-fruited indeterminate tomatoes are typically pruned to only 1 or 2 leaders. Cherry and grape tomatoes can have as many as 4 leaders per plant. Limiting the number of suckers and leaders allows the plant to focus more energy on fruit development rather than maintaining a large number of shoots, which can result in smaller fruit. Having 2 leaders instead of 1 can serve as insurance in case anything should happen to the main stem.

While any sucker can be designated a leader, preference is given to the main stem and the sucker that forms immediately below the first flower cluster because of its strength and position on the plant. All other suckers above and below this point are removed from the plant, as well as suckers that form in odd places like on the ends of flower clusters.

If one of the leaders becomes damaged, another sucker can be designated as an alternate leader; however, on grafted plants it is advised not to choose suckers lower on the plant to prevent the scion from rooting.

Pruning suckers can begin once the first flower cluster has developed, and should continue throughout the crop's development. To avoid the possible spread of plant diseases, prune only when foliage is dry and sanitize your hands and tools before each use and between crops or after being contaminated by infected plants.

It is easiest to prune suckers by hand while they are still small and in the morning when the turgor pressure is still high. Larger suckers leave a larger wound which can be invaded by pathogens and may require pruning shears to avoid damaging the stems when removed.

Check plants regularly for the development of new suckers.

PRUNING LEAVES:
Similar to removing suckers, pruning leaves allows the plants' energy to go toward fruit production instead of maintaining excess vegetative growth. Further, removing the lower leaves increases air flow, which can reduce the incidence of disease.

As with pruning suckers, use sterilized equipment and prune only when the foliage is dry to avoid the potential spread of disease.

Once the plants have approximately 18-20 leaves, begin removing 1-3 leaves each week with sterilized pruners. The leaves most appropriate to remove are those on the lower parts of the plant that may be shaded or crowded. Additionally, if you see any leaves that appear diseased, remove these and dispose of them.

PRUNING FRUIT CLUSTERS:
Greenhouse tomatoes may produce an over-abundance of fruits on each cluster due to the improved growing conditions. To produce quality fruit and to allow for optimal plant growth, each cluster should be pruned to a specified number according to the type of tomato being grown when the fruit are approximately dime sized.

Beefsteak or slicing types should be pruned to 5–7 fruits per cluster. In the case of very large fruited varieties, when fruits a typically greater than 10 ounces, we recommend only allowing 4 fruits per cluster. If overly large "king blossoms" appear it is advised to remove them, as they usually produce misshapen cat-faced fruits.

With any variety, it is best to try different fruit pruning strategies until you find what works best for your needs.

Note: Small- fruited, cherry, grape, and plum types should NOT be cluster pruned at all as it will significantly reduce yields.

LOWERING AND LEANING:
Once the plants have reached the top of the wire, they can either be topped off to prevent additional vertical growth, or if you attached enough extra string or are using a spooled crop support device, lowered and leaned to one side to allow them to continue growing and extend production.

To lower and lean a plant, carefully release about a 1 foot length of string from the spool or hook and move the plant over one position before reattaching to the wire. Moving the plants down the wire in this way prevents them from gathering on the ground and breaking, while still giving the plant extra vertical growing space. Continue down the row until you reach the last plant. If you planted with no more than 2 feet between rows, the last plant in a row can be lowered, and then the crop support device can be hooked to the wire in the neighboring row.

As the season progresses, the plants may need to be lowered and leaned multiple times. Always lean the plants in the same direction each time.

REV 11/16/2016 RC, PG, EH, PZ