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Sustainable and Urban Agriculture Series **Fact Sheet 08-21**

Pruning of Tomato Plants

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Pruning in horticulture is the practice of selective removal of parts of a plant, such as branches, buds, or roots. The reasons for pruning plants include removal of dead shoots, shaping, enhancing or maintaining health, reducing risk from falling branches, preparing and increasing the yield or quality of flowers and fruits. Pruning affects plant health; the leaves of a pruned and supported plant dry off faster, so bacterial and fungal pathogens have less opportunity to spread. In addition, soil is less liable to splash up onto staked plants. The bottom line is that upright plants have fewer problems with leaf spots and fruit rots because their leaves stay drier and free from pathogen-laden soil.

Pruning ensures that each leaf has plenty of room and is supported up off the ground. When a tomato plant lies on the ground, or when its growth is extremely dense, many of its leaves are forced into permanent shade, greatly reducing the amount of sugar they produce. If a leaf uses more sugar than it makes, eventually it will yellow and drop off. A pruned and staked plant will produce larger fruit two to three weeks earlier than a prostrate one. A properly pruned and supported single-stem tomato plant presents all of its leaves to the sun. Most of the sugar produced is directed to the developing fruit, since the only competition is a single growing tip.

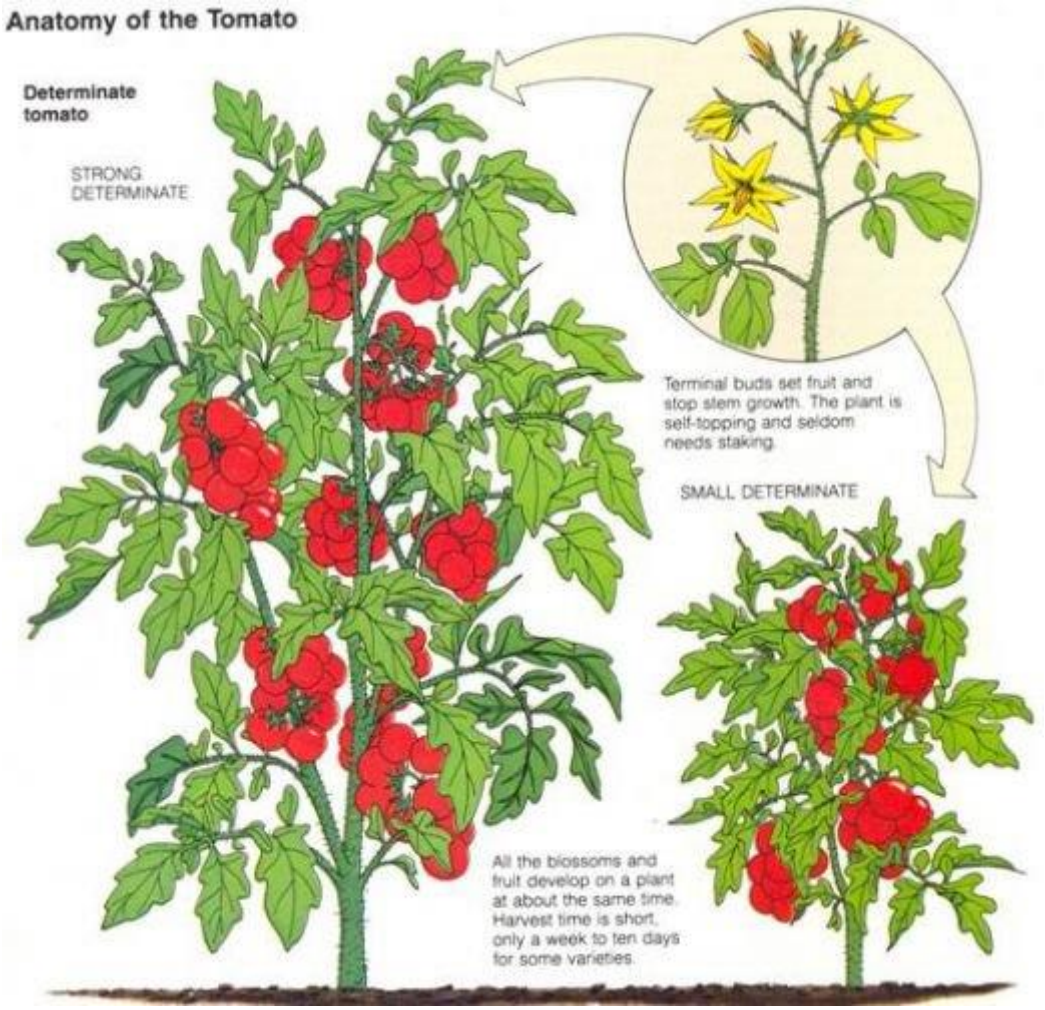
The result is large fruits that are steadily produced until frost. If more stems are allowed to develop, some of the sugar production is diverted from fruit to multiple growing tips. Fruit production, although slowed, never stops. The result is a nearly continuous supply of fruits throughout the season, but in general, more stems means more but smaller fruits, which are produced later in the season.

Kinds of Tomato Vines

i) Determinate Tomato Plants

Determinate varieties of tomatoes are bred to grow to a compact height of approximately 4 feet. They stop growing when fruit sets on the terminal or top bud, ripen their entire crop at or near the same time (usually over a 2 week period), and then die.

Thus, they will stop growing at a certain point and direct all of their energy into producing more leaves and fruits. They tend to produce a large crop of tomatoes that mature all at once. They may require a limited amount of caging and/or staking for support and little pruning. In some varieties, pruning should not be done as it severely reduces the crop yield. Examples of determinate tomatoes are Roma and Marglobe.



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ii) Indeterminate Tomato Plants

Indeterminate varieties are more vining and vigorous plants. They produce tomatoes that ripen over a period of several weeks. Indeterminate varieties of tomatoes are also called "vining" tomatoes. They will grow and produce fruit until killed by frost and can reach heights of up to 10 feet although 6 feet is considered the norm. They require substantial caging and/or staking for support and pruning and the removal of suckers is practiced by many but is not mandatory. The need for it and advisability of doing it varies from region to region. Examples of indeterminate tomatoes are Big Boy, Beef Master, Atkinson, Early Girl, and most heirlooms.

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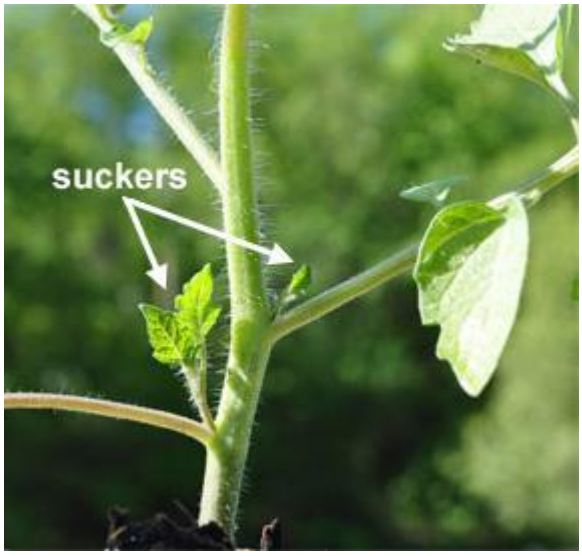
iii) Semi-Determinate Tomato Plants

As the name implies, semi-determinate tomatoes are somewhere between determinate and indeterminate types. Shoots of semi-determinate plants produce several flower clusters to the side of an apparent main stem, like indeterminate plants, but eventually the shoot terminates in a flower cluster, as in determinate plants. Although there are not many semi-determinate tomatoes, one of the most popular hybrids, 'Celebrity', falls into this category.

Pruning Steps for Determinate Tomatoes

1. Make sure that the leaves are never touching or even close to the soil. This should be checked on a regular basis and pruning should be done as necessary.

2. Remove all side shoots that form between the side stem and the main stem (called suckers). These side shoots if left alone will form like a normal stem and have leaves and bear fruit. The main stems strength will also be compromised and may break under all the weight. The easiest and safest way to do this is to pinch it off when it is still small using your thumb and index finger; avoid using blades as this can quickly lead to infection. You should remove the suckers as they appear



If they become too large, you risk damaging the plant when they are removed. It will also leave a larger wound in the plant stem, which is a larger entrance for disease and pest.

3. Caged plants only need their bottom leaves pruned to keep the leaves well away from the soil. Any wandering stems just need to be pushed back inside the cage.

Supporting Tomato Plants

Three popular methods of supporting tomato plants are staking, caging, and trellising. The main reason for staking and supporting tomato plants is to keep plants and fruit off the ground.

This reduces losses from fruit rots when fruit touches the soil and from sunburn when fruit are not shaded by foliage. Supported plants are easier to spray or dust for insect and disease control and easier to harvest than those sprawling on the ground. Decide on the method of support before setting tomato plants in the garden. Plants for trellising are set closer together than plants to be staked or caged. Plants for caging are set farther apart than plants for staking.

Staking

Staking requires wooden or metal stakes 5 to 6 feet long for indeterminate varieties and 3 to 4 feet long for determinate varieties. Wooden stakes should be at least 1 inch square. Metal stakes can be of smaller diameter and have the advantage of lasting many years. Do not use chemically treated wood. Sections of concrete reinforcing rods (rebar) make excellent tomato stakes. Space plants 18 to 24 inches apart in the row and drive a stake next to every plant or every other plant. Place the stake 3 to 4 inches from the base of the plant on the side away from the first bloom cluster to prevent trapping the fruit between the plant and the stake. Tie individual branches to the stake with soft cord by first tying twine to the stake and then looping it loosely around the plant. Never tie a plant immediately below a fruit cluster because the weight of the fruit may cause the plant to sag and strip the cluster from the plant. It is recommended that you continue to prune and tie the plant as it grows.

Caging

Tomato plants supported by cages made from concrete reinforcing wire require considerably less work than either staked or trellised tomatoes because there is no tying and only limited pruning. A 5-foot length of 10-guage reinforcing wire with 6-inch openings makes a cage of about an 18-inch diameter. Make cages at least 5 feet high for indeterminate varieties. Shorter cages are best for determinate varieties. Using heavy bolt cutters, remove the sections of the bottom horizontal wire, leaving wire legs to stick into the ground. Set your tomato plants 3 feet apart in the row and place a cage over each plant.

Push legs into the ground for anchoring the cage. Protect early plants from cold and wind by wrapping the bottom 18 inches of each cage with clear plastic. Black plastic mulch, in combination with caging and a clear plastic wrap, promotes early blooming. Caged plants generally are pruned to four or five main fruiting branches. As plants grow, keep turning ends of the branches back into the cages. Caged plants may not produce ripe tomatoes as early as staked or trellised plants, but they produce more tomatoes that are less likely to crack or sunburn.

Trellising

Trellising is only for indeterminate varieties. Set plants about 1 foot apart in the row and prune to just the main stem, or occasionally to the main stem and one strong sucker (the sucker originating just below the first bloom cluster). Remove all other suckers as they develop. Build a trellis by setting support posts in the ground about 20 feet apart. The tops of the posts should be about 6 feet above the soil surface.

Stretch a heavy wire or a piece of barbed wire between the tops of the posts and attach a length of heavy twine to the wire above each plant. Barbed wire prevents twine from slipping as the top wire sags with the weight of the plants. Tie twine to the base of each plant or to a bottom wire if one is used. As plants grow, wrap them around the twine for support, or use the plastic clips that greenhouse tomato growers use. When trellising two stems per plant, one should use a separate cord for each stem. Trellising produces ripe fruit earlier than other methods of support. Each plant produces fewer but larger tomatoes that are more subject to sunburn because of the small amount of protective foliage.

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