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Importance of training and pruning in Tomato

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Abstract

The article emphasizes the significance of training and pruning in tomato cultivation. These practices enhance fruiting, increase crop yield, and simplify fertilization operations. Training and pruning also contribute to maintaining plant health and ensuring high-quality yields. Training involves shaping the plant through staking, tying, or support structures, while pruning involves removing excess or undesirable parts of the plant. The objectives of training and pruning include controlling plant shape, distributing fruit-bearing parts, managing pests and diseases, ensuring sunlight penetration, and balancing vegetative and reproductive growth. Various training systems, such as stake and twine support, trellising, and caging, are discussed for different tomato varieties. Stake and twine support involve the use of stakes and twine to provide support for the plants. Trellising utilizes wire and twine attached to support posts to train indeterminate tomato plants. Caging involves using cylindrical mesh cages to support the plant, with caged plants requiring minimal pruning. The article also mentions different pruning methods, such as primary pruning, pyramidal pruning, and double-branch pruning, each with their own specific purpose and target areas for removal. Overall, training and pruning are crucial practices in tomato cultivation, enabling optimal plant growth, yield, and quality.

Key Words: *tomato, pruning, training, high quality yield and balance vegetative growth.*

Introduction

Pruning and training is an important factor necessary in tomato which leads to early fruiting, increase in the qualitative and quantitative crop yield and ease of fertilizing operation through solution spray and powder spray. Pruning is necessary when the growth is extremely dense. Manipulation of canopy architecture through pruning and training together with appropriate spatial arrangements has been identified as key management practices for getting maximum marketable yields from polyhouse. Training and pruning are the cultural practices directly influencing fruit quality and plant lifespan. The target of pruning is to allow plants to available benefits of light at a maximum level, to get early, high quality yields, keep the plant young, provide air movement around the plant, to easy the pests and disease control. The greatest function of leaf and fruit pruning in vegetable culture is to vegetative and reproductive balance. It is provide a supporting framework for crop. Removing lower limbs can transform a shrub into a small tree, creating an elegant shape and allow more space for planting below.

Training

When the plant is staked or tied or supported over a trellis or pergola in certain fashion or some of its parts are removed or trimmed with a view to give the plant a particular shape, this operation is called training. OR Training refers to judicious removal of part to develop a proper shape of plant capable of bearing heavy crop load.

Pruning

Removal of any excess or undesirable/ unproductive branches, shoots or any other parts of plants so as to allow the remaining part to grow normally or according to desire of pruner is called pruning. OR Pruning is defined as the judicious removal of parts like root, leaf, flower, fruit etc. to obtain good and qualitative yield.

Training system of tomato

Following training system use in tomato:

1. Stake and Weave

In this training system, wooden or metal stakes are driven between every other tomato plant. Lines of twine are strung between stakes on either side of the plants to provide support. Indeterminate varieties require longer stakes (5-6 feet) than determinate varieties (3-4 feet)

although the growth habit of your specific variety will help determine stake length. Wooden stakes should be at least 1” square to provide strong support throughout the season. Metal stakes can be of a smaller diameter and have the advantage of being reusable from season to season. Cut pieces of concrete reinforcing rods make excellent stakes. Twine must be resistant to weather and stretching and have sufficient "grip" to wrap tightly around stakes . A variation of this system called the Florida weave establishes the first line by weaving from one side of the plant row to the other, alternating around each stake. The first line is attached from the end stake to the next stake, wrapping that stake and crossing the row to reach the following stake on the other side of the plant row forming down the row and returning in the opposite. Often only the first line is woven in this manner and subsequent lines run straight down each side of the plant row.

2. Trellis

Trellising is used to train indeterminate tomatoes. The system consists of heavy gauge wire strung horizontally across the top of widely spaced, sturdy (3-6 inch) support posts. Lengths of twine are dropped from this top wire and secured to the base of each tomato plant (or to a bottom wire, if used). The plants are trained to two main stems and each stem is wound around a length of twine as the plant grows. Support posts should stand 5-6 feet above the soil and be spaced 12-20 feet apart down the row. The fruit of trellised plants is more susceptible to sunburn because of the reduced canopy and greater sun exposure. The plants may produce fewer fruits but these are larger and ripen earlier than plants trained in other ways.

3. Cages

A foot length of mesh can be folded into a cylindrical cage with an 18 inch diameter. The cage can be supported by a stake, or if the bottom cross-wires are cut out the cage can be pressed into the ground on its wire “feet”. For indeterminate varieties, cages should be 5 feet high; determinate varieties can be grown with shorter cages. Caged plants are pruned lightly or not at all. Growing branches should be lifted or turned to be supported by the wire. Tomatoes can be harvested easily through the 6 inch mesh. Caged plants may not produce ripe tomatoes as early as staked or trellised plants, but they produce more tomatoes that are less likely to suffer from cracking or sunburn.

Pruning of tomato

Following pruning methods are use in tomato (Hesami *et al.*, 2012).

1. Primary pruning

In primary pruning removing all secondary branches and flower clusters at 30 cm above soil surface. In case of single branch pruning, all secondary branches removed at early stage of appearance.

2. Pyramidal pruning

In pyramidal pruning, main stems were left and pruning was performed on secondary branches at 30 cm above soil surface till flower appearance and after that apical bud was removed to cut vegetative growth.

3. Double branch pruning

In double branch pruning, primary pruning was done at 50 cm above soil surface. In this main stem and one of the secondary branches were allowed to growth so these stems were considered as main stems.

Effect of training and pruning on tomato

Hesami *et al.* (2012) recorded maximum TSS of green house tomato in double branch pruning. Maximum fruit length and fruit diameters noted in two branch pruning method while maximum yield per plant and total yield noted in four branches pruning method in tomato which studied by Alam *et al.* (2016). Khairul *et al.* (2015) reveal that tomato plant pruned with tree stem method observed superior for number of fruits per plant, yield per plot and total yield. Nishtha and Kumar (2016) reported greater number of fruit per plant, fruit weight, yield per plant and total yield in tomato plant which trained in single stem training method. Anand *et al.* (2018) recorded that when tomato plant trained with two stem training method noted highest number of fruits per plant, yield per plant, yield per plot and total yield, while maximum fruit yield was recorded in single stem straining method.

Conclusions

From the foregoing discussion it can be concluded that, pruning and training are essential for early fruiting, increased crop yield, and ease of fertilization in tomato cultivation. These practices also impact fruit quality and the lifespan of the tomato. Pruning allows for maximum light exposure, early high-quality yields, pest control and the development of a balanced vegetative and reproductive growth.

References

- Alam, M. S.; Islam, N.; Ahmad, S.; Hossen, M. I. and Islam, M. R. (2016). Effect of different staking methods and stem pruning on summer tomato. *Ban. J. Agric. Res.*, 41(3):419-432.
- Anand, S. K.; Basavaraja, N. Hanchinamani, C. N.; Hadimani, H. P.; Biradar, I. B. and Satish, D. (2018). Influence of different training and nutrition level on growth and yield of tomato under protected conditions. *Int. J. Microbiol. App. Sci.*, 7(9): 3288-3299.
- Hesami, A.; Saadat, S. and Hosseini, S. S. (2012). Effect of shoot pruning and flower thinning on quality and quantity of semi determinate tomato. *Notulae Sci. Biol.*, 4(1): 108-111.
- Khairul, H. E.; Akand, M. D.; Haque, M. N.; Pulok, A. I. and Moonmoon, J. F. (2015). Rowth and yield of tomato as influence by GA₃ and pruning. *Int. J. Curr. Res.*, 6(12):10464-10469.
- Nishtha, P. and Kumar, S. (2016). Effect of spacing and training on quality parameters in tomato under protected culture. *Biofolet*, 13(2): 420-424.