

A Success Story - Tomato Cultivation in Trellis Method

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Introduction

A well-known Indian proverb goes, “No Tomato, No Cooking.”. Tomato (*Lycopersicon esculentum*) is most widely cultivated crop in India and important crop in terms of nutrition and income. It is an herbaceous plant that grows to a height of 1-3 m with a weak woody stem belonging to family *Solanaceae*. India is the second largest producer of tomato in the world after China with total production of 20299.6 Tonnes in an area of 852 thousand ha. (NHB 2021-22).

Problem

Despite the economic importance of tomato, its production is confined among small farm holdings is laced with technical and economic constraints in Khammam district.

In Addition many challenges like high incidence of pests and diseases, lack of technical feasibility, poor availability of hybrid seeds, shortage of water especially during the dry spells and disproportionate rains in the rainy season. Fruit rot is other another factor deteriorating the quality of fruits. Considering the above factors, KrishiVigyan Kendra, Wyr. Scientist introduced trellising of tomatoes that can address the problem of pest and disease incidence to a great extent and improve the fruit quality. Trellising the plants is technically feasible and economically viable. While harvesting the trellis method involves less drudgery when compared to traditional method and easy in harvesting.

Technology interventions

Keeping in view of the above problems, the farmer Sri V SriHari garu of Repallevada village, Enkoor Mandal of Khammam district has switched to trellis method for tomato cultivation. In this method he cultivated with indeterminate type of tomato varieties suitable for the system.

Land Preparation

The land is ploughed 2-3 times and main field is prepared by mulching and spreading drip laterals. Mulching sheet is used to cover the plant bed. Holes are made on mulch film.

Nursery preparation

It is advisable to raise the nursery in raised nursery bed. Soil is treated with 3gms of copper oxy chloride or 0.5% Bordeaux mixture in 1 liter of water. Prepared the 3-4 meter long and 120 cm in width and about 15 cm in height. Seeds are sown in nursery bed with 10cm spacing and covered with polythene sheet or paddy straw, after germination the mulch must be removed. Drip lines are arranged at the centre of the bed.

To set up a hanging-string trellis, he started with tall, strong posts, driven into the ground 7 feet, apart with a line of strong wire, 12 gauge high tensile wire stretched tightly, between the posts. 5 to 6 feet height bamboo or other poles are placed in between the beds to provide strength to twines. Some length of twine is tied to the wire at every point where a vine will be suspended, and then loosely tied at the base of the plant with an overhand knot. The 25-30 days seedlings are transplanted to the main field and planted 45cm spacing between plant to plant. The farmer planted about 10000 plants in his 1 acre of field with trellis technology.

Staking is provided with the bamboo poles or wood sticks to prevent the foliage and fruits touching the ground, it also helps in increase the fruit yield, reducing fruit rot and easy spraying. Each branch is trained to the horizontal wire with the help of gunny wire, the branches are to pulled with easy hand to prevent from breakage and knotted to the horizontal wire.

Suckering: Suckers will be developed between each compound leaf and stem in indeterminate types. These suckers are removed, leaving only the main stem as a growing point.

Weed management

Application of metribuzin and Quizalphos Ethyl herbicide is sprayed 15 to 20 days after transplanting. Irrigation is given daily to supply 1-2 liters of water/sq.m/day depending on the local weather condition

Fertilizer management

The farmer has better yields as nutrient management was following soil testing recommendations. In this technology, the fertilizers are applied through fertigation method.

As the nutrients are available to the root zone and directly absorbed by the roots uniform plant growth was observed. 80-100-100 kgs of NPK is applied, 75 % of the K is to be given in the form of fertigation and remaining 25% is applied as basal dose



Scientist visit to the farmer field

Impact of intervention:

Trellising resulted in upright crop which improved air penetration reducing incidences of fungal disease attacks and easy maneuvering when carrying operations like spraying. Trellising tomatoes also increased pollination and reduced vine damages during harvesting. Mulching and fertigation along with trellising improved the crop yield. Finally 40-50% yield increase was observed along with increased crop duration when compared with traditional method of tomato cultivation.

S.No	Particulars	Cost of cultivation (Rs/acre)	Cost of cultivation (Rs/acre)
1	Seed cost and sowing	2400	2400
2	Raising of nursery	1500	1500
3	Main field preparation and mulching	10,500	10,500
4	Transplanting charges	2000	2000
5	Trellising cost	-	25,000

6	Manures andFertilizers	7000	12,400
7	Pesticides and spraying charges	10,536	10,800
8	Harvesting	10,000	14,000
9	Total Cost of Cultivation	43,936	78,600
10	Yield (q/ha)	172.4	249
11	Percentage of yield increase		44.26%
12	Gross returns	86310	174322.4
13	Net returns	42374	95722
14	CB Ratio	1:1.96	1:2.21

