



## Popularization Organic Farming Practice in Tomato Cultivation Through Front Line Demonstration

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Tomato (*Solanum lycopersicum*) is the important vegetable crops being utilized everywhere in India. In Namakkal district, Tamil Nadu, tomato is the major vegetable crops and cultivating to extent of 1000 ha in Kharif season. Compared to other horticultural & agricultural crops, it is having potential to gives more yield within short span of time. Henceforth, day by day area under cultivation increasing for tomato. It included in human diet for the supply of vitamins and minerals. Tomatoes supplies lycopene content having an anti-oxidant property that may gives to protect against carcinogenic substances.

Excessive and unbalanced fertilizers application lead to multinutrient deficiency in soil. It deteriorates the soil health as well as crop productivity. Also, excessive absorption, assimilation of chemicals affects

### ABSTRACT

In Namakkal district, Tamil Nadu, tomato is the major vegetable crops and cultivating to extent of 1000 ha in Kharif season. To motivate the farmers to adopt organic farming practice, front line demonstrations was conducted in farmer's field under kharif season. Farmers motivated to adopt composting and vermicomposting technologies by using biodegradable wastes obtained from their farms and other biocontrol agents' preparation at their farm holding. Then FLD trails were conducted at selected farmer's field. From the demo plot, tomato yield was recorded high (245.56 q/ha) and yield increase was 14.59% compared to farmers' practice. Also results revealed that Virus infestation at fruiting could not be controlled by foliar spraying with bio agents at initial stage of farmers who adopting organic practice. To achieve the potential yield in organic farming practice, farmer's interest and patience to be needed for 3- 4 years for complete conversion of field into organic farming.

the soil - plant - human – animal health and also entire biodiversity in the world. Recently government mainly focus on rejuvenation of soil health for sustaining crop productivity. Hence front-line demonstration was conducted to in farmer's field to promote organic farming practice in tomato.

### METHODOLOGY

Mass awareness campaign was conducted regarding tomato cultivation with organic farming practice followed by training was conducted and then group discussion were made. Followed by 20 interested farmers were selected and hands on training were conducted to them for preparation organic amendments to soil enrichment & foliar application. Jeevamirtham, ganajeevamirtham, vermicompost, panchagaviya, 3 G extract, and pest

repellent preparation were demonstrated.

Then Front-line demonstration in tomato was taken in two adopted villages namely, Moolakkadu and Naraikinaru villages in Rasipuram and Namagiripettai blocks of Namakkal district, Tamil Nadu. Two packages i.e. farmers practice (check) and organic package of practices were studied in area of 8 ha. In farmers practice, applied farm yard manure @ 10 t/ha, application of DAP @ 250 kg/ha, followed by Complex fertilizers @ 250 kg/ha @ 45 Days after Planting &



Foliar spraying with IIHR vegetable booster @ 5g/litre twice at flowering stage and 15 days after first spray. Organic package of practice was followed as per the guidelines given by Dept. of Nammazhvar Organic Farming Research Centre, Tamil Nadu Agricultural University, Coimbatore. In organic farming practice applied FYM @ 10 t/ha as Basal dose followed by top dressing with Vermicompost @ 5t/ha in 3 equal splits at 30, 45 and 60 days after planting. Applied 2 kg/ha of Azospirillum and 2 kg/ha of Phosphobacteria & 200 kg/ha of Neem cake along with 50 kg of FYM. Panchagavya @ 3% given as foliar spray followed NSKE@5%, 3G extract @ 5% and 5 leaf herbal extract @ 5% once in 30 days interval. Set up Pheromone trap at 12 Nos./ha for *Spodoptera* & *Helicoverpa control* and yellow stick trap at 12 Nos./ha for sucking pests was placed in experimental field. Tomato sivam hybrid was taken as test crop and carried out all the package of practices as per the guidelines given in Crop Production Guide of TNAU, 2020. This experiment was taken up in Kharif season during the year 2020-2021 in 20 trained farmer’s field. Growth and Yield parameters like plant growth rate at various growth stages, no. of branches/plant, days at first flower emerged, average no. of fruits per plant and fruit weight (g) was calculated from each harvest in randomly selected five plants and then average was calculated and presented. Yield was calculated in square meter area and then multiplied into hectare. Economics was worked out with gross income & cost of cultivation.

**Table 1. Growth and Yield attributes of tomato**

Particulars	Plant height at 30 DAS (cm)	Plant height at 60 DAS (cm)	Plant height at 90 DAS (cm)	Plant height at 120 DAS (cm)	Branches/plants (Nos.)	First flowering stage (50% flowering) - days	No. of flowers /plant (Nos.)	Fruit yield /plant (kg)
Farmers practice (check)	45.67	68.08	98.6	109.1	6.43	59	184	1.278
Organic farming practices	49.32	74.08	106.54	127.05	7.09	53	212	1.642
CD (P=0.05)	1.941	2.353	2.949	6.214	0.274	1.149	7.753	0.093

**Table 2. Yield & its attributes & economic of experiment**

Particulars	No. of fruits/per pant	Average fruit weight (g)	Yield (t/ha)	% increase over control	Cost of cultivation (Rs./ha)	Gross income (Rs./ha)	Net returns (Rs./ha)	B:C Ratio
Farmers practice (check)	167	108.7	21.43	14.59	1,10,076	1,92,857	82781	1.75
Organic farming practices	189	145.7	24.56		1,11,005	2,21,000	1,09,995	1.99
CD (P=0.05)	4.317	6.320	0.681					

## RESULTS

*Growth and yield attributes* : Growth and yield attributes were recorded periodically in random five plants. The average data of five plants are presented here under (Table 1). The growth of the plant was increased from 30 days after planting to 120 days after planting in the main field. The growth was substantially maintained till the last harvest (upto 150 days). Organic farming with periodical nutrient supplements increased the growth attributes of tomato. The results also revealed that growth promoters' application induced the flowering ability of crops. Hence six days earlier 50 percent of plants expressed flowering capacity than farmer's practice.

It also found to be observed that no. of flowers/plant was more 212 nos. followed by fruit yield 2.942 kg in organic plot than farmer's practice.

Number of fruits/plant and fruits weight (g) increased in organic farming practice whereas yield attributes decreased in farmers practice (Table 2.). Yield was increased upto 14.59% over farmers' practice.

## DISCUSSION

*Growth and yield attributes of tomato* : Growth and yield attributes were recorded from 30 to 120 days after planting of tomato. The growth of the plant was increased progressively from vegetative and harvest stage of tomato. This might be due to proper supplement of balanced nutrients from vegetative to harvest stage through organic supplements under organic farming (Table 1). In general, 72% of farmers well known about timely application of farm yard manure, neem cake and vermicompost application irrespective of crops in order to increase growth & yield attributes of crops (Sahoo *et al.* (2022)). It enhanced the growth of meristematic tissues and thereby height and lateral branches increased proportionately under organic farming. Proper growth of the plant induces the reproductive capacity of plants which in turn recorded maximum flowering and fruiting ability. Thereby maximum no. of flowers/plant and fruit yield/ plant noticed in organic plot than farmers practice. Also continuous practices of organic farming improved the production potential of soil and farmers motivated to get organic certification to get better price in the market since tomato is directly consumed by many people as salad (Narain *et al.*, 2024). 14 farmers in that district got organic certification and they are being

cultivating vegetables, greens, groundnut, turmeric as major crop for income generation with the guidance of KVK (Jaganathan, *et al.* (2010)). By the continuous practicing of organic farming practices improved the inherent potential of farmers that motivated a lot to adopt conventional farming Sangeetha *et al.* (2018) also stated the above statement. Bhattacharjee *et al.* (2021) reported that KVK intervention had contributed a lot in adoption level of organic farming followed by education and socio-economic status of individual farmers.

Number of fruits/plant and fruits weight (g) increased in organic farming practice whereas yield attributes decreased in farmers practice (Table 1). The reason for enhanced fruit yield & its attributes might be due to assimilation of macro and micro nutrients on various growth stages which ultimately lead to more photosynthetic activities and regulates the synthesis of various metabolites needed for yield enhancement (Meena and Verma, 2019). Yield was increased upto 14.59% over farmers practice. Lepcha *et al.* (2018) also reported that adoption of integrated organic approach through capacity building programme improved the yield of tomato than farmers practice. Even then low fertility observed in harvest, Inherent supply of nutrients from soil and sustained release of macro & micro nutrients especially from the organic resources might be contributed to better assimilation and nutrient uptake of nutrients increased the yield and its attributes. Highest yield parameters *viz.*, number of the fruits and fruit weight resulted in the maximum fruit yield.

Naturally available organic resources like farm yard manure, dung, urine, green leafs like neem, domestic wastes were utilized in their farm for conducting trial and hence cost was not included in the cost of cultivation (Table 2). At the same time, expenditure involved for purchase of seed, biofertilizers, biocontrol agents and labour were included. In conventional practice costs involved for agrochemicals like fertilizers, growth promoters, herbicide and pesticide were additionally included in the expenditure (Sengupta *et al.*, 2018). The yield and its attributes observed in the organic practice were higher than farmers practice. Farmers preference for organic produce was quite increasing high in the uzhar Santhai, local shops and nearby needy farmers. An average rate of Rs.10/kg was getting irrespective of the season. Hence net profit and benefit cost ratio for

organic practice was 1.99 compared to 1.75 in farmers' practice. Satyajeet *et al.* (2018) reported that higher net return in organic practice might be associated with synergistic effect of all integrated organic inputs utilized for organic cultivation. Also, the study revealed that trained farm women had a patience to learn complete package of practices and adopted well and got more yield (Kumar *et al.*, 2024). Sharma *et al.*, (2016) suggested from his study, training and social participation of farmers had a significant impact towards sustainability in organic farming.

From this study, it can be suggested that government has to take more initiative to give subsidy for variable inputs especially seed/panting material, bioagents, organic manure supplements and machineries, strong management skill for pest and disease management to those farmers involved in organic farming (Satyajeet *et al.*, 2019). Also marketing facility might be created to get better at local level for organic farmers. These are the practices pave amenities to increase the more no. of farmers involved in organic farming and maximized the productivity of crops. This statement was supported by Singh and Thakur (2022).

## CONCLUSION

From this front-line demonstration, it can be concluded that yield, its attributes, and economics were observed to be higher in organic package of practices adopted fields. At the same time farmer's interest and patience need to be addressed to adopt the organic farming practices and to motivate nearby farmers and villages in a larger scale. Also virus infestation in the middle of flowering and fruiting stage couldn't be controlled by new beginners involved in organic farmers. At this juncture, Krishi Vigyan Kendra and other extension organization personnel might pay more attention towards in strengthening of on farm site production of organic resources to sustain organic farming.

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