

A STUDY ON PRODUCTION PRACTICES IN ORGANIC TOMATO CULTIVATION IN BELAGAVI DISTRICT OF KARNATAKA

Mr. Mahadevappa Muttalageri,

B.Sc(Agri), MBA (Agri – Bus Mgt), Research Student.

Dr. Mokshapathy. S,

PGD – Eng., MAMM., MDP., Ph.D.,

Asst Professor in Agri – Business Management.

Department of Agri –Business Management. Institute of Development Studies.

University of Mysuru, Mysuru, Karnataka.

Mail ID – mhmphd97@rediffmail.com,

ABSTRACT

A study on production practices being followed in organic tomato production in Belagavi district of Karnataka. The primary data were collected from 140 organic tomato cultivars/farmers through structured questionnaire method for the study. The result revealed that the adoption of organic tomato production practices in cultivation of tomato crop by self nursery raising (89.28%) and transplanting recommended aged seedlings (90.00%). Green manuring with Niger and Sunhemp were adopted by 82.14% of the respondents. The practice of timely weeding was observed high percent (96.42%) followed by maintaining the optimum soil moisture to avoid leaching and mobility of nutrients (89.28). majority of the respondents (97.85%) were found to adopt deep summer ploughing and 96.42%

of the farmers practicing crop rotation with legume (soybean, green gram and cowpea etc) in organic tomato production. Similarly the practice of monitoring pest, collection and destruction of affected plants and shoots were noticed among 90.71% and 96.42% of the respondents respectively. Most of the organic tomato growers (97.85%) found to use neem seed karnal extract at the rate of 2 ml per litre of water to control worms and whiteflies. The desired practices of hand weeding were observed with 94.28% of the respondents. Majority of farmers were found to practice cleaning the surface of tomato by wet cloths (97.14%). Finally it was noticed that 97.86% of the organic tomato growers were found to pack the tomato in 10 Kg and 20 Kg capacity of bamboo baskets.

Key Words: Organic tomato, organic production practices, green manuring

I. INTRODUCTION

Organic production practices are assuming importance all over the world now a days in order to make the harvested produce free of pesticide residues and other harmful chemicals, to minimize soil, water and environmental pollution and sustain the soil productivity. It relies up on crop rotations, crop residues, animal and green manures, legumes, mechanical cultivation, bio-fertilizers and biological pest control methods to maintain soil productivity, to supply nutrients and to control insects, disease and weeds. Organic food has evolved from being a fashion cult to a necessity for healthy living and the global food markets present a bright situation for the organic food suppliers as the demand for outstrips the supply.

Organic vegetable production is becoming important in the horticulture sector in India and it includes all horticultural systems that promote environmentally, socially and economically sound production of vegetables. These systems take local soil fertility as a key to successful production. By respecting the natural capacity of plants, animals and landscape, it aims to optimize quality in all aspects of horticulture and the environment. Organic vegetable production reduces external inputs by refraining from the use of chemo – synthetic fertilizers and pesticides. Instead it allows the powerful laws of nature to increase both vegetable yields and disease resistance. We have exploited our natural resources beyond all limits to realize high productivity and production. During the recent past, the use of chemicals for the management of pest and disease and improve the soil fertility has been increased. Some of these chemicals do not degrade easily and enter into human body leading to health hazards.

Therefore in several countries around the world including India, demand for organically produced vegetables is increasing among the consumers. In this direction it is endeavour of all people concerned with organic or safe vegetable production. The principle objectives of organic vegetable production are to develop a sustainable farming system for guaranteed adequate vegetable production in the foreseeable future to develop self – sufficient horticulture system which would rely as much as possible upon own resources and to develop an alternative strategy over chemical farming which would be a guideline for working of biological processes in natural eco-systems.

II. REVIEW OF LITERATURE

Ashwathaiah and Krishna (1973) in their study on adoption of improved practise by potato growers in Belgaum district noticed that all the respondents used improved seeds, while 86 percent were found to applied recommend dose of FYM. Adoption of recommended spacing and application dose of nutrients noticed with 74.30 percent and 65.70 percent of farmers respectively but plant protection measures were not adopted by 78.60 percent of potato growers.

S.S. Nagarajan (2010) in his article on “growing brinjal in the organic way” had highlighted that attempted to describe the cultivation of brinjal in the organic way. He discussed the produce is harvested when they are still tender and when they have attained a good size and when the surface is bright and glory. He found that organic agriculture is an economically viable proposition and farmers can earn more income through the premium price for organic produce and they need fewer inputs to manage return.

K. Guruswamy and K. Balanaga Guruna (2010) have done a study on “SWOT Analysis of organic farming management in India”, to analyze the internal environment and identifying external opportunities. SWOT analysis of organic farming ,reveals that organic farming practices provide number of valuable benefits like poison less food, harmless water, soil restoration to the natural condition, creating friendlier environment and total employment for farmers.

S.Jeyakumar (2011) did a study on “organic agriculture – a good quality of life for all” to develop a sustainable agriculture system for guaranteed adequate food production and self-sufficient agriculture system, alternative strategy over chemical agriculture primary data was used for this study. The study found organic agriculture is a production system that sustains the health of soils ecosystems and people. It relies on ecological processes, biodiversity and cycles

Justification or Importance of the study:

Inorganic farming affects the environment in multiple ways. Pesticides sprayed on vegetables not only destroy pests and contaminate the crops but also kill beneficial insects. The residue of these pesticides affects the health of human being. Organic farming on natural

resources favours interactions with in the agro ecosystem that are vital for both vegetable production and nature conservation. Ecological services derived include oil farming and conditioning, soil stabilization and waste recycling. Organically grown food is dramatically superior in mineral content. So, “**A Study on Production Practices in Organic Tomato cultivation in Belagavi District of Karnataka**” is most appropriate and the present study is undertaken for studying production practices being followed in organic tomato production or cultivation .

Objectives of the Study:

1. To study the organic tomato production practices being followed by organic tomato growers.

Scope of the study:

This study would help the common people to understand the importance of organic tomato production. Study may also help the tomato cultivators to take up appropriate steps to increase their income by the application of various production practices given by the organic tomato growers. This study would help the both horticulture and agricultural department and policy makers to understand the easy production practices by the farmers who use organic farming; thereby programmes can be designed by the Government to minimize the problem of the farmers.

III.METHODOLOGY

The study was conducted during 2014-15 in Belagavi district of Karnataka state. The research design and statistical tools used as follows.

Research design:

Primary data were collected from 140 organic tomato cultivars / farmers through structured questionnaire method at Belagavi district of Karnataka.

Statistical tools used

The collected data were scored, tabulated and analysed by using suitable statistical tools such as frequency, percentage, mean and standard deviation. The inferences were drawn at each level of intervention to arrive at final results.

IV. RESULTS AND DISCUSSION:

1. Organic tomato production practices being followed by organic tomato growers.

The details of organic production practices being followed by the organic tomato growers have been grouped under the components like agronomic practices, practices of soil fertility management, practices of management of pest and disease and finally practices of post harvest losses of tomato.

Table. 1.1 Adoption of agronomic practices by organic tomato growers

(N = 140)

Sl.No	Practices	Tomato	
		Number	Percentage
1	Sowing Type	138	98.57
2	Nursary raising		
a	Self raised	125	89.28
b	Purchased from outside	15	10.71
3	Age of transplanted seedlings		
a	As per recommendation	126	90.00
b	Other than recommended	14	10.00
4	Seed rate : as per recommended	125	89.29
5	Green manuring (Niger, Sunhemp and navadhanya)	115	82.14
6	Use of indigenous / local seeds (Tomato – champakali)	110	78.57
7	Cropping System		
a	Sole cropping	92	65.71
b	Inter cropping (with brinjal / maize)	48	34.28
8	Seed treatment with (Panchagavya / beejamruta)	127	90.71
9	Mulching (Sugar cane trash)	37	15.00

Source: Primary data

The data depicted in table No. 1.1 revealed that the adoption of organic tomato production practices in cultivation of tomato crops, by self nursery raising (89.28%) and transplanting recommended aged seedlings (90.00%). Similarly, a high percentage of farmers were found to practice recommended seed rate in tomato (89.28%). Green manuring with Niger and

sunhempa were adopted by 82.14% of respondents. Uses of indigenous and local varieties like champakali were grown by 78.57% of the respondents. The sole cropping practices were adopted around 66% by the respondents. The practice of treating with panchagavy (prepared by mixing cow dung – 10 kg, cow urine 5 litre, cow milk – 250 ml, cow curd – 250 ml, cow ghee – 100g) and beejamrut (prepared by mixing cowdung – 5kg, cowurine – 5 litre, cow milk – 1 litre, lime – 250 g, water – 100 litre) was noticed with 90.71% of farmers. The practice of mulching with sugarcane trash was noticed with 26.42 percent of vegetable growers.

Table. 1.2 Adoption of soil fertility enhancement practices by organic Tomato growers

(N = 140)

Sl.No	Practices	Tomato	
		Number	Percentage
I	Application of organic manures		
1	Application of farm yard manure	140	100
2	Use of Vermi-compost (5-10 q/ac) once in year	125	89.28
3	Use of Neem seed cake (5-10 q/ac) / press mud (5-10 q/ac) once in year	75	53.57
4	Composting (2 t/ac) once in year	19	13.57
5	Application of poultry manure (30 q/ac) once in year	12	8.57

Source: Primary data

Table 1.2 noticed that 100% of organic tomato growers applied recommend quantity of farmyard manure (5-10 t/acre) for tomato production. Similarly, a high percent of farmers (89.28%) were practicing vermicompost @ 5-10 q/acre, whereas the application of neem seed cake @ 5-10 q/acre or pressmud @ 5 t/ acre in tomato crops once in year was noticed with 53.57% of the respondents. Application of composting once in year (2t/ac) and poultry manure (@ 30q/ acre) by 13.57 and 8.57 percent of the farmers respectively.

Table 1.3 Intercultural practices for Organic Tomato Production

(N = 140)

Sl.No	Intercultural practices	Tomato	
		Number	Percentage
1	Timely weeding	135	96.42
2	Maintaining optimum soil moisture to avoid leaching and mobility of nutrient	125	89.28
3	Incorporation of crop residues like (wheat straw / soybean)	35	25.00

Source: Primary data

Table 1.3 revealed that the practices of timely weeding was observed among high percent (96.42%) followed by practice of maintaining the optimum soil moisture to avoid leaching and mobility of nutrients (89.28%) in organic tomato cultivation. The practice of incorporating crop residues like wheat residue and soybean residue was noticed with only 25.00 percent of the respondents.

Table. 1.4 Use of Bio-fertilizers for organic tomato production

(N = 140)

Sl.No	Use of Bio-fertilizers	Tomato	
		Number	Percentage
1	Azatobactor, as per recommendation 2 kg /ac soil application, once in a year	47	33.57
2	Azospirillum, as per recommendation (2 Kg / ac soil application) once in year	34	24.28
3	Phospet sulbalizers, as per recommendation (2 kg/ac soil application) once in a year	27	19.28
4	Crude protein pack (1 Kg / ac) once in year	18	12.85
5	Pseudomonas as per recommendation (2 kg/ ac soil application) once in year	9	6.42
6	Aspergillus, as per recommendation (2 kg/ac soil application) once in year	5	3.57

Source: Primary data

Table 1.4 revealed that the various types of bio-fertilizers like *Azatobacter* as per recommendation (2 Kg/acre) was found with 33.57% of farmers in organic tomato

production, followed by *Azospirillum* (2 kg/acre) and *Phospet solubilizers* use (2 kg / acre) as per recommendation was noticed among 24.28% and 19.28% of farmers respectively. But negligible percentages (12.85%) of respondents were found to use crude protein (@ 1 kg/acre). Similarly use of *pseudomonas* and *Aspergillus* (2 kg/acre) was noticed with only 6.42% and 3.57% of respondents respectively.

Table. 1.5 Management of pest and disease by cultural practices

(N = 140)

Sl.No	Practices	Tomato	
		Number	Percentage
1	Deep Summery ploughing	137	97.85
2	Crop rotation with legume crop (Soybean / cow pea)	135	96.42
3	Avoiding ratoon cropping	132	94.28
4	Synchronized planting	128	91.42
5	Trap cropping (Marigold)	120	85.71
6	Mixed cropping (Coriender / leafy vegetables / onion, / maize)	111	79.28
7	Timely showing of entire block	101	72.14
8	Appropriate Season		
a	Kharif (May – June)	85	60.71
b	Rabi (Sept – Oct)	72	51.42
c	Summer (Jan – Feb)	35	25

Source: Primary data

The depicted in table 1.5, revealed that 97.85% of the respondents were found to adopt deep summer ploughing and 96.42% of the farmer practicing crop rotation with legume (soybean/green gram/cowpea) in organic tomato production. Similarly high percentage of farmers (94.28%) in tomato had the practice of avoiding ratoon crop and 91.42% of farmers avoiding synchronized planting. Trap crops like marigold, garlic, onion and coriander were adopted by 85.71 percent of the respondents. Mixed cropping with coriander, leafy vegetable, maize, sesame and mustered was noticed with 79.28 percent of respondents followed by timely sowing of entire block was noticed with 72.14% of the farmers. Around 60% of farmers preferred sowing in Kharif season (May – June) followed by rabi (September –

October) and summer (January – February) planting among 51.42 and 25.00 percent farmers respectively in organic tomato production.

Table 1.6 Management of pest and disease by mechanical practices

(N = 140)

Sl.No	Mechanical practices	Tomato	
		Number	Percentage
1	Collection and destruction of affected plants and shoots	135	96.42
2	Monitoring of pest	127	90.71
3	Uprooting of alternative host plants	120	85.71
4	Collection and destruction of Egg masses / larvae	97	69.28
5	Use of pheromone trap	29	20.71

Source: Primary data

Table 1.6 revealed that the practices of monitoring of pest, collection and destruction of affected plants and shoots were noticed among 90.71% and 96.42% of the respondents respectively. Similarly, a high percent (85.71%) of farmers were found to adopt uprooting of alternative host plants like weeds and collection and destruction of egg masses and larva 69.28% of the respondents followed by 20.71 percent of the respondents found to use pheromone trap.

Table 1.7 Management of pest and disease by Bio – pesticides or agents.

(N = 140)

Sl.No	Practices by using Bio – pesticides or agents	Tomato	
		Number	Percentage
1	Use of Neem Seed Karnal extract to control warms and white fly @ 2 ml/lit of water during standing crop	137	97.85
2	Use of neem cake to control nematodes / root disease (3-5 q/ac)	69	49.28
3	Applying of Ash (10 Kg) and cow dung slurry (25 lit) as the Bio digester along with irrigation	57	40.71
4	Erecting of Bird perches for predators like crow, myna etc (Jawar crop / erecting tree branches)	32	22.85

Source: Primary data

Table 1.7 revealed that majority of the tomato growers (97.85%) found to use neem seed kernel extract at the rate of 2 ml per litre of water to control worms and whiteflies. The application of neem cake at the rate of 3-5 q/acre to control nematode root disease was noticed with 49.28 percent of the respondents. The practice of applying Ash (@ 10 Kg/acre) and cow dung slurry (@25 litres) of the bio digester along with irrigation was observed with 40.71 percent of tomato growers. Lastly the practice of erecting bird perches for resting predators like crow, myna was observed with 22.85 percent of the respondents in organic tomato production.

Table. 1.8 Weed Management practices for organic tomato production

(N = 140)

Sl.No	Weed Management Practices	Tomato	
		Number	Percentage
1	Timely hand weeding	132	94.28
2	Good land preparation operations (One ploughing followed by two harrowing)	130	92.85
3	Timely inter cultivation	105	75.00
4	Keeping field bunds from weeds	93	66.42
5	Soil solarisation by exposing soil	87	60.00

Source: Primary data

The table 1.8 revealed that the desired practices of hand weeding were observed with 94.28 percent of the respondents. Around 93% of the respondents had practice of good land preparation. Timely inter cultivation were practiced 75.00 percent of the respondents. Keeping field bund from weeds and soil solarisation practicing followed 66.42% and 60.00 % of respondents respectively.

Table No. 1.9 Adoption of post harvest management practices by organic vegetable growers

(N = 140)

Sl.No	Post harvest Management practices	Tomato	
		Number	Percentage
1	Cleaning surface of tomato with wet cloth	136	97.14
2	Grading (Size- Small, Medium and Big)	127	90.71

3	Value addition	9	6.42
4	Packing in Baskets	137	97.85

Source: Primary data

The table 1.9 revealed that the majority of the farmers were found to practice cleaning surface of organic tomato by wet cloths (97.14%). The number of grading of harvested produce into small, medium and big size with the objective of getting better price for the produce was noticed among 90.71% of the respondents. The practice of preparation of sauce as value addition was noticed with only 6.42 % of organic tomato growers. It was noticed that 97.85% of the organic tomato growers were found to pack the tomato in 10 kg and 20 kg capacity of bamboo baskets.

V. CONCLUSION

Tomato is one of the most important vegetable crop and has wider use. Organic tomato cultivation gives reasonable profit to the farmers and also provides employment opportunities to the rural people. Organic farming is becoming more popular because consumers are demanding healthy and environment friendly food. Organic farm products are generally more expensive than inorganic crops. Yields drop sharply during the phase of conversion as it take some time for the soil and plants to reach equilibrium. However, yields rise again, once management systems get established. Organic tomato cultivation is technically feasible, financially viable.

REFERENBCE:

1. **Ashwathaiah and Krishna (1973)**, Adoption of improved practices in Potato cultivation by farmers and their characteristics Farm and Factory J, Nov 1973, University of Agricultural Sciences, Bangalore
2. **Jeyakumar.S (2011)**, “Organic agriculture a good quality of life for all “Kisan World Vol – 28 No – 3 , PP: 47 – 51.
3. **Guruswamy.K and Balanage Gurunathan.K (2010)**, “SWOT analysis of Organic farming management in India” Southern Economist Vol – 49 No: 8 , PP 14 – 16

4. **Nagarajan.S.S (2010)**, “Growing Brinjal in the organic way” Kisan world Vol – 37
No – 10, PP: 17 – 18.