**Knowledge Level on Recommended Tomato Cultivation Practices among the Tomato Growers in Madurai District**

## ABSTRACT

Tomato is one of the most important vegetable crop and it plays a major role in daily diet. So, it considered as vital commercial and dietary vegetable. During 2017-2018, the tomato cultivation area in Tamil Nadu is 29.08 Ha. Even though the production is high, the farmers are struggling a lot to come up well to meet out the demand of growing population. The study on knowledge level of the farmers on recommended cultivation practices will be beneficial to assess the technology reach and intelligence on recommended cultivation practices of tomato farmers. The study was conducted in Chellampatti block of Madurai district. 90 respondents were selected by employing proportionate random sampling technique. The statistical tools such as mean, standard deviation and percentage analysis were used. Most of the respondents (56.67%) had medium level of knowledge on recommended tomato cultivation practices followed by high (22.22%) and low (21.11%) knowledge. Majority of the tomato growers (54.44%) had medium level of adoption on tomato cultivation practices followed by low (30.00%) and high (15.56%) level of adoption. Majority of the tomato farmers had cent per cent knowledge on practices like season of sowing, Farmyard Manure, planting material, transplanting, spacing, manual weeding and symptom of harvest. They had low knowledge on practices like seed treatment with bio-fertilizer (22.22%), damping off (33.33%), tomato spotted wilt (41.11%) and weedicide application (44.44%).

***Key words :*** *Tomato growers, recommended cultivation practices, knowledge level.*

## INTRODUCTION

India ranks second in the world's tomato-producing countries, next to China. The production of tomato during 2017-2018 is likely to be around 197 lakh tonnes as against 207 lakh tonnes in 2016-2017 which is about 3 per cent higher than the last five years average production. The productivity of tomato in India was 25.04 MT/Ha in the year 2017-18. Tamil Nadu contributes a share of tomato cultivation as 29.08 ha area and the production as 887.08 MT in the year 2017-18 and the productivity of tomato was 30.51MT/ha *(Horticultural Statistics at a Glance, 2018)*. The demand for tomato is increasing day by day and we are in a need to feed the growing population*.* Knowledge is a fundamental key for adopting any innovation. This makes the farmers to understand the innovation and their importance. Knowledge of a person is not only acquired by learning but also by experience. It could be the doorway for adoption. Hence an attempt was made to assess the knowledge level of the tomato growers on tomato cultivation practices viz., crop improvement practices, crop management practices, plant protection practices physiological disorders and harvesting practices.

## MATERIALS AND METHODS

The study was conducted in Panniyan and Karumathur villages of Chellampatti block of Madurai district. The present study was confined to *expost-facto* research design. Being a vegetable belt, 90 tomato growers were selected randomly from two villages for the study. The data was collected by pretested interview schedule. The collected data were analyzed, tabulated and interpreted. The statistical tools such as mean, standard deviation and percentage analysis were used. *Bloom et.al.,(1995)* defined knowledge as those behaviour and test situations which emphasize the remembering by recognition of recall of ideas, materials or phenomena. The knowledge on tomato cultivation were categorized into four subheadings as crop improvement practices, crop management practices, crop protection and harvesting practices. The study on knowledge level of the farmers on recommended cultivation practices will be beneficial to assess the technology reach and intelligence on recommended cultivation practices of tomato farmers. In this study, knowledge symbolizes the farmers grasping of the approved tomato cultivation process. This knowledge was evaluated by using a teacher made test constructed covering all aspects of cultivation. The knowledge has been operationalized that the responses were dichotomous in nature as known and unknown for which a score of 2 and 1 are assigned respectively. Using percentage analysis practice wise knowledge was studied. The formula used was as follows.

No. of respondents answered correctly

× 100

Knowledge level of ith practice =

Total No. of respondents

The total knowledge score of each respondent was calculated by summing up the scores obtained by the individual respondent. Based on the scores of the respondents, their overall knowledge was assessed as low, medium and high by using cumulative frequency.

## RESULTS AND DISCUSSION

The knowledge level of every farmer may vary due to experience, information source utilization and so on. Every individual has different thoughts and practice. Knowledge of a person is not only acquired by learning but also by experience. It could be the doorway for adoption. Hence an attempt was made to assess the knowledge level of the tomato growers on tomato cultivation practices. The knowledge level was shown in the Table 1 and Figure 1.

**Figure 1: Distribution of respondents according to their overall knowledge level**

**Table 1. Distribution of respondents according to their overall knowledge (N=90)**

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No** | **Category** | **Frequency** | **Per cent** |
| 1 | Low (<57.51) | 19 | 21.11 |
| 2 | Medium (57.51- 62.79) | 51 | 56.67 |
| 3 | High (>62.79) | 20 | 22.22 |
|  | Total | 90 | 100.00 |

Mean = 60.15 Standard deviation = 2.64

Table 1 was clearly showed that the more than half (56.67%) of the tomato growers had medium level of knowledge followed by high (22.22%) and low (21.11%) knowledge level on recommended tomato cultivation practices. Similar findings were in accordance with Sangeetha *et al.,* (2013),Prasad *et.al.,* (2018) and Yadav *et.al.,* (2014).

Overall, it can be stated that 78.89 per cent of the tomato growers had medium to high level of knowledge in recommended tomato cultivation practices. The exposure was given by State department of Horticulture and Agricultural College Madurai, nursery unit nearby study area and input dealers make the farmers aware of tomato technologies.

The knowledge on tomato cultivation were categorized into four subheadings as crop improvement practices, crop management practices, crop protection and harvesting practices. The practice-wise knowledge level on tomato cultivation is tabulated in Table 2.

### *i).Crop Improvement Practices*

The farmers in the study area had cent per cent knowledge on sowing season, FarmYard Manure application, choosing planting material, transplanting and spacing. The farmers know the importance of above practices. Hence, they had good knowledge. The practices like field preparation (97.88%), hybrids (96.77%), Urea (85.66%), Superphosphate (75.66%) and Muriate of potash (64.44%) were known by 64 to 98 per cent of the farmers. Regular exposure by state agricultural and horticultural departments, private input dealers make the farmers to aware of above practices. Major ruling hybrids are Shivam, Lakshmi, Devi and Rider. Hence majority of the farmers were known the practices.

With regard to Micronutrient application (54.44%), farmers had medium knowledge due to lack of awareness and less importance compared to major fertilizers NPK.

The seed treatment with carbendazim was known by 52.22 per cent of the farmers. But the seed treatment with bio-fertilizers and bio-fungicides were known only by 22.22 per cent. Even though state department of horticulture is taking effort to popularize bio-fertilizers, bio-fungicides and carbendazim, most of the farmers ignore the application might be the possible reasons.

### *ii).Crop Management Practices*

It was found that cent per cent knowledge was observed in manual weeding. The practices on surface irrigation and its interval (98.99%), gap filling (95.60%), earthing up (92.22%) and top dressing (80.00%) were known by 80 to 99 per cent of the farmers. The above practices were regularly undertaken in tomato cultivation in the study area. Hence, Majority of them had knowledge. The findings of the present study are in line with the findings of Jat *et al.,*(2011). The control measures for weeds by weedicide like Pendimethalin, Fluchloralin were known by 44.44 per cent of farmers.

**Table 2. Practice-wise knowledge level and extent of adoption of tomato growers practices (N=90)**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No** | **Items** | **Knowledge** | |
| **I** | **Crop Improvement Practices** | **No** | **%** |
| 1. | Hybrids | 87 | 96.77 |
| 2. | Season of sowing   1. May-June 2. Sep- Oct 3. Nov –Dec | 90 | 100.00 |
| 3. | Field preparation | 88 | 97.88 |
| 4. | Basal dose |  |  |
| 1. FYM @12.5 t/ha | 90 | 100.00 |
| 1. Urea (N@45-50 kg/ha ) | 77 | 85.66 |
| 1. Superphosphate   (P@ 200-250 kg/ha) | 68 | 75.66 |
| 1. Muriate of Potash (K@ 90-100 kg/ha) | 58 | 64.44 |
| 5. | Micro nutrients  Foliar spray of ZnSO4 @ 0.5 per cent, Spray 19:19:19 + Mn @ 1 % at 60 days after planting. | 49 | 54.44 |
| 6. | Planting material | 90 | 100.00 |
| 7 | Seed treatment Practices with chemicals | 47 | 52.22 |
| 8 | Seed treatment Practices with bio fertilizer | 20 | 22.22 |
| 9 | Transplanting(25 - 30 days old seedling) | 90 | 100.00 |
| 10 | Spacing (60X45 cm) | 90 | 100.00 |
| II | **Crop Management Practices** |  |  |
| 11 | Gap filling  (6 - 10 days after transplanting) | 86 | 95.60 |
| 12 | Earthing up | 83 | 92.22 |
| 13 | Manual Weeding | 90 | 100.00 |
| 14 | Weedicide application   1. Pendimethalin/ Fluchloralin | 40 | 44.44 |
| 15 | Surface Irrigation | 89 | 98.99 |
| 16 | Weekly intervals of Irrigation | 89 | 98.99 |
| 17 | Top Dressing   1. N@100 -150kg/ha /Foliar spray 0.3% / Boric acid | 72 | 80.00 |
| **III** | **Plant protection Practices** |  |  |
| 18 | Pests |  |  |
|  | 1. Fruit borer and   control measure (Azadirachtin /Quinalphos) | 67 | 74.44 |
|  | 1. Serpentine leaf miner   and control measure (Neem seed kernel extract /Cyantraniliprole) | 61 | 67.78 |
|  | 1. Thrips and control   Measure (Cyantraniliprole / Thiamethoxam) | 61 | 67.78 |
|  | 1. White fly and control measure (Carbofuran) | 51 | 56.67 |
| 19 | Diseases: |  |  |
|  | 1. Damping off and   control measure (COC @2.5g/l) | 30 | 33.33 |
|  | 1. Leaf spot and control measure (Mancozeb) | 57 | 63.33 |
|  | 1. Tomato early blight and control measure (Hexaconazole / Propiconazole) | 65 | 72.22 |
|  | 1. Leaf curl and control measure (Carbofuran / Malathion) | 63 | 70.00 |
|  | 1. Tomato spotted wilt (Carbofuran) | 37 | 41.11 |
| **IV** | **Physiological disorders** |  |  |
| **20** | **Physiological disorders Practices** |  |  |
|  | 1. Sunscald | 64 | 71.11 |
|  | 1. Fruit Cracking | 67 | 74.44 |
|  | 1. Cat facing | 59 | 65.56 |
| **IV** | **Harvesting Practices** |  |  |
| **21** | **Harvesting** |  |  |
|  | 1. Time of harvest | 89 | 98.99 |
|  | 1. Symptom of harvest | 90 | 100.00 |

### *iii).Plant protection measures*

Under pest management, the knowledge on fruit borer (74.44%), thrips and Serpentine leaf miner (67.78%) was medium to high. Only 56.67 per cent of respondents had knowledge on whitefly.

With regard to disease management, majority of the farmers felt the incidence tomato early leaf blight (72.22%), leaf curl (70.00%) and leaf spot (63.33%). 41.11 per cent and 33.33 per cent of the farmers expressed the incidence of tomato spotted wilt and damping-off.

The State department of Horticulture conducted repeated trainings on vegetable cultivation which made the farmers to aware of control measures and the importance in reducing the pest and disease incidence but majority of farmers were rely upon the pesticide shops for pesticides and disease control. Hence, overall knowledge seems to be medium.

### *iv).Physiological disorders*

This explained the knowledge on incidence and control measures of physiological disorders in tomato cultivation. Physiological disorders like fruit cracking (74.44%), sunscald (71.11%) and cat facing (65.56%) were known to the farmers in the study area due to regular occurrence in their field.

The physiological disorder ultimately reduces the yield of the crop. So, they had medium level of knowledge on physiological disorders. They said that rainfall and high temperature during pre-harvesting or harvesting stage causes the major physiological disorder. The respondents may not aware about the physiological disorders as like as plant protection measures. So, awareness has to be created on the physiological disorders.

### *v).Harvesting*

The respondents had knowledge on symptom of harvest (100.00%) and time of harvest (98.99%). Since harvesting is a regular practice, the farmers had known the symptoms of harvest and time of harvest.

## CONCLUSION

The study revealed that 56.67 per cent of the farmers had medium level knowledge on recommended tomato cultivation practices. Majority of the tomato farmers had cent per cent knowledge on practices like season of sowing, Farmyard Manure, planting material, transplanting, spacing, manual weeding and symptom of harvest. The study showed that low knowledge on seed treatment practices with bio-fertilizer, damping off, tomato spotted wilt and weedicide application. These practices have to be concentrated by the development workers and extension officials in order to increase the production and productivity of tomato.

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