Original Research Article

A Study on Adoption of TNAU Released Small Onion Variety CO (On) 5 among Farmers of Perambalur District, Tamil Nadu

ABSTRACT

Onion (*Allium cepa* L.) is an inevitable vegetable in Indian diet. India holds first place in onion cultivation in the world and Tamil Nadu state occupies ninth place in onion production in India. Perambalur district is the top most producer of small onion in Tamil Nadu. This study was aimed to find the adoption level of small onion variety CO (On) 5 among the farmers of Perambalur district of Tamil Nadu. This study had been conducted using *ex post facto* research design. Of the 4 blocks of Perambalur district, Alathur block was purposively selected for this study that it produces more quantity of small onion compared to other 3 blocks. Irur, Chettikulam, Nattarmangalam and Padalur were the four villages selected in Alathur block for study. The data were collected from 120 respondents among selected four villages using well-structured interview schedule between April to May, 2022. The collected data were tabulated and analysed using frequency and percentage. The results of the study revealed that 65.83 % of the respondents belonged to medium level of adoption category, followed by 23.33 % and 10.33 % of the respondents in low and high level of adoption categories. The farmers who had adopted small variety CO (On) 5 have not been adopted the package of practices properly.

Keywords: Onion, cultivation, indigenous knowledge, ex post facto research design; Package of practices

1. INTRODUCTION

Agriculture in India is projected to register a CAGR of 4.9% during the forecast period 2022-2027. Horticultural crops include different variety of vegetables, fruits, spices, condiments etc. Horticultural crop production goes on an increasing trend in the last few years. Total Horticulture production in 2020-21 is estimated to a record 334.60 million tonnes, which is an increase of about 14.13 million tonnes (4.4%) over that achieved in 2019-20 [1]. Olericulture refers to cultivation of all vegetables such as onion, brinjal, okra, chilly, cucumber etc. India occupies the second position in vegetable production contributing 13.38 % to the total world production. Onion is one of the major horticultural crops which is enumerable in the Indian diet and also has many medicinal characters. Onion belongs to *Alliaceae family*. The word “onion” is derived from Latin word which means “large pearl” [2]. Onion is a biennial herb. Onion contains various nutrients and minerals which are essential for health maintenance. Onion is a nutrient-dense vegetable. They are low in calories but they are high in vitamins and minerals. One cup of chopped onion provides calories14.9 grams (g) of carbohydrate, 0.16 g of fat, 0 g of cholesterol, 2.72 g of fiber, 6.78 g of sugar and 1.76 g of protein [3]. They are rich of vitamin B and vitamin C. They contain around 25 different antioxidants. They have antibacterial property which can fight against dangerous bacteria such as *Escherichia coli*. Pungency of onion is due to presence of volatile oil allyl propyl disulphide in the bulb. Phytomolecules, such as different types of phenolic and sulphur compounds, in onion can prevent non-communicable chronic diseases due to their various potential effects, such as anti-oxidant, anti-obesity, anti-diabetic, anti-cardiovascular and anti-cancer [4]. India is the largest producer of onion. Onion production in India was around 26.64 million metric tonnes during 2021-22 [1]. During 2004-05 and 2009-10, the rural consumption of onions increased to 32 % and urban consumption of onions increased to 18 % in India (Kalaiselvi, 2020) [5]. There were different varieties of small onion cultivated in different regions of India. The quality, production and price of Kharif grown onion are lesser then those grown in Rabi season [6]. In Tamilnadu, the majority of the farmers prefer CO (On) 5 small onion variety which was released by Agricultural College and Research Institute, Tami Nadu Agricultural University,

Coimbatore. Because of its bigger size and attractive colour, the Co (On) 5 bulbs fetches higher price always in the market. Moreover, for export during the period of March to September the bulbs of bigger size such as CO (On) 5 is preferred [7]. This small onion CO (On) 5 variety was the best suited variety for cultivation in Perambalur district. The objective of the study was to find the adoption level of CO (On) 5 variety. Based on the results we could find the overall adoption level of CO (On) 5 variety and adoption level of every individual recommended cultivation practices.

2. MATERIAL AND METHODS

This study had been conducted using *ex post facto* research design. Perambalur district was purposively selected for this study, as it was the largest producer of small onion in Tamilnadu. It had 4 blocks. They were Perambalur, Veppur, Veppanthattai, Alathur. Among the four blocks, Alathur block produces more quantity of small onion compared to others. In Alathur block four villages were selected using the simple random sampling method. They were Irur, Chettikulam, Nattarmangalam and Padalur. In those four villages, 120 respondents were selected using the proportionate random sampling technique. 40 respondents from Irur, 34 respondents from Chettikulam, 24 respondents from Padalur and 22 respondents from Nattarmangalam were selected for this study using proportionate random sampling. The interview schedule was framed with the scale followed by Muthulakshmi (2021) [8] and each farmer was interviewed individually to obtain data. The collected data were analysed using frequency and percentage.

3. RESULTS AND DISCUSSION

Table 1. Distribution of respondents based on the adoption level of Small onion CO (On) 5 cultivation technologies (n=120)

S.No	Statements	Adoption	Non-adoption
1.	Season for planting small onion CO (On) 5 variety in Perambalur (October-November)	120 (100.00)	0
2.	Main field preparation- The field is ploughed to a fine tilth	120 (100.00)	0
3.	Method of planting		
	a) Nursery – seed rate 8 kg /ha	0	120 (100.00)
	b) Directly planting bulbs - 1000 kg/ha	67 (55.83)	53 (44.16)
4.	Gap filling – 6 to 8 days after planting	120 (100.00)	0
5.	Irrigation – Drip irrigation (once in 15 days)	30 (25.00)	90 (75.00)
6.	Farm Yard Manure/ Compost (25 t/ha)	68 (56.67)	52 (43.33)
7.	Basal application – 30:60:30 NPK kg/ha	116 (96.66)	4 (3.33)
8.	Top dressing – 30 kg N /ha at 30 days after sowing	114	6

		(95.00)	(5.00)
9.	Azospirillum – 2 kg/ha	40	80
		(33.33)	(66.66)
10.	Phosphobacteria – 2 kg/ha	32	88
		(26.66)	(73.33)
11.	Weeding - Pre plant incorporation of Basalin 2kg a.i./ha + 1 Hand Weeding	115	5
		(95.83)	(4.16)
12.	Thrips - 0.1 % Malathion + 0.1 % sandovit 4spray @ 15 days interval	77	43
		(64.16)	(35.83)
13.	Onion fly - Dimethoate 30 EC 7ml/10 lit	17	103
		(14.16)	(85.83)
14.	Cut worm - Chlorpyriphos @ 2 ml/lit	58	62
		(48.33)	(51.66)
15.	Leaf spot - Mancozeb 2 gm/lit or Copper oxychloride 2.5 gm/lit and add Teepol 0.5 ml/lit to the spray fluid	37	83
		(30.83)	(69.16)
16.	Basal rot - Bulb treatment with Trichoderma viride, @ 4g/kg	70	50
		(58.33)	(41.66)
17.	Purple blotch - Dithane M 45 @ 0.25% with triton 0.1% on the first appearance of disease	12	108
		(10.00)	(90.00)
18.	Harvesting time - 90 Days after sowing	60	60
		(50.00)	(50.00)
19.	Harvesting method – Pulling out plants	120	0
		(100.00)	
20.	Curing - 3 to 5 days drying in field + Tops are cut leaving 2 to 2.5 cm height of bulb + again drying in field for 7 to 10 days	116	4
		(96.66)	(3.33)
21.	Storage – Low cost onion storage structure (shed) / Cold storage @ 0 – 2.2^{0}C	88	32
		(73.33)	(26.66)

**Figures in parentheses are percentage to total*

It could be observed from the Table 1, that all the respondents (100%) had adopted the correct season for planting CO (On) 5 variety of small onion. Cent % of the respondents (100%) adopted the main field preparation practice. The above results shown that none of the farmers had adopted nursery method of planting. Cent % of the farmers adopted the method of direct planting of bulbs. But only 55.83 % of farmers followed the recommended quantity of bulbs for planting. Cent % of the farmers adopted the recommended practice of gap filling within 6 to 8 days after sowing. Only one fourth (25.00%) of the respondents adopted drip irrigation practice. Around 56.67 % of farmers had applied farm yard manure (or) compost before sowing. Majority of the farmers (96.66%) followed the recommended practice of basal application of fertilizers of 30:60:30 Nitrogen, Phosphorus and Potassium kilo grams per hectare. Majority of the farmers (95.00%) followed the recommended practice of top dressing 30 kg Nitrogen per ha at 30 days after sowing. Only one third (33.33%) of the farmers applied Azospirillum 2 kg per ha. Only 26.66 % of respondents applied Phosphobacteria 2 kg

per ha. Due to high cost of labour for seed treatment, the adoption of Azospirillum and Phosphobacteria for bulb treatment were less. Majority of the farmers (95.83%) adopted the recommended practice of weeding.

Little less of two third (64.16%) of farmers had adopted recommended control measure for controlling thrips. Only 14.16 % of farmers adopted recommended practice for controlling onion fly. Nearly half of the farmers (48.33%) adopted recommended control measure for cut worm. Nearly one third of farmers (30.83%) adopted recommended control measure for leaf spot and 58.33 % of farmers adopted the recommended control measure for basal rot. The adoption of recommended control measure for purple blotch disease was 10.00 %.

Exactly half of the farmers (50.00%) followed recommended harvesting time which was 90 days after sowing. Cent % of the farmers harvested small onion by pulling out plants. The majority of the farmers (96.66%) followed the recommended curing procedure. Nearly three fourth (73.33%) of farmers adopted recommended storage procedure. Rest of the farmers stored onion simply in the fields by traditional storage practice which was not recommended.

3.1 Overall Adoption of CO (On) 5 Growers about Recommended Cultivation Practices

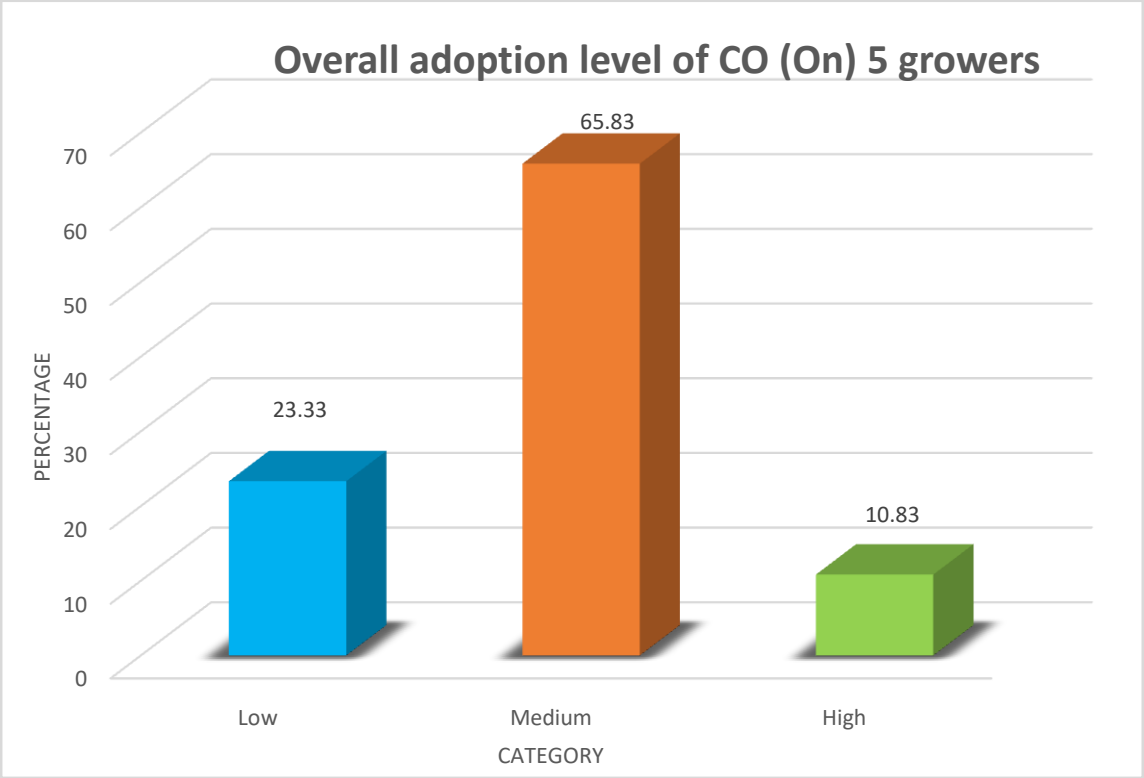

Fig. 1. Overall adoption level of CO (On) 5 growers about recommended cultivation practices

It was concluded from the Fig. 1, that majority (65.83%) of the farmers had medium level of adoption. Next to that 23.33 % of farmers had low level of adoption and only 10.83 % of farmers had high level of adoption.

4. CONCLUSION

From the results of the study it is obvious that the adoption level of the farmers were medium with 65.83%. The farmers who adopted small onion variety CO (On) 5 have not adopted the package of practices properly. Only few farmers were found adopting all the package of practices correctly. Those farmers are in good contact with extension agencies and also they were young. Recommended practices like season, main field preparation, gap filling, basal application, top dressing, weeding, harvesting method and curing had high level of adoption. Three fourth (75.00%) of the farmers had not adopted the drip irrigation practice due to the incompatibility of using drip with existing field situations. This shows that the know-how knowledge of using the drip technology was

poor and they should be provided with the above mentioned technology with adequate knowledge to make better use of it. Regarding pest and disease management, onion thrips and basal rot disease incidence were high when compared with other pests and diseases. This problem can be efficiently managed if they are advised to follow the recommended practices properly. This will also be helpful in reducing the crop loss and increasing the yield efficiently. Exactly half (50.00%) of the farmers did not follow the recommended time of harvest since they were adopting their indigenous knowledge of harvesting. Since the variety did not have the qualities specified by Agricultural and Processed Food Products Export Development Authority (APEDA), it cannot be opted for exporting. Hence the author insists on improving the quality of the crop in future to increase its marketing opportunities and to get its best price. In due course of time this will improve the livelihood of the onion farmers and they shall attain self-sufficiency which will be the best outcome of the economy. The findings of the present study were in concordance with the results of Singh et al., (2019) and Jadav NB, Munshi MA (2004) [9,10].

Consent

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS DISCLAIMER:

Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

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