

## Original Research Article

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## Adoption of Improved Cultivation Practices of Turmeric in Yavatmal District, India

Maya A. Kankate<sup>1</sup>, V.S. Tekale<sup>2</sup> and Pranali N. Thakare<sup>2\*</sup>

<sup>1</sup>Extension Education Section, College of Agriculture, Nagpur (M.S.) 440001, India

<sup>2</sup>Department of Extension Education, Dr. PDKV, Akola (M.S.) 444104, India

\*Corresponding author

### ABSTRACT

#### Keywords

Adoption, Turmeric grower, Improved cultivation practices

#### Article Info

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The present study was conducted in Yavatmal district of Vidarbha region of Maharashtra state in the year 2017 with 100 turmeric growers as respondents. An exploratory research design of social research was used for investigation. After analysis it was observed that relatively higher per cent of respondents (49.00%) had medium level of adoption. The results of correlation revealed that, the characteristics of the respondents viz., education, training received, farming experience, land holding, annual income, area under turmeric cultivation, social participation, extension contact, sources of information, market orientation, and innovativeness had positively and significantly correlated at 0.01 per cent level of probability with adoption of improved cultivation practices of turmeric, whereas, age and risk preference did not show any relation with adoption. By and large turmeric growers were highly motivated to cultivate turmeric crop due to as it is a cash crop, high profitability, possibility of intercropping, attractive price and soil suitable for turmeric cultivation.

### Introduction

Turmeric (*Curcuma longa* L.) is a herbaceous perennial plant growing up to the height of 60 – 90 cm with short stem and native South Asia particularly India. The plant is propagated by rhizomes. Turmeric is one of the most important and ancient spice of India and a traditional crop having very good commercial value for spice oils and oleoresins. It is used daily extensively by all classes of people in the preparation of tasty curried dishes. A few

species are naturalized in North Eastern regions of India and Java.

India is the leading producer, consumer and exporter of turmeric in the world. According to the Third Advance Estimates of Spice Board and Ministry of Agriculture and Farmers Welfare, in India turmeric is cultivated in an area of 1.85 lakh ha. with a production of 9.57 lakh tonnes during 2015-2016 (Anonymous, 2016). In the Maharashtra about 8200 ha of cultivation area under

turmeric crop. The district growing turmeric in Maharashtra are mainly Satara, Sangli, Kolhapur, Hingoli, Parbhani, Nanded and some part of Vidarbha region.

Yavatmal district is surrounded by Andhra Pradesh state and Nanded district to South and Hingoli district to West. As Andhra Pradesh is major turmeric growing state and Nanded, Parbhani and Hingoli are major turmeric growing districts in Maharashtra. The people from Yavatmal district have changed their attitude towards the production of turmeric. The total area under turmeric in Yavatmal district in the year 2014-2015 was 933.90 ha. (Anonymous, 2014). Keeping in view this aspect present study was under taken.

### **Materials and Methods**

The investigation was carried out in Yavatmal district of Maharashtra state. For the study of adoption of improved cultivation practices of turmeric, exploratory research design was used. In Yavatmal district there are 16 tahsil out of these, two tahsil namely, Umarkhed and Mahagaon were selected. From each of the selected tahsil, 5 villages were selected on the basis of maximum area under turmeric cultivation, from each selected village 10 farmers were selected randomly. Thus, from two selected tahsil 10 villages were selected and from these village total 100 turmeric growers were selected and considered as sample in present study. The data were collected with the help of schedule developed by interviewing the respondents.

### **Results and Discussion**

It is revealed from Table 1 that, majority of the respondents (55.00%) were belonged to middle age (36 to 50 years), relatively higher proportion of the respondents (42.00%) were educated up to high school level, great majority of the respondents had low level of

training (68.00%), whereas 68.00 per cent of the respondents had medium level of farming experience, more than half of the respondents (53.00%) from study area belonged to medium size of land holding (4.01 to 10.00 ha), majority of the respondents (54.00%) had high annual income (above Rs. 2,00,000), further 68.00 per cent had medium area under turmeric cultivation, majority of the respondents (55.00%) were belonged to medium category of social participation, more than half of the respondents (53.00%) were belonged to medium level of extension contact, majority of respondents (52.00%) were using medium sources of information and also 56.00 per cent belonged to medium risk preference category, great majority of respondents (67.00%) had medium level of market orientation and medium level of innovativeness (55.00%). These results were similar with the findings of Naik (2012), Bhagat (2015), Tekale (2015) and Katole (2016).

The data regarding practice wise adoption of improved cultivation practices of turmeric by turmeric growers were presented in Table 2, it was revealed that, majority of respondents completely adopted improved cultivation practices of turmeric viz. harvesting of turmeric by digging (90.00%), harvesting of turmeric after yellowing of leaves followed by drying @50 per cent (75.00%), varieties (61.00%), soil type for cultivation of turmeric (60.00%), preparatory tillage practice like ploughing followed by clod crushing and harrowing (60.00%) and method of sowing (50.00%). Less than half of the respondents were completely adopted improved cultivation practices of turmeric viz. time of sowing (47.00%), irrigation (45.00%), and seed rate (42.00%), intercultural operation like hoeing should be done eight days after spraying (40.00%), use of plant protection measure like control of pest viz. rhizome fly and scales (35.00%), spacing (30.00%), intercultural

operation like earthing up (30.00%), and crop duration (25.00%), respectively.

Majority of respondents were partially adopted improved cultivation practices of turmeric viz. spacing (60.00%), fertilizer management (50.00%) and crop duration (50.00%). Less than half of respondents were partially adopted improved cultivation practices of turmeric viz. intercultural operation like earthing up (47.00%), preparatory tillage practice like addition of well decomposed FYM (45.00%), sowing time (40.00%), plant protection measures like control of pests viz., rhizome fly and scales (40.00%), method of sowing (33.00%), soil type (30.00%), preparatory tillage like ploughing is followed by clod crushing and harrowing (30.00%), intercultural operation like weed management (30.00%), irrigation (25.00%) and harvesting of turmeric after yellowing of leaves followed by drying @50

per cent (25.00%) and harvesting of turmeric by digging (10.00%), respectively. It was found that majority of the respondents had not adopted the improved cultivation practices of turmeric viz. plant protection measure like control of leaf spot disease (71.00%) followed by intercultural operation like weed management (50.00%). Less than half of respondents had not adopted the improved cultivation practices of turmeric viz. intercultural operation like hoeing should be done 8 days after spraying (48.00%) and preparatory tillage practice like addition of well decomposed FYM (40.00%), respectively.

It was observed from Table 3 that, nearly half of the respondents (49.00%) had medium level of adoption followed by 30.00 per cent and 21.00 per cent of the respondents were in high and low level of adoption of improved cultivation practices of turmeric.

**Table.1** Profile of Turmeric grower (N=100)

Characters (N=100)	Frequency	Percentage
<b>Age</b>		
Young (up to 35 years)	25	25.00
Middle (36 to 50 years)	55	55.00
Old (above 50 years)	20	20.00
<b>Education</b>		
Illiterate	03	03.00
Primary school	09	09.00
Middle school	15	15.00
High school	42	42.00
Higher secondary school/Junior college	16	16.00
Diploma/Technical education	02	02.00
Under graduate degree	10	10.00
Post graduate degree	03	03.00
<b>Training received</b>		
No training (0)	17	17.00
Low (up to 1)	68	68.00
Medium (02)	13	13.00
High (03 and above)	02	02.00
<b>Farming experience</b>		

Low (up to)	15	15.00
Medium (10 to 25 years)	68	68.00
High (above 25 years)	17	17.00
<b>Land holding</b>		
Marginal	03	03.00
Small	14	14.00
Semi-medium	25	25.00
Medium	53	53.00
Large	05	05.00
<b>Annual income</b>		
Up to Rs. 50,000/-	02	02.00
Rs. 50,001 to 1,00,000/-	15	15.00
Rs. 1,00,001 to 1,50,000/-	16	16.00
Rs. 1,50,001 to 2,00,000/-	13	13.00
Above Rs. 2,00,000/-	54	54.00
<b>Area under turmeric cultivation (ha.)</b>		
Small	22	22.00
Medium	68	68.00
Large	10	10.00
<b>Social participation</b>		
Low	27	27.00
Medium	55	55.00
High	18	18.00
<b>Extension contact</b>		
Low	25	25.00
Medium	53	53.00
High	22	22.00
<b>Source of information</b>		
Low	26	26.00
Medium	52	52.00
High	22	22.00
<b>Risk preference</b>		
Low	26	26.00
Medium	56	56.00
High	17	17.00
<b>Market orientation</b>		
Low	13	13.00
Medium	67	67.00
High	20	20.00
<b>Innovativeness</b>		
Low	18	18.00
Medium	55	55.00
High	27	27.00

**Table.2** Distribution of the respondents according to their practice wise adoption of improved cultivation practices of turmeric

Sr. No.	Improved practices	Respondent (n=100)		
		CA	PA	NA
		Freq. (%)	Freq. (%)	Freq. (%)
<b>1</b>	<b>Soil type</b> Well drained, crumby, fertile, medium type soil	60 (60.00)	30 (30.00)	10 (10.00)
<b>2</b>	<b>Sowing time</b> May – June	47 (47.00)	40 (40.00)	13 (13.00)
<b>3</b>	<b>Method of sowing</b> Ridges and Furrow (Rhizome) or Broad Bed Furrow	50 (50.00)	33 (33.00)	17 (17.00)
<b>4</b>	<b>Seed rate</b> 2250 to 2500 Kg rhizome/ha	42 (42.00)	27 (27.00)	31 (31.00)
<b>5</b>	<b>Preparatory tillage</b> 1. Ploughing is followed by clod crushing and harrowing.	60 (60.00)	30 (30.00)	10 (10.00)
	2. Add well decomposed FYM @ 40 to 50 cartload/ha	15 (15.00)	45 (45.00)	40 (40.00)
<b>6</b>	<b>Variety</b> PDKV-Waigaon, Selam, Phule- Swarupa, Krushna, Rajapuri	61 (61.00)	12 (12.00)	27 (27.00)
<b>7</b>	<b>Spacing</b> 30 - 40 cm row to row and 22.5 to 30 cm plant to plant` rhizome	30 (30.00)	60 (60.00)	10 (10.00)
<b>8</b>	<b>Fertilizer management</b> 200:100:100 NPK kg/ha ½ dose of N - after 30 days of emergence and remaining ½ dose of N - after 45 days of 1 <sup>st</sup> dose	25 (25.00)	50 (50.00)	25 (25.00)
<b>9</b>	<b>Irrigation</b> Irrigation should be done 8 to 10 days of interval as per the soil and crop requirement	45 (45.00)	25 (25.00)	30 (30.00)
<b>10</b>	<b>Intercultural operation</b> For weed management, spraying of Pendamethaline 1.5 kg a.i. per ha. 2-3 DAS should be done.	20 (20.00)	30 (30.00)	50 (50.00)
	Hoing should be done 8 days after spraying	40 (40.00)	12 (12.00)	48 (48.00)
	Earthing up should be done to each crop under 90 days after sowing.	30 (30.00)	47 (47.00)	23 (23.00)
<b>11</b>	<b>Plant protection measure</b> 1.For control of rhizome fly and scales, use of	35 (35.00)	40 (40.00)	25 (25.00)

	disease free rhizomes.			
	2. For control of leaf spot disease, spraying of Copper oxychloride 25 gm in 10 lit. of water.	12 (12.00)	17 (17.00)	71 (71.00)
<b>12</b>	<b>Crop duration</b> For turmeric, average time required is about 210 to 270 days	25 (25.00)	50 (50.00)	25 (25.00)
<b>13</b>	<b>Harvesting</b> 1. Yellowing of leaves followed by drying @50% is the major indication of harvesting stage of turmeric.	75 (75.00)	25 (25.00)	00 (00.00)
	2. Harvesting is done by digging	90 (90.00)	10 (10.00)	00 (00.00)

CA - Complete adoption PA - Partial adoption NA - None adoption

**Table.3** Distribution of respondents according to their overall adoption

Sr. No.	Adoption index	Respondents (n =100)	
		Frequency	Percentage
<b>1</b>	Low	21	21.00
<b>2</b>	Medium	49	49.00
<b>3</b>	High	30	30.00
	<b>Total</b>	<b>100</b>	<b>100.00</b>

**Table.4** Relationship between the characteristics of the respondents with their adoption of improved cultivation practices of turmeric

Sr. No.	Characteristics	“r” values
<b>1</b>	Age	0.0961 <sup>NS</sup>
<b>2</b>	Education	0.5127**
<b>3</b>	Training received	0.2743**
<b>4</b>	Farming experience	0.3453**
<b>5</b>	Land holding	0.2932**
<b>6</b>	Annual income	0.3417**
<b>7</b>	Area under turmeric cultivation	0.4721**
<b>8</b>	Social participation	0.4014**
<b>9</b>	Extension contact	0.3765**
<b>10</b>	Source of information	0.3690**
<b>11</b>	Risk preference	0.1354 <sup>NS</sup>
<b>12</b>	Market orientation	0.3545**
<b>13</b>	Innovativeness	0.4084**

\*\* Significant at 0.01 level of probability, NS- Non significant

**Table.5** Distribution of respondent according to factor motivating the turmeric grower for turmeric cultivation

Sr. No.	Factors	Motivation		
		High	Medium	Low
		Freq. (%)	Freq. (%)	Freq. (%)
1	Good storage facility	02 (02.00)	03 (03.00)	95 (95.00)
2	Possibility of inter-cropping	71 (71.00)	25 (25.00)	04 (04.00)
3	Cash crop	79 (79.00)	19 (19.00)	02 (02.00)
4	Profitability	73 (73.00)	17 (17.00)	10 (10.00)
5	Attractive price	63 (63.00)	25 (25.00)	12 (12.00)
6	Soil suitability	55 (55.00)	33 (33.00)	12 (12.00)
7	Adequate water	41 (41.00)	36 (36.00)	23 (23.00)
8	Easy marketability	17 (17.00)	25 (25.00)	68 (68.00)
9	Long term crop	40 (40.00)	34 (34.00)	26 (26.00)
10	Easy loan facility	20 (20.00)	24 (24.00)	56 (56.00)

It could be inferred from the above findings that nearly half of the respondents had medium level of adoption and 30.00 per cent of respondents had high adoption of improved turmeric cultivation practices. These findings are similar to finding of Patel *et al.*, (2012), Ovhar (2013) and Barman *et al.*, (2015).

It could be seen from Table 4 that, the characteristics, education, training received, farming experience, land holding, annual income, area under turmeric cultivation, social participation, extension contact, source of information, market orientation and innovativeness were positively and significantly correlated at 0.01 per cent level probability with adoption of improved cultivation practices of turmeric. Whereas age and risk preference were

non-significantly correlated with the adoption of improved cultivation practices of turmeric. The correlation analysis of age and risk preference were not shown any relation with the adoption of improved cultivation practices of turmeric grower.

**Factors motivating turmeric grower for turmeric cultivation**

The data in Table 5 revealed that, majority of turmeric growers (79.00%) were highly motivated to cultivate turmeric crop as it is a cash crop, followed by 73.00 per cent respondents were motivated due to its profitable crop, possibility of intercropping (71.00%), attractive price (63.00%) and soil suitability (55.00%). The less than half of the respondents

were highly motivated for cultivation of turmeric due to adequate water (41.00%), long term crop (40.00%), easy loan facility (20.00%) and easy marketability (17.00%), respectively.

The high proportion of the respondents were medium motivate to cultivate turmeric crop namely, adequate water (36.00%), long term crop (34.00%), soil suitability (33.00%), attractive price (25.00%), possibility of intercropping (25.00%), easy marketability (25.00%), cash crop (19.00%) and profitability (17.00%), respectively.

By and large turmeric growers were highly motivated to cultivate turmeric crop due to it is a cash crop, high profitability, possibility of intercropping, attractive price and soil suitable for turmeric cultivation. Following motivating factors viz. cash crop, attractive price, soil suitability, adequate water and long term crop were similar with the findings of Jayanthi and Vaideke (2015).

In conclusion, the findings of study indicated that relatively higher per cent of the respondents had medium level of adoption of improved cultivation practices of turmeric. Hence independent variables were significantly related with their adoption of improved cultivation practices of turmeric. The results revealed that turmeric grower had medium level of adoption hence, in order to achieve a higher level of adoption respondents are required to be fully aware about improved cultivation practices of turmeric.

The factors motivating to turmeric growers for cultivation of turmeric were it is a cash crop, profitable crop, possibility of intercropping, attractive price and soil suitability.

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