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Adoption Behaviour of Turmeric Growers about Post Harvest Technology

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ABSTRAC: *The study revealed that, the 43.64 per cent of the turmeric growers belonged to age group 35 to 45 years, had educated up to college level (41.81%), land holding 1.01 to 2.00 ha (54.55%), with family size of 6 to 7 members (57.27%). The annual income of Rs.2,08,001 to Rs.3,53,300/- (63.64%), medium sources of information (61.82%) and medium level risk during cultivation (66.36 %). Regarding knowledge level, the almost all growers had complete knowledge of drying of turmeric by spreading in single layer after two to three days, storage in gunny bags (99.09%), use of cold storage (58.18%) . Regarding adoption, almost all growers adopted drying of turmeric (100%), storage in gunny bags (95.45%). The 90.00 per cent of the turmeric growers expressed their main constraints was more fluctuation in market prices, non availability of labours at the time of harvesting (81.81%), in non availability , Agricultural Research Station for turmeric crop (47.27%), timely credit facility (47.27%) and market oriented improved turmeric varieties and farm mechanization technologies (40.90%). The 97.27 per cent of them suggested, the government should declare the minimum support price, to reforms in the rules and regulations of Market Committee (91.82%), Storage facility should made available (84.55%), the State Agricultural Universities, KVKs and State Department of Agriculture should made available the training facilities (81.82 54%), the financial institutes should provide sufficient and timely credit facilities (74.55%), the ICAR, New Delhi should provide separate Agricultural Research Station for turmeric growing bowl of Maharashtra (72.72%),the State Agricultural University should provide research priority on market oriented new variety and farm mechanization(65.45 %) and the turmeric sale counter should be nearer to sample area for minimizing transport cost (54.54%).*

Key Words: *Knowledge, adoption, constraints, suggestion, Post Harvest Technology of Turmeric*

Turmeric is produced in various states of India but due to lack of post harvest technology, losses in terms of quality and quantity occur promptly. In Maharashtra area and production of turmeric during 2010-11 was 9000 ha and 45300 million MT, respectively. Price fluctuations and weather phenomenon directly affect the production of turmeric. Mahatma Phule Krishi Vidyapeeth, Rahuri has recommended the post harvest technology of turmeric for value addition to make high profit to farmers. But it is observed that there is low level of knowledge and adoption of these recommended technology to the turmeric growers. In view of this the present study was conducted in the year 2013 with the objectives to study the socio-economic profile of turmeric growers, to assess the knowledge and adoption of post harvest technology and to study the relationship between socio economic profile with their knowledge and adoption, constraints in adoption and suggestions to overcome it.

MATERIALS AND METHODS

The present study was undertaken in the tahsils having maximum area under turmeric crop *Viz*, Miraj (14,476.37 ha) and Walwa (18201.96 ha) tahsils of Sangli district of Maharashtra. The three villages from each tahsil and 16-18 farmers from each selected village's were selected on the basis of turmeric production and area of growers. Thus, final sample consisted of 6 villages and 110 farmers from Sangli district. Primary data were collected with the help of pretested interview scheduled specially designed in local language for the purpose. Simple statistical tools like percentage, mean standard deviation and Karl pearson's correlation co-efficient were used for the analysis of data.

RESULTS AND DISCUSSION

Socio-economic profile : It is revealed from Table 1 that, 43.64 per cent of the turmeric growers belonged

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to age group 36 to 45 years and 41.81 per cent had college level education. The 54.55 per cent of them had land holding 1.01 to 2.00 hectares and 57.27 per cent had medium family size of 6 to 7 members. The 63.64 per cent of the farmers had received annual income of Rs. 2,08,001 to 3,53,300/- from agriculture, while 79.09 per cent of them had medium social participation, 61.82 per cent had used medium sources of information and the 66.36 per cent turmeric growers take medium level of risk during cultivation and production of turmeric. Similar, results were also noticed by Walke (2008) and Tayade (2010).

Table 1
Socio-economic profile of turmeric growers

Characters (N= 110)	*Frequency*	*Percentage*
Age		
Young (upto to 35 years)	22	20.00
Middle (36 to 45 years)	48	43.64
Old (46 and above years)	40	36.36
Education		
Illiterate	05	04.50
Primary (up to IVth std)	01	00.99
Secondary (8th to Xth std)	22	20.00
Higher (XIth to XIIth std)	36	32.70
College (Above XIIth std)	46	41.81
Land Holding		
Upto 1.00 ha	16	14.55
1.01 to 2.00ha	60	54.55
2.01 to 4.00 ha	21	19.09
4.01 and above	13	11.81
Family Size		
Upto 5 member	02	1.82
6 to 7 member	63	57.27
8 and above member	45	40.91
Annual Income		
Upto Rs 2,08000/-	20	18.18
Rs.2,08001 to 3,53,300 /-	70	63.64
Rs.3,53,301 and above	20	18.18
Social Participation		
Low (upto 2)	08	07.27
Medium (3 to 5)	87	79.09
High (6 and above)	15	13.64
Sources of Information		
Low (upto 17)	19	17.27
Medium (18 to 37)	66	61.82
High (38 and above)	23	20.91
Risk Orientation		
Low (upto 7)	25	22.73
Medium (8 to 11)	73	66.36
High (12 and above)	12	10.91

KNOWLEDGE AND ADOPTION OF TURMERIC GROWERS ABOUT POST HARVEST TECHNOLOGY

It is seen from Table 2 that, regarding knowledge the most of the turmeric growers had complete knowledge of drying of turmeric (100%), storage in gunny bags (99.09%), polishing by using drum (92.72%) and testing of boiled turmeric by hand pressing (92.72%). However, the 58.18 per cent of them had complete knowledge in storage of turmeric in cold storage, while 67.27 per cent of them had partial knowledge about scientific method of boiling . While, regarding the adoption the turmeric growers had high adoption in harvesting of the turmeric at 8-9 months (83.64%), traditional method of boiling (90.00%), drying (100%), polishing of turmeric by using drum (98.18%), grading of the turmeric (100%) and storage of turmeric in gunny bags (95.25%). Adoption to the medium extent in testing of boiled turmeric by use of sticks (41.82%) and use of ware houses for storage (24.55%). Turmeric grower had low adoption in scientific method of boiling (07.27%) and use of cold storage for storage of turmeric (04.55%) . The findings of present study are similar to those of Singh and Kaur 2004, Kolte (2002) and Kubade *et.al* (1999).

RELATIONSHIP BETWEEN THE SOCIO-ECONOMIC PROFILE OF TURMERIC GROWERS WITH THEIR KNOWLEDGE AND ADOPTION

It was revealed from Table 3 that, the non-significant relationship between age and family size of the turmeric growers with their knowledge and adoption. A highly significant relationship was observed between education, land holding, annual income, social participation, sources of information and risk orientation with their knowledge and adoption about post harvest technology followed by turmeric growers. Similar results were reported by Kadam (2008).

CONSTRAINTS FACED BY TURMERIC GROWERS IN ADOPTION OF POST HARVEST TECHNOLOGY

It is revealed from Table 4 that, the 90.00 per cent of the turmeric growers expressed their main constraints was more fluctuation in market prices, while 81.81 per cent of them expressed non availability of labours at the time of harvesting, the less technical knowledge about seed treatment (76.36%), lack of complete knowledge about diseases management (72.72%), higher charges by market commission agents (70.00%), lack of complete knowledge about pest management (69.09%), non availability of Agricultural Research Station for Turmeric crop (47.27%), non availability of timely credit facility (47.27%) and non availability of market oriented improved turmeric varieties and farm mechanization technologies (40.90%).

Table 2
Distribution of turmeric growers according to their knowledge and adoption of post harvest technology

Sr. No.	Recommended Post Harvest Technology	Knowledge and adoption of turmeric growers. (N=110)					
		Complete knowledge	Partial knowledge	No knowledge	High adoption	Medium adoption	Low adoption
1.	**Harvesting :**						
	Harvesting at 8-9 months	107(97.27)	03(02.73)	00(00.00)	92(83.64)	15(13.63)	03(02.73)
	Yield of dried turmeric (60-75 qt/ha)	104(94.55)	04(03.64)	02(01.81)	83(75.45)	20(18.18)	07(06.36)
2.	**Post Harvest Technology :**						
	A. Boiling :						
	Traditional method	110(100.00)	00(00.00)	00(00.00)	99(90.00)	11(10.00)	00(00.00)
	Scientific method	10(09.09)	74(67.27)	26(23.63)	08(07.27)	55(50.00)	47(42.73)
	B. Testing :						
	Sticks (piercing)	98(89.09)	07(06.36)	05(04.54)	46(41.82)	52(47.27)	12(10.90)
	Hand pressing	102(92.72)	08(07.27)	00(00.00)	99(90.00)	09(08.18)	02(01.82)
	C. Drying :						
	Spreading in single layer (2-3 days)	110(100.00)	00(00.00)	00(00.00)	110(100.00)	00(00.00)	00(00.00)
	Collection of dried turmeric (9-10 days)	107(97.27)	03(02.73)	00(00.00)	108(98.18)	02(01.82)	00(00.00)
	D. Polishing :						
	1. Using drum	102(92.72)	07(06.36)	01(00.90)	105(95.45)	04(03.64)	01(00.91)
	2. Using turmeric powder or solution	75(68.18)	27(24.54)	08(07.27)	04(03.64)	97(88.18)	09(08.18)
	E. Grading :						
	According to size	107(97.27)	01(00.90)	02(01.81)	110(100.00)	00(00.00)	00(00.00)
	Separating mother rhizomes	87(79.09)	23(20.90)	00(00.00)	82(75.55)	15(13.64)	13(11.82)
	F. Storage :						
	Gunny bags	109(99.09)	01(00.90)	00(00.00)	105(95.45)	05(04.55)	00(00.00)
	Iron pev's	105(95.45)	04(03.63)	01(00.90)	15(13.64)	70(63.64)	25(22.73)
	Ware houses	98(89.09)	08(07.27)	04(03.63)	27(24.55)	65(59.02)	18(16.37)
	Cold storage	64(58.18)	42(38.18)	04(03.63)	05(04.55)	73(66.36)	32(29.09)
	G. Plant protection majors	89(80.90)	17(15.45)	04(03.63)	71(64.55)	24(21.82)	15(13.64)

Table 3
Relationship between the socio-economic profile of turmeric growers with their knowledge and adoption

Sr.No.	Socio-economic profile	'r' value Knowledge	'r' value Adoption
1.	Age	-0.113 NS	0.035 NS
2.	Education	0.189 *	0.188 *
3.	Land holding	0.485**	0.414 **
4.	Family size	0.087 NS	0.054 NS
5.	Annual income	0.525**	0.331**
6.	Social Participation	0.571**	0.268**
7.	Information sources	0.660**	0.423**
8.	Risk orientation	0.643**	0.491**

D.F. = 110 NS = Non-Significant * = Significant at 5% ** = Significant at 1%

Table 4
Constraints faced in adoption of post harvest technology

Sr. No.	Constraints	Turmeric growers (N=110) Frequency	Percentage
1	More fluctuation in market prices	99	90.00
2	Non availability of labours at the time of harvesting	90	81.81
3	Less technical knowledge about seed treatment	84	76.36
4	Lack of complete knowledge about diseases management	80	72.72
5	Higher charges by market commission agents	77	70.00
6	Lack of complete knowledge about pest management	76	69.09
7	Non availability of Agricultural Research Station for turmeric crop	52	47.27
8	Non availability of timely credit facility	52	47.27
9	Non availability of market oriented improved turmeric varieties and farm mechanization technologies.	45	40.90

SUGGESTIONS MADE BY THE TURMERIC GROWERS TO OVERCOME THE CONSTRAINTS

It is observed from Table 5 that, the 97.27 per cent of the turmeric growers suggested the Government should declare the minimum support price for turmeric to minimize the price fluctuation. While, the 91.82 per cent of them suggested to reforms in the rules and regulations of market committee to control the market middlemen and commission agents, storage facility should made available to the turmeric growers by the Government (84.55 54 %), the State Agricultural Universities, KVKs and State Department of Agriculture should made available the training facilities to the turmeric growers (81.82 54 %), the financial institutes should provide sufficient

Table 5
Suggestions made by the turmeric growers to overcome the constraints

Sr. No.	*Suggestions*	*Turmeric growers (N=110)*	
		Frequency	*Percentage*
1	Government should declare the minimum support price for turmeric	107	97.27
2	Reforms in the rules and regulations of market committee to control the market middlemen and commission agents	101	91.82
3	Storage facility should made available to the turmeric growers by the Government.	93	84.55
4	The State Agricultural Universities, KVKs and State Department of Agriculture should made available the training facilities to the turmeric growers	90	81.82
5	The financial institutes should provide sufficient and timely credit facilities to the turmeric growers	82	74.55
6	The ICAR, New Delhi should provide separate Agricultural Research Station for turmeric growing bowl of Maharashtra	80	72.72
7	The State Agricultural University should provide research priority on market oriented new variety and farm mechanization.	72	65.45
8	The turmeric sale counter should be nearer to sample area for minimizing transport cost	60	54.54

and timely credit facilities to the turmeric growers (74.55 54%), the ICAR, New Delhi should provide separate Agricultural Research Station for turmeric growing bowl of Maharashtra (72.72%) , the State Agricultural University should provide research priority on market oriented new variety and farm mechanization (65.45 54%) and the turmeric sale counter should be nearer to sample area for minimizing transport cost (54.54%).

The study concluded that, maximum turmeric growers were directly made any processing product. Also there is constraints in various agencies which were not directly related to turmeric growers. The concern line departments like State Department of Agriculture, Maharashtra State Agricultural Marketing Federation etc. should provide knowledge through trainings to the turmeric growers about package of practices for processing which encourage the stability in prices. The Agricultural Universities, various agricultural research stations and agricultural department of state government should provide information and knowledge to the turmeric growers about proper time of harvesting, proper post harvest technologies, pest control etc. which will help to prevent losses and also to obtain higher market prices. The Agricultural Universities should give emphasis on practical training of turmeric growers on post harvest technology *viz*., boiling process, grading and processing of turmeric into different products. The extension workers should use advanced communication medias for diffusion of innovations in the field of horticulture, especially about turmeric growers for convincing them about the adoption of post harvest technology of turmeric. This should necessarily include the organization of demonstrations, rallies and exhibitions. The federation as well as the government should look into development of processing unit for producing processed product of turmeric *viz*., turmeric powder, medicine, cosmetics. This will help the turmeric growers to tide over the market glut conditions and also the helpful to consumers. The government should provide subsidy and encouragement to the entrepreneurs for establishing such processing units in the turmeric growing area.

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