



Gender Participation and Technology Use in Turmeric Production System

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Abstract

Survey was carried out regarding basic information, gender participation, time spent on various activities and technology usages and satisfaction for different activities in turmeric field. Important role of farm women in turmeric cropping system in Maharashtra, India was found in planting rhizomes, clearing weeds cleaning activities. Ploughing, forming ridges and irrigation are performed and solely by male farmers. Participation of farm women in earthing up activity was 85% and it was followed by fertilizer application (83%). Majority of the activities such as planting, earthing up, harvesting in turmeric production system were performed manually. Data on time spent by the female workers in performing different activities in turmeric production system indicated that, maximum time consuming activity was hand weeding (84 man days/ season) followed by earthing up (63 man days/ season) and cutting, sorting and cleaning roots (each of 56 days/ season). No implement or machine is used by them for earthing up activity due to lack of awareness and availability. Study revealed urgent need of development of technologies for performing these activities.



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Introduction

Women are workforce of agriculture and important part of Indian economy. There is a gradual increase in realization of the key role of women in agricultural development and their involvement in the field of agriculture, food security, horticulture and other allied sectors. Women as farm labourers, participate in various activities such as seeding, cutting, planting, weeding, fertilizer spreading, plant protection,

thinning, harvesting, treating, selling, sorting, care of animals, kitchen gardening etc. It is estimated that women work every day for about 8-9 h in agriculture and four hours in household activity. The Indian women, especially in the poverty group work for above five hours per day more than the Indian men in work, including visible burden of family. As per the recent findings, women in India are the major producers of food in terms of value, volume

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and number of hours worked.¹ Drudgery can be reduced by providing gender friendly farm tools and equipment which increase the productivity of worker with safety and comfort to her. Time scheduling is also needed for achieving such task. Drudgery is term for hard work, monotony, time consuming, use of traditional tools with inappropriate working posture in field. So one way of reduction of drudgery can be through quantifying the particular field operation² The main objective of this study was to know the participation of women in turmeric production system and their use of technologies. The information will be helpful to design gender friendly new tools and technologies.

Materials and Methods

The spice turmeric or *Haldi* constitutes boiled, dried, cleaned and polished rhizomes (the underground swollen stem of plant) of *Curcuma longa*. In Marathwada region of Maharashtra, women farmers play important role in turmeric crop production.³ A questionnaire was prepared and survey was conducted on 120 women farm workers having working experience in turmeric field. Survey was carried out regarding basic information, gender participation, time spent on various activities and technology usages/ satisfaction for different activities in turmeric field. This survey was conducted at major turmeric growing area in Marathwada region viz. Pokharni, Katneshwar, Nandgaon, Bharati Camp Dist. Parbhani and Hatta, Adgaon, Satephal village of Dist. Hingoli.

Work load as per time⁴ was calculated by using scale and score was assigned to each activity such

as : very high duration-5, high duration-4, moderate duration-3, less duration-2, Very less duration-1. Data collected on time spent in hours for each selected activity was converted into no. of man-days spent by using following formula.

No. of man days: 8 hour =1 man day

Results

Gender Participation of the Respondents Under Different Activities in Turmeric Production System

Key role of farm women in turmeric cropping system in Marathwada region was found in planting rhizomes, removing weeds, cutting and sorting turmeric roots as well as cleaning activities (Fig.1). Ploughing, forming ridges, irrigation are the activities performed 100 per cent by male farmers. Participation of farm women in earthing up activity was 85% and it was followed by fertilizer application (83%) (Table 1).

Technology Usages/ Satisfaction of the Respondents in Turmeric System

Majority of the activities such as planting, earthing up, harvesting in turmeric production system were manually carried out. Traditional tool named 'khurpi' was used for removing weeds in field. Bullock operated plough was used for fertilizer application activity (only in row to row planting). Mobile turmeric cooker with hot water boiler was used for cooking 4 q quantities of turmeric rhizomes in field and rotating drums for polishing turmeric fingers. (Table 2).



Fig. 1: Participation of women worker in various activities in turmeric field

Table 1 : Gender participation of the respondents under different activities in turmeric production system N=120

Activities	Male Frequency %		Female Frequency %		Both Frequency %	
Land preparation						
1. Stubble collection	-	-	120	100	-	-
2. Ploughing	120	100	-	-	-	-
3. Manure application	120	100	-	-	-	-
4. Forming ridges and furrows	120	100	-	-	-	-
5. Planting Turmeric rhizomes	-	-	120	100	-	-
Weed management						
1. Spraying weedicide	1	-	-	-	-	-
2. Hand weeding (row to row)	-	-	120	100	-	-
3. Earthing up	18	15.00	102	85	-	-
Fertilizer application with Ploughing						
	20	16.66	-	-	100	83.33
Irrigation						
	120	100	-	-	-	-
Harvesting						
1. Ploughing	120	100	-	-	-	-
2. Cutting turmeric roots/ Fingers	-	-	120	100	-	-
3. Sorting turmeric roots/ Fingers	-	-	120	100	-	-
4. Cleaning turmeric roots/ Fingers	-	120	100	-	-	-
Transporting						
1. Carrying	120	100	-	-	-	-
2. Loading	120	100	-	-	-	-
Post-Harvest Treatment						
1. Cooking Turmeric/ Roots	120	100	-	-	-	-
2. Drying Turmeric/ Roots with direct sun drying in the field	85	70.83	35	29.16	-	-
3. Polishing by hand operated barrel	120	100	-	-	-	-

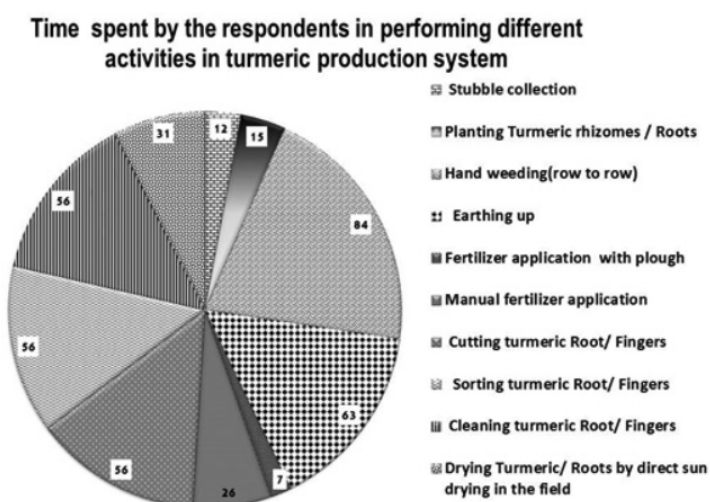


Fig. 2: Time spent by the respondents in performing different activities in turmeric production system

Table 2: Technology usage satisfaction of the respondents in turmeric production System N=120

Activities	Technology used		Duration of use of technology per season (hrs./min)	Years of use	Source of technology	Satisfaction level	
	Conventional method	Improved method				Satisfied (%)	Not satisfied (%)
Land preparation							
1.Stubble collection	Manually	-	-	-	-	-	-
2.Ploughing	Plough	-	-	-	Local Artisan	-	-
3.Manure application	Plough	-	-	-	Local Artisan	-	-
4.Forming ridges and furrows	Plough	-	-	-	Local Artisan	-	-
5. Planting Turmeric rhizomes / Roots	Manually / Sickle	-	-	-	Local Artisan	-	-
Weed management							
1.Spraying weedicide	-	-	-	-	-	-	-
2.Hand weeding (row to row)	sickle	-	240 hrs.	-	Local Artisan	21	79
3.Earthing up	Manually	-	720 hrs.	-	-	-	-
Fertilizer application with plough	Plough	-	240 hrs.	-	Local Artisan	38	62
Irrigation	Electric pump/Drip irrigation	-	4320 hrs	-	District market	120	-
Harvesting							
1.Ploughing	Plough	-	120 hrs.	-	-	120	-
2.Cutting turmeric Root/ Fingers	Manually	-	-	-	-	-	100
3.Sorting turmeric Root/ Fingers	Manually	-	-	-	-	-	100
4.Cleaning turmeric Root/ Fingers	Manually	-	-	-	-	-	100
Transporting							
1.Carrying	Gunny bag/ Ghamela	-	-	-	Local Market	-	-
2.Loading	-	-	-	-	-	-	-
Post-Harvest Treatment							
1. Cooking Turmeric / Roots	Presser cooker	-	1080 hrs.	-	-	-	-
2. Drying Turmeric/ Roots direct sun drying in the field	Rake	-	720 hrs.	-	-	21	79
3. Polishing by hand operated barrel	Drum	-	24hrs	-	-	-	100

Duration for Performing Field Activities in Turmeric Crop

Data on duration for performing selected field activities in turmeric crop indicated that maximum time consuming activity was hand weeding (84 man days/ season) followed by earthing up

(63 man days/ season) and cutting, sorting & cleaning roots (56 man days/ season). As per the work load score all the activities performed by women were of very high duration. All the selected farm women were working in the field for 7 hours/ day (Table 3).

Table 3: Duration/time spent by the respondents in performing different activities in turmeric production system N=120

Activities	Time (h) /day	Days required/ acres/season	labour employed	Man days/ season*	Work load score**
Field preparation					
1.Stubble collection	7	2	7	12	5
2.Ploughing	-	-	-	-	-
3.Manure application	-	-	-	-	-
4.Forming ridges and furrows	-	-	-	-	-
5.Planting Turmeric rhizomes / Roots	7	2	8	14	5
Weed management					
1.Spraying weedicide	-	-	-	-	-
2.Hand weeding (row to row)	7	16	6	84	5
3.Earthing up	7	12	6	63	5
Fertilizer application with plough	7	4	2	7	5
Manual fertilizer application	7	6	5	26	5
Irrigation	-	-	-	-	-
Harvesting					
1.Ploughing	-	-	-	-	-
2.Cutting turmeric Root/ Fingers	7	8	8	56	5
3.Sorting turmeric Root/ Fingers	7	8	8	56	5
4.Cleaning turmeric Root/ Fingers	7	8	8	56	5
Transporting					
1.Carrying	-	-	-	-	-
2.Loading	-	-	-	-	-
Post-Harvest treatment					
1.Cooking Turmeric / Roots	-	-	-	-	-
2.Drying Turmeric/ Roots by direct sun drying in the field	5	10	5	31	5
3.Polishing by hand operated barrel	-	-	-	-	-

*Man day: 8 hour =1 man day

**Work load as per time¹: very high duration-5, high duration-4, moderate duration-3, less duration-2, Very less duration-1

Time spent by the women farmers in performing different activities in turmeric production system depicted that total seven activities are performed by farm women in turmeric production system. Total seven hours per day are spent by farm women in the field. Eight days were required for cutting, sorting and cleaning turmeric roots / fingers while performing stubble collection planting and drying turmeric roots required only two days. Earthing up and hand weeding required 12 to 16 days per acre.

Conclusion

Key role of farm women in turmeric crop in Marathwada region was found in planting rhizomes, removing weeds, sorting and cleaning activities. Ploughing, forming ridges, irrigation are performed solely by male farmers. Participation of farm women in earthing up activity was 85%, it was followed by fertilizer application (83%). Majority of the activities

such as planting, earthing up, harvesting in turmeric production system were performed manually. Data on time spent by the female workers in performing different activities in turmeric production system indicated that, hand weeding was maximum time demanding activity (84 man days/ season) followed by earthing up (63 man days/ season) and cutting, sorting as well as cleaning roots (each of 56 days/ season). It indicated urgent need of development of technologies for performing these activities.

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Conflict of Interests

Authors declare that there is no conflict of interest.

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