

## **Tribal Farm Women's Participation in Agriculture and Factors Influencing It: Evidence from West Bengal, India**

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### **ABSTRACT**

A study was conducted at Makaltala and Farmania villages of Habra block, North 24 Parganas, West Bengal, India, to know the extent of tribal women's participation in farming activities. Rice-Jute-Mustard rotation was predominant in the study area. The results showed that participation of tribal farm women were 28.3 man-days on an average during the crop seasons. Participation in farming activities during mustard crop season in terms of average man-days was more (11.81) when compared to paddy (9.48) and jute (7.01). The involvement of women was more in transplantation, weeding, and harvesting activities. Most of the farm women were middle aged, illiterate, had high economic motivation and social participation. The independent variables like education and economic motivation had significant positive relationship, whereas age and social participation had significant negative relationship with participation of tribal women in farming activities. Lack of education, knowledge, and skill, lack of child care facilities, low income derived from agriculture, etc. were the major constraints expressed by the tribal women. Skill development among the tribal farm women regarding the new simple agriculture technologies suitable to their location will have a far reaching impact on improving the tribal farm women's participation in agriculture, improving their confidence in farming.

**Keywords:** Constraints to participation, Economic motivation, Farming activities, Tribal community.

### **INTRODUCTION**

Women play a significant and crucial role in agricultural development and allied fields in developing countries like India. For the successful implementation of any development programme, an understanding of the involvement of women in various activities is important. Agriculture is one such area where the developmental activities can be planned for the tribal farm women. Modern agricultural technology is almost unknown to the tribal community and has been left out from the main stream of economic development. Considering their socio-economic development, it is reported

that the various economic activities that can profitably be carried out by the tribal people include: agricultural production, livestock production and non-agricultural activities like handicrafts, cottage industry, small business, tailoring and nursery establishment, etc. (Rokonuzzaman, 2013). In tribal communities, the role of women is substantial and crucial as they work hard for enhancing the family income and livelihood security (Patel *et al.*, 2016). Tribal farm women play an important role and make significant contribution to small and medium sized farm (Mohanta, 2017). Since women play a major role in agriculture, an understanding of the involvement of women in various farm activities is important for the

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successful implementation of agriculture development programs. The study was undertaken in-order to have a detailed understanding on the participation of tribal farm women in farming activities and factors affecting their participation. The knowledge on extent of participation of tribal farm women in cultivation of major crops in the region and factors affecting it would help to plan or develop women friendly technologies or farm implements and machineries for them so that their participation can be made more effective. A clear understanding of the participation of tribal farm women in crop production would enable the extension organization and other policy makers to develop strategies for enhancing their participatory efficiency in different farming systems (Padhy, 2015). The present study has been contemplated to know the level of participation of tribal farmwomen in various farming activities, their socio economic characters, and the constraints faced. The study has been designed with the following specific objectives.

1. To assess the extent of participation of tribal farm women in agriculture;
2. To find the factors affecting the participation of tribal farm women in agriculture,
3. To document the constraints faced by tribal women in participating in agriccnn

## MATERIALS AND METHODS

This study was conducted at Makaltala and Farmania villages, which is one of the tribal dominated pockets of the area in Habra block of North 24 Parganas, West Bengal, India (Anonymous, 2012). The villages Makaltala and Farmania were selected purposively as 110 tribal families were residing in these two villages where a project on enhancement of livelihood security of tribal farmers was being planned to be implemented by Indian Council of Agriculture Research under Tribal Sub Plan,

Govt. of India (Anonymous, 2015). Simple random sampling procedure was used as the population was found to be homogeneous. Considering a confidence level of 95% and Confidence interval up to 12.5%, a sample size of forty was considered and was selected randomly for the study from these two villages. Based on the objectives of the study, a semi structured interview schedule was prepared. Tribal farm women's participation in agriculture was selected as dependent variable for the study. It was measured by calculating the man-days spent by tribal women in agricultural activities. In agricultural field operations, one man-day is considered as eight working hours (Mahipal, 1992). The independent variables selected were age, education, family type, family dependency ratio, income, social participation, economic motivation, mass media participation, extension participation, decision making pattern, and level of knowledge in Farming. Modules were prepared for measuring independent variables like age, education, family type and income. Family dependency ratio was calculated by finding the ratio of number of dependent members to number of earning members. For the variable Social participation modified scale developed by Trivedi (1963) was used. Economic motivation was measured using the scale developed by Supe (1969). The module followed by Shamna (2006) was used to measure mass media participation, extension participation, and decision making pattern. To measure the level of knowledge in farming activities, a schedule was prepared by considering the cultivation practices of each crop in the cropping sequence of the area, and the responses were scored to obtain the results. The schedule was pre-tested in non-sample area for its practicability and relevance. The final schedule was used to collect the information from the respondents by personally interviewing the women involved in agricultural activities for their livelihood. The collected data were analyzed using statistical package for social sciences (SPSS

Version 16). Qualitative data were converted into quantitative data by means of suitable scoring, wherever necessary. Descriptive statistics such as mean and standard deviation were used for describing the variables of the study. Pearson's coefficient of correlation in SPSS was used to explore the relationships between any two concerned variables.

## RESULTS AND DISCUSSION

### Extent of Tribal Farm Women's Participation in Farming Activities

The most followed cropping sequence (rotation) in the selected village was rice-jute-mustard. Hence, the tribal farm women's participation in farming activities related to these three crops were studied. The extent of involvement of tribal women in farming activities was measured by the number of hours worked for different field activities. The total hours spent was divided by eight to obtain the man-days involved for the work. (Table 1)

It was observed that the participation of tribal farm women during the crop seasons was 28.3 man-days, on an average. This indicates that the participation of farmwomen in farming activities was much less than an average women labourer who gets 60 to 125 man-days of work per year. The women labourers got on an average 122.49 days of employment in a year in agriculture in Kerala State (Nisha, 2008). Naresh (2014) reported that the tribal women earned, on an average, 158 days of work per year on farm.

Participation of tribal farm women in the

**Table 1.** Crop-wise man-days involved by tribal farm women during cropping season.

Sl No	Crop	Man-days
1	Paddy	9.48
2	Jute	7.01
3	Mustard	11.81
	Total	28.30

farming activities during mustard crop season in terms of average man-days was more (11.81), when compared to paddy (9.48) and jute (7.01). The reason for more participation during mustard crop season may be the easiness in the operations and favourable weather conditions. The male counterparts concentrated more on other works outside the village like construction and masonry works during winter season which coincides with the mustard crop season. The result contradicts the work of Naresh (2014) who reported that, in India, the maximum participation of farm women was in rice crop followed by wheat, field pea, and black gram.

### Participation in Paddy Cultivation

The number of hours spent by tribal farm women in different operations of paddy cultivation was collected from the respondents. The total hours spent was converted into man-days and then average time spent by individual farm women was calculated. The results are depicted in Table 2. The highest participation of tribal farm women in case of rice cultivation was in weeding (2.42), harvesting (1.95), and transplantation activities (1.58). It was observed that weeding, harvesting and transplantation were done only by females, and many times the women in family alone do all the operations. The tribal farm women's activity was nil in land preparation but had contributed 0.77 man-days in seedbed preparation. In carrying and threshing activities, more participation of women was there and, hence, the time required for completing the operations was less. The results are in line with the findings of Beohar *et al.* (1999), Kumari *et al.* (2016), and Hussain *et al.* (2011).

### Participation in Jute Cultivation

Jute is a fibre crop which requires more labour in the cropping season (Sheheli and

**Table 2.** Tribal farm women's participation in paddy cultivation in terms of man-days in different operations.

Sr No	Operations	Total time spent	Total man-days	Average time-spent by individual farmer
1	Bed preparation	246.4	30.8	0.77
2	Transplantation	505.6	63.2	1.58
3	Manure and fertilizer	192.0	24.0	0.60
4	Weeding	774.4	96.8	2.42
5	Plant protection measures	195.2	24.4	0.61
6	Harvesting	62.4	78.0	1.95
7	Bundling	214.4	26.8	0.67
8	Carrying	140.8	17.6	0.44
9	Threshing	140.8	17.6	0.44
	Total	3033.6	379.2	9.48

Roy, 2014). They reported that about 77% of cost is incurred for only human labor in jute cultivation. In total, 181 man-days per hectare were required for Deshi jute cultivation. The study on participation of tribal farm women in farming activities during jute season revealed that, overall, the contribution of tribal women on jute crop production was less when compared to the total man-days required during the season. Their activities were restricted in land preparation, weeding, steeping and washing and drying in case of jute cultivation. The result is depicted in Table 3.

In this village, due to unavailability of sufficient labour, steeping and washing operations of jute was done mainly by women, in contrast to the other jute cultivated areas. In operation like weeding, it was only done by female; whereas in case of steeping, washing, and drying male assistance was there. In Manirampur area of Bangladesh, female labourers participated

only in harvesting and carrying (1.9%) and drying and storing (18.5%). All the other field activities were carried out by men (Anonymous, 2004).

### Participation in Mustard Cultivation

Mustard was the third crop followed in the cropping sequence of jute-paddy-mustard. A glance on Table 4 reveals that harvesting (1.90 man days) and threshing (1.90) are the operation in which the farmwomen participation was more. Similar results are obtained by Pandey and Pandey (2012).

In case of mustard crop, the respondents were involved in almost all the farm operations. An interaction with farm women revealed that some of the men folk go to other states during winter season for work, especially to southern states of India. These results in a shortage of labor and, for this

**Table 3.** Tribal farm women's participation in Jute cultivation in terms of man days in different operations.

Sr No	Operations	Total time spent	Total man-days	Average man-days spent by individual farmer
1	Land preparation	252.8	31.6	0.79
2	Weeding	601.6	75.2	1.88
3	Steeping and washing	1052.8	131.6	3.29
4	Drying	336	42.0	1.05
	Total	2243.2	280.4	7.01

**Table 4.** Tribal farm women's participation in mustard cultivation in terms of man-days in different operations.

Sr No	Operations	Total time spent	Total man days	Average time spent by individual farmer
1	Land preparation	236.8	29.6	0.74
2	Sowing	201.6	25.2	0.63
3	Manure and fertilizer	576.0	72.0	1.80
4	Weeding	550.4	68.8	1.72
5	Plant protection measures	272.0	34.0	0.85
6	Harvesting	3040.0	76.0	1.90
7	Bundling	428.8	53.6	1.34
8	Carrying	297.6	37.2	0.93
9	Threshing	608.0	76.0	1.90
	Total	3779.2	472.4	11.81

reason, women's involvement is a little more in the mustard crop season. Women's participation in manure and fertilizer application and plant protection measures can also be observed in this crop season for the above mentioned reason.

#### Profile of Tribal Farm Women

The data provided in Table 5 gives a detailed picture on the personal, economic, social, psychological, and communication variables of the tribal farm women.

Majority of the farm women were above 30 years of age (67.5%) and nearly one third (32.5%) were in young age group. From this, we can infer that most of middle aged farmwomen were involved in farming related activities with a range of variation in participation. Majority of the farm women were illiterates (65%). The results regarding the age and education are in line with the findings of Bhamare *et al.* (2006), Bhoyar *et al.* (2014) and Singotiya *et al.* (2014). Majority of the respondents (82.5%) also confessed that their knowledge on farming activities were poor. The result indicates the necessity of educating the farm women and improving their knowledge on farming activities. More than half of the respondents (55%) belonged to medium income group who earned an Annual between 1,554 and 3,107\$. The result was found to be in different line with that of Bellurkar (2015).

About one third of the respondents were landless. They either worked in other field or leased in land for cultivation purpose. Majority of the respondents were marginal farmers (65%) who possess less than one ha of land. Similar results were obtained by Warkade (2010). Also, 67.5% of the respondents had nuclear family type. This clearly indicates the fragmentation of land and it is the reason for small land holdings by the respondents. The work of Gokhe (2007) and Singotiya *et al.* (2014) contradicts this result while findings of Khan *et al.* (2012) and Bellurkar (2015) are in line with the results. Family dependency ratio was found to be medium to high for 77.5% of the respondents, which indicated that the number of dependent members is more than number of earning members in the family. Nearly half (45%) of the respondents had high level of social participation. This is because of their regular participation in Self Help Group activities. The results are not in line with the work of Patel *et al.* (2016) who reported that the majority of tribal women had no social participation. Nearly half of the respondents informed that the decisions regarding the farm activities were taken by headman of the family. The results are in line with the findings of Joshi *et al.* (2016) and Yadav (2010).

Nearly half of the respondents had medium level of economic motivation and

**Table 5.** Profile of tribal farm women.

Sr No	Independent variables	Category	Respondents	
			No	Percent (%)
A	Personal variables			
1	Age	Young (< 30)	13	32.5
		Middle (30-50)	19	47.5
		Old (> 50)	8	20
2	Education	Illiterate	26	65.0
		Primary education	13	32.5
		Secondary education	1	2.5
3	Level of knowledge in farming	Low	33	82.5
		Medium	6	15.0
		High	1	2.5
B	Economic and social variables			
1	Annual income	Low (< 1554\$)	11	27.5
		Medium(1554-3107\$)	22	55
		High (> 3107\$)	7	17.5
2	Land holding	Land less (0)	13	32.5
		Marginal (< 2.5 acre)	26	65
		Small (2.5-5 acre)	1	2.5
3	Family type	Nuclear	27	67.5
		Joint	13	32.5
4	Family dependency ratio	Low (< 50)	9	22.5
		Medium (51-100)	17	42.5
		High (>100)	14	35
5	Social participation	Low (< 0.825)	9	22.5
		Medium (0.825-1.725)	13	32.5
		High (> 1.725)	18	45.0
6	Decision making pattern	Headman (< 16.41)	19	47
		Individual (16.41-23.64)	6	15
		Collective (> 23.64)	15	37
C	Psychological and communication variables			
1	Economic motivation	Low	11	27.5
		Medium	18	45.0
		High	11	27.5
2	Extension participation	Low	14	35
		Medium	8	20
		High	18	45
3	Mass media participation	Low	13	32
		Medium	7	17
		High	20	50

27.5 percent of respondents had high motivation. Most of the respondents were resource poor farm women and they were working to obtain the money for household purpose, whenever they could. This is the reason for medium to high economic motivation for most of the respondents. The

result is in confirmation with the findings of Yadav (2010). Extension participation was high for nearly half of the respondents (45%). One third of the respondents had low extension participation. This may be due to illiteracy among the participants. The work of Jain *et al.* (2003) and Sharma (2008)

supports the findings. The results also revealed that half of the (50%) respondents had high mass media participation. They had scored high because most of the participants were watching television regularly, which is one type of recreation for them and almost all respondents were using mobile phones for various communication purposes. The findings are in confirmation with that of Sharma (2008).

### Relationship of Independent Variables with Participation

Variables like age, education, social participation, economic motivation had significant relation with participation of farm women (Table 6). The variable 'age' was negatively correlated with participation. It revealed that aged tribal women spent lesser time compared to young women. The young age farm women are more prone to change. Their physical strength enables them to perform more agricultural activities. The work of Choudhary and Singh (2003) is in line with this finding, but the results contradict the findings of Chauhan (2011) and Fami (2006). The variable 'education' showed a positive and significant correlation with their participation in farming activities. As such, the level of education was low among the tribal farm women, many of whom were illiterate. However, those who

were primary and secondary school educated showed a higher participation in farming activities also. These farm women had also guided others for preparation of insecticide and pesticide spray formulations. Similar results had been obtained by Singh *et al.* (2015) and Chauhan (2011). The variable 'social participation' had a negative and significant correlation with participation of tribal women in farming activities. This is because of their active participation in Self Help Group activities. Those who spent more time in self-help group activities found less time to be spent at farm. For this reason, the variable had negative correlation with participation in farming activities. The results contradict the findings of Singotia (2014) and Patel *et al.* (2016). Economic motivation was another variable with positive and significant relation with participation of farm women in farming activities. Many tribal women had taken up farming activity to assist the head of the family in income generation. The necessity to earn more money to meet the daily needs made them participate more in farming activities so that all the family needs can be met. Similar results were obtained by Sharma (2008) and Bhairve (2013). All the other selected variables like family type, family dependency ratio, income, mass media participation, extension participation and decision making pattern had

**Table 6.** Relationship of independent variables with participation of tribal farm women in farming activities.

Sl No	Independent variables	Co-relation coefficient (r)
1.	Age	-0.620**
2.	Education	0.493**
3.	Family Type	0.151 <sup>NS</sup>
4.	Family dependency Ratio	-0.236 <sup>NS</sup>
5.	Income	0.067 <sup>NS</sup>
6.	Social participation	-0.320*
7.	Economic motivation	0.760**
8.	Mass media participation	0.090 <sup>NS</sup>
9.	Extension participation	-0.14 <sup>NS</sup>
10.	Decision making pattern	-0.0055 <sup>NS</sup>
11.	Level of knowledge in farming	-0.269 <sup>NS</sup>

\* Significant at 5% level; \*\* Significant at 1 % level, NS: Non-Significant.



insignificant relation with participation of farm women in farming activities. The level of knowledge in farming of the respondents in the study area showed a negative insignificant relationship with their participation in farming activities. Those who had more knowledge in general and on farming were the ones who involved in the other income generating activities of Self Help Groups of the study area. The results contradict with the findings of Singh *et al.* (2015) in case of extension participation, Mass media participation and knowledge on farming and support the findings in case of Education and Income. Khan *et al.* (2012) contradicts the finding who reported that the women participation in agriculture & total income of family has a negative and significant relationship. A study by Chauhan (2011) revealed a negative relationship with type of family and their participation in crop husbandry. Chayal and Dhaka (2010) also revealed that type of family; education level and caste have non-significant relationship with the participation of women in agriculture.

### Constraints Faced by Tribal Women in Agricultural Activities

A list of prime constraints faced by rural women in empowerment (Uma Devi, 2013) was adopted to analyse the constraints of tribal women participating in farming activities. Frequency and percentage of each constraint was calculated and depicted in Table 7.

Result showed that lack of education (88.1 %) was the major constraint faced by tribal women followed by income derived is too little (85.7 %), lack of child care facilities (83%) and Lack of knowledge and skill (81%). Lack of education was reported as major constraint because tribal farm women were not able to read and understand the printed media or other written form of information on new and improved farming technologies. Due to lack of knowledge and skill the tribal women could not participate in farming activities which involved small machineries and implements and thus emerging as major constraints. Lal and Khurana (2011) and Naresh (2014) also support the results. Many tribal women

**Table 7.** Constraints faced by tribal women in agricultural activities.

Sl No	Constraints	Frequency	Percentage
1	Lack of education/Literacy level	37	88.1
2	Income derived is too little	36	85.7
3	Lack of child care facilities	35	83.3
4	Lack of knowledge and skill	34	81
5	Lack of training	33	78.6
6	Doubts regarding the women capabilities	30	71.4
7	Loans are not sufficient	30	71.4
8	Family restriction: (a) Husband, (b) Elders	26	61.9
9	Partiality of government officials	26	61.9
10	Conflicts with other workers	24	57.1
11	Caste system in the village	23	54.8
12	Ego problems of men folk	20	47.6
13	Lack of freedom to take decision	18	42.9
14	Confining the role of women to household activities	17	40.5

hesitated to work in the farm as they were burdened with their household activities. Many of the tribal women belong to nuclear family and as a result lack of child care facilities became a major constraint when they go for work. A majority of the respondents also (78.6%) also listed lack of training as major constraints. 71.4% of the respondent reported doubt regarding the women's capabilities as constraint in participating in farming activities. Because of non-exposure of tribal women to new technologies or implement for drudgery reduction, they lack confidence in using the technologies which also led to lack of confidence about their capabilities and these had reduced their participation in farming activities. The studies of Kantidas (2012) and Rokonzaman (2013) are also in line with the above findings. The result conclude that tribal women need to be educated and trained for doing the farm operations in a better way so that their efficiency can be increased and drudgery can be reduced. The men folk should also be educated regarding the importance of educating the women. This will help to reduce the family problems, ego problems and social problems.

## COCLUSIONS

Women are the major contributors of socio economic development of the country in general and family in particular. The study on participation of tribal farm women on agricultural activities revealed that main agriculture activities performed by women were weeding, harvesting and post harvesting operations of the crops selected for the study. Participation of tribal farm women during the crop seasons were 28.3 man days on an average. Women were involved in multifarious activities and proportionately the time spent in farming activities was less. Maintaining the balance between income generating activities including farming and other house hold activities was a major challenge for the tribal

women. The participation of tribal farm women in farming activities were significantly affected by the variables like Age, Education, Social participation, Economic motivation. Majority of the respondents also confessed that their knowledge on farming activities were poor. The result indicates the necessity of educating the farm women and improving their knowledge on farming activities. Tribal farm women were not using any specific drudgery reducing implements to carry out farm operations. Introduction of such implements or technologies like sowing with seed drill, line sowing, use of CRIJAF nail weeder, retting of jute using microbial consortium, paddy thresher etc will have a positive impact on the progress of tribal families. Skill development among the tribal farm women regarding the new simple agriculture technologies will have a far reaching impact on tribal farming. The different areas for skill improvement are to be identified based on the crops the tribal farmers preferred in different regions. Training should be given to the farmers and farm women on such identified areas so that their knowledge and skill can be improved. Women would also be encouraged to go on exposure visits and training outside the village, as the exposure to areas of new developments on different sectors would open the windows of livelihood opportunities.

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## مشارکت زنان کشاورز قبیله ای در کشاورزی و عوامل موثر بر آن: شواهدی از بنگال غربی در هند

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### چکیده

این پژوهش در روستاهای Makaltala و Farmania در قطعه Habra در منطقه North 24 Parganas در بنگال غربی هندوستان اجرا شد و هدف آن شناسایی میزان مشارکت زنان قبیله ای در فعالیت های کشاورزی بود. در منطقه مطالعه، تناوب اصلی برنج-چتایی-خردل بود. نتایج نشان داد که میانگین مشارکت زنان قبیله ای در طی فصل زراعی در حدود ۲۸/۳ نفر-روز بود. مشارکت زنان در مورد خردل (۱۱/۸ نفر-روز) بیشتر از برنج (۹/۴۸) و چتایی (۷/۰۱) بود. نوع مشارکت زنان بیشتر در فعالیت های نشا کاری، مبارزه با علف هرز، و برداشت محصول بود. بیشتر زنان میانسال، بی سواد، با انگیزه مالی و مشارکت اجتماعی بالا بودند. مشارکت زنان قبیله ای در فعالیت های کشاورزی با متغیر



های مستقل مانند تحصیلات (آموزش) و انگیزه های اقتصادی رابطه مثبت و معنادار بالایی داشت در صورتی که سن و مشارکت اجتماعی، با فعالیت های کشاورزی دارای رابطه منفی معنادار بود. نداشتن تحصیلات و مهارت، و نبود تسهیلات برای نگهداری فرزندان، همراه با درآمد کم از کشاورزی عواملی بود که زنان قبیله به عنوان محدودیت های اصلی برای مشارکت خود ابراز می داشتند. افزایش مهارت این زنان قبیله ای در زمینه فنآوری های ساده و جدید که مناسب محل کارشان باشد تاثیر عمیقی روی بهبود مشارکت آنان در کشاورزی و بهبود اعتماد آن ها به فعالیت های زراعی خواهد داشت.