

## Participation of farm women in agricultural activities

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### Abstract

*The study was conducted in Gwalior district of Madhya Pradesh revealed that participation of farmwomen in harvesting, ranked first followed by weeding, cleaning of grain, storage, sowing, winnowing, cleaning of field, thinning, grading, marketing, irrigation while least participation of farm women as found in operations like ploughing, leveling of field, application fertilizer, and spray of chemicals. The overall participation of farm women indicated that about half (51%) of farm women had medium level of participation in agricultural activities, while 28 per cent had low and 21 per cent had high level of participation in agricultural activities. Out of 16 independent variables twelve variables viz. age, education status, family size, family type, annual income, mass media exposure, extension agency contact, extension participation, information seeking behaviour, level of knowledge, economic motivation and scientific orientation showed positive and significant relationship at 0.01 level of probability with participation in agricultural activities. The study also revealed that education status, family size, family type, annual income, and economic motivation were most important predictors in participation in agricultural activities.*

**Key words:** farmwomen participation, Agricultural Activities,

### Introduction

Women make essential contributions to the agricultural and rural economies in all developing countries. Their roles vary significantly between and within regions and are changing rapidly in many parts of the world, where economic and social forces are transforming the agricultural sector. Agriculture needs manpower, if the manpower split into gender wise, amazing fact is that the women contribution is greater or equal to men.

According to Ahmed and Hussain (2004) rural women play key roles in agriculture sector production by working with full enthusiasm in production of crops right from the soil preparation till postharvest activities. Agriculture and allied sectors are unique because of their diversity and location specific requirements, decussating adaptation of technologies to a range of agro-ecological conditions. Women are key players in agriculture and allied fields. Their activities typically include producing agricultural crops, tending animals, processing and preparing food, working for wages in agricultural or other rural enterprises, collecting fuel and water, caring for family members and maintaining their homes (SOFA Team

and Cheryl Doss, 2011; Arshad *et al.*, 2010). But it is most untoward that the role of women in agricultural has not highlighted. By and large they have remained imperceptible workers. Although women have many inherent capacity like high determination, sense of responsibility, better managerial ability, yet their potential are overlooked by the planners, scientists and the extension personnel.

Women participation in home and farm activities is dependent upon social, cultural and economic condition in area. It also varies from region to region and even within a region, their involvement varies widely among different farming system, castes, classes and socio-economic status (Kada and Kada, 1985). In spite of several restrictions, women of the low income households are found working outside their home due to severe economic pressures, while women of the medium and high income household seek employment in order to decrease self dependency and to increase the standard of living.

Keeping the above facts in view an attempt was made to explore the participation of farm women in agricultural activities.

### Methodology

Study was conducted in Gwalior district of Madhya

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Pradesh to explore the participation of farm women in agricultural activities. A sample of 200 farm women was selected through random sampling method. Selected respondents were interviewed personally using well structured pre tested interview schedule.

In the present study, participation of farm women in agricultural activities was considered as a dependent variable and operationally defined as active involvement of farm women in various agricultural activities on their farm.

The extent of participation in agricultural activities by a farm woman was rated on the extent of a woman's involvement in all of the selected eleven agricultural activities. Respondents were asked to what extent they were involved with these eleven agricultural activities. A 3-point rating scale was used to measure the extent of participation in agricultural activities by the women. They were asked the frequency of their participation is frequently, occasionally, and never. Points were awarded for each response, with sufficient scoring as the frequent to no participation (2, 1 and 0, respectively). A respondent's score could range from 0 to 33, where 0 indicated never participation and 33 indicated the highest participation in agricultural activities. Frequency counts of responses were also recorded to compute the Participation Index (PI) of a woman for each of the agricultural activities. Participation Index of agricultural activities was computed by using the following formula:

$$PI = (N_1 \times 2) + (N_2 \times 1) + (N_3 \times 0)$$

Where,

PI = Participation Index of agricultural activities

$N_1$  = Number of women who participate in the farm activity frequently

$N_2$  = Number of women who participate in the farm activity occasionally

$N_3$  = Number of women who never participate in the farm activity

Based on total scores, the respondents has been classified into three categories i.e. low, medium and high participation of farm women in agricultural activities by using mean and standard deviation as a measure of check.

Data thus collected were analyzed using appropriate statistical tools to deduce results.

## Results and discussion

### Socio-personal and economic attributes of the farm women:

The data in Table 4.1 indicated that majority (61%) of the farm women belonged to middle age group, followed by young (26.5%) and old age group (12.5%) The average age of the respondents was 40 years. It was also revealed that majority (60%) of the

respondents had medium level of education status, followed by low (29%) and high level of education (11.5%). The results on farm size shows that maximum number of farm women (39%) possessed small farm size, followed by semi medium (21%) marginal (20.5%) medium (12.5%) and large farm size (7%). Results on family size revealed that maximum number of the farm women (38%) had medium family size (4-6 family members) whereas about one fourth (24%) of them had very large family size (more than 10 family members), 19.5 per cent had large family size (7-9 family members) and 18.5 per cent had small family size (1-3 family members). While looking at their family type the results indicated that majority (64.00%) of farm women had joint family, whereas 36.0 per cent of farmwomen had nuclear family. The results on annual income indicated that majority (58.50%) of farmwomen belonged to medium income group whereas 22.0 per cent of farmwomen belonged to low income group and 19.5 per cent of farm women belonged to high income group. The information about social political participation of the farm women indicated. The data revealed that majority (61.00%) of the farmwomen had medium level of social political participation; whereas 20.5 per cent had high and 18.0 per cent had low level of social political participation. In case of material possession it is apparent that majority (60.0%) of the farm women possessed medium level of material possession, while 22.0 per cent had high material possession and 18.0 per cent had low level of material possession.

### Communication attributes of farm women:

Table 2 depicts that majority (55.5 %) of the respondents had medium level of mass-media exposure; while 33.5 per cent of them had low and 21.5 per cent had high level mass media exposure. Similarly, in case of extension agency contact the data indicated that majority of farm women (60.5%) had medium level of extension agency contact. Whereas one fifth (20.5%) of them had high and 19 per cent had low level of extension agency contact. The results on extension participation the data indicated that majority (64.5%) of farm women had medium level of extension participation whereas, about one fifth (21.5%) had high and 14.0 per cent had low level of extension participation. Likewise in case of information seeking behavior the data indicated that majority (58.0%) of farm women had medium level of information seeking behavior, while about one fourth (24.0%) of them had high and 18.00 per cent had low level of information seeking behavior. In the same way, the results on cosmopolitanness shows that majority (56.0%) of farm women had medium, level of cosmopolitanness, while

one fourth (25.5%) of them had high and 18.5 per cent had low level of cosmopolitaness.

#### **Psychological attributes of farm women**

The data in Table 3 indicated that half (50.0%) of farm women possessed medium level of knowledge, whereas 29.00 per cent had high, and 17.0 per cent of them had low level of knowledge regarding improved agricultural practices. A critical perusal of the data also portrays that more than half of farm women (53%) had medium economic motivation followed by high (24.5 %) and low (22.5 %) economic motivation. Similarly, the results on scientific orientation revealed that about half (49.0%) of farm women had medium level of scientific orientation, whereas 22.5 per cent had high and 20.5 per cent had low level of scientific orientation.

#### **Participation of farm women in agricultural activities**

A perusal of data in Table 4 depicts the participation of farm women in agricultural activities. A total number of fifteen different agricultural activities related to different stages of cultivation were indentified to study the extent of participation of farm women.

The glance of data in regards to participation of farmwomen in harvesting got maximum score and ranked first followed by weeding, cleaning of grain, storage, sowing, winnowing, cleaning of field, thinning, grading, marketing, irrigation, spray of chemical, application of fertilizer, leveling of field, and ploughing of field,

Data also designated that there was least participation of farm women in operations like ploughing, leveling of field, application fertilizer, and spray of chemicals. These operations were an exclusive domain of males in the area under study. The data also indicated that farm women often dedicated more time in performing the operations like harvesting, weeding and cleaning of seed as compare to men. Ghosh (2000) also cited in his study that about 60 per cent of agricultural operations like sowing of seeds, transplanting of seedling , winnowing, storage of grains etc are handled almost exclusively by women while in other jobs they share the work with men.

Data also pointed out that majority of farm women occasionally participated in ploughing of field, only 9 per cent farm women were participated in ploughing of field. Similar results are presented by Mihiret and Tadesse (2014) and Chayal and Dhaka (2010)

The data also indicated that majority of the farm women participated occasionally in leveling of field, sowing, weeding, thinning, irrigation, spray of

chemical harvesting and winnowing, grading, storage and marketing.

The above findings specified that highest participation of farm women was observed in harvesting, weeding, cleaning of grain, storage, sowing and winnowing, though least participation was observed in ploughing, leveling of field, application fertilizer, and spray of chemicals.

The data presented in Table 5 indicated the distribution of respondents according to their level of participation in agricultural activities. It is clear from data that, about half (51%) of farm women had medium level of participation in agricultural activities, while 28 per cent had low and 21 per cent had high level of participation in agricultural activities.

#### **Relationship of selected socio-personal, economic, communication and psychological attributes of farm women with their participation in agricultural activities**

To find out the relationship of socio-personal, economic, communication and psychological attributes of farm women with their participation in agricultural activities, correlation coefficient was worked out and presented in Table 6.

It could be observed from data that among 16 independent variables twelve variables viz. age, education status, family size, family type, annual income, mass media exposure, extension agency contact, extension participation, information seeking behaviour, level of knowledge, economic motivation and scientific orientation showed positive and significant relationship at 0.01 level of probability. This shows that farm women who are older, had better education, belonged to joint family, had higher annual income, consulted more sources of information, extension personnel & mass media, had more scientific orientation, good knowledge and had better economic motivation had higher participation in agricultural activities.

The variables viz. farm size, socio-political participation, material possession, and cosmopolitaness did not show any significant relationship with participation of farm women in agricultural activities. It clearly indicated that these variables have no impact on participation in agricultural activities.

#### **Regression analysis**

Table 6 elucidated that all the sixteen independent variables taken together explained 76.7 per cent of variation in participation in agricultural activities. The 'F' value 36.64 was significant at 0.05 per cent level of

probability. The result implied that all the sixteen variables accounted for significant amount of variation for technological gap.

Further, it was also observed that 't' test of the significance expressed in coefficient of regression 'b' values were positively significant for educational status, family size, family type, annual income and economic motivation at 0.01 level of probability on the contrary, coefficient of regression 'b' values were not significant for age, farm size, socio-political participation, material possession, mass media exposure, extension agency contact, extension participation, cosmopolitanness, information seeking behaviour, level of knowledge.

To identify set of independent variables contributing maximum toward participation of farm women in agricultural activities, the step wise multiple

regression with backward eliminating procedure was carried out. As a result, out of 16 independent variables, were identified as most contributing factors toward participation of farm women in agricultural activities (Table 4.13).

It could be revealed from Table 4.13 that these five variables viz. education status, family size, family type, annual income, and economic motivation taken together explained the variation in participation of farm women in agricultural activities to the extent of 75.78 per cent.

The results of the analysis were inductive of the fact that education status, family size, family type, annual income, and economic motivation were most important predictors in participation in agricultural activities.

**Table 1: Distribution of the respondents according to their socio-personal & economic attributes (n=200)**

S. No	Attributes	Category	Frequency	%	Mean	SD
1	Age	Young (< to 35)	53	26.5	40.00	9.05
		Middle (36 to 55)	122	61.00		
		Old (> to 50)	25	12.5		
2	Education Status	Low (<0.57)	58	29.0	2.15	1.58
		Medium (0.57-3.73)	120	60.0		
		High (>3.73)	22	11.0		
3	Farm Size	Marginal (up to 1 ha)	41	20.5	2.72	1.93
		Small (1.01 to 2.01 ha)	78	39.0		
		Semi Medium (2.01 to 4.00)	42	21.0		
		Medium (4.00 to 10.00 ha)	25	12.5		
		Large (Above 10 ha )	14	7.0		
4	Family size	Small (1 to 3 member)	37	18.5	2.47	1.07
		Medium (4 to 6 member)	76	38.0		
		Large (7 to 9 member)	39	19.5		
		Very large (10 to above)	48	24.0		
5	Family type	Joint family	128	64.0	1.65	0.48
		Nuclear family	72	36.0		
6	Annual Income	Low (< 1.22 score)	44	22.0	2.85	1.63
		Medium (1.22-4.48 score)	117	58.5		
		High (>4.48 score)	39	19.5		
7	Socio -political participation	Low(<18.65 score)	36	18.0	22.67	4.02
		Medium (18.65-26.69 score)	123	61.5		
		High (> 26.69 score)	41	20.5		
8	Material possession	Low (<5.65 score)	36	18.0	8.27	2.62
		Medium (5.65-10.89 score)	120	60.0		
		High (>10.89 score)	44	22.0		

**Table 2: Distribution of the respondents according to their communication attributes n=200**

	Attributes	Category	Frequency	%	Mean	SD
1	Mass media exposure	Low (<0.1 score)	67	33.5	0.85	0.75
		Medium (0.1-1.60 score)	111	55.5		
		High (> 1.60 score)	42	21.5		
2	Extension agency contact	Low (<1.84 score)	38	19.0	6.45	4.61
		Medium (1.84-11.06)	121	60.5		
		High (> 11.06 score)	41	20.5		
3	Extension participation	Low (< 18.08 score)	28	14.0	20.56	2.52
		Medium (18.08-23.08 score)	129	64.5		
		High (>23.08 score)	43	21.5		
4	Information seeking behaviour	Low (<16.83 score)	36	18.0	19.30	2.05
		Medium (16.83 -21.77)	116	58.0		
		High (> 21.77)	48	24.0		
5	Cosmopolitaness	Low (<0.66 score)	37	18.5	1.55	0.89
		Medium (0.66-2.44)	112	56.0		
		High (> 2.44 score)	51	25.5		

**Table 3: Distribution of the respondents according to their psychological attributes (n = 200)**

S. No.	Attributes	Categories	Frequency	%	Mean	S.D.
1	Level of knowledge	Low (<14.03 score)	34	17.0	17.68	2.12
		Medium (14.03-20.53 score)	108	54.0		
		High (>20.53 score)	58	29.0		
2	Economic motivation	Low (<18.82 score)	45	22.5	21.95	3.13
		Medium (18.82-25.08 score )	106	53.0		
		High (>25.08 score)	49	24.5		
3	Scientific orientation	Low (<16.98 score)	57	20.5	19.85	2.87
		Medium (<16.98-22.72 score)	98	49.0		
		High (> 22.72 score)	45	22.5		

Table 4: Participation of farm women in agricultural activities (n = 200)

S. No.	Agricultural activities	Participation			Mean Score	Rank
		Regularly	Some time	Never		
1	Ploughing of field	18 (9)	120 (60)	72 (36)	45.00	XV
2	Cleaning of field	45 (25.0)	128 (64.0)	27 (13.5)	72.66	VII
3	Leveling of field	20 (10)	130 (65)	50 (25)	56.66	XIV
4	Sowing	50 (25.0)	125 (62.5)	25 (12.5)	75.00	V
5	Application of fertilizers	36 (18.0)	130 (65.0)	34 (17.0)	67.33	XIII
6	Weeding	49 (24.5)	140 (70)	11 (5.5)	79.33	II
7	Thinning	44 (22.0)	128 (64.0)	28 (14.0)	72.00	VIII
8	Irrigation	42 (21.0)	124 (62.0)	34 (17.0)	69.33	XI
9	Spray of chemical	38 (19.0)	129 (64.5)	33 (16.5)	68.33	XII
10	Harvesting	60 (30.0)	119 (59.5)	21 (10.5)	79.66	I
11	Winnowing	45 (22.5)	134 (67.0)	21 (10.5)	74.66	VI
12	Cleaning of grain	62 (31.0)	111 (55.5)	27 (13.5)	78.33	III
13	Grading	34 (17.0)	145 (72.5)	26 (13.0)	71.00	IX
14	Storage	47 (23.5)	134 (67.0)	25 (12.5)	76.00	IV
15	marketing	40 (20.0)	132 (66.0)	28 (14.0)	70.66	X

Figures in parenthesis indicate percentage

**Table 5: Distribution of farm women according to their level of participation in agriculture activities**

S.No.	Category	Frequency	Percentage	Mean	SD
1	Low (< 30.29)	56	28.0	35.54	5.25
2	Medium (30.29-40.79)	102	51.0		
3	High (> 40.79)	42	21.0		

**Table 6: Correlation between socio-personal, economic, communication and psychological characteristics of the farm women and their participation in agriculture activities**

S. No.	Characteristic	Correlation Coefficient "r"
<b>A</b>	<b>Socio-Economic variables</b>	
1	(X1) Age	0.2626**
2	(X2) Educational Status	0.6599**
3	(X3) Farm Size	0.0825ns
4	(X4) Family Size	0.6995**
5	(X5) Family Type	0.4956**
6	(X6) Annual income	0.8298**
7	(X7) Socio- Political Participation	0.1225ns
8	(X8) Material possession	-0.0603ns
<b>B</b>	<b>Communication variables</b>	
1	(X9) Mass media exposure	0.5792**
2	(X10) Extension Agency contact	0.2300**
3	(X11) Extension participation	0.4975**
4	(X12) Cosmo politeness	-0.0296 <sup>ns</sup>
5	(X13) Information seeking behavior	0.2961**
<b>C</b>	<b>Psychological variables</b>	
1	(X14) Level of knowledge	0.5638**
2	(X15) Economic motivation	0.801**
3	(X16) Scientific orientation	0.5971**

\* Significant at 0.05 level of probability.

\*\* Significant at 0.01 level of probability.

**Table7: Regression analysis of socio-personal, socio-economic, communication and psychological characteristics of the farm women and their participation in agriculture activities**

S. No.	Factor	Beta	Percentile contribution	Standard partial regression coefficient "b"	t-value
1.	Age	-0.003	-0.100	0.024	0.069
2.	Educational Status	0.148	12.717	0.177	2.780**
3.	Farm Size	-0.003	-0.031	0.104	0.076
4.	Family Size	0.151	13.815	0.296	2.513**
5.	Family Type	0.131	8.467	0.504	2.858**
6.	Annual income	0.560	60.587	0.192	9.401**
7.	Socio- Political Participation	0.001	0.015	0.051	0.024
8.	Material possession	-0.045	0.351	0.075	1.099
9.	Mass media exposure	0.045	-3.864	0.377	0.949
10.	Extension Agency contact	0.048	1.443	0.0450	1.229
11.	Extension participation	-0.032	-2.094	0.100	0.676
12.	Cosmopolitaness	-0.011	0.043	0.098	0.292
13.	Information seeking behavior	0.019	0.752	0.237	0.483
14.	Level of knowledge	0.050	3.642	0.125	0.978
15.	Economic motivation	0.77	0.804	0.064	2.027*
16.	Scientific orientation	0.044	3.452	0.99	0.820
$R^2 = 0.7670$ Multiple R= 0.8758** F-value= 37.64 with 16 and 183 DFS					

\* Significant at 0.05 level of probability.

\*\* Significant at 0.01 level of probability

**Table 8. Step-down regression analysis of selected characteristics of the farm women and their participation of in agriculture activities**

S.N	Factor	Beta	Beta x R Percentile contribution	Standard partial regression coefficient "b"	t-value
1.	Educational Status	0.166	14.457	0.159	3.477
2.	Family Size	0.150	13.869	0.258	2.863
3.	Family Type	0.135	8.807	0.452	3.275
4.	Annual income	0.567	62.026	0.167	10.946
5.	Economic motivation	0.080	0.842	0.60	2.222
$R^2 = 0.7578$ Multiple R = 0.8706** F-value 121.50 with 5 and 194 DFS					

\* Significant at 0.05 level of probability.

\*\* Significant at 0.01 level of probability.



## Conclusion

On the basis of above discussion, it can be concluded that participation of farmwomen in harvesting got maximum score and ranked first followed by weeding, cleaning of grain, storage, sowing, winnowing, cleaning of field, thinning, grading, marketing, irrigation while least participation of farm women as found in operations like ploughing, leveling of field, application fertilizer, and spray of chemicals. The overall participation of farm women indicated that about half (51%) of farm women had medium level of participation in agricultural activities, while 28 per cent had low and 21 per cent had high level of participation in agricultural activities. Out of 16 independent variables twelve variables viz. age, education status, family size, family type, annual income, mass media exposure, extension agency contact, extension participation, information seeking behaviour, level of knowledge, economic motivation and scientific orientation showed positive and significant relationship at 0.01 level of probability with participation in agricultural activities. The study also revealed that education status, family size, family type, annual income, and economic motivation were most important predictors in participation in agricultural activities.

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