

## Determinants of participation of farm women in sugarcane cultivation activities

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### Abstract

The present study was carried out in Mandya district of Karnataka state during 2014-15 to find out the association between the personal, socio-economic, psychological and communication characteristics of farm women with their participation in sugarcane cultivation activities. Sixty farm women from Maddur and Mandya taluks were personally interviewed using a pre-tested schedule. The results of chi-square analysis indicated that education, attitude towards farming, innovativeness, management orientation, economic motivation, mass media participation, extension participation and extension agency contact had significant to highly significant association with the extent of participation of farm women. All the 15 independent variables selected for the study fitted together in the regression model explained 62.61 per cent of the variation to the participation of farm women in sugarcane cultivation activities. Further, it was observed that extension agency contact and extension participation of farm women had direct, indirect and largest indirect effects on the participation of farm women in sugarcane cultivation activities.

**Keywords:** Participation, Farm Women, Education and Innovativeness

### Introduction

Women play an important and varied role in agriculture – as farmers, co-farmers, family labour, wage labour and as managers of farms. They are involved in all aspects of agriculture from crop selection to land preparation, seed selection, planting, weeding, pest control, harvesting, crop storage, handling, marketing and processing. The lack of options outside agriculture for women is one of the major factors for increase in female workforce in rural areas

in general, and agriculture in particular. Role of women in farming will increase significantly due to continuous decline in operational holding which are becoming economically unviable. Women have to shoulder the responsibility of farming while men have to work outside the farm to supplement the farm income.

The nature and extent of women's involvement in agriculture, no doubt, varies greatly from region to region. Even within a

region, their involvement varies widely among different ecological sub-zones, farming systems, castes, classes and stages in the family cycle. Studies on women in agriculture conducted in India and other developing and under developed countries all point to the conclusion that women contribute more to agricultural production has generally been acknowledged. Recognition of their crucial role in agriculture should not obscure the fact that farm women continue to be concerned with their primary functions as wives, mothers and homemakers. With far less access to education and technology a host of other factors also affect the participation of farm women in cultivation activities. Against this background, the present study has been taken up with the following specific objectives:

1. To understand the relationship between the personal, socio-economic, psychological and communication characteristics of farm women with their participation in sugarcane cultivation activities.
2. To know the extent of contribution of the personal, socio-economic, psychological and communication characteristics of farm women to their participation level.
3. To find out the effects of the personal, socio-economic, psychological and

communication characteristics contributing to the participation of farm women in sugarcane cultivation activities.

### Materials and methods

The present study was conducted in Maddur and Mandya taluks of Mandya district in Karnataka State during 2014-15. Five villages were randomly selected for the study from each of the two sampled taluks. From each village, six farm women cultivating sugarcane were randomly selected for the study. Thus, the total sample constituted 60 farm women from ten villages of Mandya and Maddur taluks. Relevant data was collected using a pre-tested interview schedule. The details regarding the number of farm women sampled for the study are given in the Table -1.

Extent of participation (dependent variable) is defined as '*the degree to which the farm women are carrying out various sugarcane cultivation activities*'. It was measured using the procedure followed by Rajula Shanthi (2010) with slight modification. A list of 25 sugarcane activities was presented to the respondents to know their extent of participation. To analyze the extent of participation of the respondents a score of 2 and 1 was assigned for 'participation' and 'non-participation' in the cultivation activities, respectively.

**Table 1: Details of taluks, villages and number of farm women sampled for the study.**

District	Taluks	Villages	Farm Women
Mandya	Mandya	1. Channapanadoddi	6
		2. Belur	6
		3. Yarahalli	6
		4. Kagehalladadoddi	6
		5. Javanegowdanadoddi	6
	Maddur	1. Ambarahalli	6
		2. Doddaharasinakere	6
		3. Muttanahalli	6
		4. Singatagere	6
		5. Madarahalli	6
Total		10	60

Based on the total score obtained by each respondent, they were grouped into low, medium and high categories using mean (44.68) and half standard deviation (7.04) as a measure of check. A larger number (36.68%) of farm women were having medium level of participation, while an equal number (31.66% each) of farm women were having low and high level of participation in sugarcane cultivation activities. Information regarding 15 personal, socio-economic, psychological and communication characteristics (independent variables) (Table-2) of farm women were collected using a structured schedule with suitable scales.

Expost-facto research design was adopted for conducting the study. The collected data was analyzed using frequency, percentage, mean, chi-square test, multiple regression test and path analysis. Chi-square test was employed to find out the association between independent variables and dependent variable. Multiple regression analysis was used to find out the extent of contribution of independent variables to the participation level. Path analysis was employed to find out the direct, indirect and largest indirect effects of independent variables on participation level.

## **Results and discussion**

### **Personal, socio-economic, psychological and communication characteristics of farm women**

A cursory perusal of Table-2 reveals that a larger number of farm women were of middle age (65.00%), living in nuclear family (91.66%), having small holding (51.67%) and moderate farming experience (43.33%), with high level of economic motivation (46.66%) and low level of education (51.66%), annual income (41.66%) and mass media participation

(40.00%). It is also observed from the table that more number of farm women were possessing favourable attitude towards farming (43.33%) and having medium level of innovativeness (48.33%), scientific orientation (45.00%), management orientation (48.33%), achievement motivation (46.66%), extension agency contact (46.66%) and extension participation (41.66%). It can be inferred from the above findings that majority of the farm women were of middle age, small farmers and had medium levels of other socio-economic, psychological and communication characteristics.

### **Association of independent variables with the participation of farm women in sugarcane cultivation activities**

The results of chi-square analysis indicate that extension participation is having a positive and significant association with the extent of participation of farm women at one per cent level of probability (Table-3). Variables such as, education, attitude towards farming, innovativeness, management orientation, economic motivation, mass media participation and extension agency contact had positive and significant relationship with the extent of participation of farm women at five per cent level of probability. The remaining variables namely, age, family type, farming experience, land holding, annual family income, scientific orientation and achievement motivation of farm women were found to be having a positive but non-significant association with the extent of participation in sugarcane cultivation activities. These findings are in agreement with the findings of Sarah Jehu Autaet *al.* (2010), Farahat (2011), Nataraju (2012), Sujaykumar (2012), Nirmala (2013) and Viswanathet *al.* (2014).

**Table 2: Personal, socio-economic, psychological and communication profile of farm women (n=60).**

Sl. No.	Characteristics	Category	Farm women	
			Number	Per cent
1	Age	Young	8	13.33
		Middle	39	65.00
		Old	13	21.67
2	Education	Low	31	51.66
		Medium	11	18.33
		High	18	30.01
3	Family type	Nuclear	55	91.66
		Joint	5	8.34
4	Farming experience	Less	11	18.33
		Moderate	26	43.33
		More	23	38.34
5	Land holding	Marginal	29	48.33
		Small	31	51.67
6	Annual family income	Low	25	41.66
		Medium	21	35.00
		High	14	23.34
7	Attitude towards farming	Less favourable	12	20.00
		Favourable	26	43.33
		More favourable	22	36.67
8	Innovativeness	Low	18	30.00
		Medium	29	48.33
		High	13	21.6
9	Scientific orientation	Low	14	23.34
		Medium	27	45.00
		High	19	31.66
10	Management orientation	Low	13	21.6
		Medium	29	48.33
		High	18	30.00
11	Achievement motivation	Low	18	30.00
		Medium	28	46.66
		High	14	23.34
12	Economic motivation	Low	12	20.00
		Medium	22	33.34
		High	28	46.66
13	Mass media participation	Low	24	40.00
		Medium	22	33.34
		High	14	26.66
14	Extension agency contact	Low	22	23.34
		Medium	28	46.66
		High	18	30.00
15	Extension participation	Low	18	30.00
		Medium	25	41.66
		High	17	28.34

The possible reasons for the independent variables having significant to highly significant association with the participation level of farm women are given in the following paragraphs:

Education provides an opportunity for farm women to expose themselves to mass media which carry messages on production aspects of farming, thus motivating farm women to participate in the farming activities. When a farm women possesses favourable attitude towards sugarcane farming, they would have, naturally evaluated its positive and negative implications of practicing the same on their farm. Therefore, favourable attitude towards farming brings significant association with the participation.

Farm women, who are innovative, generally will have higher orientation towards risks of scientific technology influencing one's management productivity. Farm women who participate in farming activity would naturally be innovative in adopting new scientific technologies and will strive hard to achieve higher productivity and income. Sugarcane is a long duration crop where farm women involve themselves at all the phases of management efficiently. The urge of an individual to manage their resources efficiently will take better advantage to participate in the sugarcane cultivation activities.

Economic motivation is the basic character upon which other motives drive and other attributes are built. It psychologically conditions an individual to motivate themselves to achieve higher income. One could set higher levels of economic motivation, when one develops higher levels of motivation and wants to achieve, they could strive hard, participate and get inter-relieved themselves about different aspects of sugarcane cultivation. Farm women who are motivated to get higher income will actively participate in the sugarcane cultivation activities.

The higher levels of mass media use would facilitate the farm women to develop habits of gathering more information about sugarcane cultivation through radio, television, newspaper, farm magazines and other literature. Mass media develop modern orientation among the farm women and make them more efficient in acquiring, retaining and evaluating the effectiveness of farm innovations. Hence, mass media participation has motivated the farm women to participate.

Extension agency contact would help the farm women to expose themselves to improved farm technologies promoted by the extension workers. Frequent contact with the extension workers would motivate women to participate in sugarcane cultivation activities. This clearly indicates that the contact with extension workers has influenced the participation of farm women in sugarcane cultivation activities. Participation of farm women in extension activities such as, group discussion, demonstrations, training programmes, field days, farmers field school, video conferencing, krishimela, etc., would promote the acquisition and consequent adoption of farm technologies. The eagerness in solving their problems with extension workers and also the interest in extension activities to gather recent information will enhance the participation of farm women in the farming activities.

Extent of contribution of independent variables to the participation of farm women in sugarcane cultivation activities

The results in Table-3 also reveals that extension agency contact and extension participation of farm women were significantly contributing to the participation in sugarcane cultivation activities at one per cent level, while management orientation and mass media participation of farm women were significantly contributing to the participation in sugarcane cultivation activities at five per cent level of probability.

The other variables, namely, age, education, family type, farming experience, land holding, annual family income, attitude towards farming, innovativeness, scientific orientation, achievement motivation and economic motivation did not significantly contribute to the participation of farm women in sugarcane cultivation activities. All the 15 independent variables fitted together in the regression model explained 62.61 per cent of the variation to the participation of farm women in sugarcane cultivation activities. It can be inferred from the results that extension agency contact, extension participation, education, management orientation and mass media participation of farm women had immensely contributed to the participation level.

#### **Direct, indirect and largest indirect effects of independent variables on the participation of farm women in sugarcane cultivation activities**

The path co-efficient of personal, socio-economic, psychological and

communication characteristics of farm women with respect to their direct effects, total indirect effects and largest indirect effects channeled through other independent variables on extent of participation are presented in Table-4. For the purpose of path analysis, eight variables which were found to be having significant association with the extent of participation of farm women were considered. It is evident from the Table that all the eight variables selected for path analysis had positive direct effect on the extent of participation of farm women in sugarcane cultivation activities. Ranking variables based on their direct effect on extent of participation revealed that extension participation (X8), extension agency contact (X7), management orientation (X4) and attitude towards farming (X2) occupied first four ranks in that order, whereas economic motivation (X5), innovativeness (X3), mass media participation (X6) and education (X1) obtained the last four ranks in the same order.

**Table 3: Association of independent variables with the participation of farm women in sugarcane cultivation activities (n=60).**

Sl. No.	Independent variables	Chi-square value	Regression co-efficient (b)	Standard error	't' value
1	Age	2.68 NS	0.79	0.54	0.68 NS
2	Education	11.61 *	0.09	0.17	1.89 NS
3	Family type	2.69 NS	0.21	0.21	0.99 NS
4	Farming experience	2.61 NS	0.89	0.81	0.92 NS
5	Land holding	1.62 NS	0.82	0.42	0.51 NS
6	Annual family income	3.11 NS	0.48	0.61	1.26 NS
7	Attitude towards farming	3.66 *	0.22	0.38	1.68 NS
8	Innovativeness	4.52 *	0.39	0.61	1.56 NS
9	Scientific orientation	1.69 NS	0.08	0.11	1.28 NS
10	Management orientation	3.01 *	0.40	0.81	2.010 *
11	Achievement motivation	1.81 NS	0.18	0.17	0.96 NS
12	Economic motivation	3.62 *	0.34	0.26	0.78 NS
13	Mass media participation	2.81 *	0.26	0.56	2.11 *
14	Extension agency contact	3.20 *	0.25	0.67	2.68 **
15	Extension participation	8.29 **	0.27	0.81	3.00**

NS= Non-significant; \* Significant at 5 per cent; \*\* Significant at 1 per cent level;  $R^2 = 0.6261$ .

As regards to total indirect effects channeled through other variables for each of the independent variables, it was found quite substantial. Ranking of these effects revealed that extension participation (X8), management orientation (X4), extension agency contact (X7) and economic motivation (X5) occupied the first four ranks which had the highest total indirect effect on the extent of participation in the descending order of magnitude. On the other hand, attitude towards farming (X2), innovativeness (X3), mass media participation (X6) and education (X1) occupied the last four ranks in the same order.

The first largest indirect effect channeled through is extension participation (X8) in the case of five variables and the remaining three variables channeled through attitude towards farming (X2), mass media participation (X6) and extension agency contact (X7). The second largest indirect effect channeled through extension agency contact (X7) in case of four variables, closely followed by management orientation (X4) and extension participation (X8). However, the third largest indirect effect has channeled through management orientation (X4) in case of five variables, closely followed by attitude towards farming (X2) and extension agency contact (X7). The total residual effect was found to be 0.3739.

Extension participation and extension agency contact had direct, indirect and largest indirect effects on the extent of participation of farm women. Participation in extension activities such as, group discussion, general meetings, demonstrations, training programmes, farmer field school, field days, krishimela, etc., would promote the acquisition and consequent adoption of farm technologies. Regular participation in extension activities has influenced the farm women to participate more in sugarcane cultivation activities. Extension agency contact would

help the farm women to have an exposure to the latest farm technologies promoted by the extension workers. Frequent contact with the extension workers has motivated farm women to participate in the sugarcane cultivation activities.

Therefore, extension participation and extension agency contact were found to be not only having major direct effect on the extent of participation, but also through indirect and largest indirect effects influencing the participation. Hence, extension participation and extension agency contact were the dominant variables through which other variables can influence the participation. Extension participation can be considered as the forerunner of the extent of participation of farm women in sugarcane cultivation activities.

The eagerness in solving their problems with extension workers and also the interest to participate in extension activities to gather recent information have immensely influenced the participation of farm women in sugarcane cultivation activities. Hence, extension participation and extension agency contact of farm women has immensely induced the participation in the sugarcane cultivation activities.

### **Conclusion**

The results revealed that there was a strong association between the extension participation and extension agency contact with the participation of farm women in sugarcane cultivation activities. Therefore, more exposure of farm women to the extension activities (training programmes, demonstrations, discussion, meetings, field days etc.) and frequent contacts with the formal extension personnel (Cane superintendent, Cane development officers, Assistant Agricultural Officers, Agricultural Officers, Farm scientists etc.) will help them to gain knowledge regarding sugarcane cultivation leading to increased participation in sugarcane cultivation activities.

**Table 4: Direct, indirect and largest indirect effects of independent variables on the participation of farm women in sugarcane cultivation activities (n=120).**

Factor No.	Factor	Direct effect	Rank	Total indirect effect	Rank	Three largest indirect effect channeled through
X1	Education	0.0212	8	0.0111	8	0.129 X8 0.018 X7 0.015 X4
X2	Attitude towards farming	0.0792	4	0.0418	5	0.078 X8 0.038 X7 0.026 X4
X3	Innovativeness	0.0514	6	0.0319	6	0.239 X8 0.079 X4 0.051 X7
X4	Management orientation	0.0800	3	0.0761	2	0.497 X7 0.052 X8 0.016 X2
X5	Economic motivation	0.0612	5	0.0571	4	0.032 X8 0.015 X7 0.010 X4
X6	Mass media participation	0.0411	7	0.0219	7	0.576 X2 0.014 X8 0.004 X4
X7	Extension agency contact	0.0801	2	0.0689	3	0.183 X8 0.046 X4 0.041 X2
X8	Extension participation	0.0926	1	0.0822	1	0.197 X6 0.023 X7 0.020 X4

Residual effect: 0.3739.

The results have also revealed that mass media participation had a significant association with the extent of participation of farm women in sugarcane cultivation activities. Dissemination of improved sugarcane technologies through media (newspapers, farm magazines, radio, television etc.) in local languages will also increase the awareness of farm women on improved sugarcane technologies thereby enhancing their participation in sugarcane cultivation activities.

### References

Farahat, A. E. M., 2011. The determinants of political participation of rural youth-

comparativestudy between male and female youth in Menoufiya Governorate. Arab Univ. J.Agr. Sci.,19(1):39-85.

Nataraju, B.Y., 2012. A study on participation of women in dairy farming in Chikmagalur district. M.Sc. (Agri)Thesis, (Unpub), Univ. Agri. Sci.,Bengaluru.

Nirmala. N.S., 2013. Participation and time utilization pattern among members of women milkproducers co-operative societies in Hassan district. M.Sc. (Agri) Thesis (Unpub),Univ. Agri. Sci.,Bengaluru.

RajulaShanthy, T., 2010. Gender perspectives for sustaining sugarcane

based farming system. Indian Res. J.Extn. Edn., 10 (1): 112- 116.

Sarah Jehu Auta, Yusuf, Abdullahi, M., Mohammed Basitu, 2010. Rural youths participation in agriculture: prospects, challenges and the implications for policy in Nigeria. J. Agri. Extn. Edn.,16, 298-307.

Sujaykumar, S., 2012. Participation and time utilization pattern of rural youth in

**IJSAR, 3(10), 2016; 77-85**

organic sugarcane cultivation under Cauvery command area of Karnataka. M.Sc. (Agri) Thesis (Unpub),Univ. Agri. Sci., Bengaluru.

Vishwanath, H., Manjunatha, B.N., Lakshminarayan,M.T., Anand, T.N., 2014. Participation of rural youth in Sericulture. Mysore J. of Agri. Sci., 48(2): 251-256.