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Gender Participation in Sugarcane Cultivation Activities

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Abstract

The study was conducted in ten villages of two taluks in Mandya district of Karnataka State during 2014-15 to analyze the extent of participation of farm men and women in sugarcane cultivation activities. One hundred and twenty respondents (60 farm men and 60 farm women) were selected as sample for the study. Small and marginal sugarcane farmers were interviewed using a pre-tested interview schedule. The results revealed that a majority (75.00%) of the farm men were having high to medium level of participation, whereas a majority (76.66%) of farm women had medium to low level of participation in sugarcane cultivation activities. There was a significant difference between farm men and women with respect to their participation level in sugarcane cultivation activities. The results further revealed that majority of farm men perceived drudgery in performing task like mixing and application of plant protection chemicals (64.00%). While, majority of farm women perceived that hand weeding (83.33%) and planting setts (60.00%) were the activities which involved drudgery.

Historically, it is believed that it was women who first domesticated crop plants, and there by initiated the art and science of farming. While, men were out hunting in search of food, women started gathering seeds from the native flora and began cultivating plants for the sake of food, feed, and fuel. Even today, this tradition has continued in many parts of the developing world. Women are regarded as "the creators of all the green things in the world". Rural women share abundant responsibilities and perform a wide spectrum of activities like running the family, maintaining the household, attending to farm labour, performing several farm activities, attending domestic animals and extending a helping hand in rural artisanship and handicrafts; but their contribution in economic terms has not been recognized. This situation prevails in almost all the developing countries (Veena *et al.,* 1990).

Sugarcane *(Saccharum officinarum* L.) is an annual crop engaging around 50 million farmers of which approximately half of them are women (Zaidi and Munir, 2014). Even though women form the backbone of sugarcane cultivation, they still tend to exist as "the hidden farmers" with almost negligible access to land, resources, technologies, financial services, markets and even education. Despite their exclusive inputs in sugarcane farming viz., planting setts, manure application, hand weeding, and detopping and cleaning the cane, the output of the land controlled by women is drastically lesser than the male counter parts. Unfortunately, the study on farm women's participation in sugarcane cultivation activities is very meager. Hence, it is essential to know the participation of farm men and women in various activities of sugarcane cultivation. Against this background, the present study is taken up with the following specific objectives:

1. To study the extent of participation of farm men and women in sugarcane cultivation activities.

2. To identify the drudgery related activities in sugarcane cultivation as perceived by farm men and women.

Methodology

The study was conducted in Mandya district of Karnataka State during 2014-15. Mandya district was purposively selected for the study, since it is considered to be one of the agriculturally progressive district in Karnataka. Out of the seven taluks of the Mandya district, two taluks namely, Mandya (7,655 ha) and Maddur (5,135 ha) were purposively selected for the study, since these taluks have recorded highest area under sugarcane cultivation during the year 2013-14 (Anon, 2013-14). Sugarcane is cultivated as a cash crop in all the villages of the sampled two taluks. Five villages were randomly selected for the study from each of the two sampled taluks. Small and marginal farmers were interviewed for the study since farm

women from small and marginal farmers are more involved in the participation in sugarcane cultivation activities. From each village, six farm households cultivating sugarcane were randomly selected. Relevant data was collected from the head of the family and his spouse. Thus, the final sample constituted 120 respondents (60 farm men and 60 farm women) from ten villages of Mandya and Maddur taluks.

Ex-post facto research design was employed in the present study. Personal interview method was adopted to collect the data from farm men and women. The collected data was analyzed using frequency, percentage, mean and student 't' test.

Participation in the present study is operationally defined as degree to which the farm men and women are carrying out various sugarcane cultivation activities. It was measured using the procedure followed by Rajulashanthy (2010) with slight modification.

A list of 25 sugarcane activities were presented to the farm men and women to know their extent of participation. To analyze the extent of participation of farm men, a score of 3, 2 and 1 was assigned to 'farm men alone', 'farm women alone' and 'both', respectively. The extent of participation of farm women was analyzed by assigning score of 3, 2 and 1 to 'farm women alone', 'farm men alone' and 'both', respectively. Based on the total score obtained for the 25 sugarcane cultivation activities by the respondents, the farm men and women were classified into low, medium and high participation level considering mean and half standard deviation.

Participation category	Score			
	Farm men		Farm women	
Low { Less than (Mean - ½ SD)}	Below	47.13	Below	35.19
Medium {Between (Mean ± ½ SD)}	47.13 to	55.11	35.19 to	41.29
High {More than (Mean +½ SD)}	Above	55.11	Above	41.29
Mean		51.12		38.24
Standard deviation		7.98		6.10

Results and Discussion

Overall participation of farm men and women in sugarcane cultivation activities : A cursory perusal of Table I reveals that a greater number of farm men (40.00%) had high level of participation, while 35.00 and 25.00 per cent of the farm men had medium and low level of participation in the sugarcane cultivation activities, respectively. It can be concluded that three-fourth (75.00%) of the farm men had high to medium level of participation. Farm men had either 'exclusively' or 'jointly' participated in all the sugarcane cultivation activities, hence three- fourth of the farm men had medium to high level of participation in the sugarcane cultivation activities.

It is also observed from Table I that an equal percentage of the farm women (38.33% each) had medium and low level of participation, whereas 23.34 per cent of the farm women had high level of participation in the sugarcane cultivation activities. It

Table I

Overall participation of farm men and women in sugarcane cultivation activities

Category	Farm men (n=60)		Farm women (n=60)	
	No.	%	No.	%
Low	15	25.00	23	38.33
Medium	21	35.00	23	38.33
High	24	40.00	14	23.34
Total	60	100.00	60	100.00

can be inferred that a vast majority (76.66%) of farm women had medium to low level of participation in sugarcane cultivation activities. Majority of farm women had medium to low level of participation is due to non-participation in the cultivation activities such as ploughing, forming ridges and furrows, cleaning irrigation channels, spraying plant protection chemicals, transporting harvested cane from field to vehicle and shoulder breaking operations in ratoon crop. Women in addition to carrying out farming activities, they have also devoted time in doing domestic task (household work, cooking, child care etc.), hence, a vast majority of farm women were having low to medium level of participation in performing sugarcane cultivation

activities. The reported results are in line with the findings of Nethravathi (2008) and Sujaykumar (2012).

Activity-wise participation of farm men and women in sugarcane cultivation : A total of 25 sugarcane cultivation activities were selected for the study to know the extent of participation of farm men and women and the same is presented in Table II.

The results in Table II reveals that the sugarcane cultivation activities like ploughing, forming ridges and furrows, cleaning irrigation channels, spraying plant protection chemicals, transporting the harvested cane from field to vehicle and shoulder breaking operations in ratoon crop were performed exclusively (100.00%) by farm men. Whereas, a vast majority of farm men participated in the activities such as gap filling (96.67%), spraying weedicide (93.34%), guiding irrigation water (96.66%), earthing up (96.66%), detrashing and mulching (96.66%), mixing plant protection chemicals (94.00%), rouging the affected clumps (95.00%) and cutting the cane (95.00%). The above activities are laborious, tough and cumbersome and hence being performed exclusively by farm men. More or less similar findings was observed by RajulaShanthy(2010).

It is also observed in Table II that a majority of farm women participated in the sugarcane cultivation activities such as sett cutting (60.00%), sett treatment (61.66%), sett transport (55.00%), spreading setts (63.34%), sett planting (60.00%), application of farm yard manure (53.33%), basal dose of fertilizer (51.66%), top dressing of fertilizer (53.34%), hand weeding (90.00%), and detopping and cleaning the cane (61.66%). These activities are also laborious but do not demand much physical energy as required by the activities done by farm men.

Over one-fourth of 'farm men and women have 'jointly' participated in the sugarcane cultivation activities like sett planting (26.66%), application of basal dose (35.00%) and top dressing of fertilizers (35.00%), and detopping and cleaning the cane (30.00%). Whereas, less number of both farm men and women have 'jointly' performed the activities like sett cutting (23.34%), sett treatment (21.68%), sett transport (20.00%), spreading setts (20.00%), gap filling (3.33%), application of farm yard manure (5.00%), hand weeding (8.34%), spraying weedicide (6.66%), guiding irrigation water (3.34%), earthing up (3.34%), detrashing and mulching (3.34%), mixing plant protection chemicals (6.00%), rouging the affected clumps (5.00%), cutting the cane (5.00%) detopping and cleaning the cane (30.00%) and stubble shaving operations in ratoon crop (16.67%).

It could be observed from the results that sett planting and application of basal dose and top dressing of fertilizer, hand weeding and detopping and cleaning the cane are women dominated activities. Hence, more than 25.00 per cent of the farm women have 'jointly' participated along with their spouses in performing the above activities. The findings are in consonance with the findings of Rajeshkumar *et al.* (2005), Rajulashanthy (2010) and Vishwanath (2013).

Test of significance between farm men and women with respect to their participation in sugarcane cultivation activities : Results in Table III reveals that the mean participation score of farm men (51.12) is greater than the mean participation score of farm women (38.24). The 't' value (9.98) was found to be highly significant at one per cent level of probability indicating significant difference exist between farm men and women with respect to their participation level in sugarcane cultivation activities. Farm men have either 'exclusively' or 'jointly' participated in all the sugarcane cultivation activities. Farm women in addition to carrying out farming activities, have also devoted time in doing domestic task (household work, cooking, child care etc.), hence there is a significant difference between the farm men and women with respect to their participation level in sugarcane cultivation activities.

Drudgeries in sugarcane cultivation activities as perceived by farm men and women : A perusal of Table IV reveals that over one-third of the farm men experienced 'backache' while irrigating the sugarcane crop (45.00%) and harvesting the cane (36.66%). Whereas, majority of farm women experienced 'backache' while performing operations like hand weeding (83.33%) and planting setts (60.00%). The drudgeries can be reduced with respect to the above activities if suitable farm implements such

TABLE II

Extent of participation of farm men and women in sugarcane cultivation activities

Sugarcane cultivation activities	Farm men (n=60)		Farm women (n=60)		Both (n=120)	
	No.	%	No.	%	No.	%
Land preparation						
a. Ploughing	60	100.00	0	0.00	0	0.00
b. Forming ridges and furrows	60	100.00	0	0.00	0	0.00
Planting setts						
a. Sett cutting	10	16.66	36	60.00	28	23.34
b. Sett treatment	10	16.66	37	61.66	26	21.68
c. Sett transport	15	25.00	33	55.00	24	20.00
d. Spreading setts	10	16.66	38	63.34	24	20.00
e. Sett planting	08	13.34	36	60.00	32	26.66
f. Gap filling	58	96.67	0	0.00	04	3.33
Manuring						
a. Applying FYM	25	41.67	32	53.33	06	5.00
b. Applying fertilizers						
i Basal dose	08	13.34	31	51.66	42	35.00
ii. Top dressing	07	11.67	32	53.33	42	35.00
Weed management						
a. Hand weeding	01	1.66	54	90.00	10	8.34
b. Spraying weedicide (n=30* and 60*)	28	93.34	0	0.00	04	6.66
Irrigation						
a. Guiding irrigation water	58	96.66	0	0.00	04	3.34
b. Cleaning channels	60	100.00	0	0.00	0	0.00
Earthing up	58	96.66	0	0.00	04	3.34
Detrashing and mulching	58	96.66	0	0.00	04	3.34
Plant protection						
a. Mixing plant protection chemicals (n=30* and 60*)	47	94.00	0	0.00	06	6.00
b. Spraying plant protection chemicals (n=50** and 100**)	50	100.00	0	0.00	0	0.00
c. Rouging affected clumps	57	95.00	0	0.00	06	5.00
Harvesting						
a. Cutting the cane	57	95.00	0	0.00	06	5.00
b. Detopping and cleaning the cane	05	08.34	37	61.66	36	30.00
Transporting the cane from field to vehicle	60	100.00	0	0.00	0	0.00
Ratoon management						
a. Stubble shaving operation	26	43.33	24	40.00	20	16.67
b. Shoulder breaking operation	60	100.00	0	00.00	0	00.00

* Number of farmers applied weedicide ; ** Number of farmers applied plant protection chemicals.

TABLE III

Test of significance between farm men and women with respect to extent of participation

Respondents	Extent of participation	
	Mean score	't' value
Farm men (n=60)	51.12	9.98**
Farm women (n=60)	38.24	

** Significant at 1 per cent level

as harvesters, weeders and sugarcane sett planters are developed by the farm scientists. The sugarcane farmers can adopt sub-surface drip irrigation to irrigate the crop for reducing the drudgeries. However, the technologies should be within the farmer's financial means.

It is also observed that over one-third of the farm men experienced 'neck pain' while carrying out operations like application of plant protection

TABLE IV

Drudgeries in sugarcane cultivation activities as perceived by farm men and women

Drudgeries	Farm men (n=60)		Farm women (n=60)	
	No.	%	No.	%
Backache				
a. Land preparation	16	26.66	0	0.00
b. Planting setts	10	16.66	36	60.00
c. Hand weeding	01	1.66	50	83.33
d. Detrashing and mulching	17	28.33	01	1.66
e. Earthing up	14	23.33	01	1.66
f. Irrigation	27	45.00	02	3.33
g. Harvesting	22	36.66	03	5.00
h. Transportation of canes	13	21.66	0	0.00
Neck pain				
a. Application of FYM	10	16.66	02	3.33
b. Application of fertilizers	09	15.00	20	33.34
c. Application of plant protection chemicals	22	36.66	0	0.00
d. Harvesting canes	21	35.00	03	5.00
Blisters and lesions				
a. Land preparation	11	18.33	0	0.00
b. Hand weeding	04	6.66	33	55.00
c. Application of fertilizers	08	13.33	24	40.00
d. Mixing and application of plant protection chemicals	32	64.00	03	6.00
e. Harvesting	17	28.34	02	3.34
f. Transporting canes	11	18.34	0	0.00
Cough and nasal infections due to inhalation of:				
a. Manure dust	23	38.33	20	33.33
b. Mixing and application of plant protection chemicals	13	21.67	0	0.00
Eye irritation				
a. Application of fertilizers	08	13.34	19	31.67
b. Mixing and application of plant protection chemicals	14	23.33	03	6.00

chemicals (36.66%) and harvesting of canes (34.00%). It was also found that one-third (33.34%) of the farm women experienced 'neck pain' while applying fertilizers to the sugarcane crop. Drudgeries in the above mentioned activities could be reduced by efficiently using sprayers and harvesting tools.

Further, majority of the farm men (64.00%) perceived that 'blister and lesions' were caused while carrying out mixing and application of plant protection chemicals. In case of farm women, a larger number of farm women perceived that 'blister and lesions' were caused while performing hand weeding (55.00%) and applying fertilizer to the sugarcane crop (40.00%). Drudgeries could be reduced in the above mentioned activities by efficiently using the sprayers and weeders. Hand gloves could be used while mixing and application of agro-chemicals so that the chemicals would not come in contact with the skin.

The data in Table IV further shows that most of the farm men (38.33%) and farm women (33.33%) perceived drudgery due to inhalation of manure dust causing 'cough and nasal infections', whereas 21.67 per cent of farm men had perceived drudgery while mixing and applying plant protection chemicals causing 'cough and nasal infections'. Nose mask could be utilized to avoid inhalation of dust caused while mixing and application of manures.

It is also observed from Table IV that a little more than one-fourth of the farm men perceived drudgery while mixing and applying plant protection chemicals (23.33%) causing 'eye irritation' , whereas six per cent of farm women perceived it to be drudgery while mixing and applying plant protection chemicals causing 'eye irritation'. About one-third (31.67%) of farm women perceived the application of fertilizers as drudgery causing 'eye irritation', while 13.34 per cent of farm men perceived that the application of fertilizers as drudgery causing 'eye irritation'. The eye irritation could be minimized by wearing eye mask by the farmers while mixing and applying agro-chemicals to the sugarcane crop. However, the above tasks are conceived as routine ones and there is no realization with regard to the drudgery involved.

The extent of drudgery of farm men and women in the farm vary widely with the nature of work, type of activity, their socio-economic status, local customs, size of family etc.

The reduction in drudgery will lead to reduced fatigue and increase the participation of farm men and women in farm activities.

The study results are in conformity with the finding of Padmavathi (2002), Bharath Kumar (2010), Rajulashanthy (2010) and Zaidi and Munir (2014).

The research results has revealed that a greater proportion of farm men (40.00%) had high level of participation, whereas an equal percentage of the farm women (38.33% each) had medium and low level of participation in the sugarcane cultivation activities. It can be inferred that both farm men and women have participated in the sugarcane cultivation activities but their participation levels differed in various activities. The extension agencies should educate the farm men to motivate farm women to participate actively in farming activities. Hence, both farm men and women can profitably engage themselves in different activities of sugarcane cultivation. More exposure of farm women to the extension activities and frequent contacts with the formal extension personnel will help the farm women to gain knowledge for improving self perception, self esteem and confidence which contribute to increased participation in sugarcane cultivation activities.

Extending the technological interventions such as ploughing tools, sugarcane sett planters, sugarcane sett cutter, sugarcane detrasher, sugarcane intercultivator, earthing up ridger and ridger cum weeder, rotovator, sprayers, sugarcane stubble shaver, ratoon manager, sugarcane combine harvester and sugarcane stripper (stripping leaves and detoppping of cane after harvest) etc., will reduce the drudgery to both farm men and women. The Karnataka State Department of Agriculture may provide farm implement on custom hire basis to the needy farmers through Raitha Samparka Kendras.

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