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Assessment of Technological Interventions in Farm Women Empowerment

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ABSTRACT

Women play an important role in agriculture. There is a need to empower these farm women to improve their overall wellbeing. An attempt was made to assess the impact of technological interventions in terms of participation of farm women in farming activities, change in drudgery involved, involvement in decision making and other attributes related to empowerment in North 24 Parganas district of West Bengal involving 110 farm families. The results reveal that there is significant increase in participation in all the selected farming activities in post intervention period. Majority of the farm women participated in decision making always in activities like drying (95%), weeding (70%) and storing (70%) in the post intervention period. The mean drudgery score had also decreased for all the activities, the higher decrease was observed in case of retting (1.525) followed by sowing (1.225). Among the personal attributes studied, the highest difference level in mean was attained in case of self-confidence (2.45) followed by decision making ability (2.15). The present study clearly indicate that special emphasis on women friendly technologies can make a huge change in their existing status in agriculture by improving their participation in farming activities, decision making ability and self-confidence.

INTRODUCTION

Women play a significant and crucial role in agricultural development and allied fields including the main crop production, livestock production, horticulture, postharvest operations, agro/ social forestry, fisheries, etc. The nature and extent of women involvement in agriculture varies greatly from region to region. Women's status is often described in terms of their level of income, employment, education, health and fertility as well as their roles within the family, the community and society (Awais et al., 2009). Despite doing the back breaking works, women are not socially and economically empowered. Women face many problems in carrying out the income generating activities. These problems are to be addressed first for their socio-economic upliftment. Women agriculturalists are associated with traditional subsistence and low-yield food crops, poverty, lack of influence and the inability to adopt crop and husbandry innovations (Youssef, 1995). It is very important to solve this issue by empowering them socially and economically as the livelihood of these farm women depend entirely on farming and related activities. Empowerment is a multi-faceted, multi-dimensional and multi layered concept. With regards to women, empowerment is a process in which women gain greater share of control over resources- material, human and intellectual like knowledge, information, and ideas and financial like money- and control over decision making in the home and community (Awasti et al., 2020). Women's empowerment has a direct impact on agricultural productivity and household food security (Sraboni et al., 2014; Harper et al., 2013). There is also a need to enhance women participation in the decision-making regarding agricultural and livestock activities and the educational facility should be provided to females to enhance their capabilities in the rural areas (Nain & Kumar, 2010; Yadav et al., 2021).

Under Tribal Sub Plan (TSP) various activities for enhancing the livelihood security was initiated by ICAR-Central Research Institute for Jute and allied Fibres since 2015 in Makaltala and

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Farmania villages of Habra block, North 24 Parganas. A special emphasis was given on tribal farm women of the village since majority of the agricultural activities were undertaken by the women folk of the village. The major interventions were improved jute varieties, line sowing, jute intercrop with green gram, nail weeder, retting with CRIJAF Sona, improved rice cultivation practices, vegetable cultivation in rice crop, Improved package and practices of mustard, coriander, fisheries, poultry and entrepreneurship development through value addition of jute fibre and fabrics.Technologic empowerment of farm women was focused since the participation of women in agriculture activities need to be improved and drudgery to be reduced simultaneously. The present study was taken up to assess the impact of technological interventions interms of participation of farm women in farming activities, drudgery, involvement in decision making and other personal attributes of farm women related to empowerment.

METHODOLOGY

The study was conducted at Makaltala village of North 24 Parganas, West Bengal where jute based farming system is followed by majority of the farmers. After analysing the existing farming situation and level of farm women's participation in farming activities through baseline study, a cafeteria of technologies was introduced slowly in the villages from year 2015 to 2019 in order to technologically empower the farm women by providing skill on improved jute production technologies, providing drudgery reducing tools and implements and also training them on value addition which is a part and parcel of sustainable agriculture system. A total of forty farm women out of 110 farm families was considered for collecting data for analysing the impact of technological interventions on farm women empowerment. As the population was homogenous simple random sampling procedure was used. Based on the objectives, a semi structured interview schedule was prepared. The investigation was applied in nature and survey in design. Self-anchoring technique was used wherein the respondents were asked to rate themselves on the scale on the range given against the selected activity or dimensions before and after the introduction of interventions. Three levels were mentioned against each farm activity for measuring the participation- always, sometimes and never with a score of 2,1 and 0 respectively. Descriptive statistics such as frequency and mean were used wherever necessary. Participation of women in farming activities in two dimensions like physical participation and participation in decision making was considered for the study. The term Physical participation is operationalized as the extent of participation of farm women in different farming activities physically, right from land preparation to marketing of farm products. Similarly, the participation of farm women in decision making of farming activities in the present study is operationalized as the extent of involvement of farm women in decision making of various farm activities right from land preparation to marketing of products and by-products.

RESULTS AND DISCUSSION

The impact of introduction of farm interventions in terms of participation of farm women in farming activities, the level of drudgery and the overall perceived impact of the interventions were assessed and the results are presented below.

Physical participation of farm women in different farming activities of jute cultivation in terms of field preparation, sowing, weeding, irrigation, plant protection, harvesting, retting, drying, storing etc. was studied. The results (Table 1) reveal that there is significant increase in participation in all the selected farming activities in post intervention period. The highest participation, after the introduction of technological interventions on crop production aspects in jute was shown in drying and storing as per the score recorded (69), followed by record keeping (66) and weeding (63) whereas in pre intervention period farm women participating in various farming activities regularly were very less, the highest being in weeding operation (44). In other farming activities the farm women who participated in farming activities regularly were very less or nil. In the pre intervention period no respondent reported regular participation in sowing, irrigation, plant protection and selling of bi-products, the total score in the level of participation being 8,2,1 and 4 respectively. But the post intervention period score shows that the participation level has increased to 20, 17, 10 and 38 respectively. The farm activity that showed least change in the participation level of farm women was plant protection, the reason for which was the higher drudgery involved in operating the sprayer in jute field. Mittal & Kaur (2021) also reported that the participation of farm women in plant protection measures are very less. The results indicate that women friendly technologies in agriculture can improve their level of participation in farming activities.

Table 1. Level of participation of women in farming activities

Activities	Level of physical participation of farm women		Participation of farm women in decision making	
	Pre-interventions	Post-interventions	Pre-interventions	Post-interventions
Field preparation	17	42	21	56
Sowing	8	20	18	43
Weeding	44	63	43	68
Irrigation	2	17	8	43
Plant protection	1	10	4	30
Harvesting	39	48	38	60
Retting	3	25	8	46
Drying	44	69	45	78
Storing	38	69	36	68
Selling products	30	52	18	42
Selling biproducts	4	38	10	45
Record keeping	26	66	24	65

Participation of farm women in decision making also increased in all the farming activities studied. It can be observed from the pre intervention and post intervention scores that increase in participation in decision making was more in activities like drying (78), weeding (68), storing (68), record keeping (65) and harvesting (60). The difference in the total score obtained under each farming activities revealed that a greater change happened in case of participation in decision making regarding record keeping followed by retting, field preparation, irrigation and selling bi-products. The studies by Kaur (2008); Jamali (2009); Devendra & Chittedi (2010); Pal & Haldar (2016) also support that in order to increase the role of farm woman in decision making for agricultural production, dairy and other allied activities of technical nature, it is necessary to equip them with latest information so that they can play a vital role in decision making in the family. Baliyan (2014) reported that higher work has a favourable impact on the status of women in the family and their role in decision-making.

Level of drudgery

In the present study, the level of reduction in drudgery in jute farming activities due to introduction of interventions were studied by collecting the data of pre and post intervention period (Table 2). In the post intervention period, the mean drudgery score had decreased for all the activities, the higher decrease was observed in case of retting (1.525) followed by sowing (1.225) and weeding (1.05). The technology CRIJAF Sona, a microbial formulation that helps in faster and quality retting helped the farm women to reduce drudgery as the fibre extraction from the bark became easier, less difficulty in separating the fibre from the bark as there was more or less uniform retting and the root content was almost nil. Another drudgery reducing tool used by farm women in jute cultivation was four row jute seed drill. Since there was uniform seed distribution in rows, there was no need for the farm women to go for thinning operation. Further, the line sowing of jute also made the other intercultural operations easy for them. The drudgery in weeding operation was reduced due to the introduction of CRIJAF nail weeder. The Wilcoxon test also showed that there is a significant reduction in the drudgery level (at $p<0.01$) of all the farming activities except in case of drying. None of the technology having direct or indirect impact on drudgery reduction in drying of fibre was introduced in the study area.

The results are in line with the studies of Singh et al., (2014) who reported higher working efficiency while harvesting with serrated sickle. Similarly, Sharma et al 2018 in their study on awareness about various innovative agriculture techniques, farm tools and implements and drudgery experience of respondents found that, for majority of women with the help of modified technology, the work output was more than traditional techniques. Barakha et al., (2018) reported increased efficiency, work output and reduced drudgery of farm women resulted from adoption of improved technology using hanging grain cleaner. Surabhi et al., (2016) reported similar findings in the study comparing energy expenditure of farm women during performing agricultural activities in traditional practices and by using drudgery reducing tools.

Impact of the technological interventions on individual ability of farm women

The impact of the interventions on farm women in terms of their individual abilities was analysed and the result reveal that among the personal attributes studied (Table 3), the highest difference level in mean was attained in case of self-confidence (2.45) followed by decision making ability (2.15), economic freedom level (2.08), leadership ability (1.73), freedom of expression (1.63), individual identity and managerial skills (0.60). The regular trainings on improved crop production technologies, skill development programmes of SHG members on various income generating activities such as backyard poultry, duckery, vegetable cultivation, value addition of jute through jute bag preparation etc. helped the women farmers to gain knowledge and skill on new technologies which in turn resulted in increase in self-confidence and decision

Table 2. Impact of interventions on perceived level of drudgery of farm women

Activities	Mean score before	Mean score after	Difference	Wilcoxon test(z value)
Field preparation	2.925	2.050	0.875	5.51 ($p<0.01$)
Sowing	2.925	1.70	1.225	5.37 ($p<0.01$)
weeding	2.700	1.650	1.050	4.69 ($p<0.01$)
irrigation	2.775	2.275	0.500	3.26 ($p<0.01$)
plant protection	2.675	2.100	0.575	4.01 ($p<0.01$)
harvesting	2.200	1.950	0.250	2.75 ($p=0.01$)
retting	2.925	1.40	1.525	5.37 ($p<0.01$)
drying	2.100	1.975	0.125	1.33 ($p=0.18$)

Table 3. Impact of interventions on individual ability of farm women

Attributes	Mean before interventions	Mean after interventions	Difference	Wilcoxon test (z value)
Leadership ability	0.75	2.48	1.73	4.97 ($p<0.01$)
Individual identity	0.73	1.78	1.05	4.11 ($p<0.01$)
Freedom of expression	0.88	2.50	1.63	5.03 ($p<0.01$)
Economic freedom level	0.53	2.60	2.08	5.44 ($p<0.01$)
Decision making ability	0.43	2.58	2.15	5.37 ($p<0.01$)
Managerial skills	1.20	1.80	0.60	3.41 ($p<0.01$)
Self Confidence	0.38	2.82	2.45	5.29 ($p<0.01$)

making ability of the farm women. Access to technology and improvement of farming and production systems can have positive benefits not only from an economic perspective but also in helping to enhance the status of women. Research by Sanginga et al., (2006) & Bhuyan et al., (2019) support this finding. The income level of the farm women increased because of the technologic empowerment. This had led to their increased economic freedom level which in turn helped them to influence the expenditure pattern of their family.

This may be the reason for indicating the increase in economic freedom level by the farm women. Women gained knowledge and became active in their Self Help Groups, guiding others in the village because of the technological interventions. This might have contributed to their higher mean score towards leadership ability, freedom of expression, individual identity and managerial skills. It can be concluded from the table that the interventions had left an indelible improvement in the personal, social and economic conditions of farm women.

CONCLUSION

Training or skill enhancement on improved technologies play a major role in improving and sustaining the participation of farm women in agriculture. Special emphasis on women friendly technologies can make a huge change in their existing status in agriculture in terms of their participation in farming activities physically as well as participation in decision making regarding the farming activities, reduction in drudgery and improving the overall personal attributes. If these women farmers can be provided with equal access to other resources like land, credit and other services, a tremendous sustainable impact on their overall livelihood can be made. The researchers and policy makers should therefore be more gender sensitive in designing research agenda and programmes that may encourage more farm women to adopt new suitable women friendly technologies.

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