Women Friendly Technological Approaches for Techno-Socio-Economic Empowerment of Farm Families – A Case Study of Kanas Block of Puri, Odisha

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ABSTRACT

The women are the backbone of agricultural workforce but worldwide their contribution has been unpaid. Women of landless labour and marginal farm families are the poorest, bearing a heavy burden of work in cultivation of crops along with all household tasks. Identifying gender issues and testing available farm technology for women perspective aimed at improving the status of women in term of increasing employment and enhancing income levels. Most of the farm families in Odisha belong to marginal farmers and landless agricultural labours. Assessment of technology in women perspective is being one of the thrust areas of ICAR-CIWA, were focussed under one SCSP programme in villages i.e. Kantabania, Lokapal and Chhotijodi village, Kanas of Puri district of Odisha. Keeping the problems and needs of the farm women in view gender friendly technologies like backward poultry farming mushroom cultivation, homestead nutritional garden, Custom Hiring Centre (sewing machine), vermi composting, drudgery reducing small tools and impediments, were tested among 100 farm women clientele of 10 SHG. The detail techno-economic assessment of these interventions found that a backyard poultry unit of 30 birds can generate on an average of net profit Rs.25,500/- in a year. Mushroom cultivation can generate an avg. of Rs

16000- 17500/- per 100 of bed in one month. From homestead nutrition garden farm women can get 7.0 kg vegetable per sqm. From sewing of bags and dresses the group earn Rs.40,000 per month at CHC. From 5 vermicompost bed women produce 8 q of manure in 6 months. Use of small and implements like Improves sickle, garden hoe, cultivar, hand hoe, automatic battery-operated sprayer, axe bill hook increased work efficiency, reduces drudgery and alternatively increases the productivity of farm women.

INTRODUCTION

India is an agrarian country and in agriculture women constitute about 66% of the agricultural workforce. Rural women have, since many centuries, have been putting in unfathomable, unbearable and underpaid drudgery to earn for their family's livelihood and provide food security to country's 1.2 billion people. The plight of most rural women has been dismal since they have to collect firewood, fetch drinking water, search fodder to feed cattle, work on their marginal land to raise crop and work as labourer on other farms as well as take care of children etc. (Patel, 2010). Women constitute the invisible workforce and contribute towards rural and family economy. They play a crucial role in food production, producing more than half of the world's food (FAO, 1986). Despite tremendous contribution of rural women in the country's economy, they continue to be overlooked, exploited and even further disadvantaged by main development process.

Techno-Economic development of rural women is an important approach in gender mainstreaming in agriculture, which help not only in income generation but also empower them with suitable agricultural technology and business skills. Empowerment means earning with self-esteem, self-reliance and self-confidence, but unfortunately research efforts rare take these into account the gender needs which differ between men and women farmers in adoption of technologies. There are number of technologies in agricultural system but their performances and sustainability for meeting the needs of women are not established. Therefore, it is essential to take up programmes to identify the relevant technologies, test in women perspective and refine to make them women friendly.

Materials and Methods:

The study was conducted in participatory mode among the 100 farm women beneficiaries of the ICAR-Central Institute for Women in Agriculture, Bhubaneswar adopted villages i.e. Kantabania, Lokapal and Chhotijodi village in Kanas block of Puri district of Odisha. The selected beneficiaries were supported with critical inputs from the project. 50 farm women were provided with improved poultry breeds namely RIR. Likewise, 20 farm women of 2 SHG were given the critical inputs for straw mushroom production, vegetable seed kit (30 nos. for 3 season), sewing machine (10 for one CHC) vermi bed (10 nos.) and drudgery reducing tools and implements (30 nos.) were supported as critical input. Prior to conducting the study, the farm women were well trained in Institute trainings as well as at the village level training programmes. Regular supervision of Subject Matter Specialist (SMS) through scheduled village level tours strengthened the capacity of farm women by identifying the problems in respective. The follow up interventions are as follows:

1. **Backyard poultry farming**:

Based on need and aspiration SC and resource poor women (50 nos) were identified and

capacity building orientation on backyard poultry farming were conducted in Chhotijodi and Lokapal villages along with critical input support of improved RIR chicks (30 birds), concentrates, fedder and drinker. From the study it revealed that the mortality and tolerance capacity to disease in RIR was found moderate. The weight gained in 10 months (kg/bird) was 2.5 kg. The average annual egg production (nos./bird) recorded was 180 in RIR. Through better performance in term of egg and meat production and became very popular in the locality. Thus, it is important to select right region-specific breeds of poultry. Backyard poultry was found to be a good livelihood option for SC and resource poor farm families. A backyard unit of 30 birds gave an average of net profit Rs. 25,500/- to the farm families. Successful women in backyard poultry started poultry farm in a business mode for utilization of their unused resources. Location specific advisory, specialist's visits and supply of desired variety are crucial for successful of backyard poultry. Therefore, it is advisable that along with household chores a housewife can keep 25-30 birds easily for increasing her family income, nutrition by proper utilization of her available resources.

2. Mushroom cultivation:

Mushroom is extensively cultivated in Odisha. Mushroom cultivation by two women Self Help Groups (SHGs) showed (Table 1) that it is gender friendly have a great potential for empowerment of farm women. In supplements the family nutrition and family income and productively uses their available resources in leisure time (Mishra, *et.al* 2008). The farm women feed backed that it requires very less area, less investment and gives early return by adopting the simple technology. Women sell the mushroom directly to the consumer and get profit directly which promote economic activities/ entrepreneurship. Through mushroom cultivation the women got social appreciation and support from man of their in procuring mushroom spawn and chemicals. Including these two women SHGs, about 20 other farm women of marginal farm families started cultivating straw mushroom (*Volvariella* species). The SHGs got training for mushroom cultivation and its value addition at multiple occasions. The cost of cultivation and economics in mushroom cultivation are given in table below.

Table 1 Economic analysis of mushroom cultivation.

Sl No	Village	Name of the SHGs/ CHC	No. of bed	Average yield per bed (kg.)	Total yield (kg.)	Investment (Rs. /bed)	Income/ bed (Rs.)	Profit/bed (Rs.)
1.	Kantabania	Maa Jogamaya CHC	100	1.250	125	50	1.25 kg x Rs 180/- =175	175
2.	Lokapal	Maa DwariNarayani SHG	100	1.150	115	50	1.2 kg.x Rs.180/- =166	166

3. Homestead nutritional garden:

Growing of different seasonal vegetables in homestead is very old practice in Odisha. Before implementation of the SCSP project, it was observed that the homestead land remains fallow or partially used with few seasonal specific vegetables grown very densely without maintaining proper space. Due to non-availability of quality seed (88%) and due to poor knowledge (22%) facing with multiple problems in new technology adoption,

cultivation and storage of seed remain awaited. In order to promote effective adoption of new technological approaches was made among 30 farm women for scientifically cultivation practice of vegetables in area such as selection of improved seed, preparation of plots, line sowing, giving proper space, irrigation and plant protection etc. With proper utilization of the available unused resources like land, water and FYM, the women were got fresh vegetable and produced seed. Thirty units of nutritional garden cum seed production size 15m^2 to 118m^2 were developed for 4 consecutive seasons by involving 30 farm women from 3 villages. 10-12 numbers season specific improved variety including colour green leafs seed kits were supplied to farm women as critical input support. The result revealed that the highest biomass production 7 kg per m^2. It was found that the farm women having small land size get maximum yield in comparison to large size of plot as it is easy to manage the small plot. The involvement of farm women in nutritional cum seed production units were land preparation (61%), nursery raising (66%), irrigation (61%). The involvement of farm women recorded maximum in seed collection (80%), planting (80%), intercultural (83%) and harvesting (80%). The impact was studied by taking the perception of the farm women. There was a visible change in eating habit and were more concern on family nutrition through fresh greens and vegetables.

4. **Small tools and Implements**

Keeping in view farm women's drudgery, ICAR-CIWA introduced farm tool kits (consisting of 9 items) among 30 SC farm women under SCSP programme of the Institute in 3 villages of Kanas block in Puri district of Odisha in 2024. Assessment study was done after one season to know the impact of the technology on farm women in carryout various farm activities. The impact was analysed with the variables like: technology adoption, activities before and after intervention and, areas of impact. Improved sickle, garden hoe, cultivar, hand hoe, automatic battery-operated sprayer, axe and bill hook were supported to the farm women. The study shows that, there was 100% adoption in case of sprayer, axe and bill hook whereas 95%, for improved sickle and spade (90%) followed by khurpi (88%), garden hoe (80%), hand hoe (78%) and cultivator (66%). On the other hand, lowest adoption rate was for trowel (55%). The farm women used all these tools towards cutting, training, pruning, grafting, harvesting, weeding, ridge making, land and bund preparation, filling soil in polythene bag, intercultural operation and pesticide application. Before intervention, farm women were performing the activities like weeding, harvesting, pesticide application and cutting of herbs and shrubs by hand or traditional methods whereas after intervention, they made use of improved design tools. They felt the technologies as women friendly which increased their efficiency and productivity, reduced hazards and drudgery, also saved time. Thirty women were benefited out of technological interventions. Other farm women of the village demanded for small tools and sprayers. Battery operated sprayer was highly demanded in the village. Adjoining villagers take the sprayer on hire basis from costume hiring centre. Extending the women friendly tools and technological innovations will reduce the burden, and save time and energy of women.

5. Custom Hiring Centre

ICAR-CIWA established one Custom Hiring Centres in Kantabania village, Kanas, Puri named as “ICAR- CIWA -Maa Jogamaya CHC”. Ten sewing machines were provided in the CHC to develop entrepreneurship under SCSP scheme. With this, prior establishment the women were given capacity building training on designing dress stitching, record keeping in CHC etc.The group earn Rs. 40,000/ per month through stitching clothes

and making bags. The young women and girls were involved in stitching work in a common house of the village community. It is found that the CHC create good opportunity for local youth in employment, learned and enhanced their skills to fulfil the local demands at affordable cost.

6. Vermicomposting

The women were sensitized about chemical free farm production and trained in the vermi-compost preparation by using polythene vermi-beds. Improved Earth worm breed ***Eisenia fetida*** and polythene vermi-beds were supported to 10 farm women for compost production. They produced vermi-compost and used, in their homesteads for yielding organic vegetables, green leaves and fruits. The farm women easily adopted this low-cost technology and learned the economically viability and environmentally safe nutrient supplements for organic food production. Some of the women also sold vermicompost @Rs.15/- per kg to other farm families for income generation and entrepreneurship development.

Table 2: Impact of different technologies on different techno-socio economic empowerment of farm women

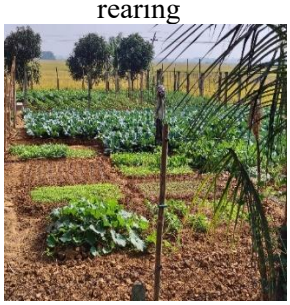
Area of impact	Back Yard Poultry		Mushroom cultivation		Custom Hiring Centre (CHC)		Homestead nutritional garden		Tools and Implements		Vermi composting	
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
Nutrition	****	****	****	**	***	***	****	****	***	***	****	****
Employment	***	0	***	*	***	0	****	*	***	***	****	**
Self-esteem	**	*	****	*	**	*	***	*	***	**	**	*
Drudgery reduction	***	****	****	**	**	**	**	**	***	**	**	**
Health hazard reduction	***	*	****	**	**	*	****	*	**	*	****	****
Strengthening livelihood	***	***	****	**	****	***	****	**	**	*	****	**
Skill development	***	**	****	**	****	**	***	**	**	**	***	**
Gain in knowledge	***	****	****	****	****	***	****	****	***	***	****	****
Change in attitude & perception	***	*	****	*	****	***	****	***	**	*	****	***
social acceptance (multiplier effects)	***	**	****	****	***	***	****	***	***	***	****	***
Eco- friendliness	***	****	****	****	****	****	****	****	**	**	****	****
Increased in yield	***	**	***	**	***	**	***	**	**	**	***	**
Sustainability	***	*	**	**	****	**	****	**	****	**	***	***
Increase in income	***	**	****	**	****	**	****	**	**	*	***	***
(No Impact- '0', Low Impact- 'x', Medium Impact Highest Impact- 'xxx').												


Mushroom Cultivation in SHG


Vermicomposting


Back yard poultry rearing


Custom Hiring Centre


Nutrition Kitchen Garden


Distribution small tools and imlements

Summary

- Rural women form a significant proportion of India's agricultural workforce, yet remain under-recognized despite their vital role in food production, livelihood security, and household management.
- The participatory interventions implemented by ICAR-CIWA in Odisha demonstrated that access to appropriate technologies, capacity building, and critical inputs significantly enhanced women's productivity, income, and decision-making abilities.
- Enterprises such as backyard poultry, mushroom cultivation, nutritional gardens, vermicomposting, and Custom Hiring Centres proved to be economically viable, gender-friendly, and effective in promoting entrepreneurship among farm women.
- Introduction of drudgery-reducing tools and improved practices resulted in higher technology adoption, reduced physical burden, time savings, and increased efficiency, thereby improving the overall quality of life of farm women.

CONCLUSION

The study clearly establishes that techno-economic empowerment of farm women through need-based, participatory, and location-specific interventions can substantially improve their livelihoods, nutritional security, and socio-economic status. The integration of skill development, access to improved technologies, and institutional support not only enhanced income-generating opportunities but also strengthened women's confidence, self-reliance, and role in decision-making. The success of interventions such as backyard poultry, mushroom cultivation, and Custom Hiring Centres highlights the potential of scaling up such models for wider impact. Therefore, gender-sensitive research, extension services, and policy support is essential to ensure sustainable agricultural development and inclusive growth by recognizing and strengthening the contributions of farm women.

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