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Gender Issues for Technological Empowerment of Women in Agriculture

The mandate of National Research Centre for Women in Agriculture is to — conduct basic, strategic and applied research to identify gender issues and test appropriateness of available farm technologies/programme/policies with women perspective; carry out training and consultancy for promoting gender mainstreaming in research and extension for empowerment of farmwomen; and capacity building of scientists, planners and policy makers to respond to the needs of farmwomen.

Gender roles in household activities: An analysis of household activities carried out among women indicated that 26% of their time was devoted for household chores and 17% accounted for fuel wood collection with evidences of inter-generational changes in the pattern of gender work participation. A tendency was noticed among 15% of farmwomen to shy away from wage earning activities in agriculture as influenced by level of education.

Impact of mechanization: Mechanization in rice farming led to a loss of about 57.1 human days in irrigated and 22 days in non-irrigated situation while creating additional space for women and restructuring of gender roles. Introduction of thresher created on an average, 18 additional days of employment for women in irrigated areas and 5.2 days in non-irrigated areas. In the absence of male members, 20% of women managed the farm operations by custom hiring of machines.

Livelihood security through entrepreneurial activity among farm families: Women self-help groups are very effective in capacity building of rural women. However many such SHGs lack entrepreneurial skills for income generation. Development of rice and pulse-based agro-enterprises among farmwomen in Pipili and Sakhigopal villages of Puri district, Orissa were very useful in helping the SHGs to generate income and also in improving leadership qualities and confidence among rural women. Two SHGs were trained in agro-processing and value addition.

Technology testing and refinement in gender perspective: Application of non-hazardous pesticides such as nuxvom, tobacco-soaked water, neem oil and calotropis and hanging of camphor and naphthalene balls from the plant combined with pheromone trap, light trap and maize and marigold barrier at the time of transplanting were effective in the management of brinjal shoot and fruit borer and maintaining higher population of predator such as spider. Maize barrier and marigold intercrop provided favourable cost benefit ratio followed by calotropis powder. Termite traps made of earthen pots were also effective for termite control. The above techniques were easily accessible to and affordable by farmwomen.

Robusta and G-9 varieties of banana were evaluated for low input homestead cultivation using indigenous organic and inorganic inputs. An application of 5g ammonium sulphate and 10g sulphate of potash blended with 500g of fresh cow dung to the distal end of bunch showed significant enhancement in fruit weight yield and

Capacity building of farmwomen

The action research for capacity building of women agricultural labourers (WALs) for increasing the efficiency in agro-enterprises taken up among 60 women in blocks Tangi and Salepur, showed that WALs preferred poultry rearing, mushroom cultivation, rice processing, solar drying and bee keeping for development of enterprise and capacity building. Training programmes, demonstrations, field visits and group discussions were organized on the selected enterprises. Demonstrations of four-row rice transplanter designed by the CRRI, raising of mat type seedlings and mechanical transplanting were carried out.

SUCCESS STORY

Profit earning self-help group

Sangram Vikram Self-help Group in Konjar village in Orissa, came into existence with the effort of a research team of NRCWA, Bhubaneshwar. The group opened a bank account with the State Bank of India, Pipili in September 2002. The group members leased a land area of 0.2ha for 3 years @ 650/year for carrying out the farm-based activities. In November 2002 they grew tomato, cauliflower, beans, potato and greens. With an investment of Rs 320 they could earn a gross amount of Rs 1,278 with a net profit of Rs 958 after two months. The NRCWA trained them in the preparation of lime and orange squash, and with Rs 1,120 they could earn a profit of Rs 950. The group was also trained in the preparation of *baddi* with blackgram. With Rs 280 they could earn a profit of Rs 60/kg. Thus within a year the SHGs could earn a net profit of Rs 2,368. With the initiative of the President of the group they established contact with a private company, which was impressed by the quality of the product, and it placed order for 40 bottles of lime squash. Inspired by this the group secured a loan of Rs 50,000 from the State Bank of India for expanding their business. The group prepared 2,000 bottles of lime squash and 50 bottles of tomato puree and different types of spices including haldi powder, which they sold in the exhibition organized by Orissa State Government and earned a net profit of Rs 28,000.

maturity. The cost of treatment worked out to be Rs 4 per plant as compared to Rs 8 per plant in soil application of recommended dose of NPK indicating cost effectiveness and ease of adoption by women.

Animal health camps were organized and practices such as supplementation of mineral mixture in the concentrate ratio, cultivation of improved forage and vaccination and de-worming were taken up. Castration and replacement of males among farmers' flock for breed improvement, vaccination and de-worming to reduce mortality and morbidity and supplementary feeding of concentrate made from locally available feed resources were introduced for increasing productivity of small ruminants. On an average 20% gain in body weight of lambs/kids was recorded due to supplementation of homemade concentrate as compared to farmers' practice. Replacement of male buck/ram resulted in better stock. Castration of male lambs/kids resulted in body weight gain and these fetched 20-25% higher price than un-castrated ones due to consumer preference.

Implementation of scheduled prophylactic health measures reduced mortality from 33 to 7% and increase in growth rate of 25-30% in the animals between 6 and 12 months of age in their flocks. Women accepted the improved practices, as these were easy to follow.

Drudgery assessment and reduction

Introduction of women friendly improved farm tools and implements: Out of 20 farm operations, the ten critical areas of involvement of women are interculture, harvesting, cleaning and grading, drying and storage, preparatory work in field for sowing, winnowing, ridge/furrow making, maize shelling, vegetable plucking and groundnut decortications. The critical areas of operations for men were ploughing, preparatory work in the field for sowing, harvesting, sowing of seeds, threshing, carrying grain after threshing, ridge/furrow making, carrying fertilizer and its application, carrying FYM and its application, and carrying harvested crop. Most of the farm operations which farmwomen carried out are either by their own hand, feet or using traditional tools, such as sickle, spade, supa, chalani etc. Women's involvement index in farm operation (WII fo) was developed. Women involvement index (WIIfo) in farm operations was 0.42, which varied from 0.36 to 0.53 across the selected villages. The highest WIIfo of 0.53 was in the village having vegetable production. The operations that showed WIIfo of more than 0.50 were drying and storage, cleaning, grading, interculture, vegetable plucking, maize shelling, harvesting, groundnut decortications, and preparatory work in field for sowing. Fourteen equipments namely seed treatment drum, hand ridger, fertilizer broadcaster, Naveen dibbler, twin wheel hoe, PAU weeder, grubber weeder, sitting type groundnut decorticator, hanging type cleaner with five sieves and sack holder, PAU seed drill, pedal cum power operated cleaner grader, knapsack sprayer and groundnut stripper with four stools were introduced in the selected villages and farm women were given training in their operation and maintenance. Most of these tools and implements had the potential to reduce the cost of operation as well as drudgery per unit output due to increased work efficiency. PAU wheel hoe and twin wheel hoe saved Rs 1,563/ha and 1,514/ha (over traditional method), respectively, in the cost of weeding and interculture operations. Use of hand ridger saved labour cost to the extent of Rs 333/ha. Use of tubular maize sheller, groundnut decorticator and groundnut stripper saved Rs 21.85, Rs 123.20 and Rs 63.40/q, respectively, in cost of operation due to labour saving.

All India Coordinated Research Project on Home Science

The All India Coordinated Research Project on Home Science, that was merged with NRCWA

Gender sensitive extension model

The concept of Village-level Para Extension Workers (VPEW) was tested for development of a logical model for gender mainstreaming in extension. This is being tried by building their capacity for identification of the needs and problems of farmwomen and training them to help in increasing the productivity in agriculture, income and living standards of rural households. Under the study being implemented in two rainfed villages of Khurda, Orissa, training programmes were conducted on mushroom cultivation, agro-processing, eco-friendly storage pest control, seed production, result demonstration on cultivation of rice, colacasia and mushroom. Demonstrations were laid on 50 homestead nutritional-cum-seed production units of 75m^2 each, eight mushroom units of 25 beds each, culture of fish in two community ponds of 3,000m^2 and high yielding scented rice in four acres as interventions for capacity building. Women belonging to SC and weaker sections and self-help groups derived more benefits from VPEWs.

is in operation at nine Centres/SAUs, viz. CCSHAU, Hisar; PAU, Ludhiana; UAS, Dharwad/ Bangalore; MPUAT, Udaipur; ANGRAU, Hyderabad; GBPUAT, Pantnagar; MAU, Parbhani; AAU, Jorhat; and CSKHPKV, Palampur. Empowerment of rural women for enhancing the quality of life is the main objective of the Project.

Gender disaggregated data have been collected from 1,800 households covering 3,600 respondents from nine states (400 respondents from each centre and one male and female from each household). The gender specific information included role and responsibility, access to and control over resources in farming, post harvest, horticulture, homestead garden, livestock management, fisheries and availability of extension services. The pooled data of all the states indicated that, the extent of independent participation of women was highest (29.9%) in livestock management and least in horticulture (6%). About 34.1% of women have complete responsibility of livestock management followed by 17.19% in horticulture and 16.4% farm related activities. Compared to women higher percentage of men have taken complete responsibility in performing various activities. About 15.8% women have complete access to farm related resources. Greater access was in livestock (28.2%) followed by homestead resources (27.4%) and horticulture (25.5%). The relative frequency of women who had control over the resources was lowest (7.3%) in farm related resources and highest (21.5%) in livestock related resources. In general, the extent of access to and control over the resources in agriculture and related activities were biased in favour of men.

Based on the multi-location field trials, drudgery reduction technologies including, ring cutters for harvesting vegetables and flowers, improved sickle for harvesting paddy, harvest bag for cotton picking, improved weeders, maize shellers for maize threshing, hand wheel hoe, long handled scrubbing brush, hand rake, paddy row seeders, water fetching trolley, potato picker and vegetable peelers were transferred to women. Head load manager technology was developed at the ANGRAU, Hyderabad, for reducing drudgery in the manual head loading of vegetables while transporting.

Training on apiary for rural women

Empowerment programmes were conducted through group discussions, demonstrations and trainings in the adopted villages for women in the resource management practices such as fuel/ energy saving practices, alternative energy technologies and water management practices. A low cost solar dryer was fabricated using indigenous material for effective use of solar energy for household purposes, and the technology was transferred.

The concept of **nutrition garden** was promoted among selected families to create awareness and motivation about the role of micronutrients in diet. An iron rich product *Lehyam* from locally available unconventional green leafy vegetables was developed that helps in combating iron deficiency. The standardization of the developed product was completed by all the centers.

Intensive training programmes of three months duration were conducted at all the centres, and girls and married women in the age group of 11 – 25 years were trained to develop vocational skills, crèche organization and management, establishment and management of early childhood education centres, preparation of educational play materials, nursery rearing of vegetables and fruits, vermi compost preparation, color yielding and medicinal plants and mushroom cultivation. Adolescents have also become members of self-help groups and are involved in enterprise development.

Sisal plant (*Agave americana*), grown as edge plant around the fields, is usually discarded as agricultural waste. This plant is a good source of non-conventional fibre and was identified as source for hand-made paper making.