

## 16. Empowering Women in Agriculture

The Directorate of Research on Women in Agriculture (DRWA) has been engaged in research under different technology-based theme areas in farm women perspective in a network mode with research and development institutions and agricultural universities.

**Migration pattern and gender:** Considering the significance of migration in the life and livelihoods of rural people a study was conducted. Occupational profile of women labour migrants indicated that 92% were engaged as wage labourer in the infrastructure sector. Importantly an estimated 48% of women migrants moved back to their villages during the lean months (monsoon and autumn) that coincided with important agricultural seasons in their places of origin. Significantly, 67% of these women were engaged as agricultural labourers in rice and vegetable farming in their villages, whereas 25% were engaged in farming either on their own or leased-in land. About 12% possessed own land with an area of 1–2 acres. The reasons of migration included non-availability of job opportunities for most part of the year and low wages followed by natural calamities and debt burden.

**Public private partnership for gender mainstreaming:** Research on public private partnership (PPP) for gender mainstreaming in agriculture was undertaken at six network centres. PPP models from 22 States of India were collected and analyzed based on the impact of models on gender mainstreaming in agriculture as per strengths and weaknesses of the models. Models in the areas of gender empowerment in crop production (DRWA, Bhubhaneshwer); empowering women vegetable growers for market linkage (Avinashilingam University for Women, Coimbatore); entrepreneurship development of farmwomen in mushroom production (KAU, Thrissur and MPUAT, Udaipur); promotion of biofertilizer through SHGs (AAU, Jorhat); and value-addition of fruits, vegetables and bead-string making (CCS HAU, Hisar) and were found suitable for scaling up.

**Storage pest management:** A study on storage pest management in pigeon pea (*Cajanus cajan*) was undertaken with resources, easily available with farmwomen, viz. begunia leaf powder, neem leaf powder and chilli powder at different doses along with neem oil as the standard check. Application of neem leaf powder @ 10 g/kg was effective and recorded minimum (17.3%) bored grain followed by begunia leaf powder (17.38%) and dry chilli powder (19%) in comparison to the control (27%). Maximum test weight was recorded in standard check (6.23 g) followed by neem leaf powder 5 g/kg (4.56 g) after six month of storage. Highest germination percentage was recorded in standard check (84%) closely followed by chilli powder

applied @10 g/kg (72.49%). It was inferred that 10 g of *Capsicum annuum* powder; *Vitex negundo* and *Azadirachta indica* leaf powder was standard dose for the safe storage of pigeon pea up to six months and did not have any environmental or health hazard.

**Women in horticulture:** Knowledge and research gaps among women farmers were identified under the Network project on Assessment of gender issues—identification and refinement of selected women-specific technologies in horticultural crops being implemented at six centres. Interventions taken up to address the gaps were: (i) raising vegetable seedlings in portrays; (ii) planting on raised beds for better survival; (iii) seed replacement with high-yielding brinjal, bitter gourd, cucumber and pumpkin; (iv) cultivation of off-season and high-value vegetables under protected structures; and (v) proper staking/training of vegetables.



Vegetable production with bamboo structures – a women-specific technology in horticultural crops

**Gender issues in livestock production:** Action research was taken up under the project on enhancing livelihood of rural women through livestock production involving goats, pigs, backyard poultry and area-specific mineral mixture at five network centres. At Izatnagar the income from a unit of five adult female and one male goat was about ₹ 11,000 after one year and from rearing pigs was ₹ 7,000/animal. Use of revolving stool (*pirhi*) for milking animals reduced the drudgery and increased their efficiency of work. General lack of awareness about chaff cutter and feeding trough for feeding animals resulted in loss of animal feed. A model for sustainable poultry production is being tested in Jaypur village in Puri district involving women SHGs wherein the profits generated by rearing chicks are being ploughed back to purchase new lot of chicks. At Namakkal women farmers were initiated to take up azolla production for developing low cost feed for poultry and goat.

**Gender gap in nutritional status:** Gender gap in nutritional status of farm families was identified in



rice-based cropping systems in Odisha, Uttarakhand and Madhya Pradesh. Anthropometric measurements (body mass index) indicated highest gender gap in rice-rice cropping system (13.3%), followed by rice-millet (11.1%). Measurement of haemoglobin concentration revealed large gender gap in rice-rice cropping system which was mainly due to monocropping of rice, resulting in less food choice at household level.

**Occupational health hazards of farmwomen:** Lack of safety measures during the farm operation resulted in incidents/accidents such as trapping of cloth (5.4%), slipping (3.2%), falling of machine on body (2.7%) etc. The hazards faced by farm women in their daily activities were also due to lack of modern equipment/technology (41%), low wage (43.3%), monotonous work (40.8%), irregular hours (31.9%) and excess responsibilities (20.4%). Occupational health hazard and stress indices were developed to identify the extent of hazard and stress level faced by farm women while performing household, farm and animal rearing activities.

**AICRP on Home Science:** The All India Co-ordinated Research Project (AICRP) on Home Science is being implemented through nine state agricultural universities. This project focused on development of gender-specific database, development of training modules for farmwomen, technology interventions for drudgery reduction of women in agriculture, nutritional security and health promotion of farm families, promoting vocational skills amongst adolescent girls, value-addition to under-utilized natural fibre resources and empowerment of rural women for livelihood security.

Analysis of gender disaggregated data collected from 23,000 respondents of 11,500 families from 56 zones revealed that independent participation of male member was higher than female members in all the States except Uttarakhand, where participation of women was the highest (29.41%). Joint participation with female members was higher in Andhra Pradesh, Himachal Pradesh, Maharashtra and Rajasthan in seed selection, nursery raising, transplanting, weeding and harvesting. Complete access of resources to rural women over use of land was high in Himachal Pradesh (70%), Maharashtra (50%) and Uttarakhand (32%) but low in sale and purchase of land. More women respondents of Himachal Pradesh, Rajasthan and Karnataka had complete access to tools and implements than other states. Complete access to and control over storage and retention for household use for women was higher than other resources in Punjab (63%), Uttarakhand (55%), Andhra Pradesh (51%), Himachal Pradesh (31%), Rajasthan (30%) and Haryana (27%) than rest of the States. Control over improved seeds was visibly high in Uttarakhand (55%).

A comparison of the role profile indicated that highest independent participation of rural women was in homestead gardening (28.8%), followed by livestock-management activities (22.3%) and post-harvest

management (11.4%). The responsibility profile showed that women shouldered major responsibility in livestock management (29.3%), followed by homestead gardening and post-harvest management activities. Rural women had complete access to resources related to livestock management (33.3%), followed by homestead (26.1%) in comparison to resources in other areas. Rural women's control over resources was also higher (28.3%) in livestock than other areas.

Rural women of Himachal Pradesh (77%) and Rajasthan (50%) were completely responsible for maintenance and lending of tools, which is higher over other states.

In Himachal Pradesh, number of women who had control over use of land resources was more than the male members of the family, because men stayed away from the villages for their livelihoods and attended farming operations seasonally. Women had higher responsibilities in backyard management including livestock with highest participation in Punjab, Himachal Pradesh, Rajasthan and Karnataka. Male members were generally considered as owners of cattle and women were associated with livestock as 'milk managers'. Decisions concerning feeding, excreta management, storage of fodder and dairying incomes were made by women.

Interstate comparison of participation in extension programmes indicated that women in Assam attended more trainings in livestock management, in Andhra Pradesh in homestead management, and in horticulture in Himachal Pradesh. Women's participation in farm-related trainings and awareness in Uttarakhand was the highest (87%). Women did not attend the training programmes due to shortage of time, lack of prior notice and relevance of training. In the adoption of technologies, the major constraints were lack of access to women-friendly technologies and region-specific inputs, and marketing.

**Capacity building of farm women:** Training modules on bee-keeping, value-addition to tomatoes, fruit preservation, vermi-compost, dairy management, mushroom cultivation and production of biofertilizer were developed for establishment of micro-enterprises for economic empowerment of women.

For drudgery reduction of women in agriculture, improved agricultural tools/technologies, namely, fertilizer trolley, manual seed drill, mat nursery, vegetable plucker, vegetable bag, water bag, face protector, dung collector, fodder chopper, fodder collector, groundnut stripper, groundnut decorticator, groundnut stripping frame, long handle fork, manual maize sheller, mango harvester, potato picker and revolving stool, were field validated. Trainings/demonstrations were organized for capacity development of women in agriculture. Nutrition gardens were established in *rabi* and *kharif* seasons to improve the daily diet of rural families to reduce micro-nutrient deficiencies. For promotion of vocational skills among adolescent girls and young mothers, need-based skill-oriented training programmes were organized for their

capacity development benefiting adolescent girls/ mothers and anganwadi workers.

Value-addition and income-generating technologies were disseminated in the adopted villages for empowerment of women. Training programmes on dyeing with natural dyes, loin loom weaving, care of woollen garments, importance of protective clothing, handmade paper product, garment construction, children's garments, hand-made carry bags, files and covers making, *Grewia optiva* (*biul*) handicraft development, embroidery, photo-frames from waste newspaper and soft toy making were conducted for capacity building and skill upgradation of farmwomen. Significant gain in knowledge was observed after the training. Women initiated their own micro-enterprise unit at home scale taking job orders.

Protective garments were designed and developed to protect farm women from the health hazards during pesticide application. During pesticide application, the farm workers are exposed to pesticide vapours leading to various health hazards and it enter body via dermal absorption, inhalation and ingestion due to improper clothing. Hence farm workers suffer from short term



A farm woman wearing face protector; and (*inset*) campaigning and trainings to create awareness about functional features and advantages of protective clothing

health risks, i.e. headache (78%), eye irritation/itching (75%), nausea (58%), breathlessness (53%), loss of appetite (47%), dizziness (38%), skin allergy/ ailments (35%), vomiting (20%) and scorching (10%). Lectures, campaigns, video shows and trainings were conducted to create awareness about functional features and

advantages of protective clothing among pesticide applicators.

**Role of women in inland fishery:** The impact of gender and its role in open water fisheries was assessed in two stretches of upper Hooghly estuary (Nawabganj and Tribeni). In Nawabganj stretch, fisherwomen performed grading of fish. It provided extra income of ₹60/day to the family as mixed fish catch sold at low price in comparison to graded fish. They were also involved in other income generating activities like stitching clothes, wage earning, livestock, nursing and cooking. Livelihood diversification of fisher women was observed with declining fish catch and increase in numbers of fishers in last decade. Highest diversification (29.13%) was observed for nursing followed by grading of fish (26.7%) and livestock rearing (14.56%).

**Empowering ST women through transfer of composite carp culture technology:** Composite carp culture technology was disseminated to a self-help group of 12 Santhal women in Boudh and Purulia, in Bihar under, the DST funded project. The group took lease of Panchayat tank 'Dhanga Bandh' a seasonal pond having 1.75 ha water spread area. CIFA extended technical assistance, capacity building training and provided critical inputs. By stocking good quality fish



Empowering ST women through transfer of composite carp culture technology

seed and proper scientific care the SHG achieved three-times higher production than the pre-adoption production levels. Women SHG group member actively participated in all stages in composite carp culture including harvesting. Participation of tribal women in composite carp culture proved beneficial in achieving nutrition security and also socio-economic upliftment. □