

# **Empowering Grass-root Women in the Management of Agro-Enterprises: Reflections from Indian Central Himalaya Region (ICHR)**

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## **Introduction:**

The Indian Central Himalaya Region (ICHR), spreading over a geographical area of 53,485 km<sup>2</sup>, supporting of 8,479,562 population who constitute about 0.83 and 21.40% of the total population of the Indian Republic and Indian Himalayan Region (IHR) respectively. The region is synonymous with the newly constituted Himalayan state of Uttarakhand. The geographical area of the region is dispersed within an altitudinal variation ranging from 200 m to more than 8000 m amsl. It is composed of five litho-tectonically and physio-graphically distinct subdivisions, namely the Outer Himalaya comprising the Tarai and Bhabhar, the Sub-Himalayan belt of the Siwalik, the Lesser Himalaya; the Great Himalaya and the Trans-Himalaya or Tethys<sup>1</sup>. The climate and consequently the biological communities vary considerably along the gradients of this mountain ecosystem, giving a heterogeneous dispersion of biodiversity elements in the region<sup>2</sup>. Conservative estimates indicate that the region harbours more than 700 species of medicinal plants out of the 1748 and 2500 species reported in the IHR and India respectively<sup>3</sup>. It also supports remarkable cultural and ethnic diversity, and human habitation is found up to an altitude of 3500 m asl.

## **Study Area and Methodology:**

An attempt has been made to examine the economic empowerment and management of grass-roots women engaged in agro-enterprises in Indian Central Himalaya Region (ICHR). For this purpose twelve sample villages of the region located within altitudinal variation of 1500–2000 masl in Uttarkashi districts in Uttarakhand which is synonymous with the ICHR has been selected for the study (See table-1). The villages were purposively selected keeping in view the biophysical diversities, i.e. altitudinal location, distance from (i) block headquarters, (ii) market/growth centers, (iii) road and bus points; and also cultural diversities, i.e., multi-caste composition of the village, so that they were best representatives of other villages in the region. For the study of women agro-enterprises, a detailed case study of Women Co-operative Federation, WCF (a joint organization of self help groups) of Yamuna valley, the western part of Uttarakhand state has also been conducted. Data of income, employment and empowerment related issues were collected through interviewing the member of different SHGs /women enterprises, using open-ended interviews and guided dialogue techniques. As many as 20 SHGs and 200 women respondents were interviewed in their cooperatives/federation to document the grass-root empowerment of women and their management skill through agro enterprise. Focus group discussion (FGD) and participatory rural appraisal (PRA) of women was also conducted to ascertain the

community perception on various issues related to grass-root empowerment and agro enterprise management of the region.

**Table 1.** Particulars of studied villages

Particulars	Number
Total villages selected for study	12
Total SHGs/Women Enterprises selected for study	20
Total Women selected for interview/PRA	200
Altitudinal variation of location of villages	1500-2000 m
Proximity of villages from nearest road	0.0-5 km
Proximity of villages from nearest Market	0.0-20km
Location of villages from nearby forest	0.5-8 km
Nature of composition of villages	Multi cast
Total households in study villages	821
Total human population of sample villages	4943
Sex ratio in sampled villages	960
Percentage if female literacy in sample villages	63.21
Average number of people in a household	6
Average size of land holding of a household	0.90 ha
Percentage of irrigated land to total cultivated land	17.5
Percentage of land under organic traditional crops	63.95

### **ICHR Women in Different Role:**

#### *Back-bone of Economy*

Women are the main producers in rural households in ICHR. In situations in which men out-migrate, women also manage the household. They have, however, rarely been entrepreneurs with the capability and authority to making decisions on investments, production, and marketing. In a subsistence economy, the enterprise function is very limited and revolves around subsistence farming. With the emergence of market-oriented production in farm and non-farm enterprises, women have begun to carry out tasks that were once only men's. The result and impact have been mixed. New activities and enterprises, such as organic traditional crop farming, vegetable farming, horticulture, sericulture, and processing of farm and forest produce, have increased household incomes; but women's work loads have often increased. There is no relief from the burden of household activities such as collecting fuel wood, fodder and water. The positive aspect of these developments for women is their increased participation in new enterprises and larger share in the resultant income.

Women in the ICHR are the pivot of the family unit, bearing a major responsibility for agriculture, forest and other natural resource management. Women, constituting about 49.1% of the total population of the region, are the life and blood of the economic structure. The agricultural system is heavily dependent on women as except for ploughing, which is done by men; all other activities are largely undertaken by women. Large scale migration of men from this region to lower plains has attenuated women's socio- economic responsibility, enforcing them to be heavily involved in food production. Probably, because of this reason, despite a high literacy rate (the male and female literacy in the ICHR was 84.01 and 60.26%

respectively, against 75.84 and 54.16% for India)<sup>4</sup>, women in the region generally work more than 15–18 hours a day, attending to cattle, collecting fuel, fodder and water in addition to performing normal duties at home and managing agriculture (Table-2).

**Table 2.** Women’s contribution to various activities in ICHR

Activity	Women’s contribution (%)
Agriculture	85.70
Cattle care	83.50
Fuel-wood collection	90.60
Fodder collection	94.70
Water collection	90.80
Cooking	96.90
Child care	95.00

Source: Collected through Survey conducted in 2004-5

Women’s participation in farming activities shows that they done most of activities independently. In lean agricultural periods they have some opportunities to earn cash income by participating in other income generating enterprises . The present status of gender division in farming activities in ICHR is given in table-3.

**Table 3.** Gender division of labour in farming activities

Activity	Male	Female	Joint
Field preparation		✓	
Seed sowing			✓
Plowing	✓		
Manuring and harvesting		✓	
Interculture, earthing, roughing etc.		✓	
Irrigation, watch & ward			✓
Threshing, winnowing and storing		✓	
Transporting and marketing			✓

Source: Collected through Survey conducted in 2004-5

### *Environmental Conservation*

Environmental degradation the diminishment of forest and water resources have had marked adverse impact on women, who are responsible for collection and management of such resources, often forcing them to travel longer distances to meet their household daily needs. In the eighties of the last millennium the forest cover of ICHR has badly been damaged owing to indiscriminate felling for commercial purpose. The subsistence based biomass needs of the people were not being met out even for livelihood purpose. Therefore, the women of the region played a most important role in conservation of forest through Chipko movement. The empowerment of women through Chipko in spite of low literacy level and high degree of poverty is a direct result of the reduced pressure of forest resource has been a proportionate. As a legacy of Chipko the local communities have devised their own forest and other natural resource conservation strategies. Women of the

region also played an important role in environmental activism by direct participation in the following movements:

- The Chipko movement
- The Silkot Tea estate movement
- The anti-Tehri Dam movement
- The Gujjars movement
- HIMAWANTI movement

#### *Conservation of Agro-biodiversity*

ICHR can be counted as one important part of ten biodiversity mega-center of the world. The region is endowed with rich, globally important gene pools, species and ecosystems<sup>5</sup>. Agro-bio-diversity of the region is providing the livelihood opportunities to local population. The traditional crop bio-diversity is rooted deep in the tradition of the region. The richness of crop bio-diversity in the region is apparent from the fact that cultivators (especially women) of the region traditionally harvest more than twelve grains and pulses in the monsoon crops and seven to eight crops are raised simultaneously in one field<sup>6</sup>. The traditional crop diversity of the region is very high and about forty different crop species comprising cereals, pseudo cereals, millets, pulses, oilseeds etc. and number of sub varieties are cultivated and conserved by women<sup>7</sup>(Table-4). Their knowledge of rain-fed agriculture with associated practices like mixed cropping, maintenance of soil fertility etc. is ecologically practicable and economically viable.

#### *Management of Indigenous Knowledge*

In the ICHR, indigenous knowledge is an important natural resource that has enormous potential to facilitate the development process in cost effective and sustainable ways. Women as the dominant farmers, have traditionally been the managers of germplasm and its diversity, processing and the testing, preservation and exchange of seed through informal network<sup>8</sup>. Their special knowledge of the value and diverse use of plants for nutrition, food security, health and income provides a balance to the market oriented pressures that emphasis high yield uniformity. Women of ICHR have effectively used indigenous knowledge in optimally managing agriculture and other resources for their sustainable living. Also, the knowledge and practices of utilization and conservation of medicinal plants, ethno-medicinal and ethno-veterinary treatments by women of the region are vast. The women are the real custodians of the indigenous knowledge system practices, as 52% of them have knowledge on thirty against that of 26% of males<sup>9</sup>. Table-5 presents the role of women in preservation of indigenous knowledge system through indigenous medicine and health-care practices.

#### *Social Responsibilities*

Male out- migration for short term and long term is increasing throughout the region, as families struggle to find ways to sustain themselves. In many circumstances, many decisions are delayed until the household head returns for his annual visit to home. The absence of males does provide women more opportunities to participate in public life. Women's movements against alcoholism and for closing

**Table 4.** Agriculture crop biodiversity across altitudinal gradients in ICHR.

Crop species	English name	Vernacular name	Altitudinal range (Meters Above mean Sea Level)				
			500	1000	1500	2000	2500
<i>Allium cepa</i>	Onion	Pyaz	←	→			
<i>Amaranthus oleracea</i>	Amaranth	chaulai	←				→
<i>A. frumentaceus</i>	Amaranth	Chuwa/Marcha/Ramdana			←		→
<i>Avena sativa</i>	Oat	Jai				←	→
<i>Brassica campestris</i>	Mustard	Sarson	←				→
<i>Brassica spp.</i>	Mustard	Toriya	←				→
<i>Cajanus cajan</i>	Pigeon pea	Tor	←		→		
<i>Canabis sativa</i>	Hemp	Bhang			←		→
<i>Chenopodium album</i>	Pig-weed	Bhetu				←	→
<i>Cleome viscosa</i>		Jakhiya	←	→			
<i>Colocasia himalayensis</i>	Taro	Pindalu/Kuchain	←	→			
<i>Echinochloa frumentacea</i>	Barnyard millet	Jhangora	←		→		
<i>Eleusine coracana</i>	Finger millet	Koda	←			→	
<i>Fagopyrum esculentum</i>	Buckwheat	Oggal				←	→
<i>F. tataricum</i>	Buckwheat	Phaphar				←	→
<i>Glycine soja</i>	Soyabean	Bhatt		←	→		
<i>Glycine spp</i>	Soyabean	Kala Bhatt		←	→		
<i>Glycine max</i>	Soyabean	Soyabean	←	→			
<i>Hordeum himalayens</i>	Nacked barley	O-wa-jau			←		→
<i>Hordeum vulgare</i>	Barley	Jau	←				→
<i>Hibiscus subdarifa</i>	Roselle	Sun		←	→		
<i>Lens esculenta</i>	Lentil	Masoor	←			→	
<i>Macrotyloma uniflorum</i>	Horsegram	Gahat	←			→	
<i>Oryza sativa</i>	Paddy	Satti	←		→		
<i>O. sativa</i>	Paddy	Dhan	←		→		
<i>Panicum miliaceum</i>	Hog-millet	Cheena/Bhangna	←			→	
<i>Papaver somniferum</i>	Popy	Post			←		→
<i>Perilla frutescense</i>	Perilla	Bhangjeera		←	→		
<i>Phaseolus vulgaris</i>	Kidney bean	Razma			←		→
<i>Pisum sativum</i>	Pea	Matar	←		→		
<i>Pisum arvense</i>		Kong				←	→
<i>Sesamum indicum</i>	Sesame	Til	←		→		
<i>Setaria italica</i>	Foxtail millet	Kauni	←		→		
<i>Solanum tuberosum</i>	Potato	Alu		←			→
<i>Triticum aestivum</i>	Wheat	Gehun	←				→
<i>Vigna aconitifolia</i>	Mat bean	Bhringa		←	→		
<i>V. angularis</i>	Adjuki bean	Rains		←			→
<i>V. mungo</i>	Black gram	Urad	←		→		
<i>V. radiata</i>	Green gram	Mung	←	→			
<i>V. unguiculata</i>	Cow pea	Sonta	←		→		
<i>V. umbellata</i>	Rice bean	Bhotiya			←		→
<i>Zea mays</i>	Maiz	Mungri	←		→		
<i>Zingiber officinale</i>	Zinger	Adrak	←	→			

Source: Semwal *et al.* (2001). Agriculture: Ecology, Practices & Productivity. In: Kandari, O.P. and Gusain, O.P. (eds.), Garhwal Himalaya: Nature, Culture & Society, Transmedia, Srinagar (Garhwal), India.

**Table 5.** Plants and grains of medicinal value and their use in diseases/disorder

Botanical name/local name	Disease/disorder	Part of plant used
<i>Allium cepa</i> (Pyaj)	Vomiting, toothache	Bulb
<i>Allium sativum</i> (Lahsun)	Joint pain, ear ache, muscle pain	Bulb
<i>Amaranthus</i> (Amaranth)	to cure wounds	Paste of roots
<i>Angelica glauca</i> (Gandrani)	Vomiting	Root
<i>Asparagus curillus</i> (Keru)	Urinary infection	Root
<i>Azadirachta indica</i> (Neem)	Skin infection	Leaf
<i>Berberis asiatica</i> (Kilmaru)	Eye infection	Stem
<i>Brassica campestris</i> (Sarshon)	Joint pain, sprain, dog bite, tooth ache, skin burn, jaundice	Oil of seed
<i>Callicarpa macrophylla</i> (Dayya)	Mouth ulcer	Fruit
<i>Capsicum annum</i> (Lal Mirch)	Dog bite	Oil
<i>Carum carvii</i> (Kala Jeera)	Vomiting	Seed
<i>Carum copticum</i> (Ajvien)	Common cold, cough, sore throat and fever, abdominal pain	Seed
<i>Citrus histrus</i> (Jamir)	Vomiting	Root or stem
<i>Citrus limon</i> (Neebu)	Vomiting	Fruit
<i>Coriandrum sativum</i> (Dhaniya)	Vomiting	Seed
<i>Curcuma domestica</i> (Haldi)	Common cold, cough, fever and sore throat, strain, cuts, bone fracture, internal injury, joint pain	Rhizome
<i>Cucumis sativus</i> (Kakri)	Abdominal pain, Urinary infection	Seed
<i>Cynodon dactylon</i> (Doob grass)	Jaundice	Leaf
<i>Dolichos bilflorus</i> (Gahat)	Kidney stone	Pulse (seed)
<i>Elettaria cardamomum</i> (Ilaichi)	Fever	Root
<i>Eleusine coracana</i> (Madua)	Minor eye injury	Flour of grain
<i>Embllica officinalis</i> (Amla)	Vomiting	Fruit
<i>Euphorbia hispida</i> (Syun)	Ear ache	Stem
<i>Fagopyrum tataricum</i> (Fapar)	Diabetics	Flour grain
<i>Ficus auriculata</i> Lour (Timul)	Indigestion	Fruit
<i>Glycyrrhiza glabra</i> (Mulethi)	Sore throat, dry cough	Root
<i>Grewia optiva</i> (Bheemal)	Skin burns	Leaf
<i>Lannea coromandelica</i> (Jhingan)	Cuts	Root
<i>Mentha piperata</i> (Pudina)	Vomiting	Leaf
<i>Ocimum sanctum</i> (Tulsi)	Sore throat, cough, itching	Leaf
<i>Oryza sativa</i> (Dhan)	Dysentery, jaundice	Grain
<i>Phaseolus moonga</i> (Urad)	Fever	Pulse (seed)
<i>Pinus roxburghii</i> (Chir)	Joint pain Oil of pine	wood
<i>Piper nigrum</i> (Kali mirch)	Indigestion, abdominal pain,	Seed
<i>Punica granatum</i> (Darim)	Common cold, cough, sore throat and fever, mouth ulcer, vomiting	Outer layer of dry fruit
<i>Raphanus sativus</i> (Mulli)	Jaundice	Leaf
<i>Ricinus communis</i> (Rendy)	Slip disc	Leaf
<i>Solanum tuberosum</i> (Alu)	Burns	Tuber
<i>Sesamum Indicum</i> (Til)	Muscular diseases	Paste of roots
<i>Setariaindicum</i> (Kauni)	Typhoid and pneumonia	Cooked grain
<i>Syzygium aromaticum</i> (Loung)	Toothache	Bud, oil
<i>Terminalia chebula</i> (Harar)	Common cold, cough, sore throat	Pulse (seed)
<i>Trigonella foenum-graecum</i> (Methi)	Diabetes	Seed
<i>Triticum aestivum</i> (Gehun)	Burns	Flour of grain
<i>Urtica dioica</i> (Sisun or Bichhu)	Joint and muscular pain	Leaf
<i>Zingiber officinale</i> (Adrak)	Common cold, cough and fever	Rhizome

Source: P. K. Samal *et al.* (2006). Gender in the management of indigenous knowledge: reflections from Indian Central Himalaya. *Current Science*, Vol. 91, No. 1, pp. 104-108.

environmentally damaging quarries are the success stories. The movement for separate statehood where women came out in masses to participate is the example of the social empowerment of the women in this region. Recently there is a dramatic changes recorded in rural areas is the sphere of elementary education .The gross enrolment ratio (GER) for girls is very close to 100 percent and net enrolment ratio (NER) is 99 percent<sup>10</sup>. There is a significant improvement in achievement level of girls in comparison of boys in the region. It is pertinent to note that these results are the indicators of successful household management of the women.

### **Women in the Management of Agro-enterprises:**

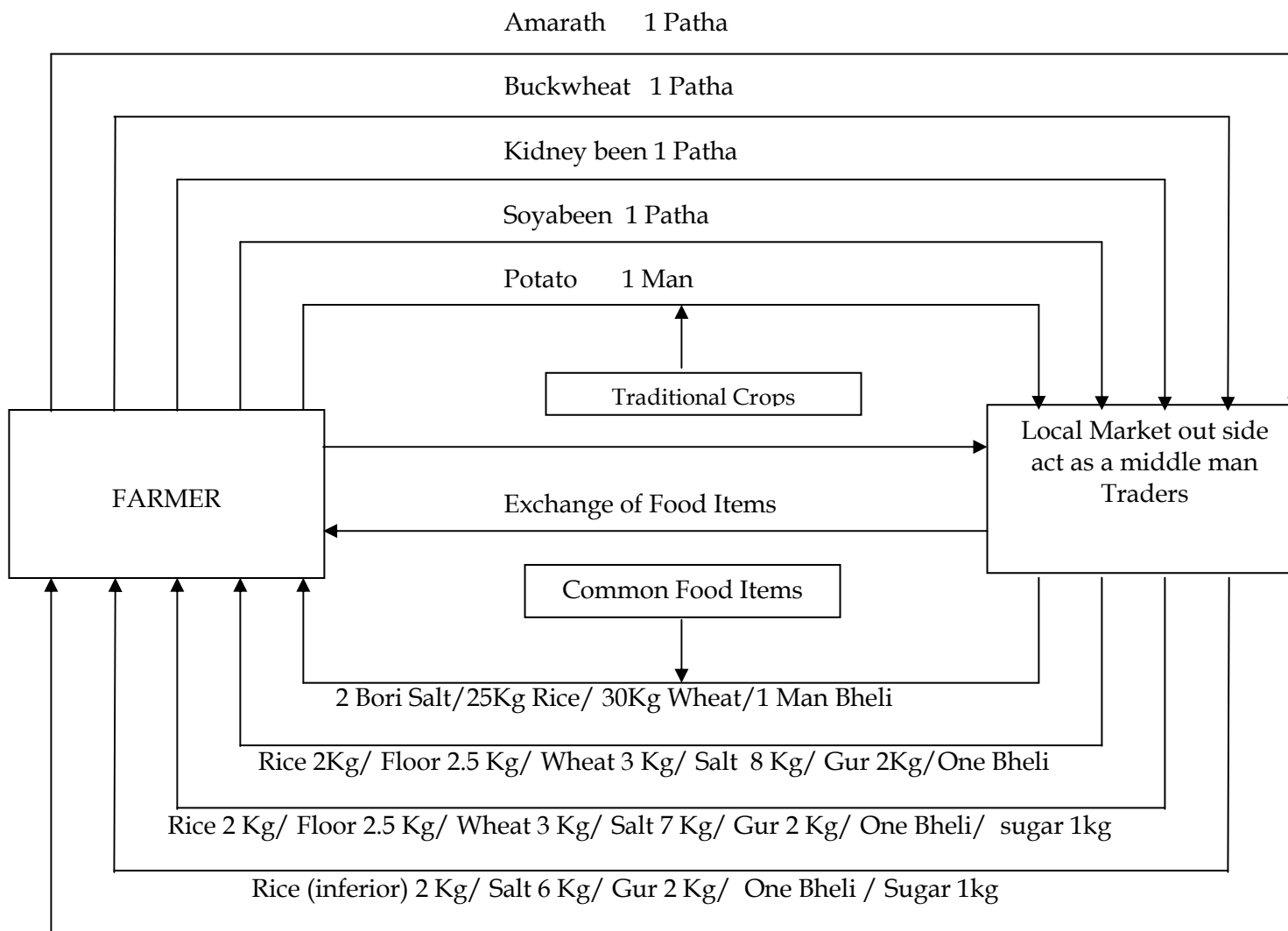
Women of the Indian Central Himalayan Region (ICHR) have a long experience of enterprise-based agriculture and a definite pattern of enterprise agriculture was emerged long back<sup>11</sup>. The region is famous for production of many organic traditional food-grains like Amaranth, Buckwheat, Pig-weed, Hog-millet, Pigeon pea, Horse gram and naked barley etc. But these traditional crops were generally exchanged for salt. Barter system has been the most common marketing practice in of ICHR. Even today women farmers of remote areas exchange traditional crops either for salt or for grains like wheat and rice, as their own production of these grains fall short of their requirement which reflect very adverse term of trade<sup>12</sup>. The exchange rate and methods of various traditional products with common food crops of the region are given in Figure -2

The ICHR, after attaining a separate Statehood of Indian Republic in 2000, as Uttaranchal state was declared as an organic state. This has gained momentum and traditional cooperative groups of women have understood the benefits of collective action and management of indigenous knowledge system. The NGO working in this area, Himalayan Action Research Centre (HARC) has played an important role by providing institutional support through different programmes like creation of Self Help Groups (SHGs)/ micro enterprises of women farmers at village level, formation of farmers cooperative federation (Rawain Women Cooperative Federation ) at the regional level, organising a training programme to SHGs and federation members and visit, for interaction, to other mountain state and different national mandies.

### **Major Activities:**

During study of women Cooperative Federation (WCF) /SHGs activities, it was found that the women of different SHGs were willing to take up entrepreneurship but initially were not confident of their ability to do so. The women federation took up the challenge to develop collective entrepreneurship among women. In the beginning, the members of the women SHGs and cooperatives were reluctant and hesitant to take up entrepreneurial activities due to lack of confidence and risk taking capacity. But after undergoing multifaceted trainings and orientation programmes women of the federation have started income generation activities (IGA) by utilizing their monthly savings. The details of major activities of agro-enterprises and Women Cooperative Federation are listed blow:

**Figure 2:** Exchange procedure of traditional crops with common food crops  
 (Patha and Man is a vernacular measure to weight grains as equivalent to 2 kg and 32kg respectively)





## Organic Farming of Traditional Crops

Women Cooperative Federation (WCF) has become played a role model of sustainable livelihood opportunities by initiating production, processing and marketing of different traditional organic crops. As institutional network developed the women gained self confidence and a sense of economic empowerment. Though agriculture was the main source of livelihood of the region, due to lack of technical knowledge of farming and transportation facilities and exploitation by the middlemen, the farmers were not getting a good return for their products. Having to face these problems at village levels, the Women Federation Promoted SHGs, and cooperative groups to start agriculture and allied activities based collective entrepreneurship in the region. Developing strong market linkages between the federation and the private and government organizations land mark commercial feet was achieved by designing marketing strategies, developing rural marketing information system, building credit and financial linkages, designing sales channels for production and trading groups and by strengthening internal and external operational capacities of federations and cooperatives.

Some food crops that are common in poor areas are gradually being lost due to valuation problems. Buckwheat, horse gram, and foxtail millet cultivation has decreased by 80 percent to 100 percent during eighties to nineties of the last millennium. A reason for the decline of area under these crops is the lack of appreciation of the different values associated with them<sup>13</sup>. With the help and motivation of HARC and women federation, farmers of the region now are cultivating many traditional crops at commercial scale. (See table-6). The average productivity of these crops ranges from 15 quintals per hectare to 20 quintals per hectare. In the year 2004, to boost the prospect of these crops, Buckwheat (*Fagopyrum esculentum*) has been reintroduced in the daily rituals of offerings (Prasad) in the famous temples of Gangotri, Yamnotri, Badrinath and Kedarnath.

**Table 6.** Marketing of major traditional crops by women federation

English name	Vernacular name	English name	Vernacular name
Amaranth	Chaulai	Taro	Pindalu/Kuchain
Pig-weed	Bethu	Red gram	Tor
Hog-millet	Cheena	Soybean	Bhatt/ Kala Bhatt/ Soybean
Buckwheat	Oggal	Kidney Bean	Rajama
Finger millet	Kodo/Manduwa	Black gram	Urd
Buckwheat	Phaphar	Mat bean	Bhirnga
Maize	Mungri	Adzuki bean	Rayans
Rice bean	Bhotia	Horse gram	Gahat
Zinger	Adrak	Potato	Alu
Red Rice	Dhan/ satti	Cow pea	Sonta
Sorghum	Jhnagora,	Sesame	Til
Chili	Lal Mirch		Jakhiya

Source: Collected through Survey conducted in 2004-5

### *Activity Selection Exercis:*

Success of any micro enterprise depends upon the selection of the right income generation activity based on local resources. Intact, this is one of the key factors to run a micro enterprise successfully. Women of the federation conduct village level exercises with SHGs for identifying and analyzing the local resources for income generation activities. The selection of the activity is done on the basis of availability of the resources, its quantity, quality and its market demand. In this exercise different SHGs/women enterprises have been identified for activity-specific specialization.

### *Production, Planning and Management Skill Enhancement*

Women Federation organizes village level workshops every three months for women groups to enhance their skills in production, planning, and management. A production plan is formulated on the basis of the market demand. To achieve the target of the production plan an agreement is signed with the various women groups and cooperatives. This systematic production planning helps strengthen backward linkages and ensure a continuous supply of products in the market.

### *Capacity Building Training*

The women groups are involved in different income generation activities through local agro based resources HARC provides advanced trainings to SHGs on grading, packing, quality control, processing, development of production plan, financial management, marketing and negotiation skill. SHGs master trainers similarly provide capacity building related exercise to farmer interest groups at the village level. These interventions help in improving the quality of the products and return.

### *Marketing Strategy and Cooperative Marketing*

For the success of any micro enterprise market strategy plays a very vital role. With the help of HARC, the Women Federation and SHGs formulate a marketing strategy for appropriate market channels and proper product supply. The strategy is also formulated to increase the accessibility of market and to understand the dynamics and trend of the market and bargaining skill. To create awareness about a product among the consumers, pamphlets, folders, leaflets etc. are being distributed in local market and 8 outlets have been set up on the pilgrimage route to Badrinath, Yamunotri and Gangotri during the peak tourist season.

To explore the good market channels for the products of farmer association and cooperative, market surveys were done in 14 mandies of New Delhi (Azadpur, and Okhla), Kashipur, Chandigarh, Meerut, Muzaffarnagar, Dehradun, Saharanpur, Lucknow, Kanpur, Sarahan (HP), Banglore etc. These market surveys helped in identifying good wholesalers for local product. The farmer associations have signed an agreement with the traders that have helped farmers to get good price of their produce. The Women Federation and SHGs have their access right up to the Azadpur Mandi in Delhi and other metropolis . At present products of women federation are being marketed in 16cities including Dehradun, Rishikesh, Srinagar,

**Table 7.** Prices of WCF Products at Different Sales' Points (in Indian currencies)

Product (Packet per kg)	Price Realised by Producer (WCF)	Price Paid by Final User/Consumer	
		Domestic	International
Amaranth ( <i>Chaulai</i> ) grain	Rs 20.0	Rs 50.0	Rs 150.0
Amaranth ( <i>Chaulai</i> ) floor	Rs 25.0	Rs 50.0	Rs 150.0
Finger millet ( <i>Manduwa</i> ) floor	Rs 10.0	Rs 25.0	Rs 100.0
Kidney Bean ( <i>Rajama</i> )	Rs 50.0	Rs 75.0	Rs 150.0
Red Rice processed	Rs 25.0	Rs 50.0	Rs 150.0
Burnyard millet ( <i>Jhangora</i> ) processed	Rs 15.0	Rs 50.0	Rs 100.0
Hog-millet ( <i>Cheena</i> ) processed	Rs 20.0	Rs 50.0	Rs 100.0
Perilla ( <i>Bhangjeera</i> ) processed	Rs 25.0	Rs 100.0	Rs 200.0
Soyabean ( <i>kala Bhatt</i> )	Rs 40.0	Rs 75.0	Rs 150.0
Red gram ( <i>Tor</i> )	Rs 50.0	Rs 100.0	Rs 200.0
Horse gram ( <i>Gahat</i> )	Rs 50.0	Rs 75.0	Rs 200.0
Adzuki bean ( <i>Rains</i> )	Rs 40.0	Rs 75.0	Rs 150.0
Black gram ( <i>Urad</i> )	Rs 40.0	Rs 65.0	Rs 150.0
Cow pea ( <i>Sonta</i> )	Rs40.0	Rs60.0	Rs 150.0
Buckwheat ( <i>Oggal</i> ) floor	Rs 25.0	Rs 50.0	Rs 100.0
Buckwheat ( <i>Phaphar</i> ) floor	Rs 25.0	Rs 50.0	Rs 100.0
Jakhiya	Rs 50.0	Rs.100.0	Rs 250.0

*Source* - On the basis of women federation office records.

Gopeshwar, Mussorrie, Haridwar, Roorkee, Delhi, Karnal in Haryana, Ahmedabad , Hyderabad , Badaun etc. For the promotion of the new products, a product launching program is organized time to time. Mother Dairy, New Delhi purchased some vegetables and traditional crops at market pries on weekly payment and sent account payee cheques to women through Women Federation. HARC and the Women Federation also facilitated the participation of women farmers in state and national level fairs and exhibition such as Uttaranchal Mahotsav at Dilli Hatt and Ashoka Hotel, Agriculture Expo, International Trade fair in Pragati Maidan in New Delhi, National Women Farmers Fair and Exhibition in Ahmedabad, Virasat Fair and Saras Fair in Dehradun to promote and display the products.

#### *Using Information technology*

The Women Federation is collecting information of the daily sale prices at different mandies of the country through different websites and providing this to farmer SHGs. This enables the farmers to know the daily prices of their produce. Through a network created by HARC, information on daily prices is taken from 5 mandies, which also includes Azadpur and Okhla mandi in Delhi and Kashipur mandies. The daily prices help the farmers to choose and decide the mandi to sell heir produce. Everyday prices are displayed at the Women Federation office so that the farmers do not get exploited.

**Table 8.** Particulars of Women Cooperative Federation and SHGs

Number of villages associated with women federation	32
Number of SHGs associated with women federation	219
Number of women farmers employed in SHGs	2838
Number of women benefited by capacity building training	2219
Number of villages got demonstration of organic farming	19
Number of Grading and Packing Exposure of traditional crops	18
Crop under organic certification	Rajama (Kidney Bean)

Source: Collected through Survey conducted in 2004-5

### Macro-estimates of Production and Income:

In order to evaluate the overall impact of women enterprises in promoting sustainable livelihood opportunities in the region, some macro estimates of production and income of farmers in survey villages, Women Cooperative Federation and SHGs are calculated and presented in table -9.

**Table 9.** Some macro estimates of production and Income of study villages,WCF and SHGs

Total area under cultivation of traditional crops in study villages	1550 ha.
Estimate of production of total traditional crops	2500 tonnes
Ex farm value of total production of traditional crops	300 lakh Rs.
Per household ex- farm value of total production	36,500 Rs.
The average annual employment without association of WCF	180 days
The average annual employment associated with WCF	300 days
Increase employment due to WCF/SHGs	1.66 times
Average annual turn over of WCF (2002 to 05)	450 lakh Rs
Average self employment in each SHGs	10-15
Average annual return of each SHGs	10-15 lack Rs

Source: Collected through Survey conducted in 2004-5

Table -9 shows that the total area under cultivation of traditional crops in 12 study villages is estimated to be 1550 hectares with production estimate of 2500 tonnes. Agricultural income of farmers in the area under study is Rs. 300 lakh (s) by selling different traditional crops. The average annual employment shows that if there were no association of women with WCF, only 180 days annual employment would be generated. But after associating with WCF the annual employment of women has increased by 1.66 times counting to a total of 300 days. The average annual turn over of WCF from 2002 to 2005 is estimated to be Rs. 450 lakh. As regards to the SHGs performance of the region, 10-15 women are getting self employment in each SHGs, where as Rs 10-15 lack is the average annual return of the SHGs.

### Conclusion and policy implication:

Women Cooperative Federation (WCF) established in Yamuna Valley, the western part of ICHR has emerged as role model of rural employment for women. The women of the region are further empowering by institutional support and technical capabilities. More than 4,000 members of the federations have taken up the

initiative to increase crop diversification, production, and quality control through agri-business activities in a systematic and planned manner.

The above discussion indicates that the economic empowerment of grass-roots women in the management of agro-enterprises has tapped the potential marginally. This is mainly because the institutional policy in this regards lacked the much-desired mountain perspective. The diversification of agriculture in the ICHR along these lines is the urgent need for ensuring participation of women in policy making, community based interventions, regional /multi-local networking of SHGs and institutional support. Recently environmental sustainability, food security and bio diversity related issues have become important in the context of sustainable mountain development. If the entire state's bio-farming patterns work along with the lines of WCF of Yamuna Valley, the expectation of marginal mountains farmers will be fulfilled, keeping in view the high premium being put on organic food, especially the Himalayan one. This will prove more sustainable livelihood opportunities standing friendly to environment.

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6. The twelve grains (Baranaza ),harvested in the Mansoon crops are Paddy, Burnyard millet , foxtail millet , Finger millet, Amaranth, Soyabeen (various types), Horse gram, Black gram , Cow pea, Sesame, Kidney Bean and Red gram .
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12. For very long period, a *Patha* (a vernacular measure to weigh grains) approximately 2 kilograms , was exchanged for three patha, approximately 6 Kilograms of salt. Thereby a ratio 1: 3 kilogram was used to exchange other grains produced in the higher altitude. Converting these data in price (expressed in Rupees), reveal that extent of adversity of terms of trade. Salt in general was priced Rupee one per kilogram and Amaranth was roughly sold for Rs 12/ per Kilogram. Even discounting the transportation cost, opportunity cost of travel of the trader, this ratio of 1: 12 in monetary measures, appears quite exploitative. Of late this tradition has undergone some changes, now Amaranth is exchanged for sugar, Jaggary (Gur ), cloths and even for money, in addition to salt. But the exchange rate are still highly unfavorable to ICHR framers.
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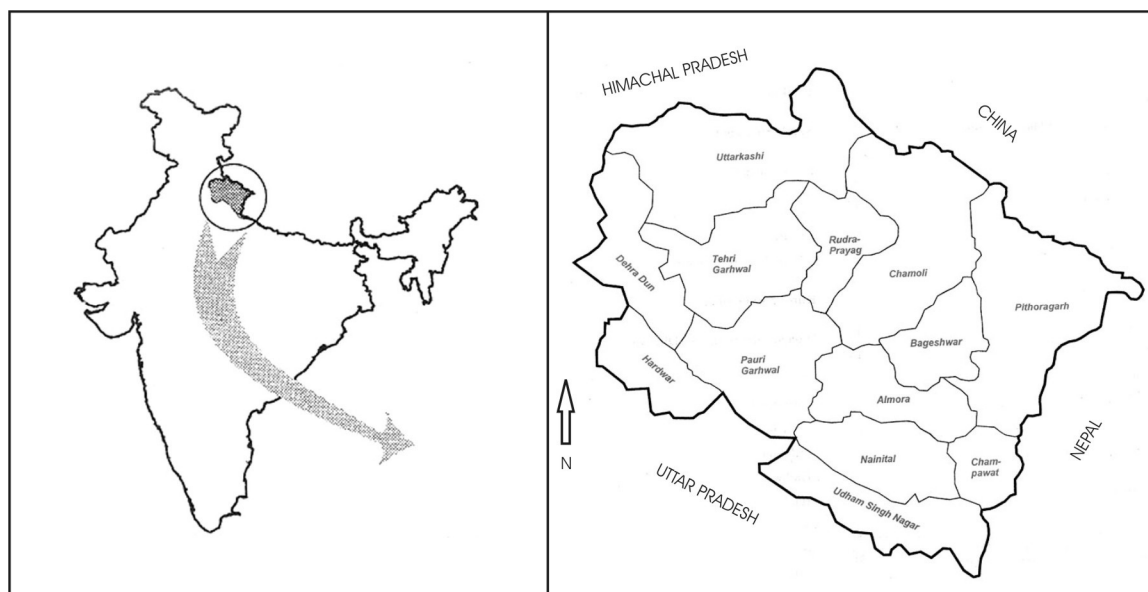


Figure 1. Location map of Indian Central Himalaya Region.