



## Farm Women's Indigenous Knowledge In Management Of Resources For Livelihood Security

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### ABSTRACT

*Women play a vital part in the mountainous region of Uttarakhand state. Women of hill region are very hard working, they toil through the day, starting with family works, nurturing children and livestock, going out for fodder, fuel and drinking water for sustaining livelihoods. Unfortunately, these women do not possess the status of a farmer. If these women are given the status of a farmer, they will get right over their land, which will go a long way in empowering them and improving their status. In the midst of the worries, a hill woman remains firmly devoted to her work, keeps her compost and is honest. Keeping all these factors in view, the research study was conducted in District of Garhwal area of Uttarakhand for empowering rural women through resource management. The respondents were the rural farm women which were selected randomly. A total sample of 150 women were taken for the study. In this techniques and methods of indigenous practices were being imparted to reduce their work load and develop. It was observed that most traditional practices of agriculture were developed empirically through trial and error, natural selection and been observation. Prior to the development and mapping of chemical pesticides, farmers seek knowledge on indigenous practices to help protect their crop pests. Indigenous practices are those practices which people in a given community have developed overtime and continue to develop. It was observed that traditional knowledge system has been a key to survival of the hill society, be it agriculture, farming, forestry or health. It has not only ensured continuous livelihood of farm households but also ecological sustainability. The study revealed the women's role as the carrier and preserver of traditional agricultural knowledge including forestry, animal husbandry and others subjects of change. Women have been identified as major victims of overall ecological degradation because of the fact that they are responsible for producing, processing and gathering food, fetching water and carrying fuel wood. Traditional knowledge provided locally manageable, sustainable and cost effective techniques for local community, especially to the poor. Women's knowledge has been the ministry of crop production, animal husbandry, dairy and forestry. They have excellent knowledge about collection, storage and use of seeds. Above all this the most important feature of a woman's life in Garhwal hills is her workload. Women are expected right from girlhood to do all the household chores and contribute substantially to agriculture. The women are responsible for gathering fuel, fodder, and leaf-litter and for caring of animals. They often work up to 14 hrs a day. Still, women do not have much right to either domestic or personal decision-making. Despite all this the rural farm women are a rich source of indigenous knowledge which can act as a catalyst for livelihood security.*

### Keywords :

#### Introduction

For centuries, nature's various products and women's knowledge of their properties have provided the basis for making water safe for drinking in every home and village of India. The seeds of the nirmali tree are used to clear muddy water by rubbing them on the insides of vessels. The drumstick tree also produces seeds which are used for water purification. Moringa seeds inhibit the growth of bacteria and fungi. Tulasi is a water purifier with antibacterial and insecticidal properties. Copper or brass pots are what Indian women use to carry and store water; and unlike plastic, they

do not breed bacteria. The technologies women have used for water purification are based on locally available natural products and locally and commonly available knowledge (Shiva 1988). Practically each terraced field has a row of fodder trees along its edge. The household women manage these carefully for procuring maximum leaf fodder yields through lopping. They know when and how to lop without damaging the main tree (Sarin and Khanna 1991). Older women train the younger ones in the art of lopping. When women lop trees they enhance the productivity of the oak forest under stable conditions.

Groups of women and old people go together to lop fodder and develop expertise by learning by doing (Shiva 1988). Farm women know the nutritional needs of their families. That is why women in Garhwal continue to cultivate mandua. They say that without their mandua and jhingora they could not labour as they do. These grains are their source of health and strength (Shiva 1988). Women in the Garhwal hills are architects of the rural economy. They are devoted to agriculture, animal husbandry, dairying, child-rearing, cooking, fodder and fuel management, etc. They work harder from morning to evening than their male counterparts for the welfare of the family. Girl children share the work of their mothers and get training in home management.

#### Origin of the research problem

Rural women play an important role in Himalayan region: as farmers in their own right, as partners with men on household farms and the main cultivators of the kitchen and in gardens. Their role in domestic food production is particularly important and in Uttarakhand hilly region where they play a key role in contributing self-sufficiency. Their crucial function in this process is accentuated by the fact that women are also processors of food for rural households. Food self sufficiency in Himalayan region is, therefore, totally dependent on women's work. Women here are overloaded with burden of household and farm work. Time constraint is one of the factors for their over all development with regards to health and hygiene. Above all the most important feature of a women's life in Garhwal hills is her workload.

#### Methodology

The study was carried out in Uttarakhand. Two blocks namely Fakot and Narendranagar were selected after thorough investigation on traditional knowledge and natural resource management. Out of the selected blocks 150 farm women were taken for the study. Results and discussion on various aspects of indigenous knowledge and resource management carried out by the farm women

#### Social Capital

Inter- and intra-village co-operation constitute an important element of both on and off-field activities. Inter-household reciprocal labour exchange, carried out mostly by women and popularly known as 'palta', is a manifestation of traditional support mechanisms which exist in hill villages. It not only provides an opportunity to women to socialise and share concerns and experiences with one another, but also promotes community participation. This kind of exchange was an important component of traditional farming system but is less popular in the cultivation of new crops. However, this practice is still very much visible in highly labour intensive activities such as in paddy transplanting, weeding and thinning out mandua, wheat harvest, and the harrowing operation or 'danali in paddy crop. Shared labour arrangements have traditionally been an important coping strategy for farmers, particularly women, as there is a chronic labour shortage in this part of the hills.

#### Food Security

In earlier years women practised mixed and inter-cropping. It ensured a better nutritional balance and more food security in terms of variety and quantity. Even on the small farms of the study area, where land holdings per household varied between 0.2 ha to 1.0 ha, farmers used to grow a significant number of crops. This system was known as baranaaja where at least 12 different crops would grow on a single farm, and women were well aware of the different production practices including seed preparation of each variety of each crop. It led to better food security, especially as the region was somewhat isolated. Given the adverse geographical condition, it was considered best to grow as many varieties as possible in order to reduce vulnerability. Today food insecurity looms large in Uttarakhand. FAO (1996) defines food insecurity as, 'food insecurity exists when all people, at

all times, do not have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life'. More and more regions in Uttarakhand are becoming food insecure today with net-sown area, per capita food availability and access to food declining, especially in the hill districts (Chopra and Pasi: 2002). The availability of pulses (a major source of protein) and cereals (the most readily food available to the poor) has significantly declined. Some of the other practices on indigenous knowledge followed by rural farm women;

- Farmers of hill regions prefer mixed cropping for minimising risks under rainfed conditions and creating ground cover for checking runoff and soil loss. They grow legumes with maize and ginger or turmeric with maize.
- After sowing ginger, colocasia and turmeric, farmers use paddy straw, wheat straw or leaf litters as mulch to ensure proper germination.
- Farmers do not practise weeding and interculturing in the maize crop because of soil conditions and the requirement of fodder in the rainy season.
- Farmers of the Garhwal hills store seeds by selection for different plots with special identification and use them in those particular plot.
- In the outer Himalaya farmers were reluctant to grow maize because of wild animals such as bears, wild boars and monkeys. In khadar (lowland) areas they grow paddy and irrigated wheat and in uplands they take rainfed rabi crops.
- In the hills farmers grow mainly mandua, jhingora and guar. Because of recent developments they have been attracted towards off- season vegetables, e.g., peas, tomatoes, etc.
- They use a special type of traditional plough. Other types of 'improved' ploughs do not work in the hills as the soil is gravelly and not deep.
- Under rainfed conditions farmers in hill regions plough their land several times before the onset of rain to conserve water and increase water retention capacity.
- Farmers plough their land straight instead of in circles and open parallel furrows for rainwater harvesting and retaining moisture. However, there is a recommendation to plough the land across the slope to check erosion.

#### Manure And Manuring

In view of the soil's condition and texture the farmers of the hill region use farmyard manure in the fields before sowing. In lowland areas, for paddy they do green manuring also. Use of chemical fertilisers has increased but people retain their belief in traditional methods.

Farmers do not dig compost pits for the collection of cowdung, residues and garbage. Instead of pits they accumulate the matter in heaps in the open for decomposition. The reason behind it is that decomposition is slow due to low temperature and little sunshine. In pits compost would not get ready in time. In the open rapid decomposition takes place. This practice is traditional but has a scientific basis.

Even today, older women are a storehouse of information of different types of trees, leaves, grasses and lopping practices, which unfortunately is not being transferred to the younger generation. They have the knowledge of lopping cycles and practices to maximise fodder and leaf production. Moreover they know how lopping could be used as a forest management strategy, which under appropriate conditions could actually increase forest canopy as well as forest productivity. Besides, they also manage local fodder trees growing on their farmlands. Through systematic pruning they procure maximum fodder yield without damaging the growth of healthy stems.

#### Animal Husbandry

In the hills, animals are reared primarily to provide draught power for land preparation, tillage, sowing, intercultural and threshing farm activities besides of course manure production. Again, women's role is significant not just for the number of tasks they perform but also for their traditional role in integrating agriculture with animal husbandry.

Women realise the contribution animals make to crop yield, due to which they are ready to undergo the drudgery of walking miles to get the fodder, making quantities of hay and utilising crop residues for their animals. Women know which leaves and grasses are best for fodder, which can help milch cattle, which plants have veterinary uses. The whole technique of haymaking from 'paral' (rice stalks), madira, mandua stalks and building haystacks or 'lutha' to tide over the crisis months especially long winters, are within the domain of women's expertise.

### Vegetative Measures For Natural Resources Management

Hill farmers grow trees of economic value and suited to their requirements. In order to have conserve soil and water they grow grasses for ground cover such as *Eulaliopsis binnata*, *Chrysopogon fulvus* and agave sps. Shrubs like *Ipomea icarnea*, *Arando donex*, *Dendrocalamus strictus*, napier grass, *Vitex negundu*, *Morus alba* and *bagrera* are grown, and in wild form are available bhang, lantana, sweet neem, etc. Among trees they grow *Grewia pitiva*, *Bauhinia* sps., *Albezia labek*, *Timla*, *Gainthietic*, to meet fuel and fodder requirements.

For the development of horticulture the trees grown are citrus, mango, jackfruit, guava, pomegranate, pear, peach and plum. In the hills Garhwal region peach, pear, khumani and apple are grown at higher elevations. There is tremendous potential to develop horticulture in the hill ranges because of undulating topography and climatic conditions. Farmers are well aware of the potential of their lands, but due to poor economic conditions and infrastructure it is not possible for them to go ahead with alternative and more profitable land use.

Hill farmers are hard-working that even in adverse topographic conditions they are devoted to agriculture for grain production. Hill farmers do not like to work as labourers or beg in villages for their livelihood; instead, they prefer to go to cities to earn. Many hill farmers migrate for jobs to the cities or join army service. The women and children look after the village property, while the men send them money to run their homes.

### Crop inputs

Another very essential operation in subsistence farming systems is the preparation of farm yard manure (FYM) which is again done by women. Pine needles and oak leaves (which were very easily available in the past) are gathered from the forests for animal bedding. These materials, when mixed with dung and household organic refuse, serve as excellent manure. This practice contributes to waste management and recycling, and provides macro-nutrients and micro-nutrients. The government has encouraged the use of chemicals (fertilisers and pesticides) in the area by making them available to the farmers at highly subsidised rates. However, women believe that artificial fertiliser cannot substitute the moisture retaining capacities of dung and humus and the use of artificial fertiliser alone is harmful.

Seed preparation, collection and storage have been intrinsic parts of traditional lifestyles in Garhwal Hills. Like other indigenous practices, women farmers here have a remarkable know-how of the unique traditional methods which have evolved over the years to collect, prepare and store seeds. They are either stored in 'tumri' (hollowed gourd shells, prepared by villagers) or bhakars (wooden boxes made by pinewood) and occasionally in covered bamboo/ringal (bamboo) baskets lined with cow dung (that are not much in use now). Seeds are usually mixed with cow dung

(gobar) ash or walnut leaves or even smeared with oil to ward off insects and pests. Seeds of most of the crops are still prepared at home by women or exchanged within the village or with nearby villages or with villages with which women have natal kinship (maite).

### Forestry

Women's role in agriculture has traditionally involved integrating forestry with food production. Forest resources augment the nutritive value of the fields both directly through its foliage and indirectly through the dung of the cattle fed with forest grass and leaves. Thus forests are central to the successful practice of crop and animal husbandry in Garhwal Hills.

Women are also well aware of the traditional techniques and methods of preparing highly energetic concentrates comprising coarse millets, lentils and vegetables. These home made concentrates are fed to animals for enhancing milk yield, provide them energy especially during arduous activities such as ploughing etc. Besides, cattle and goats are traditionally fed a very healthy and nutritious home-made concentrate after the delivery and in the days following it. Since most of the land is small and fragmented with hardly any space for growing fodder trees, the significance of home made concentrates and thereby traditional crop residues becomes all the more important.

A very interesting revelation has been the presence of animal or pashu v aids in almost all the villages of the area. They treat the livestock of people using home remedies, mostly herbal. As already explained, animals are an integral part of the farming system in the Garhwal hills. People cannot afford to have sick animals and government allopathic dispensaries are few and distant. Most pashu v aids are women and they have a good understanding of animal diseases and what treatment to accord. They usually give a prompt and free of cost treatment to the ailing animals. This enables the farmers to plough their fields on time and to make good manure. Being sufficiently knowledgeable and proficient, these women are preferred over allopathic doctors in most of the villages. The demand for their services has definitely gone down in the past few years. Though they are still popular, the increasing belief in the allopathic medicine has affected these traditional curative methods.

### Conclusions

The study had clearly demonstrated that women are the backbone to the farming system of the Garhwal hills as they have intrinsic knowledge different farming activities viz., how to make seeds and how to preserve them, how to prepare manure, how/when to sow seeds of different varieties and different crops, qualities of different crop varieties, how to get intra and inter village co-operation and how/when to harvest different crops. It is clear that while men mostly know about cash crops and new seeds, women are a reservoir of traditional knowledge system of not only farming but also forestry and animal husbandry, despite the highly skewed division of labour and decision making. This knowledge has so far provided good food security and ecologically sustainable livelihood farming. However, the region now grows only two-thirds of its total food requirements, the productivity of most crops is diminishing and this agricultural knowledge system is threatened.

Key agents of change include the government, the market and the high rate of male out-migration from the region to the plains of India. As peoples' dependence on forests, animals and their own farms is decreasing, the new generation has less incentive to learn about the traditional knowledge system, thereby posing a real challenge for the policy makers and stake-holders in the region.

### REFERENCES

- Food and Agricultural Organization (1996); Food for All, (FAO: Rome). | Gulati, Leela, (1975) "Female Work Participation : A Study of Inter State Difference," in Economic & Political Weekly, Vol. 10, No. 1 and 2, Jan 11. | Gurung, Jeannette, (1990) Invisible Farmers?: Hill and Mountain Women of the Himalaya, ICIMOD. Nepal. | Kennedy James, (1884) Life And Work In Benares And Kumaon (1839-1877). | London. | Krishna, Sumi, (1996) Politics of Environment, Sage Publications: New Delhi. | Shiva, Vandana, (1993) "Women's Indigenous Knowledge And Biodiversity Conservation", in Mies Maria and Shiva Vandana, Ecofeminism, ZED Books, ISBN. | Singh, Vir, (1989) "Pahad", People's Association for Himalayas Area Research, Nainital. | Venkateshwaran, Sandhya, (1992) Living on the Edge, Friedrich Ebert Stiftung, New Delhi. | Narayana, V.V and Rambabu, 1982, 'Estimation of soil erosion in India'. Journal of irrigation and drainage engineering. | Sarin, Madhu and Renu Khanna, 1991, Wasteland development by a women's group: a case study. New Delhi: ILO. | Sharma J.P. and B.P. Sinha, 1993, 'Traditional wisdom of hill farmers of Uttarkashi'. National Seminar on Indigenous Technology for Sustainable Agriculture. | Shiva, Vandana, 1988, Women and environment: case studies from selected villages of Orissa. New Delhi: Council of Professional Social Workers.