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Indigenous Knowledge System and sustainable development with particular reference to folklores of Kumaon Himalaya, Uttarakhand

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Agriculture and allied activities are the prime source of subsistence in Kumaon Himalaya, Uttarakhand. Indigenous knowledge accumulated by the farmers by observation, experimentation, trial and error method is the basic input in addition to seeds and farm yard manure. Farming communities of the region have gained the knowledge from their ancestors. The knowledge accumulated by them has been coined in the form of idioms and phrases in the region are known as folklores. The folklores, which have been vouging in the region, impart the knowledge for subsistence. In the paper, attempt has been made to elaborate the indigenous knowledge pertaining to agricultural operations, environment, conservation and sustainable development and discussed them in the light of western science.

Keywords: Indigenous knowledge, Folk knowledge, Folklore, Kumaon Himalaya, Uttarakhand

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Indigenous knowledge is primarily expressed in communities and encompasses expressions of folklore, religion, crafts, agriculture and medicine. Indigenous knowledge system and practices that has been developed outside the formal education system that enables communities to survive. The dominance of western knowledge system that has led to a prevailing situation in which indigenous knowledge is grossly ignored and neglected. It is, therefore, easy to forget that over many centuries, human beings have been producing knowledge and strategies and enabling them to survive in a balance relatives with their surrounding natural and social environment. The technologies material and knowledge acquired by farmers for generations of testing and experience has orally transmitted to generations. It was never documented properly and systematically. This knowledge system is of paramount importance for survival of human kind and sustainable development. Ancient agricultural research by farming communities was based on their indigenous knowledge. This is also known as traditional knowledge system. This knowledge system has provided the new ideas and techniques based on their age long experience[1]. Indigenous knowledge is referred as traditional or local knowledge is embedded in the community and is unique to a given culture, location or society. If the indigenous knowledge has not been documented and compiled, doing so that should be a research priority of the highest order. Indigenous knowledge is being lost at an unprecedented rate, and its preservation, preferably in data form must take place as quickly as possible[2,3]. Western knowledge system has described the certain principles on the basis of rationale behind every phenomenon. It prescribed the certain amount of water, nutrients, etc. for raising of a good crop. These prescriptions are made on the basis of experiments conducted with the help of modern techniques and equipments. Similarly, weather forecasting is also done with the help of some natural indicators. In ancient times, forecasting of weather, sowing time of crops, requirement of nutrients to crops, growth habit of plants and other characteristics related to environment and agricultural activities are accomplished on the basis of a long experience and empirical knowledge. Few studies in the context have been undertaken earlier in the Kumaon hills[4,5]. In light of western knowledge system, the local knowledge accumulated by generation after generation by the local communities is of not less importance for their survival. The text highlights few traditional folklores of Kumaun hills of Uttarakhand and are compared

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with the western knowledge systems. These folklores are related to agriculture and subsistence. Most of these are composed in the form of idioms and phrases in local *Kumaoni* language.

Methodology

The study is solely based on the data collected from the primary sources. For collecting the information, an interview schedule was developed. A flexible approach was adopted by using a less structural interview schedule. Data were collected through interview of randomly selected farmers and respondents from all the 5 hill districts of Kumaun Himalaya, i.e. Nainital, Champawat, Almora, Bageshwar and Pithoragarh. From each development block, 3 villages were randomly selected. In each village, 5% households were randomly selected for interview. Lottery system was adopted for randomization at all stages. A total of 33 development blocks, 99 villages and 298 respondent farmers were thus sampled. The respondents were interviewed thoroughly as per the schedule. To record the information from folklores and folksongs, the observation method was found to be very suitable. Whenever the gathering of people found in the villages and near by market places, deliberately the matter of folklores and folk songs related to agriculture and allied activities were discussed. During discussion, they revealed many local sayings related to farming activities. Apart from the observation method, relevant information from booklets and audio cassettes of the *Kumaoni* songs were also recorded. After recording of data, the relevant folklores and folksongs, they were sorted out, compiled and categorized in the various heads as mentioned in the results.

Results

Folklores related to snowfall and crop yield

Barso hyun, ko samalo gyun
(If snow falls, who will store the wheat or snow increases the wheat production)
Jo varsh hyun, wu varsh gyun
(In which, year snow falls, wheat production will be good in that year)
Hyun pado poos, gyun dharo ghoos
(Snow falls during middle December to middle January, wheat production is abundant)
Chait pado hyun, Raja gein lago chyun
(If snow falls in the month of *Chaitra*, the king infests with fungus)
Kheti lizi dyo, ghar lizi giuo
(Rain for agriculture, woman for home)

In Kumaon hills, approximately 85% of arable land is under rain fed. The region is very close to higher Himalaya, which causes heavy rain during monsoon months. Hence, *Kharif* crop does well in the region. The winter crop comprises mainly wheat (*Triticum aestivum* L.), lentil (*Lens culinaris* Medikus), peas (*Pisum sativum* L.) and others, is totally dependent upon rain or snow fall during winter. In the hill slopes, if snow falls during winter between December-February, it melts down gradually and provides a prolonged moisture regime for the wheat and other crops. This moisture regime helps in the growth of wheat crop and resulted into high yield. In contrast, if snow falls in the month of *Chaitra*, when the crop reaches at maturity, it damages the crops and creates the famine in the region. The importance of rain for agriculture and a woman for family is also described in the folklores. The folklores mentioned above are completely scientific as well social, which are to be further discussed in light of western science.

Folklores related to appropriate timings of cultural practices

Baishakha kwar, Ashadak thwar
(Vaishakh sown rice as healthy as Ashad born calf)
Jyethak thasoi dhan, saasuki takoi bwari
(Jyeshtha hoed rice as good as a daughter in-law trained by her mother in-law)
Aaghilak dhan, pachhilak madu
(Rice sown early, finger millet sown late)
Jaik asaad week asoj, jaik asoj week baishakh
(Who does well in the month of Ashwin, he also succeeds in the month of Vaishakh)

In rain fed areas, farmers try to tap the available moisture. After harvest of *Rabi* crops, the residual moisture of soil is used to germinate the rice seedlings. Generally, early monsoon showers moisturize the soil in the Kumaun hills. This moisture is tapped by farmers; they plant rice quickly in the month of *Vaishakha*. The *Vaishakh* sown rice needs to be hoed in the month of *Jyeshtha*. Sowing in the month of *Vaishakha* and hoeing in *Jyeshtha* and harvested in the month of *Ashwin (Asoj),* produces a good yield. Finger millet is also a major crop of Kumaon hills. It is sown after rice, because of weed and resources management during *kharif* season. Appropriate time of sowing intercultural practices, harvesting and resource management are important

for crop raising. Farming communities are doing it efficiently for long ago as imparted by the above folklores.

Folklores related to manure and fertilizers

Gadan mein nei hai aad, kye karu khad
(Without moisture, there is no use of fertilizer)
Mailaki kail, mailaki sail
(Dark colour of crop by manure, consequently high yield)
Guthyanik kyaw, sainiyak myaw
(Number of banana plants grown on manure as women in the fair)

Western science emphasis on irrigation and use of fertilizers. Without moisture in the soil, plants cannot absorb the nutrient from the fertilizer and soil. The farming communities had already been imparting this knowledge by the word of mouth. Plant characteristics after use of manure and its impact on yield are also transmitted through these folklores. Thus these folklores are very much scientific in nature. Western knowledge system cannot label them as non-scientific.

Folklores related to plant characteristics

Rati pinau lagain, byaw muthaki swau
(Colocasia rhizomes planted in the morning, a handful size by evening)
Dhanak balad nudi huchh, maduak balad chhitari huchh
(Rice panicle drops and finger millet panicle scatters)

Farming communities have also observed the growth habits of plant parts and characteristics, which they impart to the younger generations in the form of folklores. These folklores are very much scientific and also impart the moral values in the society. How a good character should behave in the society?

Folklore related to geographical indicator

Khatiyadi saag, gangolik baag
(Khatiyadi is famous for vegetables and Gangoli for tigers (Panthera tigris Linnaeus)

Khatiyadi, a village near Almora town is famous for vegetables, as the farmers of this village used to grow the different types of vegetables for supply to Almora town. This was a major source of their livelihood. Gangoli, a region in Pithoragarh district is famous for tigers, as there are still a large number of tigers stay in the forests in that area. Thus, the vegetables of Khatiyadi and tigers of Gangoli region became the geographical indicators in the region and local inhabitants coined them in the form of folklore.

Folklore related to sustainability

Chuni khai baar-baar, upadi khai ek baar
(Picking for ever, uprooting for once)

Generally, leafy vegetable like spinach (Spinacea oleracea L.), methi (Trigonella foenum-graecum L.), coriander (Coriandrum sativum L.), amaranth (Amaranthus caudatus L.), chinese cabbage (Brassica juncea L. (czem.) var. rugosa Roxb.), etc. are being used by picking with their tender stems along with tips and leaves. After picking once, it is regenerated again and again. In this way, these crops are consumed for a long time. If the plant is uprooted for consumption, it can be used only for once. This folklore imparts the knowledge of sustainable utilization of available resources in general.

Rain and snowfall prediction indicators

If the crow makes its nest on the lower part of the tree a heavy rain or snow fall is predicted. If it is made in the middle part of the tree a medium rain or snow fall is expected. If the nest is made on the top part of the tree, a mild or a dry spell is predicted in the coming months.

If chilli capsule or dry tobacco leaves become moist, a rain is predicted very soon.

If spiders (*Araneide*) make their webs in the open fields, the monsoon set off is predicted.

It is considered that some animals and wild creatures can sense the forthcoming climate; accordingly they prepare themselves for the coming season. Local inhabitants by observing these certain activities of (wild and domestic) creatures, plan their agricultural operations for near future. Moisturization of chilli and dry tobacco leaves, which are generally stored in the house for consumption, are due to heavy humidity in the atmosphere before raining.

Discussion

The folklores, which have been vouging from centuries in the region, are well tested by the natives. Their authenticity and accuracy is quite satisfactory. Some examples of indigenous knowledge from Kumaon region can be cited here: accurate time is fixed through observation of stars. In the Nanda folklore (*Anthu*), her curses on the pine (*Pinus roxburghii* Sarg.) (no plant will grow under you, no birds will nest in your branches, etc.) and blessings on the oak (*Quercus stellata* Wangenh) (birds and bees

will nest in your canopy, water will be there under your roots, etc.) are basically descriptions of the ecological properties of these trees. Depending upon which part of the tree top, middle or bottom, the crow makes its nest, the severity of the winter rain and snowfall is predicted. In the Kumaoni folk medicine, a local fish (*Schizothorax*) is considered a potent medicine for leucoderma[6]. It is seldom realized that traditional systems preserve the wisdom gained through millennia of experience, direct observation and the word of mouth[7]. The use of experience and knowledge of generations of indigenous people has largely contributed to sustainability of Indian farming systems. Traditional people in fact have been considered as the primary custodians of most of the evolutionary experience of mankind. Indigenous knowledge was generated through millennia of observations and experimentation, trial and error and is more ecofriendly a system of knowledge, in which farmers are part of the nature and nature is the part of their being. And therefore, in this system, there is no exploitation of nature, but a symbiotic relationship with it. The indigenous knowledge system can be very demanding on human mental faculties as also very elaborate, logical and rationale-no less than western science. But western science need not judge these systems, with its own yardsticks. The indigenous knowledge systems are better preserved in isolation of Himalayan region. These knowledge systems need to be explored, studied and preserved before they are lost under the onslaught of developmental projects. Realizing the importance of folklores in the life of natives in Kumaon hills of Uttarakhand, it can be concluded that the indigenous systems of knowledge is the tri-confluence of knowledge, culture and development. Therefore, indigenous knowledge systems should be preserved for future generation to ensure the sustainability of development, harmonious with our surrounding environment and rich cultural heritage.

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