

Indigenous water conservation technology of Sumari village, Uttaranchal

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An indigenous water conservation technology was studied in Sumari village of Pauri district, Uttaranchal. Since, the village had high population and low water quantity, therefore, they had developed an indigenous mechanism in such a way so that the available water could be managed properly for the use of humans and livestock. The indigenous technology developed by villagers is termed as *Nawn* and *Chaunree* systems of water management and conservation. The present paper investigates in detail about the *Nawn* and *Chaunree* systems of water conservation.

Key words: Indigenous water conservation technology, *Nawn* system, *Chaunree* system, Sumari, Uttaranchal, Himalayas

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Water being an essential commodity for survival and development, thinkers around the world for long time have been working on framing the systematic approach and policy for the long-term conservation of available water. Most of the villages in the Himalayan region, known for the storehouse of water, have very limited assess even for drinking water. Earlier, the human colonies settled and developed near the water bodies but simultaneously, due to several reasons the quantity of water either started decreasing or has totally disappeared. The causes of decline in water quantity are deemed to be both increasing anthropogenic pressures and natural calamities. Increasing earthquakes, increasing human population and un-regulated developmental activities have invited calamities in the form of declining water quantity in the hills. All this has forced the hill inhabitants to migrate from their dwelling places in search of new avenues. The villagers in Uttaranchal state of India have been undergoing such out migration for long period of time due to continuous decline in water quantity. Although crores of rupees has been spent on making water available to the villagers but most of these schemes are not functioning well and when there is urgent need of water, especially during peak summer seasons, there is tremendous shortage of drinking water for both

human and livestock. The scarcity of water was also there in the past, but the residents of hills had developed their own set up and indigenous techniques to manage the shortage of drinking water problems. The present study was conducted in Sumari village of Uttaranchal state with the aim to find out and document the indigenous technology developed by the villagers for conservation of drinking water.

Sumari is located in the Pauri district of Uttaranchal state at an elevation of 1350-1400 m with high literacy rate. The village real name in the past was Surmadi, literally meaning the place of deities, and later on it was changed into Sumari may be due to easy pronunciation. During 1960s the village had about 500 families, which has now reduced to about 250 families only¹. Likewise, there is a severe decline in the number of domestic animals per family. Earlier, the agriculture and animal husbandry were the major occupations of the villagers, but at present 95% economy is based on the money order system². About 2 decades ago, Sumari was surrounded by rainfed agricultural land, most of that is left barren now. Outside of the agricultural land there was *chir* pine (*Pinus roxburghii* Sarg.) forest, which is now invading in the barren agricultural land. Villagers used the *chir* pine forest for various purposes³. There is no specific grazing ground for livestock grazing and mostly livestock are allowed to graze inside the *chir* pine forest when the crops are harvested from the agricultural land.

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Methodology

To study the indigenous water conservation techniques developed by the villagers of Sumari, observations were made for many years. The different age groups of the villagers including old people were interviewed on the indigenous methods of water conservation and also on the incidences of water scarcity taken place in the past. The present crisis of drinking water availability was also monitored at regular intervals.

Results and discussion

Realizing the scarcity of water in the village, the villagers of Sumari developed a unique indigenous technology for water conservation. In past, there was a pond at a relatively flatland around which the shepherds of the nearby villages used to graze their livestock. About 8 centuries ago, a priest from Ratna Deep area of Gujarat set off for a holy journey with his king, and after reaching near to the pond in Sumari village, being mesmerized watching to the beauty of surrounding landscape, he got constructed a house near to the pond and settled forever⁴. He used to worship the goddess *Gaura Devi*, the wife of Lord Shiva. Considering the sanctity of water the priest devoted the pond to the goddess *Gaura Devi* and thus named the pond as *Gauri Kund*. Later his generations kept alive this tradition and they kept on worshipping the *Gauri Kund* with Goddess *Gaura Devi*⁴. It was the first step in conservation of the pond water by naming it *Gauri Kund* and offering it to Goddess *Gaura Devi* with a view to making the people aware about the importance of each drop of water.

Over the centuries, the human and livestock population of the village began to increase yet the entire population had to depend on the same water quantity of the *Gauri Kund*. This phenomenon forced the villagers to think seriously on the more practical ways of proper utilization of the available water. The villagers started digging around the pond to find out the source of water. On locating the water source, they designed and constructed the pond by stones in such a way that all the water could come inside the pond without wastage. The structure was locally named as *Nawn*, which was narrowed down to the bottom. At every 20 cm interval from top to bottom they constructed ladders by stones in a way that one could get down in the *Nawn* to collect the water, whenever, the water level became low in *Nawn* due to overuse of water and seasonal effects. From the source of water to the *Nawn*, a canal was constructed.

Since cement was not known at that time, the canal was constructed by using stones and the paste of pulses, especially of *Phaeseolus* sp. Stone plates were placed at the bottom of the canal and the space between two stone plates were pasted by the paste of pulses to stop the seepage of water from the canal. Stone plates were also used to cover the water canal, in the same way the bottom of canal was prepared. A thick layer of soil then covered the whole canal. A roof was made above the *Nawn* to check falling of dust and other unwanted things into the *Nawn* water.

The villagers thereafter started working on the management of overflow of water from the *Nawn* during night. They constructed another canal, which they connected from the top of the *Nawn* to another indigenously constructed pond locally called as *Chaunree*. *Chaunree* was made with a concept to store the drinking water for domestic animals. The size of *Chaunree* was kept about 7 m long and 0.5 m wide so that many cattle could drink the water at a point of time. The villagers of Sumari in order to manage the available water for the requirement of high human and cattle population of the village collectively developed the *Nawn* and *Chaunree* systems of indigenous technology.

Some rules were then set-aside by the village elders and decision makers for collecting water. No one was allowed to enter the *Nawn* with shoes, and one had to wash hands and legs before collecting water from the *Nawn*. Besides, some varieties of small fishes were also dropped in *Nawn* with a view to keep the water clean and restrict the growth of insects, worms and bacteria. These indigenous concepts exhibited that the villagers in past were quite aware of their health and hygiene.

At present, the villagers mention that the quantity of water is declining in the *Nawn* and at its source. There could be many reasons of decline in water level including shifting of ground water table, frequent earthquakes in the hills for past one decade and other natural catastrophes. However, there is one more popular belief in the villagers on the decline in water quantity in *Nawn*, which goes back on their traditional experience. The villagers felt that in past, the land around the village and mostly hills above the village was cultivated and thus ploughed at regular intervals. During rainy season, due to softness of upper surface of the land, the water percolated inside the cultivated land and then congregated at the base of the hills, which oozed out from the water source round the

year. Since most of the agricultural land today is left barren, the ground surface of the adjacent village land has become very compact and does not allow water to percolate inside in and the rainwater drains on the surface of the hills leading to wastage of water.

For past one and half decades, the scarcity of drinking water has forced the villagers to migrate from the village. Though a pipeline of drinking water from an adjacent village of Maletha to Sumari has been but the quantity of water at the source of pipeline water keeps on decreasing, especially during summer months. Although, the construction of pipeline has given some relief to the villagers of Sumari but availability of water in pipes is quite unpredictable and the *Nawn* and *Chaunree* are still the reliable source for drinking water. There is also mismanagement of pipelines, which often get broken down due to frequent landslides in the hills.

Moreover, the villagers of Maletha have some irrigated land and they are, at present, facing difficulty in getting the sufficient water for irrigation of their farmland, especially during summer due to declining water quantity. There is an urgent need to revive the indigenous technologies of water management and conservation.

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