



A general view of the Henwal Valley in Garhwal Himalaya, India: in situ conservation of genetic resources

Traditional agrobiodiversity re-introduced by farmers

In 1989, large irrigated areas in the Henwal valley were planted in rotation with wheat and rice. Two varieties of each crop were used. A considerable amount of arable land in upper rainfed areas was also planted with soybean. Most farmers had made the switch to 'improved' cultivation practices. The valley, almost completely transformed, had

Vir Singh

been converted into a virtual experimental area for Government-sponsored agencies. They conducted experiments and demonstrations and farmers received 'tested' seeds of modern varieties with chemical inputs and 'improved' implements.

It was only a matter of time before this genetic uniformity revealed its weaknesses and destructive potential. In 1987-88, the valley was struck by an unprecedented drought followed by two years of pest infestation. The modern varieties, with their very narrow genetic base, were badly damaged and farmers experienced some of the worst days of their lives.

Indigenous varieties re-introduced

Farmers confronted the crisis of genetic vulnerability by collecting together the indigenous seeds that had almost disappeared from the valley. Initially, they collected seeds of 10 local rice varieties from remote rural areas and re-introduced them into their fields. These varieties performed

remarkably but pest problems persisted even though the damage was less severe.

The following year, more farmers in the valley opted for indigenous varieties. Seeds produced during the first year were distributed to other valley farmers and another 35 indigenous rice varieties were collected and cultivated. By the end of the third year, a total of 110 local rice varieties had been re-introduced, dramatically increasing the genetic diversity in rice. By 1991, local rice varieties occupied nearly 90% of irrigated land in the valley.

The 'Save Seed Movement'

Farmers were satisfied with the results and relieved they could exercise some control over pests and unfavourable weather conditions. They launched the 'Beej Bachao Andolan' (Save Seed Movement) which spread throughout the Garhwal. The Beej Bachao Andolan searches, collects, re-introduces, tests, distributes, and popularises every indigenous variety of mountain crop available. So far, farmers have re-introduced 145 genetically distinct varieties of rice, 110 of kidney bean, 9 of rice bean, and 12 of amaranth.

Under the influence of modern agro-techniques, farmers in the valley had given up cultivating proso millet, pearl millet, and sorghum. These crops have now been re-established in their farming systems. The free exchange of seed within the community has also been revived and has proved to be a lifeline for traditional mountain agriculture.

Old and new varieties compared

The Beej Bachao Andolan keeps record of the performance of all local varieties and compares them with the so-called high-yielding varieties (HYVs) demonstrated by external development agencies. Results revealed that the average yield of local varieties of rice was significantly higher than that of HYVs. Thapachini, a widely cultivated local rice variety, produced as much as 5400 kg/ha. In comparable conditions, but with additional recommended amounts of chemical fertiliser, Saket-4, the best HYV, produced 4100 kg/ha. The GB Pant University for Agriculture and Technology conducted the experiments with HYVs.

HYV varieties produced more husk than local varieties (grain husk ratio of 1.5:1) which is of little use to mountain farmers. Local varieties, however, produced more edible rice grains and had a grain-husk ratio of 2.6:1. Farmers in the mountains do not only grow crops for grain. Straw is an equally important by product and is used for feeding livestock. The straw-grain ratio is one of the factors that make local varieties popular among farming communities. Claims are also made for the rapid development potential of HYVs. However, experiments have showed that in this feature too, local varieties outclass HYVs.

It was because of the excessive external intervention that put emphasis only on HYVs of two major foodgrain crops that led people to believe into 'miracle' seed. Once the farmers experienced the ecological vulnerability and other problems associated with the 'miracle' seeds they started opting out of the Green Revolution type of agriculture and switch over to their biodiversity-based agriculture that has been tested by them over millennia.

Recognition of the role of farmers

For generations, biodiversity in mountain regions has been in the hands of traditional farmers. Traditional systems of management and traditional knowledge have been the way farming communities have developed and adapted their livelihood systems to specific local conditions. Recognising their unique role would help stimulate farmers' interest in conservation activities. Projects on sustainability-oriented biodiversity management could encourage them to set up their own conservation movements, experiments, demonstrations, and extension services, and would also help farmers to strengthen their creative networks.

Vir Singh, GB Pant University of Agriculture & Technology, Hill Campus, Ranichauri 249 199, Tehri Garhwal, India. Vir Singh is one of the founding members of Beej Bachao Andolan.