

By RAJSHEKHAR PANT

Bestowed with diverse ecological conditions, the Nanda Devi Biosphere Reserve (NDBR) area in the state of Uttarakhand has over 500 well identified species of herbs and shrubs, 341 of trees and around 18 species of grasses. Of this rich repository, a total of 97 species of plants, field surveys reveal, have been traditionally in use for a variety of purposes. The Tolcha-Bhotiya sub-community belonging to Indo Mongoloid ethnic group and inhabiting the majority of villages falling in the buffer zone of the Reserve, especially those in the high forested reaches of the Chamoli district in the Garhwal Himalayas - has a firm faith on the traditional health care system based on herbal treatment. These rural settlements are located in the altitudinal limits of 2200 to 3600 metres. Except for the well known villages of Reni, Lata, Peng, Phugti and Tolma close to the road head, all household of Tolcha-Bhotiya community do still follow the centuries old transhumant culture entailing two permanent settlements. Their summer homes are located as high as 3600 mts, while in chill winters they come down to the lower valleys sprawled at an altitude of 800 to 1500 mts.

Reni, one of their prominent villages in the vicinity of Joshimath on the way to Badrinath shrine being the birthplace of the 'Chipko' movement of the seventies, is the buzzword among the environmentalists.

Dr RK Maikhuri, a veteran of prolonged stay, research and field work amongst this community, says that in their traditional health care system, to cure 15 major ailments like fever, headache, dyspepsia, jaundice, pregnancy complications, asthma cold and cough, etc., a total of 25 medicinal plants are generally used and, of this, 9 are common for more than one ailment. The dependence on the traditional health care system is reported to be over 95%. Barely 7-8% households prefer the allopathic system and that too for diseases like tuberculosis, rheumatism and asthma. Though for these ailments also the tradition is there to prescribe Khirku (*Nepata discolor*) and Biskanara (*Cirsium vesutum*), Jatasmasi (*Nardostachys grandiflora*), Bhainka (*Principia utilis*), Pharan (*Allium humile*) and Bhojpatra (*Betula utilis*), respectively. A few villages like Dronagiri and Garpak are still totally dependent on herbal treatment irrespective of the

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seriousness of the ailment. The local healers are well conversant with the rules pertaining to the collection time, part of the plant to be collected and storing and preparation methods.

Animal Herders or Anwals as

they are called locally, during their prolonged stay in the alpine pastures happened to collect the medicinal plants for subsistence requirement. However, with the bio-industries extending their product base and marketing opportunities using traditional knowledge based healing system, their exploitation for cash has surfaced quite rampantly in recent times. Conservation priorities in NDBR further reduced the area of accessibility, resulting in speedy depletion of resources from the regions of easy accessibility. Since wild resource of plants also make a

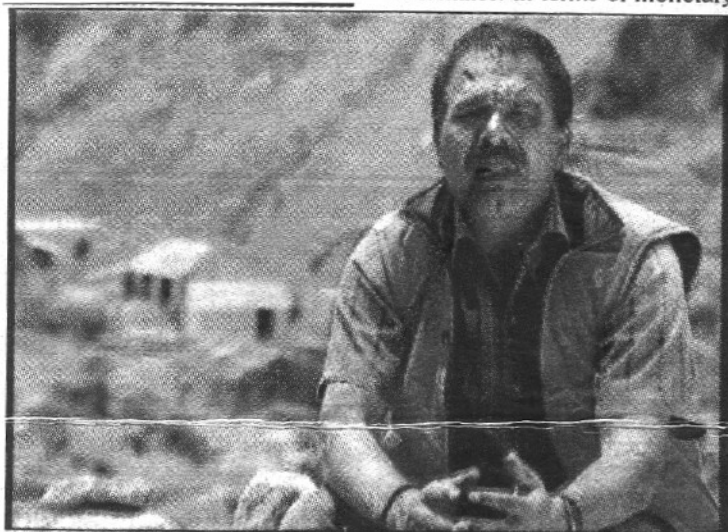
Following the formation of the state, the need for cultivation and domestication of medicinal plants was emphasised on several platforms, yet very little cognisance has so far been taken of the initiative of the Tolcha-Bhotiya

community. Working in the ten buffer zone villages with a population of 2253, Dr Maikhuri noticed the cultivation of at least eight medicinal and aromatic plants occurring naturally in the region between 2500 to 4000 mts elevation. All these plants have a low density of distribution in nature. Species like Sedam (*Allium humile*) and Jambu (*A. stracheyi*) used in jaundice and cough and cold is cultivated



significant contribution to the food security of the inhabitants of the buffer zone villages, their domestication and cultivation in the region was bound to become more intensive.

quite commonly and occupies 2/3 area of the total land under cultivation of medicinal plants. Hathajadi (*Dactyorrhiza hatagirea*) used as farinaceous food, tonic and an aphrodisiac and believed to be quite effective in chronic fever, dysentery and diarrhea, requires specialised management skills and occupies less acreage. It is usually harvested once in three years. Choru (*Pleurospermum angelicoides*) and Barmao (*Megacarpaea polyandra*) used for curing typhoid, stomach or body ache are cultivated by the least number of families. In terms of monetary



value, Kala Jeera (*Carum carvi*) has been providing them the highest return. In this small pocket of buffer zone consisting just ten villages in Chamoli district, the produce was estimated to be to the tune of well over Rs 400,000 approx.

The marketing initiative being still in nascent stage, the majority of the produce is used by the local inhabitants to barter for food items. Dr Maikhuri says that of the total annual produce of 7964 kg at least 550.5 kg per annum is used for self-consumption and the maximum (4038kg/annum) is bartered for food items. Certain species like Chippi or Gandrayani (*Angelica glauca*) and Kut (*Saussurea costus*) are cultivated mainly for local consumption. Used as an anti-spasmodic drug Kut is an excellent insecticide and its alcoholic extract is said to be extremely useful in bronchial asthma. Chippi is a common condiment and is considered to be a Cardio-active stimulant.

It is interesting to note here that as against the common crop cultivation like amaranth, kidney bean, buckwheat, finger millet, pearl millet or potato, the return

per unit of input is several times higher in case of medicinal and aromatic plants and the field scientists are of the opinion that the productivity of medicinal herbs, which already has a considerable edge over its wild counterpart, may substantially be increased by more advanced techniques and proper management. The economic returns per ha per year for medicinal plants have been estimated to be to the tune of Rs 60,000 to Rs 100,000 in the existing situation when there are enormous variation in the selling price of the medicinal plants throughout the Himalayan region. Roots of Hathajadi (*Dactyorrhiza hatagirea*) here may be sold for anything between Rs 200 to 2000 and the price of Atis (*Aconitum heterophyllum*) can vary from Rs 180 to 1500 per kg. These variations may be attributed to the absence of a proper marketing system and the increased role of middlemen in the business, who visit these villages during the harvest time i.e. September and October. Domestication of highly endangered species like Hathajadi (*Dactyorrhiza hatagirea*), Dr Maikhuri says, can turn out to be a major step towards conservation. The buffer zone population is confident enough of cultivating a wide spectrum of endangered species but for the absence of sufficient market infrastructure. Throughout the buffer zone region of NDBR, wild animals have been a potential threat to the cash crops and the conservation managers of the reserve do not have a well defined policy to compensate this loss. The ever rising antagonism between the conservation managers and the wild life on one hand and the villagers on the others may considerably be scaled down by a well planned shift in the agronomic practices. In the buffer zone villages falling in the Johar Valley of Pithoragarh district in Kumaon Himalayas, where just 12% of the total agricultural area (123.87 ha as per government records) is under cultivation, such a shift can be instrumental in effecting a revolutionary change. The lack of alternative employment opportunities following the restrictions imposed by the conservation laws has resulted here in the mass migration of youth in search of greener pastures. Although domestication of medicinal herbs constitutes a potential component of

sustainable rural development in the higher Himalayan villages, it is also quite likely that the increasing involvement of middlemen, contractors and other bigger sharks in this trade will shortly outwit and overthrow Bhotiyas- the real sons of the soil with a rich heritage of traditional health care system.