



# Popular Kheti

Volume -2, Issue-3 (July-September), 2014

Available online at [www.popularkheti.info](http://www.popularkheti.info)

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ISSN: 2321-0001

## Changing Facets of Farming Systems in Cold Desert of the Country

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Cold arid region are spread over in the northern states of Jammu and Kashmir (Leh and Kargil districts), Himachal Pradesh (Lahaul-Spiti, Kinnaur and parts of Chamba district), Uttarakhand (parts of Uttarkashi, Chamoli and Pithoragarh districts) and Sikkim (barren and desolate northern tip). Among the cold arid parts of India, Ladakh in Jammu & Kashmir is one of the highest (2,900 m to 5,900 m asl) and coldest. Leh and Kargil are two districts, which jointly form Ladakh region, the principal cold desert of India. Leh with an area of 45,110 sq km is the largest district in the country located in an altitudinal range from 2900 to 5900 m above mean sea level. The high altitude landscape is barren and dry, and the climate is extreme with temperature ranging from +35 degree centigrade in the summer to -40 degree centigrade in the winter. The human population of Ladakh has traditionally lived widely dispersed in small agricultural villages. For centuries, Ladakhis pursued a relatively self-reliant existence, economically based upon subsistence agriculture and trade with Tibet in pashm, salt and dried apricots. Small communities based upon formal and informal systems of cooperative labour, lived in delicate balance with the harsh environment and severe climate of the Himalayan cold desert. Villages grew up in valleys where the melt-water from glaciers provided sufficient irrigation to sustain barley and wheat fields. Animals such as sheep, goats, donkeys, cows and dzo (a cross between the cow and yak) played an important part in Ladakhi agriculture, providing dung for fuel, labour transport, wool and milk. The firm agricultural base in Ladakh allowed for a flourishing of culture, arts and religion.

Essentially the farming systems are mixed livestock – crop- tree/ shrub based. Such farming systems are very small scale and adapted to this unique environment. The

land is irrigated by a system of channels which funnel water from the ice and snow of the mountains. At lower elevation temperate fruits are grown in pockets, while the high altitudes are the preserve of nomadic herders. Apricots and *Pashmina* are important export items. Currently, largest commercial agricultural products are vegetables – sold in large amounts to defense establishment and as well as in local market. Production remains mainly in the hands of small land owners, who work on their own lands, often with help of migrants. As entire agriculture is irrigated, therefore, central to agriculture is the harvest of irrigation of summer snow melt from high mountains. Channels often many kilometres long, ferry the water to the villages where a finally tuned system of small channels and an equally finely tuned social system of determining who gets what water when, direct the water to small terraced fields.

For the last three decades, Ladakh has been increasingly exposed to modern influences brought on largely by tourism and economic "development". The results have been mixed at best. Ladakhi agriculture has been hit particularly hard. Subsidized food trucked into Ladakh over the Himalayas is often cheaper in the market than food grown five minutes walk away. Local agriculture now seems "uneconomic", and many Ladakhis are abandoning their farms in pursuit of paid jobs in Leh or outside Ladakh. Children who once learned from relatives and neighbours how to grow barley at 14,000 feet (4,300 m), and how to build a house, to tend animals and recognise useful plants and herbs, are gradually stop thinking about these values due to ever increasing western culture. The need of hour is to make balance between sustenance of traditional farming systems and modern economic development activities so that there should be a harmony between production attributes of traditional farming systems and socio-economic-cultural situation of the region.