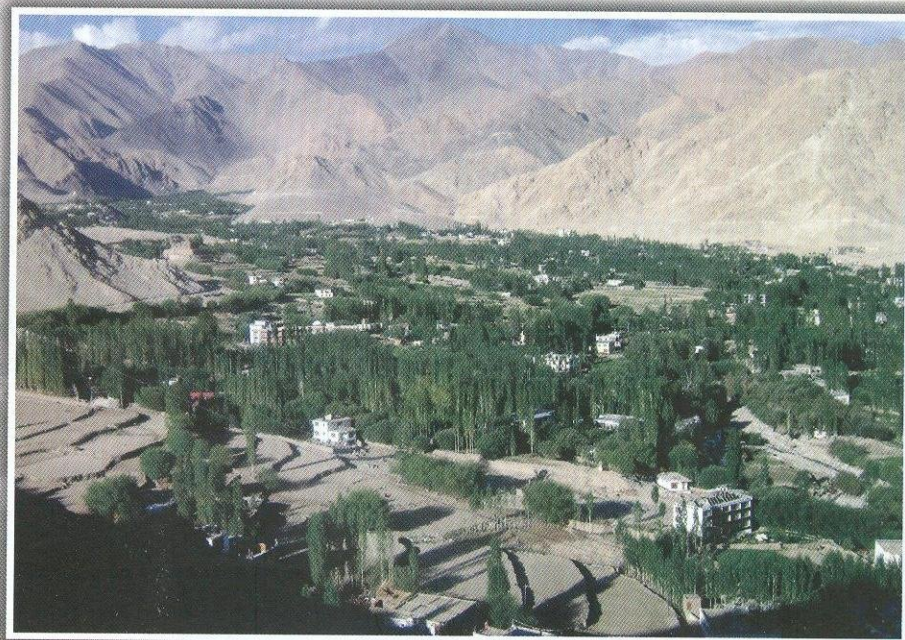


Regional Research Station, Leh

At a Glance



2014



CENTRAL ARID ZONE RESEARCH INSTITUTE

ISO 9001 : 2008

(Indian Council of Agricultural Research)

Leh-Ladakh – 194 101 J&K

COLD ARID REGION OF INDIA

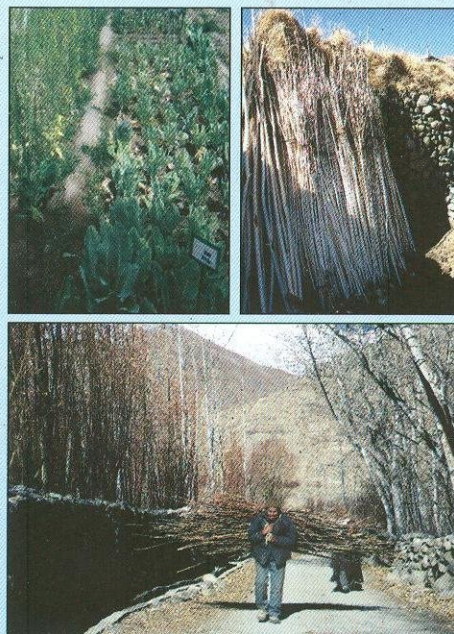
The Himalayan mountain range has significant bearing on the climate of India, as its towering height created a vast rain shadow zone in the north. The cold dry tracts of this zone referred as the cold arid region are spread over in the northern states of Jammu and Kashmir (Leh and Kargil districts), 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). The region has very short growing season as the land remains snow covered for more than 6-7 months every year during prolonged winter. It has barren topography and the soils of the region vary from gravelly and sandy loams as on the alluvial fans to sandy and silt clay loams as on the Indus plains. Due to small land holdings, the local population subsists on limited cropping and largely depends on natural resources for meeting their basic needs. Their main sources of income include rearing of Pashmina goats or Changthangi Goat (*Capra aegagrus hircus*), which provide cashmere wool for making well-known Pashmina shawl, and ecotourism activities. Natural wealth of the cold arid region is under various biotic and abiotic pressures in recent times causing high ecological imbalance.

COLD DESERT : LADAKH REGION

Among the cold arid parts of India, Ladakhin Jammu & Kashmir is one of the highest (2,900 m to 5,900 m asl) and coldest (-30°C) place. It is spread over 70,000 sq. km across the Indus, Nubra, Changthang, Zaskar and Suru valleys of the state. The mean annual rainfall is less than 50 mm. Rest of the precipitation is received mostly in the form of snowfall. The region faces fast winds blowing at 40-60 km/hr mainly in the afternoon and experiences the combined condition of both arctic and desert climate. Therefore, Ladakh is often called "Cold desert".

Leh with an area of 45,110 sq. km is the largest district in the country. It is situated between 32° to 36° degree North latitude and 75° to 80° East longitude at an altitude ranging from 2300 to 5000 m asl. It has a cold desert climate (Köppen climate classification BWk) with long, harsh winters from October to early March, with the temperature ranging from -28°C in winter to 33°C in summer.

The soil in the district is gravelly and sandy to loamy sand with low available phosphorus and potash. Agriculture is the main occupation of its rural people. Barley, wheat and alfa-alfa are the main crops, while apple and apricot are the major fruits cultivated. Livestock such as yaks, dzos, cows, sheep and goats are reared in the region. Pulses, oil seeds and other millets are also grown. Forests occupy an estimated area of only 29 sq. km in the district. Traditional agroforestry with poplars and willows is very common. The district had a net irrigated area of 9824 ha during 2011-12.



The Central arid Zone Research Institute (CAZRI), Jodhpur has now extended its scope and operation to the cold arid region, the Leh-Ladakh region has been viewed as a potential area of intervention. Following are the significant achievements of the institute in the cold arid region.

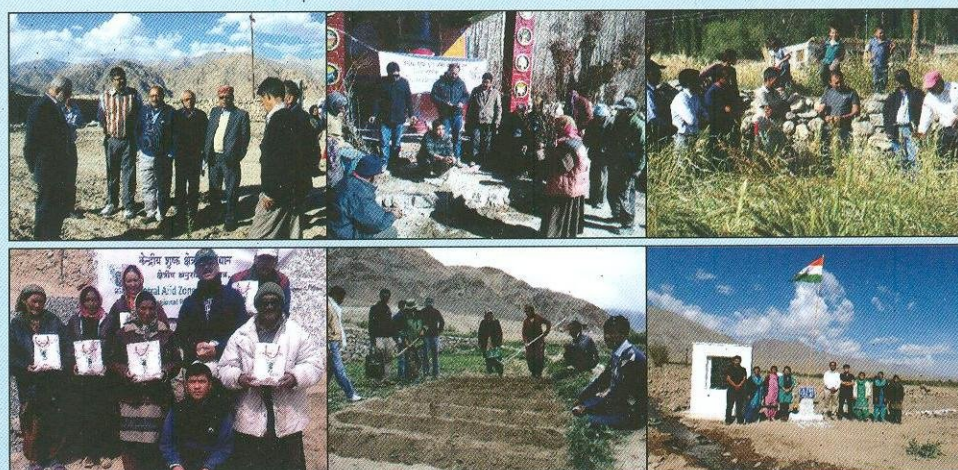
REGIONAL RESEARCH STATION AT LEH

CAZRI established its fifth regional research station at Stakna, Leh to carry out agricultural research in the cold arid region. Its foundation stone was laid on 18th August, 2012 by His Excellency Shri Rigzin Spalbar, Chief Executive Concillor, Ladakh Autonomous Hill Development Council, in the presence of Dr. S. Ayyappan, Secretary, DARE, Govt. of India and Director General, ICAR. The mandate of the station is:

- To undertake research for the development of sustainable farming options in cold arid ecosystems,
- To provide scientific management by development of locationspecific technologies, its proper transfer, and
- To act as repository of information on the state of natural resources and desertification process and its control.



The station after completing baseline survey of six villages around Leh viz., Phey, Nang, Stakmo, Saboo, Umla and Nimmo organized several trainings and meetings with Ladakh farmers, experts and line department officials on improved agriculture production technologies, protection of plant varieties, biotic stress management, resource management, etc.



Training Conducted

- **Protection of plant varieties and farmer's rights act on 11th July, 2013:** Participated by 34 farmers from Changa, Kharu, Nang, Skurbuchan, Egoo, Nubra, Leh
- **Water management in cold arid region on 25th July, 2013:** Participated by 74 representatives from LAHDC, LEHO, LEDeG, LNP, CAD, farmers of village Stakna
- **Potato production techniques in cold arid on 21st and 22nd March, 2014:** Participated by 260 farmers from village Shara, Sharmos and Phuksey
- **Potato production technique at Leh during 27th to 29th June, 2014:** Participated by 150 farmers from villages Nang and Egoo
- **Rodent pest management on 27th July, 2014:** Participated by 60 farmers from village Chuchot

Meetings Organized

- Scientists – farmers interaction meet on 28th August, 2013 with farmers of village Saboo
- Scientists – farmers interaction meetings on 29th September, 2013 with farmers of village Stakmo and Nimmu
- First agriculture stakeholder meet, Leh-2013 on 14th November, 2013 with the representatives of LAHDC, state line departments, DIHAR, SUKAST-K, KVK, NGO and farmers



COLD ARID NETWORK

As envisaged in 11th Five-Year-Plan, the institute initiated a Cold Arid Network programme in partnership with CSK HP Krishi Vishvavidyalaya, Palampur; G.B. Pant Institute of Himalayan Environment and Development, Almora; High Mountain Arid

Agriculture Research Institute, Leh and Dr. Y.S. Parmar University of Horticulture and Forestry, Solan as cooperating institutes.

The network came out with status reports of major cold arid regions in the country, facilitated the dissemination of various improved technologies for the benefit of agriculture in cold arid region. In addition, CAZRI has monitored the development of seven trout races at Chushot village in Leh under the Tribal Sub-Plan of Directorate of Cold Fisheries Research, Bhimtal.

Trainings / Meetings Organized

Activities	Target Village (District)	No. of beneficiaries (% women)
2011- 12		
Farmers' camps on winter operations in temperate fruit crops	Villages of Kinnaur (Kinnaur)	216 (29)
Pollination management in temperate fruit orchards	Hurling (Kinnaur)	50 (27.5)
Insect pest and soil health management in fruit crops	Talempi (Kinnaur)	41 (28)
Recent techniques in horticultural production system	Thangi-Lamber (Lahaul-Spiti)	50 (27.5)
Insect pest and disease management in temperate fruit crops	Thamgarang-BoningSaring (Lahaul-Spiti)	50 (27.5)
Biological control agents in apple	Shong	51 (25)
Advanced nutrient and water management in fruit crops	Chagaon (Lahaul-Spiti)	50 (27.5)
Nutrient management in temperate horticulture	Nichar (Lahaul-Spiti)	56 (29)
Soil fertility management in horticultural crops	Katgaon (Lahaul-Spiti)	62 (27.5)
Hi-tech intervention in fruit cultivation	Rarang – Thopan (Lahaul-Spiti)	50 (27)
Horticultural activities	Lari, Poh and Lidang (Lahaul-Spiti)	190 (27.5)
2012-13		
Potato production technology	Shara, Shermos and Phukse (Leh)	460 (>40)
Preparation of different pickles, jam, squash & murabba by using local vegetables, fruits and wild edibles	Sagnam Panchayats (Spiti)	69 (35)
Establishment of new apple orchards	Nasand, Nako, Hango, Asarang- Lippa, Crando Neugaiseri (Lahaul-Spiti & Kinnaur)	250 (>50)
2013-14		
Preparation of different pickles, jam, squash & murabba by using local vegetables, fruits and wild edibles	Kaza Panchayats (Spiti)	174 (60)
Cultivation, pruning and propagation of fruit plants	Fotoqsar, Changa, Chhuchot and Chhumathhang (Leh)	129 (>40)
Farmer – Scientist interaction programme	Villages nearby Solan (Solan)	40 (>30)

Exposure Visits Organized

- 105 farmers from Spiti valley villages were taken to CSK HP Krishi Vishvavidyalaya, Palampur and Lahaul valley
- 80 farmers from villages of Lahaul valley exposed to CSK HP Krishi Vishvavidyalaya, Palampur
- 46 farmwomen from Villages of Lahaul and Spiti valley exposed to farm implements at CSK HP Krishi Vishvavidyalaya, Palampur
- 39 farmwomen from villages of Udaipur, Nalda and Jhalma Panchayats exposed to CSK HP Krishi Vishvavidyalaya, Palampur

Distribution of Agriculture Inputs

- Fruit saplings and vegetable seeds to 200 farmers of villages Nang, Stakmo, Saboo, Thiksey, Nimoo, Saspol and Leh etc. with the help of CITH, Srinagar; IGFR, Jhansi; Horticulture Division, IARI, and CSKHPKV, Palampur
- Seeds of pea varieties, hoes and serrated sickles to 600 farmers of villages of Lahul and Spiti valley
- Poly-house materials for vegetable production in winters to 36 farmers of Kaza and Sangam Panchayats
- Spray pumps to 83 farmers of villages Udgoth, Tingret, Sukhto, Khanjjar, Chhaling, Chimlet, Golma of Lahaul-Spiti
- Seed potato (varieties: Kufri jyoti and Chandra mukhi) from CPRI, Shimla to 300 farmers of villages Stakmo, Nang, Egoo, Shara, Sharmos, and Phuksey of Leh
- Small farm implements to 480 farmers of villages Kukuseri, Lari, Sangala and Leo of Lahaul-Spiti

Others

- Improvement of training facilities and completion of vermicompost unit at research stations of CSK HP Krishi Vishvavidyalaya located at MARECD, Sangla (Kinnaur) and RRS, LARI, Spiti valley for the benefit of 40 farmers

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