

## **Dalang Maidan, Lahaul Valley, H.P.**

### **Summer Nursery Facility at Regional Station, Dalang Maidan**

#### **Introduction**

This regional station was established as a summer nursery facility in 1966 as a part of the Indian Agricultural Research Institute (IARI), New Delhi with a view to support the activities under All India Coordinated Wheat Improvement Project and later shifted to the present location of Dalang Maidan in 1974. The All India Coordinated Wheat Improvement Project was given the status of the Directorate of Wheat Research (DWR) and delinked from the IARI in 1978. Since then the working of summer nursery facility came under the Directorate of Wheat Research. After shifting of the DWR to Karnal in 1990, this summer nursery facility was strengthened in order to fastening the research activities for high output and it was given the status of Regional Station of the DWR in 2007.

#### **Mandate**

- Generation advancement during wheat off season
- Seed multiplication of important cultures/varieties
- Corrective crossing
- Maintenance of winter wheat germplasm and breeding to derive winter wheat traits in spring wheats
- Screening important wheat and barley material against rusts
- Centre for high altitude wheat and barley varietal trials
- Natural repository for wheat and barley germplasm

#### **Geographic location**

Geographically, this regional station is situated in the tribal district of Lahaul & Spiti of the Himanchal Pradesh. It is located approximately 32°21' N latitude and 77°14' E longitude. The station has a well maintained research farm of about 25 acres on the bank of river Chandra which is about 6 km upstream to the origin point of River Chenab. This is located in Lahaul valley which is extended between Peerpanjal to Pangti valley at the northern borders of the India in higher Himalayan range at about 3300 m (10000 feet) above the mean sea level. The climate is temperate dry with an annual rainfall of about 250 mm. the area is covered with snow for about five months, i.e. December to April. Weather in the valley is suitable for the production of quality seed potato, peas, dry fruits, kuth, hops, saffron, kalazira and many valuable medicinal plants besides wheat, barley and oats.

#### **Significance**

Historically the Lahaul valley was the integral part of the undivided Punjab where the main crops were wheat and barley. The wheat cultivars in early period were tall, having low yield potential and were susceptible to black rust due to which wheat cultivation was not economical. Keeping in view these problems, specific cultivar improvement programme was initiated that resulted into development of 'C 285' which became very popular in the area. Besides, 'NP 770', 'NP 792', 'NP 805', 'NP 809', 'NP 829' and the Japanese cultivar 'Cononaso' were under wide cultivation in the valley. With the formation of Lahaul Potato Growers' Association in 1966, there was larger extension of area under potato and at present, potato and peas are the major crops in the valley. In recent years, the apple orchards have been grown to the larger extent in the valley. This station has international recognition as the summer nursery facility that has significant contribution in the Indian wheat improvement programme.

#### **Major activities**

Among the major objectives of the station, generation advancement and evaluation of the breeding material (growing two crops in a year, during winter in the plains and another in summers at this station) is most important in order to reduce the time lag in the development of a variety as using this facility, any cultivar can be developed in 5-6 years against the normal duration of 10-12 years. The climatic conditions in this valley are very conducive to the yellow rust and therefore, this station

has very significant role in screening of wheat and barley material against yellow rust. Multiplication of important cultures/ varieties for use/ distribution, attempting corrective crosses to speed up the development of superior lines, and conduct of high altitude wheat & barley varietal evaluation trial are the other activities assigned to the station. During 1990, the number of accessions planted at the station for different purposes was 5300 which rose to 23819 during summer 2011. Besides wheat and barley, there is also experimentations on pulses and oilseeds especially gram and mustard for different objectives. Indian Agricultural Research Institute, New Delhi; Indian Agricultural Research Institute –Regional Station, Pusa; Chaudhary Charan Singh Haryana Agricultural University, Hisar; Govind Ballabh Pant University of Agriculture & Technology, Pantnagar; Mahatma Phule Krishi Vidyapeeth, Nipad; Punjab Agriculture University, Ludhiana and Indian Institute of Technology, Roorkee are major centres that extensively used this national facility for wheat and barley research programme. The maintenance of germplasm for longer period is very challenging task for which better resources are needed but the climatic conditions prevailing in the valley made it possible to maintain wheat and barley genetic resources under natural conditions. This station serves as one of the national wheat & barley repository maintained under natural conditions in cost-effective manner. At present about 7691 wheat and 2000 barley accessions were conserved at this station and the accessions conserved have the germination capacity under desired level even after 10 years of conservation under natural conditions.

### ***Utilization of winter wheats***

In India, mainly spring wheats are grown due to their adaptability in most of the wheat growing areas. The other type of bread wheat, i.e., winter wheat has longer maturity period (about 180 days) and has very limited area especially in hills. As there is snow covered for 5 months, this station has optimum conditions for growing winter wheats and the improvement programmes using winter x spring for introgression of desirable traits from winter wheats to spring wheats that can lead to significant achievements in this direction. With these objectives, number of winter wheat accessions has been maintained that can be used by the breeders.

### ***Facilities created***

This station has very high potential for research needs that attracts number of researchers and keeping this in view, the basic facilities are being strengthened for experimentation that included a and stay that included a laboratory cum office building and guest house facility. About 14 acres land is under experimentation with assured irrigation and power supply during the crop season. Using this national facility, the improved wheat cultivars can be developed in less time for their significant contribution towards national food security.

### ***Future research potentials***

The station has very high future potential in serving the national wheat programme for faster varietal development process with screening to yellow rust races. The introgression of desirable traits from winter gene pool into spring wheat through spring x winter wheat hybridization programme may also be extensively exhausted by using the station. The doubled haploid techniques and embryo rescue are other advanced activities that can be utilised in future with creation of more facilities in this regard.

### ***Some useful deadlines***

- Receipt of material for sowing : May 5 (at DWR, Karnal)
- Sowing period: May 20-30
- Crossing period : July 01 to Aug 10
- Selection period: August 15-September 15
- Harvesting : September 25 – October 10
- Material receipt at Karnal: October 20-25
- Material dispatch to co-operators: October 25-30