

# G.B. Pant National Institute of Himalayan Environment

## Special Lecture Series

### Lecture-4

8<sup>th</sup> August 2023 (Tuesday)

3:45 pm (Hybrid mode)



## *Nursery Techniques of Himalayan Conifers and High Valued Temperate Medicinal Plants*

**Dr. Sandeep Sharma**



**Chairperson**

**Mrs. Meera Sharma, IFS  
Director, GHNP, Kullu**



**Welcome**

**Prof. Sunil Nautiyal  
Director, NIHE**

Dr. Sharma is currently serving as Director In-charge at ICFRE-HFRI, Shimla. He has made significant contributions in research on modernizing nurseries of rare important Himalayan plant species. He developed 3 technologies viz., Macro-proliferation techniques for *Pircrorhiza kurroa* and *Valeriana jatamansi* and Seed Technology of *Juniperus polycarpus*. He is also developing improved varieties of temperate medicinal plants to boost commercial cultivation. He was instrumental in improving the techniques for mass production of important temperate medicinal plants and other forestry species. He was awarded with prestigious Brandis Prize for the valuable contribution in the Indian Forester in the field of Silviculture for the year 2004.



**Experience sharing**

**Mr. Deendyal  
Bee Farmer, Kullu**



**About Speaker**

**Er. R.K. Singh**



**Vote of thanks**

**Dr. Arun Jugran**



**Moderator**

**Dr. Suresh Rana**

**Webex link:** <https://qbpnihehq.my.webex.com/qbpnihehq.my/j.php?MTID=mc61870ce90f48257f459b54c08a3eec9>

**Meeting ID:** 2644 195 9651

**Password:** Himalaya@2023

# Nursery Techniques of Himalayan Conifers and High Valued Temperate Medicinal Plants

Sandeep Sharma

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## Abstract

During the past century, the world's land base has been subject to urban expansion, poor management practices, and increasing pressure on forests to provide resources including land for an ever-growing human and livestock population all over the world. As a result, tree seedling production has become a fundamental tool for addressing afforestation, reforestation, restoration, expansion of trees outside the forest, agroforestry interventions etc. Every year millions of quality seedlings are raised in nurseries all over the world for various need based plantation programs that focus on increasing the productivity of forests. The productivity of India's forests is about 0.7cum/ha/year, which is much below the world average of 2.1cum/ha/year. There is a huge gap between demand and supply for both industrial & domestic wood. This gap is continuously increasing and severely affecting the very philosophy of sustainable utilization and development of natural resources for posterity. Thus, for improving the quality of India's forests, nursery techniques play a significant role in the production of quality seedlings for establishing productive plantations.

Western Himalayan region is bestowed with a unique diversity of coniferous and temperate medicinal plants. There are 15 species of conifers belonging to 7 genera. These conifers are distributed almost the entire length of the Himalaya occupying about 6.0% of the total forest area of India. They are an important source of fuel wood, food, timber, resin, and other non-timber forest products for the local communities. To raise productive plantations, it is essential to plant genetically superior planting material having all desired physical attributes and produced in the nursery by employing modern nursery techniques. Truly speaking, production of genetically superior planting material is still a distant dream because of shortage of genetically improved seeds or other materials in India except for Eucalyptus, Poplar & Casuarinas. Therefore, for other forestry species especially temperate species only physical quality of the seedlings can be improved during establishment in the nursery by adopting modern techniques of plant production. ICFRE-HFRI, Shimla has successfully standardized nursery techniques of Himalayan conifers viz., *Abies pindrow*, *Picea smithiana*, *Cedrus deodara*, *P. gerardiana*, *Juniperus polycarpus*, and *Taxus wallichiana*. These techniques have been transferred to various stakeholders and are being utilized for raising quality planting stock.

Besides conifers, the Himalayan region is endowed with huge amount of NWFP's which include products used as food and food additives (edible nuts, mushrooms, fruits, herbs, spices and condiments, aromatic plants, game), fibres (used in construction, furniture, clothing or utensils), resins and animal products used for medicinal, cosmetic or cultural purposes. The livelihood benefits of NWFPs have been widely acknowledged however, it has not been economically evaluated to actual potential. They are attracting great attention in recent years as source of additional income to local communities. Sustainable use of these NWFPs in the country presents a challenge requiring careful planning, vigilant maintenance and judicious exploitation. Many NWFPs species are becoming increasingly vulnerable due to rapid developmental activities and excessive removal since last few decades. These days country has been striving hard for doubling the farm income. Many innovative ways need to be included in the existing farming practices to achieve this goal. To augment rural income allied sectors such as agroforestry, medicinal plants cultivation etc. need to play major role in this gigantic task. Among the various NWFPs, medicinal plants have recently attracted attention of the world community. Medicinal plants are globally valuable sources of herbal products and they are disappearing at alarming pace. It is estimated that 80% of people in developing countries are totally dependent on herbal drugs for their primary health care and over 25 % of prescribed medicines in developed countries are totally dependent on herbal drugs for their primary health care and over 25 % of prescribed medicines in developed countries are derived from wild plant species. More than 85% of herbal medicines used in traditional health care systems are derived from medicinal plants and ensure the livelihoods of millions of people, especially in the rural India.

To meet the growing demand for these plants, it becomes important to popularize their commercial cultivation and adopting various measures for their sustainable harvest from the wild. Emphasis on cultivation of the wild forms, rather than collecting from the wild would also ensure botanical identity, genetic improvement, quality and continuity in supply. Also, in order to meet the escalating demand of these resources, cultivation of these plant species is imperative. Apart from meeting the present demand, cultivation will result in conservation of the wild genetic diversity of Non-wood Forest Products including medicinal plants. Nursery practices of important temperate medicinal plants viz. *Aconitum heterophyllum* Wall. ex Royle (Atish, Patish), *Picrorhiza kurroa* Royle ex Benth. (Kutki, Kadu), *Podophyllum hexandrum* Royle (Bankakri), *Valeriana jatamansi* Jones (Nihani, Mushkbala), *Angelica glauca* Edgew (Chora), *Trillium govianum* Wall. ex D. Don (Nagchhatri) etc. have been developed in the past by ICFRE-HFRI Shimla. The institute also developed two varieties each of *Picrorhiza kurroa* and *Valeriana jatamansi* and one variety of *Podophyllum hexandrum* recently and submitted for final release. These genotypes of abovementioned species exhibiting high yield and active ingredient content, stability under different environmental conditions and found to be suitable for releasing as varieties in high hill temperate region of Himachal Himalaya.



## **G.B. Pant National Institute of Himalayan Environment**

(An Autonomous Institute of Ministry of Environment, Forest & Climate Change, Govt. of India)

### **4<sup>th</sup> Lecture under “NIHE Special Lecture Series”**

**Title:** Nursery Techniques of Himalayan Conifers and High Valued Temperate Medicinal Plants.

**Date:** 08/08/2023 (Tuesday)

**Time:** 3:45 pm onwards (Hybrid Mode)

### **Program Schedule**

<b>Time</b>	<b>Particular of Activities</b>
	<b>Floor Management/Moderator</b> <i>Dr. Suresh Rana,</i> <i>Scientist-B, GBPNIHE-HQs, Almora</i>
<b>3:55 - 4:10 PM</b>	<b>Welcome Address</b> <i>Prof. (Dr.) Sunil Nautiyal,</i> <i>Director, GBPNIHE, Kosi-Katarmal, Almora</i>
<b>4:10 - 4:20 PM</b>	<b>Introduction of the Speaker</b> <i>Rakesh Kumar Singh,</i> <i>Scientist-F &amp; Head, GBPNIHE-HRC, Kullu</i>
<b>4:20 - 5:00 PM</b>	<b>Special Lecture on “Nursery Techniques of Himalayan Conifers and High Valued Temperate Medicinal Plants”</b> <i>Dr. Sandeep Sharma,</i> <i>Director In-charge,</i> <i>ICFRE-Himalayan Forest Research Institute (HFRI),</i> <i>Shimla, Himachal Pradesh</i>
<b>05:00 - 5:15 PM</b>	<b>Experience Sharing on Beekeeping Success Story in Kullu Valley</b> <i>Shri Deendyal,</i> <i>Founder - Deendyal Bee Farm, Karadshu, Kullu, H.P.</i>
<b>5:15 - 5:30 PM</b>	<b>Address and Remarks by the Chairperson</b> <i>Mrs. Meera Sharma, IFS,</i> <i>Chief Conservator of Forest cum Director,</i> <i>Great Himalayan National Park (GNHP), Kullu, Himachal Pradesh</i>
<b>5:30 PM</b>	<b>Vote of Thanks</b> <i>Dr. Arun Jugran,</i> <i>Scientist-D, GBPNIHE-GRC, Srinagar (Garhwal), Uttarakhand</i>