

# Educational Trip Report: Institute of Himalayan Bioresource Technology (IHBT), Palampur

## Departure

Early morning of 13<sup>th</sup> March 2024, the journey started from JUIT campus. It was a joyful travel to Palampur that gave students an opportunity for interaction and laying down their expectations of the visit. After a long journey of eleven hours we arrived at our destination that was Kailash Bhavan, CSK HPKV campus.



**Photo 1**

On 14<sup>th</sup> March 2024 a group of biotechnology students from Jaypee University Of Information Technology, Wagnaghat, Solan embarked on an educational tour to the CSIR-Institute of Himalayan Bioresource Technology (IHBT) located in Palampur, Himachal Pradesh. The tour aimed to provide students with practical exposure to the field of biotechnology and its applications in the context of Himalayan bioresources.

## Arrival and Welcome:



## Photo 2

Upon reaching IHBT on 14<sup>th</sup> March 2024, we were greeted by staff as well as scientists. A brief overview of the institution's background, objectives, mission statement and areas of research was provided as a lead into the day's activities.

### Campus tour

During this part of our stay, we visited almost every corner of IHBT. State-of-the-art laboratories, experimental fields, green houses and other research facilities indicated the institute's commitment towards emerging technologies in bio-resource technology. The variety of projects that are being undertaken here attracted students' attention ranging from medicinal plants to biological remediation.

#### 1) Bamboo Hut/ Bamboo Museum



Photo 3

The bamboo museum is built from various species of bamboo grass and it had many bamboo grass products like bamboo fibre, bamboo fibre clothes, artifacts made up of bamboo. Bamboo is a super grass, an intensive research was done on this grass. There was an exhibition of other indigenous products of IHBT like herbal perfumes, immunity boosters, Soaps, Bamboo candies, SOD Enzyme ( Superoxide dismutase), Tea products, Dietary fibre, Stevioside (a natural sweetener) any many more.



**Photo 4**

Different artifacts and products made of bamboo by indigenous techniques and methods developed by IHBT, Palampur



**Photo 5**

Various natural sweeteners and products made from them

## 2) Biotechnology Lab



**Photo 6**

### **Group photo of B. Tech and M.Sc. Students with Dr. Arun Kumar (Senior Scientist), IHBT Palampur**

Students interacted with Dr. Arun Kumar. It was one on one interaction session. He talked about his research interests and also about his journey of becoming a senior scientist at IHBT, Palampur. His research interests are:

To identify enzymes with novel functions and exploit them in healthcare and agriculture industry and

(2) To understand the mechanisms of genetic resistance in crops against bacterial and fungal pathogens at the molecular and biochemical levels and exploit this information for crop improvement.

One of his research fellows gave tour of the lab to the students and showed all the equipment of the lab like PCR, Rt PCR, different type of spectrophotometer etc.

## 3) Plant tissue culture lab



**Photo 7**

The major aim of this Plant tissue culture lab is to perform Plant tissue culture and its application in conservation and improvement of commercially important plants of western Himalayas. Major plants which are worked upon in this lab were:

*Fritillaria roylei*, *Nardostachys jatamansi*, *Picrorhiza kurroa*, *Dactylorhiza hatagirea* etc.

(high value endangered/critically endangered medicinal plants of mainly, alpine/sub-alpine Himalayas)

A research scholar explained the steps/procedures involved in plant tissue culture techniques and different applications, objectives of this technique. She told the students that IHBT has developed a tissue culture protocol for mass production of quality corms of saffron.

#### 4) Aeroponics and Hydroponics Facility:



**Photo 8**

A research scholar Mrs Kanika Thakur gave a brief introduction about hydroponics and aeroponics. There are very much advantages of using these methods for cultivation of various spices, ornamental plants and vegetable crops. She pointed out various differences between these two technologies.

The major plants which are grown by hydroponics are Basil, Oregano and Parsley etc.

#### 5) Tulip Garden (Field Visit):



**Photo 9**



**Photo 10**

Developed under the CSIR-Floriculture Mission, the mesmerising Tulip garden at CSIR-Institute of Himalayan Bioresource Technology (CSIR-IHBT), Palampur.

**6) Scanning Electron Microscope Facility:**



**Photo 11**

Structure of Stomata under SEM (3.5k Magnification)



7) **Photo 12** Microbiology lab and Bioinformatics lab:



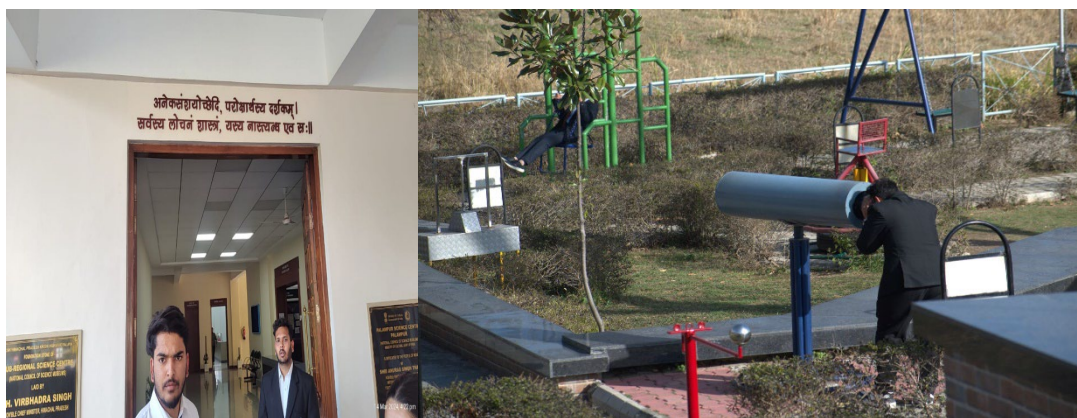


**Photo 13 Group photo of Students along with faculty members at CSIR-IHBT, Palampur**

**Dr. Gireesh Nadda (IHBT) Dr. Vivek Dogra (IHBT) Dr. Ashok Kumar Nadda (JUIT) Dr. Raj Kumar (JUIT) alongwith research scholars from IHBT and JUIT M.Sc. Biotechnology and Microbiology students B.Tech students**

### **A visit to Science Centre Palampur**

Students visited Science Park, Innovation Hub, Portable Planetarium, Fun Science Gallery, thematic gallery titled 'Untamed Earth' that houses around 25 interactive exhibits. This has been specifically conceptualised and curated keeping in view the sensitive Himalayan belt, located at the juncture of two active tectonic plates.



**Photo 14 Palampur science centre and science park**

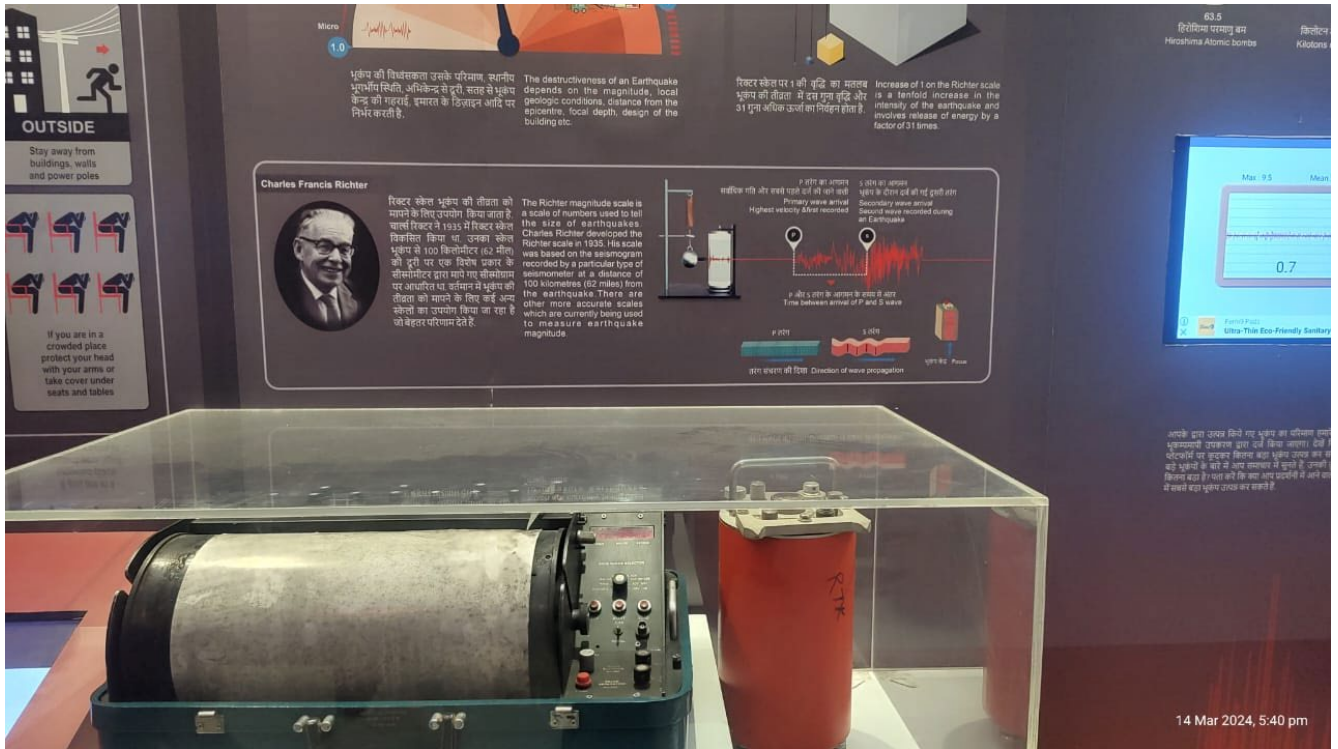


Photo 15 Seismometer in thematic gallery “Untamed Earth”.

## DAY 2: CSK HPKV

### ATIC centre and CSK HPKV Museum:



Photo 16 Group photo of students along with faculty members and Dr Sanjeev Parmar

The Agricultural Technology Information Centre (ATIC) is a “single window” support system linking the various units of a research institution with intermediary users and end users (farmers) in decision making and problem solving exercise.



**Photo 17 Dr Parmar giving the knowledge about the functioning of ATIC Centre and how the information is disseminated to the farmers by various channels. He**

**gave detailed about the structure of this centre and share a telephonic number of ATIC centre i.e, 01894230395. End user get any farming, horticulture, agriculture information from the experts of this field. He gave idea about Beekeeping practices (Apiculture), sustainable farming, high yielding varieties developed by university, and various agricultural tools which are developed by the engineering department of the university.**



**Photo 18 Dr Ashok Nadda presented a souvenir to Dr. Sanjeev Permar, CSK HPKV Palampur**

### **CSKHP KV Museum**

This is a museum that showcases various departments working efficiently and effectively in CSKHPKV. It also, displays various flora and fauna of Himachal Pradesh. The soil type, the rock type of different geographical locations within the states. It also has preserved specimens of the aquatic fauna found in Himachal. Various schemes implemented, their outcomes have been depicted very well. Farm mechanisations being used have also been kept under display. All in one Kiosk that displays almost everything that's being undertaken and achieved is kept at the very entrance of the museum. The farmers section on the first floor, showcases complete details of all the successful, prolific farmers that have increased their standards of living by following novel modes of farming.



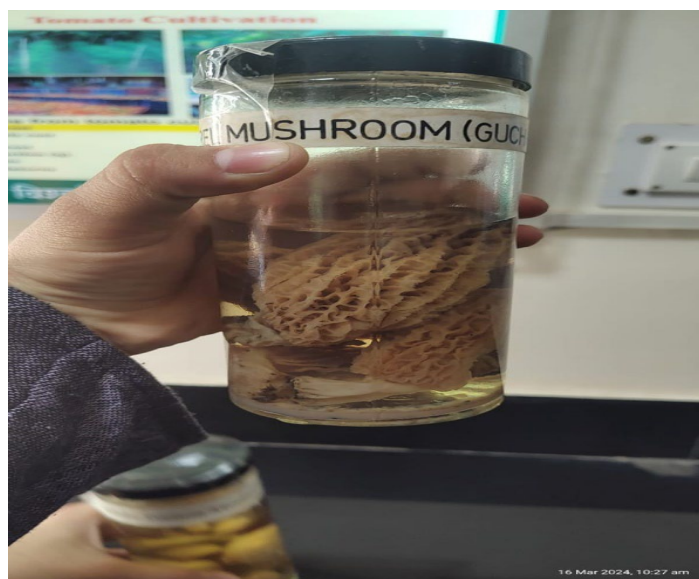
Photo 18 Students exploring the CSK HPKV Museum



Photo 20 A model of Integrated farming system in the museum



**Photo 21 Network Directorate of Extension Education**



**Photo 22 A preserved fungus of Guichi which a popular delicacy in Chamba region of H.P.**

On 16<sup>th</sup> March 2024 we reached back at JUIT campus at 11:30 PM night. We are thankful to JUIT management for assisting the students to get a scientific exposure through this great visit.