

National Mission on Himalayan Studies

PERFORMA FOR THE HALF YEARLY PROGRESS REPORT

(Period from April 2016 to September 2016)

Project Title -: Conservation strategies for *Taxus wallichiana* and *Ulmus wallichiana* by DNA markers and geospatial technology

Sanction No. and date -: NMHS/SG-2016/011, 31-03-2016

Institution Name -: Central University of Punjab, Mansa Road, Bathinda, Punjab-151001

Personal Details -:

Name and Address of the PI-:	<p style="text-align: right;">Dr. Pankaj Bhardwaj, Asst. Professor, Centre for Plant Sciences, School of Basic and Applied Sciences, Central University of Punjab, Bathinda. Email: pankajihbt@gmail.com Phone No. 9501686709</p>
Name and Address of the Co PI-:	<p style="text-align: right;">Dr. Puneeta Pandey, Asst. Professor, Centre for Environmental Sciences and Technology, Central University of Punjab, Bathinda. Email: puneetapandey@gmail.com Phone No. 9501982035</p>

Partner Details-:

S. No.	Name/ Address	Work assigned to partners	Fund allocated to partners during the period
1.	Dr. Pankaj Bhardwaj, Asst. Professor, Centre for Plant Sciences, School of Basic and Applied Sciences, Central University of Punjab, Bathinda	Sample collection and nucleic acid isolation Transcriptome sequencing for <i>T. wallichiana</i> and <i>U. wallichiana</i> Assembly, annotation, Prediction of microsatellites, primer-designing and Characterization on the populations	Rs. 15,60,000/-
2.	Dr. Puneeta Pandey Asst. Professor, Centre for Environmental Science and Technology, Central University of Punjab, Bathinda	Micro-level and macro-level spatial mapping of <i>T. wallichiana</i> and <i>U. wallichiana</i> Change detection studies to ascertain the changes in vegetation pattern and temperature variations in the last 40 years.	Rs. 2,00,000/-

Project Objectives :-

1. Sample collection and nucleic acid isolation
2. Micro-level and macro-level spatial mapping of *T. wallichiana* and *U. wallichiana*.
3. Change detection studies to ascertain the changes in vegetation pattern and temperature variations in the last 40 years.
4. Transcriptome sequencing for *T. wallichiana* and *U. wallichiana*
5. Assembly and annotation
6. Prediction of microsatellites, primer-designing and characterization on the populations.

Completion in the last six months in % (According to each Deliverables):-

S.No.	Quantifiable Deliverables (as per sanction letter)	Output/ achievements	Performance in terms of Monitoring indicators	Remarks
1	Germplasm collection	Collected around 250 leaf samples from Jammu, H.P and Uttrakhand	Stored at -80°C after snap freezing in liquid nitrogen.	
2	Nucleic acid isolation	Isolated and purified the DNA of 250 collected leaf samples.	Stored at -20°C	
3	Remote Sensing satellite data	Ordered LISS-IV and Carto sat data from National Remote Sensing Centre (NRSC), Hyderabad.	Field sampling for ground trothing has been carried out for Jammu, Himachal and Uttarakhand regions. The geographical coordinates of sampling sites have been plotted in GIS environment using ArcGIS 10.3 software to examine their spatial distribution. Land use/land cover (LULC) mapping by unsupervised and supervised classification of Himachal region is in progress. Multispectral LISS-IV satellite data has been procured partially for the state of West Bengal, Himachal and Uttarakhand during the first round of Indent raised to NRSC. Digital image processing of the same is in progress.	Second round of Indent has been raised to Data Centre NRSC, Data awaited

Summary of progress -: (with in 200 words)

Specific polygons for the study area, namely area of interest (AOI) were identified on the NRSC website. The information such as Scene number, Strip number, Path and Row number, date of acquisition and geographical coordinates were noted. This information was submitted to NRSC Data Centre for procuring the multispectral IRS P6 (Resourcesat1) LISS-IVsatellite data. So far, only partial satellite data for Uttaranchal, Himachal and West Bengal has been delivered by NRSC and is under process for preparing of LULC maps by Image classification process. Further, field sampling has been carried out for the verification of classified LULC maps. Extensive field survey was conducted for collecting the leaf samples of *Taxuswallichiana* and *Ulmuswallichiana* for DNA isolation from Jammu, Himachal Pradesh and Uttrakhand. The spatial distribution of *Taxuswallichiana* and *Ulmuswallichiana* has been carried out by plotting the sampling sites in GIS environment for the state of Himachal, Uttarakhand and Jammu. Details of sampling sites are enclosed as Annexure I. Spatial distribution map has been enclosed as Annexure II. The field sampling has been temporarily terminated due to snow cover at higher altitudes and will be resumed for next round in March-April, 2017.

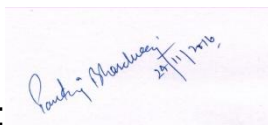
Around 150 samples of *Taxuswallichiana* comprising 11 populations and 100 samples of *Ulmuswallichiana* comprising 5 populations were collected. Specific locations were identified for easy collection of leaf samples for RNA isolation. DNA from the collected samples was isolated by the method of Doyle and Doyle, 1987. The isolated DNA was purified and stored at -20°C

Supporting data files/ maps/ tables/ figures of the results to be attached

- Data file containing information of geographical coordinates at selective sampling sites in Jammu, Himachal Pradesh and Uttrakhand.
- Spatial distribution map of sampling sites
- Representative image of isolated DNA samples.

Name of the PI:-Dr. Pankaj Bhardwaj

Signature -:



Date:- 24.11.2016