The following are the equipment shortlisted for the procurement during the FY 2024-25 and subsequent 2-3 years (under Non-project mode; out of CSIR Grant / Lab Grant):

Sl.no.		Amount (in lakhs)	Justification
1.	Single Cystal XRD Instrument	400.00	Under Prioritized Equipment Fund of Call for CSPS 2024
2.	High Resoultion Accurate Mass Spectrometer (HRAMS)	1300.00 + GST	
3.	Chemidoc	18.00	For detecting western bolts
4.	Server/Workstation with new generation AMD Epyc 9004 series processor supporting better memory bandwidth of 4800 Mbps and CUDA parallel programming of compute level 8.6 or above	20.00	Most of the existing servers have become outdated with no availability of parts and services. Also for our new initiatives in deep learning require very high compute power which the older systems are not capable of. Most of them in fact are in fact not even capable to handle enough data and carry out research activities. Thus systematic up-gradation by purchase of new servers/Workstation is needed. Through our BIC project program we replaced a few of them, while by Institute one such server was provided last year. Two more such server/workstations are required urgently. This year we plan to buy one such server. There is no server at Institute right now matching the asked specifications of equipment above.
5.	High pressure homogenizer (01 No.)	30.00	Equipment required for lab scale cell disruption (bacteria and yeast).
6.	Centrifuge with swinging bucket rotor	7.00	Our old centrifuge machines (Sigma 3K 30) are not working properly and we do not have any swinging bucket rotor facility available with us which is required.

Sl.no.		Amount (in lakhs)	Justification
7.	Desktop Workstation GPU with at least 128 GB RAM and 40 processors	10.00	We have old existing system which was CPU based and was latest purchased on 2017. So we need to upgrade the system so that PhD work will not suffer.
8.	Blast2GO software package with three year subscription	4.00	Very essential for many bioinformatics-based analyses under various plant-microbe interaction work like metagenome etc. Very vital for lab.
9.	Multiparameter meter (EC, PH and TDS)	2.00	Required for vertical aeroponic facility
10.	Work station	5.00	For In silco analysis, protein-protein interaction study
11.	UV cross linker (UVP CL-1000L)	5.00	For RNA interactome capture in P. kurroa plant
12.	Circular dichroism (CD) spectrophotometer with a Peltier thermostatted holder	75-90	This instrument is very useful for determination of protein secondary structure and stability, characterization and structural analysis of biomolecules, chiral discrimination, etc. Since our institute is working on industrially important enzymes and other biomolecules, a latest model of CD spectrophotometer that can perform measurements over a broad temperature range with a high level of precision will be very useful.
13.	Inductively coupled plasma mass spectrometry (ICP-MS/MS)	250.00	Protein Analysis: ICP-MS/MS can be utilized for quantitative analysis of metal ions bound to proteins, providing insights into metalloprotein interactions and aiding in drug discovery and protein engineering efforts. Material Characterization: ICP-MS/MS facilitates the analysis of metal impurities in raw materials and finished products, including pharmaceuticals, cosmetics, and electronics manufacturing, ensuring product quality and regulatory compliance etc.

Sl.no.		Amount (in lakhs)	Justification
14.	Multiskan SkyHigh Microplate Spectrophotometer for DNA/RNA/Proteins and Cell cultures (Compatible for nano cuvettes, cuvettes and 96 well plates)	20.00	
15.	Spray Apparatus for bioassay studies (1 No.)	15.00	For laboratory bioefficacy studies
16.	Incubator with humidity and temperature control (2 No)	20.00	For egg hatching/ insect life cycle studies
17.	Rotary evaporator with chiller	10.00	For making fungal extracts
18.	Heavy duty grinder (with accessories for storing waste)	3.00	For grinding waste for rearing insects
19.	Tulip Grader	40.00	Required for grading of Tulip bulbs of different sizes
20.	Gel doc system	5.00	For visualization of nucleic acids
21.	Circulating water bath	4.00	For sample extraction
22.	Freezer (-20^{0}C)	1.50	For sample storage
23.	Leaf area meter	10.00	To measure leaf area
24.	Centrifugal machine	3.00	For estimation of biochemical parameters
25.	Nitrogen analyser Kjeldahl apparatus	10.00	For analysis of Nitrogen in plant and soil
26.	Flame photometer	10.00	For analysis of potassium in plant and soil
27.	UPS 250KVA	5.00	For power supply at Chandpur farm
28.	Orbital shaker (clockwise and anticlockwise)	2.00	For analysis of soil sample
29.	Semi-micro weighing balance	4.80	For waging of micro-level sample
30.	Chlorophyll meter	2.50	For non-destructive analysis of Chlolophyll
31.	Flash Chromatography	30.00	For isolation and separation

Sl.no.		Amount (in lakhs)	Justification
32.	Digital Weighing balance cap 05 kg max	5.00	For weighing of bulk chemicals
33.	Sparkler type filter press with zero hold up 14 inch X 10 plates having filtration area atleast 1.0 sqm All stainless steel 304 along with tanks and accessories	7.00	Need for pilot scale solid liquid filtration. The existing machine has end of life.
34.	Multi solvent recovery unit cap minimum 50 L to max 200 L along with pump and other accessories	18.00	For recovering of solvents at pilot scale during extraction / concentration operation
35.	Muffle furnace with accessories	10.00	For ash related studies of raw and finished products
36.	ELSD detector	20.00	Highly required for deduction of Non UV VIS compounds
37.	Sulphitation Chamber	5.00	For processing of fruits crops of Ladakh
38.	Industrial Tray Dryer	15.00	For drying of processed fruits and vegetables.
39.	Emulsifying Paste Making Machine	6.50	For development of liquid formulations.
40.	Small Animal Behavioural Monitoring, Tracking and Analysis System with Accessories	18.00	For behavioral recording of multiple animals including zebrafish at same time in different arenas.
41.	Upgradation of Imaging system for Olympus BX53 microscope	13.00	For histopathological and IHC in the animal experiments.
42.	Thermocycler	5.00	For molecular studies.
43.	Hot-melt extruder	150.00	Hot melt extrusion can be used to improve the solubility of poorly soluble drugs by increasing the surface area.
44.	3D Bioprinter	70.00	3D biorinting has emerged as flexible and promising technology for its utilization in both screening and development of effective delivery system (mimicking in vitro tissue/organ physiology and development of effective therapeutic

Sl.no.		Amount (in lakhs)	Justification
			scaffold) for various ailments. It has applications in various fields including regenerative medicine, tissue engineering and cancer research.
45.	Open Air incubator shaker (50 flask capacity)	10.00	Required for submerged cultivation of invitro plant cell and organ culture.
46.	UV PAM Fluorometer (Portable Handheld)	25.00	For estimating leaf epidermal UV-A/B transmission of alpine plants.
47.	Sap Flow System (06 units)	15.00	For continuous measurements (Annual) of Water Use Efficiency in Forest Trees.
48.	A3 digital scanner	3.00	For scanning of a large number of leaf samples.
49.	Stereozoom Microscope (2 No.)	7.20	Required for identification of plant specimens for taxonomic work.
50.	Hyperspectral Sensor for drone	75.00	Recording of hyperspectral images from drone
51.	Terrestrial Laser Scanner (with RGB and LiDAR sensors)	50.00	Recording of 3-dimensional point clouds superimposed on RGB images of plants/forests
52.	Field equipment (Handheld GPS (02 No.; Data loggers, etc.)	5.00	Remote sensing Ground truthing
53.	Fume Hood	5.00	
54.	Moisture analyser	4.00	
55.	Silversion mixture	5.00	
56.	Shaker temp controlled	5.00	
57.	Chilling Water bath	2.00	
Minor & Miscellaneous Equipment			
58.	MultiScreen™ Vacuum Manifold 96-well	2.00	For routine cleanup of PCR products for sequencing
59.	Orbital Shaker Incubator	1.00	For routine incubation and shaking of cultures, etc.

Sl.no.		Amount (in lakhs)	Justification
60.	Camera attachment for microscope	2.00	For updating existing microscope
61.	Hot plate with shaker	0.25	Preparation of solution for biochemical analysis
62.	Tray drying oven	3.50	Use for drying herbs for particular conditions
63.	Projector with screen	1.00	Extension and training purposes
64.	Laboratory shaker	0.60	Use for preparing the soil and plant samples
65.	Semi Dry blotter	2.00	For use in western bolts
66.	Weighing balance with .001 mg accuracy	1.50	For weighing chemicals
67.	Full HD 65 inch monitor with stand	1.00	This is required for explaining the lab activities to the students who are visiting our lab for Electron Microscopy facilities
68.	Mini centrifuge (Capacity 2x8x0.2ml tubes)	0.20	To settle down reaction mixture before PCR
69.	Power pack system for gel unit	1.00	DNA & RNA work
70.	Autoclave	2.00	Required for sterilization purpose in vertical aeroponic facility
71.	Weighing balance	2.00	Required for media weighing purpose in vertical aeroponic facility
72.	Geyser	0.50	Required for media preparation in vertical aeroponic facility
73.	Shoe cover dispenser automatic	1.00	Required for vertical aeroponic facility
74.	ID SDS PAGE unit	1.00	For proteomic experiment
75.	Spinwin for PCR plates and MCTs	0.20	For spin down using PCR plates, routine work
76.	Miscellaneous Equipment’s	8.00	Weighing Balance, Water bath, Autoclave, Hot plate cum stirrer, pH meter, Laptop: For sterilization, thawing and sectioning, weighing of chemicals, heating and mixing of

Sl.no.		Amount (in lakhs)	Justification
			solutions, taking the pH of solutions, image analysis and histopathological quantification.
77.	Deep fridge	1.20	
78.	Weighing Balance	1.50	To carry out the quantitative analysis of specialized metabolites weight balance required
79.	Centrifuge	3.00	Highly required to conduct the various research activities involved with plant metabolized
80.	One refrigerator small (In continuation to previous year priority list)	0.50	Could not processed in 2023. Will be done in this FY. Required for keeping multiple fungal cultures for storage.
81.	4-KvA UPS No. (2)	0.80	To support and provide electric backup to the existing plant growth chambers 2 in numbers. Essential to transfer instruments at new facility
82.	One small benchtop incubator chamber (1)	0.50	Required for incubating bacterial/fungal culture at non-shaking optimum temperature. No such facility available to our lab at present.
83.	Water Bath	2.00	For routine lab use
84.	Gel rocker	1.00	For routine lab use
85.	Digital Thermohygrometer (2No.)	0.05	Are required for the collection of data for conducting experiment of medicinal plants under greenhouses at CeHAB and IHBT.
86.	Digital Vernier Caliper 300 mm (2No.)	0.10	Required for the biometric studies of herbs and shrubs for their diameter measurement in the experimented crops and ecological surveys.
87.	Forestry Pro II Laser Rangefinder (1No.)	0.45	Required for the biometric/ecological studies of trees in the forests.
88.	Monitor (02 Nos.)	0.40	Some systems have become very old and thus their monitors, which are not

Sl.no.		Amount (in lakhs)	Justification
			working properly now. We need to buy new monitors for such systems.
89.	LED screen	0.60	Required for display in vertical aeroponic facility
Jigyasa			
90.	Cameras with data processing modules 2.no	7.00	For live streaming of Jigyasa activities/ other purposes
91.	Music System/ speakers Fitting/ wireless mics	5.00	For classrooms/ conference room of Jigyasa/ Skill Development Rooms
92.	Digital Podium 1 no with accessories	20.00	For classrooms of Jigyasa/ Skill Development Room (s)
93.	3 D Printers	6.00	For JIGYASA and ATL activities besides making nucleus for pearl culture
94.	Digital standees/ Display with computer systems (Large Size) 2 No	10.00	For display of R&D and other activities of the Institute

Note:

- This is a tentative list and the instrument may or may not be purchased in this financial year as per availability of funds.
- The costs indicated as above are approximate/estimate cost only.