**Minutes of Green Committee Meeting of IIT Roorkee held on July 24, 2021 on Webex Platform at 11.00 am**

The following members were present:

1. Prof AK Chaturvedi, Director - Chairman
2. Prof M Parida, Dy. Director - Special Invitee
3. Prof Arun Kumar, HRED - Convenor
4. Prof Umesh Kr Sharma, Dean Infrastructure - Member
5. Shri Ajay Sharma, Institute Engineer - Member
6. Shri Bhavneesh Lal, Institute Architect - Member
7. Prof Y.S.Negi, Dean Saharanpur campus - Member
8. Prof Avlokita Agarwal, Arch & Planning - Member
9. Prof Bhanu Prakash Vellanki, CED - Member
10. Prof Ram Manohar Singh, HSS - Member
11. Ms. Dyutisree Haldar, RS - Member
12. Prof Bihu Suchetana, CED - Special Invitee
13. Dr. R Suresh Kumar, WII - Special Invitee

Prof ML Kansal, Associate Dean (Bhawan & Mess) and Shri Vaibhav Jain Student could not join the meeting.

Prof AK Chaturvedi, Director while welcoming the members of committee, desired that the initiatives taken by Green committee should become the regular function of the respective units/offices of the institute for campus sustainability. He asked Prof Arun Kumar to present the agenda scheduled for the meeting. At the onset of the meeting, Prof Arun Kumar gave an over-view of all the items to be presented as well as about the special invitees for presenting the plans of action on different aspects of the sustainability before the Green Committee.

**Agenda 1. Actions Taken Report:**

The action taken report on the minutes of meeting held on April 14, 2021 were deliberated. To discuss in detail, presentations were also made by the faculty who are champion for the aspects including wildlife institute of India who are engaged for bio diversity inventory survey, especially invited for the meeting.

| No. | Reference | Title / Matter | Actions Taken and deliberated |
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| 01 | April 14 , 2021 (Agenda 1) | **Biodiversity on campus:** It was suggested that to create awareness among the campus residents, activities related to this can be planned with the students of eco club (e.g. Bird watching, etc.). It was also decided that the list of species of the flora and fauna found on the IITR campus through this survey, shall be added on the IITR's website so that the campus fraternity can view the same and also add pictures | WII has started the work and undertaken 5 visits to the campus till date. Dr. R Suresh Kumar from Wildlife Institute of India is heading the team on assignment on flora fauna survey of IITR campus. He was invited for the meeting and he presented the initiatives taken by them including progress made by them during the first few months of this study. A detailed presentation for the same has been attached in Annexure 1. The study is expected to be completed in total of 9 months field work to capture different seasons. |
| | | | **Further Actions** |

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| | | new species if found by them. The images received will be initially screened and refined by WII before they are uploaded on the IITR database. WII shall make a presentation on the updated status. | It was suggested that a brief report on the bio-diversity in campus; if not a comprehensive one; can be launched on 25th Nov, 2021 being the Foundation Day of the institute. It can be showcased as one of the green –campus initiatives on the occasion of starting the 175 years of celebration. It can be released as the Phase I of the project and can be put up in the calendar of events for celebration as well. During the presentation, Dr. R Suresh Kumar informed the committee members about Globe Skimmer or Wandering glider (a species of dragonfly) which migrates from African continent. It was suggested that since IITR has long-standing ties with the African continent, this piece of information may be used as an interesting story to showcase our connection as well if establish. |
| 02 | April 14 , 2021 (Agenda 2) | **Water (Planning for distribution, monitoring, and maintenance including desired water quality to reduce water foot print):** Prof Bihu Suchetana, CED was assigned to undertake the water consumption issue and prepared a plan for the campus. It was discussed that the testing for the identification of dead zones and other regions within the water distribution system with relative lesser quality of water can be outsourced. Instruments can be deployed to detect water leakage. It was suggested that Prof Bihu should have a meeting with E&W to determine the zones for bulk water metering in the campus as well as the budget for the same, in a phased manner. It was informed that 1 MLD of treated waste-water from the sewage treatment plant is in use for watering of sports grounds and lawns. Prof Umesh Sharma Dean Infra informed the committee that the laying of underground pipeline for the same has been completed. To carry out this matter forward, it is essential to create awareness among the campus fraternity regarding sensible use of water and that the sweepers, gardeners and cleaners should also be part of this survey and awareness. Proposal of Prof Bihu Suchetana to carry out the survey of the water lines and carryout the | Prof Bihu Suchetana presented the plans for reduction of water consumption in IITR. The proposal explained how the planning for distribution, monitoring, and maintenance including desired water quality to reduce water foot print, can be done. Presentation for the same is attached at Annexure 2. She informed the committee that the survey about the water consumption has been sent out by the Green Committee on 21st July, 2021. The reminders for the same shall be sent on 27/07 and 31/07. She further mentioned that the GPR survey has been published on 17/07 and the bid for the same would close on 09/08.<br>**Further Actions**<br>The analysis of survey results would be undertaken and accordingly as per the responses, further actions regarding water metering can be taken. Monthly water conservation emails can be prepared and sent through GC email ID. Pamphlets/posters for installation near wash basins and other necessary locations can be prepared. GPR survey network analysis and water quality analysis at dead-zones/critical locations would be done. All technical decisions pertaining to that can be taken by Dean Infrastructure and their team. The feasibility of options between uni-directional meters, bi-directional meters or a combination of both can be taken by their team after a thorough study of GPR survey network as well as financial feasibility. A separate tab on the Green committee website can be prepared for water conservation which is up-to-date with all the activities undertaken in this regard, surveys, posters and their outcomes so that the campus fraternity is aware about all the initiatives. It was suggested that after |

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| | | water distribution quality and quantity analysis with the required funding of Rs.6.28 Lakh shall be supported by Dean Infra to kick-start the same. | analysing the data, a decision can be made to opt for low-flow options in hostels. The sanitary fixtures can be changed to more efficient fixtures, if deemed feasible, and the tangible outcome of the same, in the form of a report, can be launched on 25th Nov, 2021 (Foundation day), as a part of 175 years of celebration. The inundation based watering of lawns and grounds, must be looked into and solution to avoid that must be chalked out. |
| 03 | April 14 , 2021 (Agenda 3) | **Waste:** Prof BP Vellanki presented the matter of solid waste management on campus. After a detailed discussion on the same, it was decided that segregation of solid waste and Bio-methanation of organic part is considered as the option to reduce the waste contribution to the society and retrieving the energy from the waste. A detailed report on the feasibility, costing and land requirement shall be prepared by Prof BP Vellanki. For locating bio methenation plant the space shall be identified in the campus or otherwise Municipal Corporation of Roorkee shall be requested to provide. Any budget required for preparing the plan and detailed project report shall be provided by the institute. | Prof B.P. Vellanki from CED presented the comprehensive plan for solid waste management on campus. Presentation for the same is attached at Annexure 3. After a detailed discussion on the same it was deliberated that the waste management should be taken up on urgent basis.<br>**Further Actions**<br>It was suggested to develop and design the program to educate the campus fraternity to segregate the waste at the source itself. Awareness for the same can be done by placing a separate tab on the Green Committee website for Solid Waste management. All the upcoming actions, surveys and posters can be uploaded there from time-to-time so that the campus community is also aware about it. Emails in this regard can also be sent out through the GC email address. The waste segregated by the household members must be taken by separate vehicles. It was informed by Prof BP Vellanki that a site for installing bio-methanation plant has been identified near Cautley Bhawan. The detailed study on all components to implement the program including capital and O&M expenses would be discussed by Prof BP Vellanki with Deputy Director and Dean Infrastructure. Any financial assistance for preparing the plans, if required, shall be supported by Dean Infrastructure. As proposed by Prof Vellanki the plan for bio-methanation plant on pilot basis, with detailed cost, locations and O&M, shall be prepared and presented to the committee so that the same may be executed at the earliest. |
| | | Under the guidance of Prof BP Vellanki, Shri Praharsh and Shri Devesh students from the ECO Group presented the study conducted by them on the Paper, Plastic & Styrofoam Cutlery problems and substitutes. It was decided that this idea can be initiated by Student's council along with the co-operation of Bhawans and Mess, with the support of Associate Dean (Bhawan and Mess) and guidance of | Since 1st and 2nd year students are not back on campus due to the pandemic situation, the initiative did not take off.<br><br>This shall be taken up in due course. |

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| | | Prof BP Vellanki. This issue can be addressed in stages. One bhawan can be targeted in the first instance. Further decisions can be taken after seeing the results stage-wise. Prof. Avlokita Agarwal also suggested about an organization 'Maathi' who make clay/earthenware cups. This option might be considered after studying the feasibility of this proposal and looking at the stage-wise results. | |
| 04 | April 14 , 2021 (Agenda 4) | **Energy:** An order has been placed for the installation of 1 MWe Solar photovoltaic on hostels roof 1.89 per kWh for a power purchase agreement of 25 years expected to be completed by March 2021 and the work on Opex basis from a RESCO (Renewable energy sources company) recently. DPR prepared by PGCIL has been agreed by the institute and implementation work is under progress and expected to be completed by March 2021. | 866 kWp capacity out of total 1000 kWp capacity of Grid Connected Solar Photo Voltaic System have been commissioned at 08 different buildings in Roorkee campus as on 05 July 2021. Remaining 134 kWp SPV system shall be commissioned very soon.<br>**Further Actions**<br>Since IIT Roorkee is installing a capacity of 2.8 MW of roof top solar which may be the highest among sister institutions for which a thorough search may be made and if found confirmed, this initiative can be released to the media on 25th Nov, 2021 on occasion of IITRs 175 years of celebration. |
| | April 14 , 2021 (Agenda 4) | **Energy:** Use of energy efficient appliances and systems for reduction in electricity:<br>Use of energy efficient appliances in the campus is being practiced for several years. However this is being done in piecemeal. Recently a MOU has been signed by IIT Roorkee with Power Grid Corporation where they agreed to support the activities of energy efficiency and reduction in power consumption. A report has been received from Power Grid Corporation and shall be shared by institute engineer with green committee convener. It was decided to conduct an energy audit especially of non-residential areas. As has been done in the past, this can be done by involving the students through internship programmes. | As per information from Associate Dean Infra (El) the committee that the draft agreement has been submitted by PGCIL. Discussion is going on for finalization of technical and financial terms and conditions. Due to a medical emergency, there was a delay in this process. The agreement will be signed with PGCIL after approval of BoG at the earliest. |
| 05 | April 14 , 2021 (Agenda 5) | **Vehicles:** Proposal of procuring e-Car has been initially dealt by Prof In charge Vehicle and as per green committee minutes is being dealt by the convener of Green Committee since March 2020. MMS has again | An over-view on the summary of the discussions from the meeting held on 20th July, 2021 regarding purchase of E-Vehicles was given. Following was suggested:<br>It was suggested that a dedicated online booking system for E-vehicles can be created for the use of |

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| | | proposed the procurement through GEM but no quotations on GEM are being received even after 3 trials. Prof Arun Kumar suggested that the proposal to procure e-cars should be done directly from the manufactures/dealers. Dy Director will discuss the matter with DR MMS and necessary action for early procurement for e-Car / vehicle using the money available shall be taken. | campus fraternity. The rates can be regularized considering the running cost, driver cost as well as maintenance cost of the electric vehicle. The announcement of inauguration of the use of E-vehicles to the campus community can be officially done on 15th August ceremony in the Director's speech. To increase the usage and visibility of such vehicles, new models can also be introduced in the campus for the same. For trying an innovative approach, these vehicles can be used for renting out by the campus community. This can be probably done on trial basis and also professionally trained drivers must be hired for the same. Proper regulations can be drafted in this regard and a more rational approach can be taken towards it. It was decided that the drawings must be received before the ceremony so that the foundation can be established on the day of inauguration. Dean Infrastructure or Institute engineer can be approached for the same.<br>**Further Actions**<br>It was decided that the official announcement of this initiative can be made on the IITRs website for making the campus community aware. A media release on the same can be done on 25th Nov, 2021 on occasion of IITRs 175 years of celebration. |
| 06 | April 14 , 2021 (Agenda 6) | **Drainage on Campus:** Prof Arun Kumar, volunteered to undertake the planning of the mitigation for the drainage issue in the next 6 months with the support of E&W personnel as well as data (Topographical survey, details on existing drainage etc.) and other faculty members. | Based on the activities undertaken in the past regarding the issue of drainage in the campus following shall be carried out.<br>(a) Plan pumping station in the continuing education centre area on similar line as provided for teacher hostel area with flap gate. The pumping station should be fitted with level sensor for auto operation. Shri Neeraj Kohli, AEE shall arrange the details on the existing drainage pumping stations and shall plan a new pumping station for continuing education centre. (Drawings and details of two pumping stations at OTH and NTH stands submitted. Proposed location (tentative) of the new pumping station at CEC is also submitted. Before estimation of work, capacity of this new station is to be determined.<br>(b) To examine and plan the smooth flow of rain water from the exit drain near the STP at Khanjarpur. Institute Architect shall get a topographical survey carried out of the drain from the exit point of the drain of institute to end. The topographical survey shall cover a longitudinal section of the drain in the scale of 1:1000 and cross section of the drain at every 30 m interval in a scale of 1:100. It shall help in planning and designing the exit drain so that water accumulation in the campus is minimized. (The topographical survey is to be |

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| | | | carried by an external agency. But it could not be taken up because of restriction imposed by the government due to Covid pandemic.)<br>(c) Shri Neeraj Kohli shall also arrange the drawings for the existing drains emerging from Niti Nagar area to NIH Chowk and covered drain from NIH chowk to STP area/Khanjarpur. E&W office may also look forward the past communications with the District administration related to the clearance of drain and any data related to drainage issues. (Drawings for existing drain emerging from Niti Nagar to NIH Chowk and covered drain from NIH chowk to STP area are not available presently. Every year district administration is being communicated related to clearance of drain off from STP to Kahanjarpur and ahead prior to the commencement to the rainy season. However, in order to prevent inundation of water inside the campus an external drain is also being cleared by our sanitation staff every year).<br>(d) In last few years, the excavated soil from the different part of the campus have been brought and spread in the area near Saraswati Mandir ground and ABN Ground and this has led to higher elevation of the ground thus reducing the area for retention during high rains. The dredging of the area up to desired depth so as to make their levels lower than the existing ground level shall be carried out by E&W. The extent of the depth for dredging shall be communicated by Prof Arun Kumar to E&W. (Soil excavated from the bhawan site and MHSS site is stacked by the CPWD on the plot beside saraswati mandir. The major quantity of the soil has already been disposed by the CPWD. However, in order to achieve the actual level some more soil is required to be shifted. Since, because of mining issue the work of disposal of soil has become cumbersome process. CPWD has already been conveyed for taking action with regards to its lifting. However, it is conveyed by them that left out soil shall be consumed for back filling at soil and they will take some time. The level of ABN ground was also raised because of stacking of surplus soil excavated from the different sites of NBCC. It was levelled in emergency for taking up the student function. We have to arrange the permission from the local district administration which again is a cumbersome process and also involved financial implication.) |
| | | | **Further Actions** |
| | | | It was discussed that the Institute Architect shall share the drawings of all the drainage plans for further actions to be taken. Topographical survey |

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| | | | of drainage from STP to Solani river may get carried out by IA asap. It was also deliberated that the soil-disposal is becoming a very critical activity and the solution to mitigate this issue must be solved at the earliest. |
| 08 | April 14 , 2021 (Agenda 7) | **Implementation of Mini-forests in IITR:** Green committee recommended that pilot site (Area beside Temple, along the periphery of the volley ball court-3 or 3.5 m wide strip) for Miyawaki forest project be approved by the ISCM (Institute Space Management Committee) and the required funding in the order of Rs. 2.5 lakh be provided by Estate and Works. Post the approval The Estate and Works office may write formerly to the NGO (SayTrees organisation) for starting the project. | MoA has already been sent by IIT Roorkee to SayTrees organisation for the initiation of work. As per the email dated 20th July 2021 from Mr. Shivam (Project Manager, NGO), they are planning to execute the plantation for next week. They will order material by the end of this week. It will take 3-4 days to reach the site. We will get the quotation for the materials in a day or two. IITR has to arrange vermi-wash and mulching material accordingly. They will also need a JCB for soil preparation. NGO members have also requested to arrange for the accommodation.<br>**Further Actions**<br>As informed, the plantation work for the same must be carried out at the earliest as per the email from NGO. Prof BP Vellanki informed the committee that he would have a discussion with Dean Infra regarding the advance payment schedule of the project as mentioned by the NGO. The advantages of Mini-forests using Miyawaki technique viz to increase the green cover, biodiversity and carbon sequestration were described in brief by the committee members. |
| 09 | April 14 , 2021 (Agenda 8) | **Water Conservation Implementation Plan in IIT Roorkee**: As informed by Prof Khare, aggregates are available but are not the ideal choice for the filter material as compared to boulders and pebbles. Since boulders and pebbles are taken from the river bed, there are restrictions from the State Government for their use. Prof Sharma, Dean Infra suggested that the same can be arranged from the adjoining States. Prof Khare to provide Dean Infra with a detailed report along with the type and quantity of filter material needed to process the same. Prof Khare also informed that the testing of the 4 installations for the demonstration would be done in the upcoming | **Further Actions**<br>As per email sent by Shri Neeraj Kohli on 24th July, 2021, pebbles and boulders are required as filter materials. The broken aggregate is very easy to get but what they require are uncut pebbles and boulders as found naturally. In the past two months, they had talked with various people at Haridwar, Biharigarh, Bhogpur, MP and Panchkula. Due to government restrictions, it is hard to get. There is a positive response from Panchkula and hopefully they would close this point by Friday.<br>**Further Actions** |

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| | | monsoon season. It was also decided that the cleaning and maintenance of the roofs for this project can be assigned to the designated JEE of the area pre-monsoon just for these 4 installations (RT-RWH-Recharge, RT-RWH-Storage, Recharge Shaft and Recharge Pit). For long term purposes, the caretaker of the respective departments/bhawans as assigned by the institute shall carry out the cleaning and maintenance works periodically. It was also discussed that recharge shafts and groundwater recharge pits should be constructed along the roads, at the lowest points, to avoid the problem of flooding in the monsoons as well as to facilitate the issues of drainage as mentioned in the earlier point of 'Drainage on campus'. The maintenance and cleaning for the same shall be looked into as the project progresses further. The filter material is awaited from E&W. | The committee to be updated with this matter by the next meeting. |
| 10 | April 14 , 2021 (Agenda 9) | **Other Items:** The awareness campaign of the green committee has been started. E-poster has been sent to all the students, faculties and staff members of the institute. It was also displayed at the LED screen and hard copies of the same are being put up in the notice boards of all the departments and hostels. The poster for the same has been attached herewith. To further facilitate this, an email ID for the Green Committee office has been created where the campus community can share their feedbacks/suggestions/queries. The document with the compiled responses would be presented so that necessary actions can be taken by the concerned faculties. Also the first theme of, "Dry/waste leaves disposal", under this campaign has been rolled out along with the questionnaire to create awareness. | To mitigate the issue of burning of dry leaves, the details of leaf shredders have already been shared by Prof M.L.Kansal with the E&W office. Institute Architect to carry out the work in this regard and update the committee with the same.<br>**Further Actions**<br>Institute Architect informed the committee that looking at the quantity of dry leaves generated in the campus every day, the size and capacity of the shredder would be decided. This job can be assigned to a Junior Architect and the committee should be updated by the next meeting regarding the progress of the same. |

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| | April 14 , 2021 (Agenda 9) | **Other Items:** As per ADOSW, the hostel staff has been instructed to use gloves and masks in the mess and bhawans. The use of Covid precautions has increased in the students by the staff as well as the students. The Chief Wardens and Mess Wardens have been instructed to keep surgical masks in the hostels for the staff and the students. For the disposal of the masks and the gloves, pamphlets and the signboards have been provided at the key places in the bhawans. Prof Umesh Sharma, Dean Infra informed that sanitization staff was not able to collect the waste from the individual households due to Covid cases. To combat this issue, an outside agency has been hired to collect the bio-medical waste in such Covid infected areas (houses and hostels). They would be placing big waste containers outside every zone for the safe disposal. The final details of the proposed plan would be shared in the coming few days by the Dean Infrastructure. | The following initiatives taken by IITR to fight against COVID. Following additional measures have been taken by the Estate and Works in view of sudden spike in Covid infections in the campus:<br>1. A dedicated control room has been established in a room in KIH for immediate sanitization of the surroundings and premises (including lifts in case of multi-storey buildings) of the infected residents. A well-equipped team with PPE kits and sanitization material shall remain available in the control room 24X7. A landline inter-com telephone with No 4747 shall remain functional 24 hours for contacting the team.<br>2. In order to pick and dispose off the solid waste from the residences of infected staff and from Ganga Bhawan (Covid care Centre) as per the relevant guidelines, an agency has been hired. This agency, who specializes in picking and disposing off bio-medical waste, shall start its operations from tomorrow onwards. Separate dustbins have been placed near the entry gate of these residences.<br>3. The sanitization of all the Departments, Hostels, residential colonies etc. was already started from 1st April, but the same has now been further expedited. The frequency of this exercise has also been increased. |
| | April 14 , 2021 (Agenda 9) | **Other Items:** M&M office regarding purchase of the recycled paper, shall take necessary action immediately for the for the people use in departments and administrative offices. | The committee was informed that the M&M office has already arranged the sample of recycled paper for photocopying (A4 & A3 size) in the offices but were not of good quality. M&M office now arranging the samples envelopes and file covers made from recycled paper for feedback etc and based on the feedback they will proceed with further procurement. |
| 11 | April 14 , 2021 (Agenda 10) | **Hazardous Waste:** Chairman informed that Hazardous waste is being successfully collected from the Department of Chemistry and Department of Metallurgical and Materials Engineering. The deputy director has been requested to review the same in the meeting with the safety office so that this can become a regular sustainable feature in the campus. It was decided in a meeting held in Dec 2020 Chaired by Dy Director that a central storage for hazardous waste shall be constructed by E&W by June 2021. E&W may approach Institute Space Management Committee for the | An over-view on the summary of the discussions from the meeting held on 20th July, 2021 regarding disposal of Hazardous waste and its management was made. Following points were mentioned:<br>- Shri Vishwanandan Kumar, Safety Officewr, informed the members that the collection of the hazardous waste materials happens quarterly. TSDF would collect the waste for the current quarter this week. No hazardous waste was generated from the Metallurgical and Materials Engineering department for this quarter. A detailed report on all the hazardous waste collected and managed from the 4 departments namely Chemistry, Chemical Engineering, Metallurgical and Materials Engineering and Biosciences and Bioengineering, would be sent to the fellow members for reference, by the Safety office shortly. |

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| | | allocation of the space and thereafter execute the work at the earliest. | - It was mentioned by Prof BP Vellanki that all the major generators of hazardous waste have been recognized and the process to manage that has been streamlined.<br>- It was suggested that the safety office can talk and visit each and every department, which are potential areas for waste generation, to sensitize them. All the other departments can be made aware through some notification or email communication regarding the safe disposal.<br>- It was decided that an online workshop can be organised by the safety office with support from all the HOD's of the departments present along with Prof BP Vellanki and Prof Deepak Kumar Ojha, preferably on 14th August 2021 for about 2 hours. It can be targeted for PhD students specifically as well as for people who are responsible for generating waste. The workshop can be on 'Collection, handling and disposal of hazardous waste'. A presentation can be made on TSDF in the presence of in-house experts and all our internal resources pertaining to this subject. Professional experts can be invited if needed.<br>- It was also discussed that it should be the protocol for all the people dealing with hazardous waste in the labs that no chemical must be left unlabelled and the expiry dates should be mentioned for the same.<br>- To further sensitize the campus fraternity, digital posters can be made on proper disposal of hazardous waste management, so that people are aware of the same. Printed posters in Hindi and English can be prepared and can be put up in the concerned departments as well as safety office. These can be prepared by Ms. Saylee Bhogle with the guidance of Shri Vishwanandan Kumar and Prof BP Vellanki.<br>- In the long term, to ensure sensitisation of research scholars from waste generating departments, every year, or at the time of registration of the PhD students, the students will have to pass an objective quiz. A set of slides about guidelines and what needs to be done in different scenarios, will be provided prior to the quiz. Also, to inculcate habit among the student community, student volunteers from each Department will try to ensure good lab waste handling and storage practices in the labs in the department.<br>- Students who do well in the quiz along with a team of students from prominent departments (5-6) can assist the safety office in providing reports if any violations are observed in the labs relating to disposal of chemicals. Safety office can visit the labs, monitor and audit them |

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| | | | - With regards to the central storage space for waste, it was informed by Prof BP Vellanki that currently the practice of localized storage at every department is followed. This was considered feasible in a meeting with ISMC at this point since it would be unsafe to have a central storage space for all the chemicals in case of an accident.<br>- It is to place in the record that due to initiative of GC and regular follow up by Dy Director with safety office and guidance of Prof Vellanki and Prof Deepak Jha such streamlining of the process was effected. |
| | | | **Further Actions** |
| | | | It was discussed that all the emails pertaining to the disposal and management of Hazardous waste management can be sent from GC email address as well. These updates can be made as a regular feature so that the campus fraternity is made aware of this issue. The emails sent from the Safety office can also be shared by the Green Committee. Surveys and posters can be put up on a separate tab on the Green Committee's website. It was decided that a small de-centralized storage facility in individual departments can be constructed so that storage and collection can be facilitated with ease. The online workshop on 'Collection, handling and disposal of hazardous waste' must be organised at the earliest. |
| 12 | - | **Solarification of the IITR:** Based on the census, a status report prepared by Ms. Saylee Bhogle, Project Associate under guidance of Prof Arun Kumar, for all the 11 Bhawans with Solar Water heating system and 9 Mess areas with Solar Steam Cooking system so that actions can be taken in this regard wherever the systems are not working / non-operational. Reports for the same have already been sent to Associate Dean Electrical for taking remedial actions. E&W started working on the same | The committee was updated with the following details.<br>**For 09 Bhawans, where Evacuated Tube Collectors (ETC) based Solar Water Heaters are installed:**<br>The matter was discussed with M/S TATA Power Solar System Ltd (AMC Contractor) and all the broken Evacuated Tubes at Bhawans have been replaced. However, few make up tanks and few storage tanks have to be repaired / replaced very soon.<br>**For 02 Bhawans, where Flat Plate Collectors (FPC) based Solar Water Heaters are installed:**<br>1 no. damaged storage tank and 1 no. broken surface glass at Kasturba Bhawan, shall be repaired / replaced very soon. Except that all systems are ok.<br>**For Solar Steam Cooking systems:**<br>All systems are in working condition but as all Bhawan's mess are closed due to Covid-19, so they are in shut down. |
| | | | **Further Actions** |
| | | | It was also mentioned that the team assigned with this work should take up this matter seriously and promptly to avoid such issues again in the future. |

**Agenda 2. Discussion on the proposed plans for reduction of water consumption by Prof Bihu Suchetana**

This agenda has already been covered in point 02 from actions taken report and the presentation for the same has been attached in Annexure II.

**Agenda 3. Proposal by Dean Saharanpur Campus for Greening Saharanpur Campus:**

A meeting of the Institute Level Green Committee (Saharanpur Campus) was held on 06-05 2021. An over-view of the matter which was discussed during that meeting was given. Prof Y.S.Negi, Dean Saharanpur Campus gave a presentation on the bio-diversity found in the Saharanpur campus. He mentioned that the Dean infrastructure may get the Master Plan approved after a detailed study and review and then only a proper Green Development work in SRE Campus can be initiated with the help of Institute Architect and Horticulturist in coordination with the Saharanpur campus Green Committee members and staff. Dean Saharanpur must share the Masterplan with Dean infra at the earliest for approval.

It was suggested that 1-2 faculty members from Saharanpur campus may be invited to participate in the next GC meeting. Also, Institute Space Management Committee (ISMC) can be approached by Dean Saharanpur campus for the greening of the campus.

**Agenda 4. Any other item with the permission of the chair:**

Prof AK Chaturvedi suggested that the emails, surveys and activities for all the agenda points of the Green Committee should be sent to the campus fraternity regularly through the Green Committee email address as well. Separate tabs must be added for every initiative like Water Conservation, Waste management etc. on the GC website so that people can track the progress as well stay updated with all the initiatives taken by the committee for making our campus sustainable.

Prof Arun Kumar informed the committee that the one year tenure of Ms.Saylee Bhogle, Project Associate will be completed on 19$^{th}$ August 2021. Since she is not seeking an extension of the project due to her plans of further education, a new project associate shall be hired.

The next meeting for the Green Committee is tentatively schedule for the first fortnight of October 2021.

Meeting ended with the vote of thanks to the chair.

Annexure:

1. Presentation on flora fauna survey of IITR campus by Dr. R Suresh Kumar, WII.
2. Presentation on Reduction of water consumption in IITR by Prof Bihu Suchetana
3. Presentation on Solid Waste Management to reduce waste disposal in IITR by Prof BP Vellanki
4. Presentation on Greening of campus and bio-diversity on Saharanpur campus by Prof Y.S.Negi, Dean Infrastructure.

**Annexure 1**

**1. Presentation on flora fauna survey of IITR campus by WII**

# *Biodiversity of an Urban Greenspace...*

*an inventory of the flora and fauna of the IIT Roorkee campus, Uttarakhand*


## *Biodiversity of an Urban Greenspace…*

*The proposed study at the IIT-Roorkee campus will focus on inventorying:*

*plants*
*butterflies & moths*
*cicadas, ants, spiders*
*amphibians & reptiles*
*birds & mammals.*

## *Biodiversity of an Urban Greenspace…*

**Project duration:** 9 months
(March to November 2021)

**Seasons:** Spring
Monsoon
Autumn

## *the Wii Team...*

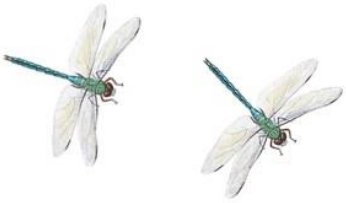
| S. No | Taxa Group | Expert/Faculty | Researcher |
|---|---|---|---|
| 1 | Plants | Dr. Navendu Page | Mr. Sachin Rawat |
| 2 | Insects | Dr. V.P. Uniyal | Mr. Ashu Gupta |
| | | Mr. Vivek Sarkar (Cicadas) | Mr. Mohammad Abdus Shakur (Ants) |
| 3 | Spider | Dr. Manju Siliwal | Ms. Nikitha Iyer |
| 4 | Amphibian & Reptiles | Dr. Abhijit Das | Mr. Pranav Gokhale |
| 5 | Birds & Mammals | Dr. R. Suresh Kumar | Mr. Harindra Baraiya |
| | | Dr. Pratap Singh | |
| | | Dr. Dhananjai Mohan | |

## *Biodiversity of an Urban Greenspace...*

## Time lines

**Field work:** August to October 2021

**Project Report:** Mid November 2021



## *Biodiversity of an Urban Greenspace...*

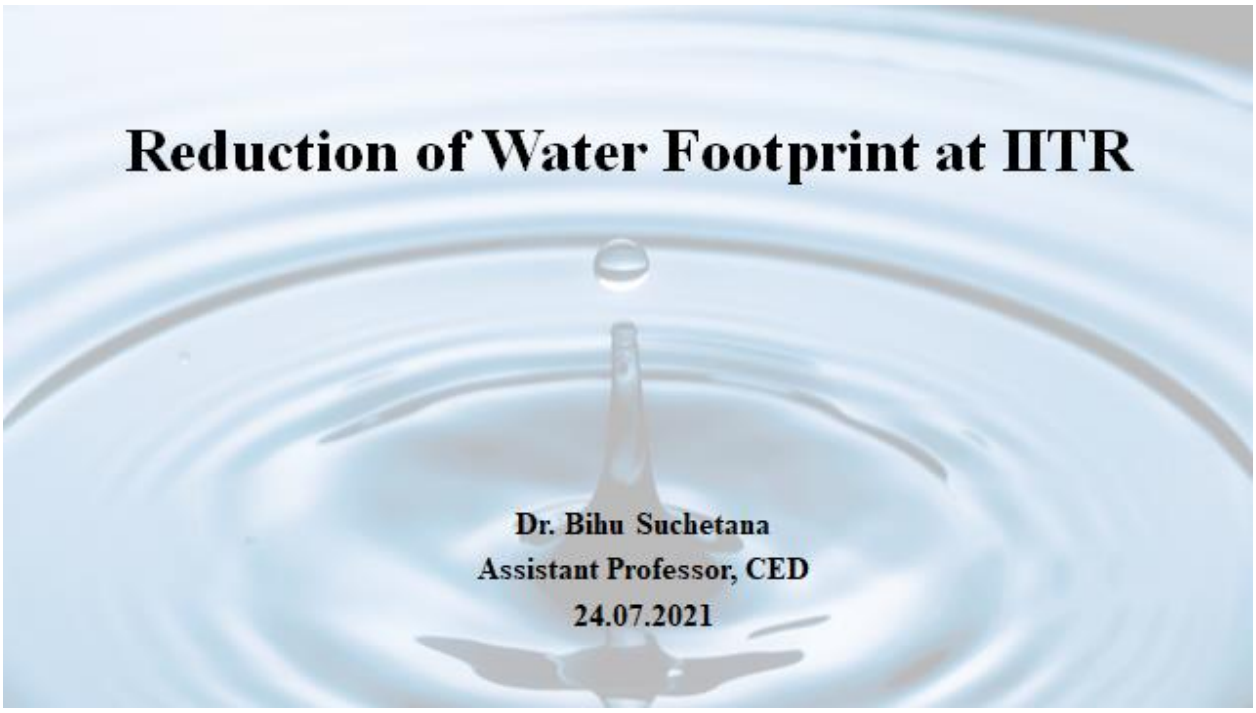
- It is expected that this inventory will create awareness among residents of the IIT-Roorkee campus on the positive benefits of living in a greenspace

- The information on the floral and faunal species that exist in the campus is expected to make people more environmentally conscious

- It is expected that this inventory will further the activities being undertaken by the Nature/Environmental club of the IIT-Roorkee campus

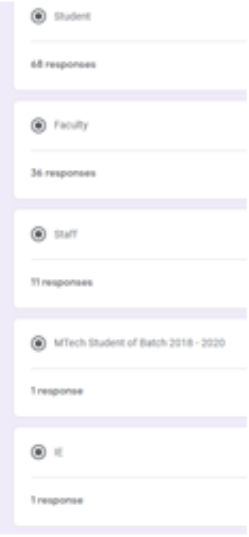
**Annexure 2**

**2. Presentation on Reduction of water consumption in IITR by Prof Bihu Suchetana**




| TASK | STATUS |
|---|---|
| Tender | • Tender for GPR survey published on 17/07. Bid closes on 09/08<br>• Period of completion: 3 months |
| Survey | • Green Committee email on 21/07. Last date to submit 31/07.<br>• Reminder email on 27/07 and 31/07<br>• Faculty, staff, students |
| Next steps | • Analysis of survey results<br>• Preparing monthly water conservation emails<br>• Preparation of pamphlets/ posters for installation near basins & other necessary locations<br>• GPR survey network analysis and water quality analysis at dead-zones/ critical locations |

# Survey: Summary Results





**ADDITIONAL SUGGESTIONS**

- Water metering
- Rooftop rainwater harvesting
- Fixed and previously-known schedules for supply of recycled water. Cut-off freshwater supply
- Stop inundation based watering of lawns and grounds, especially in summer



Students worked on survey: Siddharth Singh Baghel, Siddharth Yadav, Yash Gurjar

# Water Metering: Preliminary information

- Meeting with Mr. Kohli and Mr. Kumar on 20/7 on possible locations and plan of action for installation of water meters
- KEY CONSIDERATIONS:
  - Grid network: bi-directional flow, radial (uni-directional) at start and end points of network
  - Meters should be bi-directional, communicable, IP (Ingress Protection) 65 or higher- CUSTOM QUOTE FROM VENDOR
  - Reference: uni-directional meters installed cost~1.5 lakhs each
- POSSIBLE WAY FORWARD:
  - OPTION 1: Bi-directional meters, bulk supply measured at certain locations
  - OPTION 2: Uni-directional meters, at major consumption clusters- Hillview, Himgiri etc where flow is radial.
  - OPTION 3: Combination of bi-directional and unidirectional meters
- Location of meters should be decided based on a detailed network study

**Annexure 3**

3. **Presentation on Solid Waste Management to reduce waste disposal in IITR by Prof BP Vellanki**

# Solid Waste Management

- Preliminary report
  - Submitted this week
  - Meet

## Plan to ensure segregation

# 4 pronged approach

1. Sensitisation of residents
   - Email
   - Department level meeting
   - Student visits to residence
2. Sensitisation of maids
3. Redefining roles of waste collector
4. Infrastructure and support
   - App development
   - 4 bin approach
   - Increase capacity to collect waste within one day
   - Remove public waste dumping bins
     - Security camera

# Sensitisation of residents

## Email

- Faculty and Staff
  - the need for waste management
  - plan for waste management (bio methanation) unit on campus
  - need for waste segregation into two categories
  - Kitchen waste/biodegradable waste/wet waste
  - Dry/non-biodegradable and recyclable waste
  - benefits (manure and energy or gas)
  - convey plan for student teams to visit residences
  - plan for ensuring waste segregation

# Sensitisation of residents

### Department level meeting

- Meeting between HOD and faculty & staff
- Sense of ownership
  - Take suggestions

# Sensitisation of residents

### Student visits/call

- Team per block of residences
- Weekend visit
- Explain way forward and use of App to facilitate segregation
- Follow up visit based on info from App

## Sensitisation of maids

- Incentives to attend meeting
- Multiple meetings to work around timings

## Redefining roles of waste collector

- Sensitisation
- 1st month after first student visit or departmental level meeting
  - remind the resident
  - enter info into App
- During 2nd and 3rd months
  - Fine will increase exponentially
  - Take photo and upload to app
- From 4th month
  - Waste is not picked up

# Infrastructure and support

- App development
- Provide 4 bins to each residence
  - Incentive
  - Convey intent
- Increase capacity of waste collection
  - ensure waste collected from each home within one day
  - all day collection
- Remove public waste dumping bins
  - Security cameras at bins that cannot be removed

**Annexure 4**

4. **Presentation on Greening of campus and bio-diversity on Saharanpur campus by Prof Y.S.Negi, Dean saharanpur**

भारतीय प्रौद्योगिकी संस्थान रूड़की
Indian Institute of Technology Roorkee

सहारनपुर परिसर
SAHARANPUR CAMPUS

भारतीय प्रौद्योगिकी संस्थान रुड़की सहारनपुर परिसर
में सभी पौधों और पेड़ों की सूची।

# अशोक
## (परिसर में पेड़ों की संख्या- 289)

अशोक प्रकृति से लघु, रूक्षा, चरपरा, विपाक में कड़वा और शीतल होता है। यह दर्दनिवारक, रंग गोरा करने वाला, हड्डी जोड़ने वाला, सुगन्धित, हृद्य,तीन दोषों को हरने वाला, प्यास, जलन, कृमि, सूजन, दर्द, पेट का रोग, आध्मान या पेट का फूलना , विष, अर्श या पाइल्स, रक्त संबंधी रोग, गर्भाशय की शिथिलता, सर्व प्रकार के प्रदर या लिकोरिया, बुखार, जोड़ो का दर्द और अजीर्ण या अपच आदि रोगों का नाशक है। इसका प्रयोग कृशार्तव, रक्तपित्त (नाक-कान से खून बहना), अश्मरी या पथरी तथा मूत्रकृच्छ या मूत्र संबंधी रोग में करते हैं। अशोक की छाल (ashok chhal) कटु, तिक्त या कड़वी, बुखार व तृषा (प्यास) नाशक, रक्त-विकार, थकावट, शूल या दर्द, अर्श या पाइल्स इत्यादि रोगों में लाभदायक होता है।

स्थान- वेस्ट साइड बाउन्ड्री वॉल के पास, निवास ए -6 के सामने, निवास बी -6 के पीछे की ओर , क्रिकेट के मैदान के पूर्व की ओर, कैंटीन के पास, मालवीय भवन की बाड़ के पास, त्रिवेणी अपार्टमेंट के पास, मालवीय भवन के सामने की ओर की बाड़,

# पीपल
## (परिसर में पेड़ों की संख्या- 16)

- पीपल के पत्ते के फायदे से आखों के रोग ठीक किए जा सकते हैं। पीपल के पत्तों से से जो दूध (आक्षीर) निकलता है, उसको आख में लगाने से आखों में होने वाला दर्द ठीक हो जाता है।

स्थान- गेट नंबर 1 के पास, एन ब्लॉक के पास, निवास के पीछे की ओर A-3, निवास के पीछे की ओर B-4, निवास के सामने B-4 गैरेज के पास, निवास के पीछे की ओर C-6, E-I के सामने गैराज के पास, डी -10 के पीछे की ओर, सरस्वती मंदिर, निवास के पीछे की ओर सी -10, त्रिवेणी अपार्टमेंट के पास, मालवीय भवन बी ब्लॉक ईस्ट साइड

# चंपा

**(परिसर में पेड़ों की संख्या- 67)**

- सिर दर्द में चम्पा के फूल के इस्तेमाल से फायदे मिलते हैं।

**स्थान- गेट नंबर 1 के पास, चिल्ड्रन पार्क, गेट नंबर 2 के पास, प्रशासनिक ब्लॉक से गेट नंबर 5 रोड साइड एरिया में गेट नंबर 1 से जिमनेजियम के पास, गेट नंबर 2 के पास, D-I के सामने, C-9 के सामने, B-4 रोड साइड एरिया के सामने, एडमिनिस्ट्रेटिव ब्लॉक से गेट नंबर 5 तक, सभागार लॉन के किनारे,**

# मोरपंखी

**(परिसर में पेड़ों की संख्या- 128)**

मोरपंखी का पौधा घर की शोभा बढ़ाने के साथ साथ यह कई चीजों में फायदा भी पहुँचता है। मोरपंखी के पौधे को अगर वास्तु के अनुसार लगाया जाए, तो यह घर में सुख समृद्धि का भी प्रतिक माना जाता है।

**स्थान-पुराने डीन कार्यालय के पास, रखरखाव की दुकान के पीछे की ओर, सी-9 के सामने सड़क के किनारे का क्षेत्र, बी -4 से डिस्पेंसरी का रोड साइड एरिया, डिस्पेंसरी के पास, क्यू ब्लॉक के पास, प्रशासनिक ब्लॉक रोड साइड एरिया,**

# चांदनी

**(परिसर में पेड़ों की संख्या- 214)**

- कहते हैं रातरानी की खुशबू सूंघने से तनाव कम होता है और इसकी सुगंध से टेंशन, डर और घबराहट भी कम होती है।

**स्थान**-जिम के गेट नंबर 1 के रोड साइड एरिया, चिल्ड्रन पार्क, डिस्पेंसरी, क्रिकेट फील्ड, बैक साइड कारपेंटरी शॉप, क्रॉसिंग टू गेट नंबर 6, त्रिवेणी अपार्टमेंट के पास, मालवीय भवन रोड एरिया के सामने, डी -6 के सामने से डी-1 रोड साइड एरिया, डी-टाइप रोड साइड एरिया, बी-4 के सामने डिस्पेंसरी तक

# बोगनवेलिया

**(परिसर में पेड़ों की संख्या- 19)**

- इस पौधे में एंटी इन्फ्लेमेटरी गुण पाए जाते हैं जो त्वचा की समस्याओं को भी दूर करने में काफी फायदेमंद होता है।

**स्थान- गेट नंबर 1 के पास रोड साइड एरिया, रोड साइड एकता क्लब के पास, त्रिवेणी अपार्टमेंट के पास, रेजिडेंस बी-4 से डिस्पेंसरी के सामने, एडमिनिस्ट्रेटिव ब्लॉक से गेट नबर 5**

# आंवला

**(परिसर में पेड़ों की संख्या- 17)**

- **आंवले** में भरपूर मात्रा में विटामिन C पाया जाता है जो इम्यूनिटी और मेटाबॉलिज्म बढ़ाने का काम करता है. **आंवला** कोल्ड, कफ के अलावा शरीर में वायरल और बैक्टीरियल इंफेक्शन नहीं होने देता है. **आंवले** में ऐसे तत्व भी पाए जाते हैं जो कैंसर सेल्स से लड़ने का काम करते हैं।

**स्थान-एस एंड क्यू ब्लॉक के पास, आवास बी-3 के सामने, निवास डी-1 के पास, मालवीय भवन के सामने की ओर ए ब्लॉक, आवास बी-3 के सामने, सभागार के पास, मालवीय भवन उद्यान क्षेत्र के पास।**

# कटहल

**(परिसर में पेड़ों की संख्या- 10)**

- कटहल में फाइबर भरपूर मात्रा में होता है। इससे पाचन बेहतर होता है और वह वजन कम करने में मदद करता है।

**स्थान-टी ब्लॉक के पास, निवास के सामने ई-1, निवास के पीछे की ओर एफ-1, निवास के पीछे की ओर डी-10, पुराने डीन कार्यालय के पास, गेस्ट हाउस के पास, मालवीय भवन के सामने ए ब्लॉक, क्यू एंड एस ब्लॉक के पास।**

# लीची

**(परिसर में पेड़ों की संख्या- 4)**

- आयुर्वेद में लीची सिर्फ अपने मधुर स्वाद के लिए ही नहीं, बल्कि अनेक औषधीय गुणों के कारण भी जाना जाती है। लीची गर्म प्रकृति वाली फल है, जो गठिया के दर्द, वात तथा पित्त दोष को कम करती है।

**स्थान- Q-ब्लॉक इंदिरा भवन के पास, निवास के पीछे की ओर A-3, निवास D-। के पास।**

# कोको

**(परिसर में पेड़ों की संख्या- 1)**

- इस पौधे के बीज का उपयोग कॉफी पाउडर बनाने के लिए किया जाता है।

**स्थान- Q एंड S ब्लॉक के पास।**

# जामुन
## (परिसर में पेड़ों की संख्या- 73)

- यह शुगर के रोगी के लिए एक उपाय के रूप में प्रयोग किया जाता है|

**स्थान- टी ब्लॉक के पीछे की तरफ, के ब्लॉक के पीछे की तरफ, एन ब्लॉक के पास, गेट नंबर 2 के पास, निवास ए-3 के पीछे की तरफ, निवास ए -4 के पीछे की तरफ, निवास बी -1 के पीछे की तरफ, पीछे की तरफ निवास A-2, निवास के पीछे की ओर C-5, निवास के पीछे की ओर E-7, निवास F-I के पास, STP के पास, STP के सड़क के किनारे, निवास का पिछला भाग D-8, निवास का पिछला भाग D-7 , सरस्वती मंदिर के बगल में, निवास सी-10 के पीछे, कैंटीन क्षेत्र के पास, पावर हाउस के पीछे, मालवीय भवन बी ब्लॉक के पास, मालवीय भवन ए ब्लॉक |**

# सिल्वर ओक
## (परिसर में पेड़ों की संख्या- 70)

सिल्वर ओक पूर्वी तटीय ऑस्ट्रेलिया का मूल निवासी है। यह एक तेजी से बढ़ने वाला सदाबहार पेड़ है, जिसकी ऊंचाई 18 से 35 मीटर के बीच होती है, जिसका व्यास 1 मीटर से अधिक होता है। यह उपोष्णकटिबंधीय और शुष्क वर्षावन वातावरण में सबसे अच्छा बढ़ता है, प्रति वर्ष 1,000 मिमी से अधिक की औसत वर्षा प्राप्त करता है।

**स्थान- टी ब्लॉक का पिछला भाग, निवास का पिछला भाग A-I, निवास का पिछला भाग A-2 और A-3, निवास का पिछला भाग A-3, निवास का पिछला भाग B-4, औषधालय के पास, त्रिवेणी अपार्टमेंट के पास|**

# जक्रेंडा

**(परिसर में पेड़ों की संख्या-4)**

- एक उष्णकटिबंधीय अमेरिकी पेड़ जिसमें नीले तुरही के आकार के फूल, फर्न जैसे पत्ते और सुगंधित लकड़ी होती है।

**स्थान- टी ब्लॉक के पीछे की ओर।**

# सिमंभल

**(परिसर में पेड़ों की संख्या- 13)**

- एंटीऑक्सीडेंट होने के कारण सेमल रक्तचाप को कम करने में मदद करता है और दिल के लिए भी अच्छा होता है। जब प्राकृतिक मेढ़ों के रूप में उगाया जाता है, तो यह पेड़ कई परागणकों को आकर्षित करता है और कभी-कभार जलाऊ लकड़ी की मांग को पूरा करने के अलावा खेत जानवरों के लिए चारा प्रदान करता है। सेमल आग प्रतिरोधी पेड़ है।

**स्थान- R ब्लॉक के पीछे की ओर, निवास के सामने बी-1, निवास के पीछे की ओर सी-2, एस.टी.पी के पास, चिल्ड्रन पार्क, सभागार के पीछे की ओर।**

# अमरूद

## (परिसर में पेड़ों की संख्या- 88)

- इसकी पत्तियों को चबाकर खाने से मुंह के छाले, मसूड़ों में सूजन और मुंह से खून आने की समस्या ठीक होती है।

स्थान-टी ब्लॉक के पीछे, एम ब्लॉक के पास, निवास के पीछे -1, निवास के पीछे ए -2, निवास के पीछे ए -4, निवास ए -6 के पीछे, निवास के सामने बी -1, सामने बी -3 में , निवास का पिछला भाग C-1, निवास का पिछला भाग C-4, निवास के सामने E-1, निवास का पिछला भाग E-7, निवास के पास F-1, निवास के पीछे F-4, निवास D का पिछला भाग -10, निवास का पिछला भाग D-7, निवास का पिछला भाग D-5, निवास का पिछला भाग D-3, निवास का पिछला भाग B-5, निवास के सामने B-6, कैंटीन के पास, पावर हाउस का पिछला भाग और सेंट्रल स्टोर, त्रिवेणी अपार्टमेंट के पास, मालवीय भवन बी ब्लॉक के आसपास का क्षेत्र, ए ब्लॉक के सामने की ओर, निवास की सड़क के किनारे डी-1।

# चीकू

## (परिसर में पेड़ों की संख्या- 6)

**चीकू** में विटामिन ए भरपूर मात्रा में पाया जाता है और यह आंखों को सेहत मंद बनाए रखने में सहायता करता है।

**स्थान-के ब्लॉक के पीछे की ओर, एम ब्लॉक के पास, निवास के पीछे की ओर डी-8, मालवीय भवन बी ब्लॉक के आसपास का क्षेत्र।**

# आम

## (परिसर में पेड़ों की संख्या- 148)

आम मीठा, चिकना, शौच साफ़ लानेवाला, तृप्तिदायक, हृदय को बलप्रद, वीर्य की शुद्धि तथा वृद्धि करनेवाला है। यह वायु व पित्त नाशक परंतु कफकारक है तथा कांतिवर्धक, रक्त की शुद्धि करनेवाला एवं भूख बढ़ानेवाला है। इसके नियमित सेवन से रोगप्रतिकारक शक्ति बढ़ती है।

**स्थान-एम ब्लॉक के पास, निवास के पीछे ए-1, निवास के पीछे की ओर ए-2, निवास के पीछे ए-4, निवास के सामने की ओर बी-1, आवास के सामने की ओर बी-2, निवास के पीछे बी-4 ,निवास के पीछे C-1 से C-6, निवास के सामने की ओर E-1, निवास के पीछे E-5 से E-6, निवास F-1 के पास, निवास के पीछे F-4, निवास के पीछे D-9, निवास D-7 के पास, सरस्वती मंदिर के पास, निवास के पीछे D-6, निवास के पास D-1, निवास के पीछे C-7, निवास के पीछे की ओर B-5, चिल्ड्रन पार्क के पास, पुराने ठीन कार्यालय के पास , गेस्ट हाउस के पास, डिस्पेंसरी के पास, क्रिकेट का मैदान पूर्व की ओर, कैंटीन के पास, खेल मैदान के पास, त्रिवेणी अपार्टमेंट के पास, मालवीय भवन सड़क किनारे क्षेत्र के पास, मालवीय भवन एक ब्लॉक आसपास का क्षेत्र, ठी टाइप क्षेत्र के सड़क किनारे क्षेत्र के पास।**

# लौंग

## (परिसर में पेड़ों की संख्या- 2)

- भारतीय रसोई में पाया जाने वाला लौंग अपने औषधीय गुणों के लिए प्रसिद्ध है।

**स्थान- एन-ब्लॉक के पास व मालवीय भवन बी-ब्लॉक के पीछे।**

# बरगद

**(परिसर में पेड़ों की संख्या- 5)**

- बरगद का वृक्ष विशाल तना और शाखाओं वाला होता है। यह बहुत ही छायादार और लबे समय तक जीवित रहने वाला पेड़ है। इसकी सबसे बड़ी खूबी है।

**स्थान-एन ब्लॉक के पास, सरस्वती मंदिर के पास, कैंटीन के पास, त्रिवेणी के पास, प्रशासन ब्लॉक के पास।**

# नीम

**(परिसर में पेड़ों की संख्या- 20)**

नीम के पेड़ से शायद ही कोई अपरिचित हो। नीम को उसके कड़वेपन के कारण जाना जाता है। सभी लोगों को पता होगा कि कड़वा होने के बाद भी नीम स्वास्थ्य के लिए बहुत अधिक लाभदायक होता है।

**स्थान- खेल मैदान के पास सड़क की ओर, निवास A-2 के पीछे की ओर, निवास A-5 के पीछे की ओर, निवास B-1 के पीछे की ओर, निवास B-4 के पीछे की ओर, निवास के सामने की ओर E-1, खेल के पास ग्राउंड, पावर हाउस के पीछे की ओर, त्रिवेणी अपार्टमेंट के पास, मालवीय भवन बी ब्लॉक के आसपास का क्षेत्र, मालवीय भवन ए ब्लॉक फ्रंट साइड एरिया, एडमिनिस्ट्रेशन ब्लॉक के पास।**

# क्रोटन

## (परिसर में पेड़ों की संख्या- 17)

- क्रोटन के पौधे में हवा को शुद्ध करने की अद्भुत क्षमता होती है और यह हवा में मौजूद हानिकारक तत्वों को सोख लेता है। प्रजातियां: क्रोटन की विविधता को निर्धारित करना आसान नहीं है। इसकी पत्तियां उम्र बढ़ने के साथ अपना रंग बदलती हैं। नई पत्तियां मुख्य रूप से पीले व हरे रंग की होती हैं और वयस्क लाल व गुलाबी में बदल जाती हैं।

स्थान- कार्पेंटरी शॉप के पीछे।

# गुढल

## (परिसर में पेड़ों की संख्या- 164)

- गुड़हल का फूल जहां बालों के वरदान माना जाता है वहीं ये त्वचा के लिए भी विशेष फायदेमंद है. ये कील-मुंहासों, सन-टैन और डार्क सर्कल से छुटकारा दिलाने में विशेष कारगर है, इसके साथ ही ये त्वचा के गहरेपन को दूर करके उसे गोरा बनाने में भी इस्तेमाल होता है. गुड़हल त्वचा में कसावट लाकर, झुर्रियों को दूर करने का काम करता है।

स्थान- पम्प हाउस के सामने, चिल्लन पार्क के पास, कैंटीन के पास, रखरखाव की दुकान के पीछे, बढ़ईगीरी की दुकान के पीछे, बिजली घर के पास, बिजली घर के पीछे, त्रिवेणी अपार्टमेंट के पास, मालवीय भवन मेस के सामने, डी-6 के सामने से d-1, d-1 से c-1 के पास, प्रशासनिक ब्लॉक के पास, सभागार के पास।

# पपीता

**(परिसर में पेड़ों की संख्या- 10)**

पपीते में उच्च मात्रा में फाइबर मौजूद होता है. साथ ही ये विटामिन सी और एंटीऑक्सीडेंट्स से भी भरपूर होता है|

**स्थान- F-4 . के पीछे |**

# नींबू

**(परिसर में पेड़ों की संख्या- 6)**

नींबू का उपयोग प्राचीन काल से किया जाता है। नींबू की उत्पत्ति एशिया में हुई थी तथा नींबू पानी का पहला उपयोग भारत के असम और चीन में किया गया था। अधिकतर लोग नींबू के रस को पानी में मिलाकर सेवन करते है। भारत (India) में घर की महिलाये कपड़ो के कठोर दागो को हटाने के लिए नींबू का उपयोग करती है। वैज्ञानिको के अनुसार नींबू का उपयोग बहुत पहले से औषधीय बनाने में किया जाता है। नींबू में कई तरह के विटामिन और पोषक तत्वों के गुण पाये जाते है। जो शरीर की कई तरह की बीमारियों को दूर एव मोटापा कम करने में सहायता करते है।

**स्थान- सी -10 के पास, निवास के पीछे की ओर सी -5, ई -3 के पीछे की ओर |**

# युकलिप्टस/नीलगिरी वृक्ष
## (परिसर में पेड़ों की संख्या- 151)

- **यूकेलिप्टस** (Eucalyptus) मिर्टेसी (Myrtaceae) कुल का एक बहुत ऊँचा वृक्ष है। इसकी लगभग 600 जातियाँ हैं, जो अधिकांशत: आस्ट्रेलिया और तस्मानिया में पाई जाती हैं। यूकेलिप्टस रेगनेस (Eucalyptus regnas) इनमें सबसे ऊँची जाति है, जिसके वृक्ष 322 फुट तक ऊँचे होते हैं। उपयोगिता के कारण यूकेलिप्टस अब अमरीका, यूरोप, अफ्रीका एवं भारत में बहुतायतश: उगाया जा रहा है। बीज नरम, उपजाऊ भूमि में सिंचाई करके बो दिया जाता है। कुछ वर्ष बाद छोटे छोटे पौधों को सावधानी से निकालकर, जंगलों में लगा दिया जाता है। ऐसे समय जड़ों की पूरी देखभाल करनी पड़ती है, अन्यथा थोड़ी असावधानी से ही उनकी जड़ें नष्ट हो जाती हैं। इसके कारण पौधे सूख जाते हैं। दक्षिण भारत में नीलगिरि पर्वत पर यूकेलिप्टस ग्लोबुलस (Eucalyptus globulus) जातिवाला वृक्ष बाहर से मँगाकर लगाया गया है। इस स्थान पर यह बहुत अच्छा उगता है और काफी ऊँचे ऊँचे वृक्ष के जंगल तैयार हो गए हैं। ऊँचे वृक्ष से अच्छे प्रकार की इमारती लकड़ी प्राप्त होती है, जो जहाज बनाने, इमारती खंभे, अथवा सस्ते फर्नीचर के बनाने में काम आती है। इसकी पत्तियों से एक शीघ्र उड़नेवाला तेल, यूकेलिप्टस तेल, निकाला जाता है, जो गले, नाक, गुर्दे तथा पेट की बीमारियों, या सर्दी जुकाम में औषधि के रूप में प्रयुक्त होता है। इस वृक्ष से एक प्रकार का गोंद भी प्राप्त होता है। पेड़ों की छाल कागज बनाने और चमड़ा बनाने के काम में आती है।

स्थान- पी-ब्लॉक के पीछे, S.T.P. दीवार के पास।

# हपुषा(Juniper)
## (परिसर में पेड़ों की संख्या- 69)

- **हाउबेर/हाऊबेर** या **हपुषा**(Juniper) एक कोणधारी वृक्ष है जिसकी ५० से ६७ जीववैज्ञानिक जातियाँ हैं जो पृथ्वी के उत्तरी गोलार्ध पर विस्तृत हैं।यह कुप्रेसाएसिए जीववैज्ञानिक कुल में आते हैं, जिसका सबसे प्रसिद्ध वृक्ष-प्रकार सरो है। हपुषा आयुर्वेद और अन्य पारम्परिक चिकित्सा प्रणालियों में बहुत महत्वपूर्ण है।

स्थान- ऑडेटोरियम लॉन के पास, डिस्पेंसरी के पास।

# बोतल पाम

**(परिसर में पेड़ों की संख्या- 11)**

- **बोतल पाम** एक बहुवर्षीय, पुष्पीय पौधा है। यह मूलरूप से मॉरिशस का निवासी है। इसका तना फूला हुआ होता है। इसकी चार या छः पत्तियाँ ही होती है जो वृक्ष के ऊपर मुकुट के समान निकलीं होती हैं। यह पौधा अधिक शीत सहन नहीं कर पाता है तथा 0°C तापमान पर इसकी मृत्यु हो जाती है।

**स्थान- सी-6 के पीछे, गेट नंबर 2 के पास व निकट ऑडेटोरियम।**