

The image shows a cover page for a 'Green Audit Report 2024'. The background is a light green color with a faint, repeating pattern of leaves and flowers. A thin, dark green rectangular border is centered on the page. At each of the four corners of this border, there is a decorative floral arrangement consisting of green leaves and small white flowers. The text 'Green Audit Report' is centered in the upper half of the page, and '2024' is centered below it. Both lines of text are in a bold, green, sans-serif font with a subtle drop shadow.

Green Audit Report

2024

**POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS
SECTOR – 11, CHANDIGARH**



**Green Audit Report
2024**

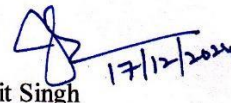
Post Graduate Government College for Girls-11, Chandigarh

Plant diversity in the college has been assessed by external and internal committees and a report has been generated to study environmental impact of the institution and to fulfil the requirement for the Green Audit.

Plant diversity in the college and the steps taken by the institution to conserve the same have been found to be satisfactory.



Dr. Anurita Sharma
Associate Professor (Botany)
PGGCG-11, Chandigarh



Prof. Kamaljit Singh
Professor & Chairperson
Department of Botany
Panjab University, Chandigarh



Prof. (Dr.) Anita Kaushal
Principal,
PGGCG-11, Chandigarh

Report of Post Graduate Government College for Girls-11, Chandigarh

About Institution

Ever since its inception in 1956, Post Graduate Government College for Girls, Sector 11, Chandigarh has established incredible traditions and legacies by shaping young, impressionable minds, and nurturing them as discerning individuals and empowered nation builders. The intellectual treasure is supplemented with highly qualified and dedicated academic family, state of the art infrastructure, well-equipped labs, well-stocked library, value-added amenities and periodic launch of innovative and job-oriented courses. We promise 'going beyond the classroom' approach, cultivating a spirit of 'giving back to the society', and garnering the young women for multi-faceted holistic development. Recently, the Chandigarh MC conducted Swachh ward survey on basis of indicators such as waste segregation, adoption of composting, principles for sustainable zero waste micro-climate. PGGCG-11, Chandigarh, adjudged Rank 1 with highest Score (95.5%) in all categories of 35 wards of Chandigarh. The institute is pioneer in the environment activities for eco-restoration and environment sustainability and won awards at national and International forum.

In view of the NAAC circular regarding Green Auditing, the college management decided to conduct internal Green Auditing for which the Green Audit Committee was reconstituted on 04.08.2022. The members of the Green Audit Committee are mentioned below:

- Chairperson: Prof. (Dr.) Anita Kaushal, Principal, Post Graduate Government College for Girls, Sector-11, Chandigarh
- Member: Mr. Ajay Kumar Sharma, Dean and Chief Coordinator, Post Graduate Government College for Girls, Sector-11, Chandigarh
- Member: Dr. Sadhana Verma, Head of Department, Chemistry and Incharge, Environment Society
- Member: Dr. Umesh Bharti, Head of Department, Zoology
- Member: Dr. Anurita Sharma, Head of Department, Botany
- Member: Dr. Parul Virk, Department of Environment Science
- Member: Dr. Amit Jakhal, Department of Botany

The institution has policy for the campus micro-climatic eco-restoration and primarily ten committees have been constituted, which are involved with the sustainability of the campus environment (**Table 1**).

Table-1. Committees for sustainability of campus environment:

S.No	Committees constituted	Date
1	Rain water Harvesting Committee	16.11.2005
2	Environment Committee	24.09.2010
3	Green Audit Committee	10.2.2018
4	Floriculture and Landscaping Committee	04.08.2012
5	Renewable Energy Committee	22.08.2012
6	Campus Hygiene Committee (Eat Right Campus)	14.03.2018
7	Cleanliness Committee	12.09.2018
8	Solid Waste Management Committee	19.03.2019
9	Swachhta Committee (Waste segregation)	22.01.2020
10	Plastic free Campus Committee	10.02.2021

The institution has undertaken various environmental activities to achieve the aim of 'Zero waste campus'. The student oriented environment related activities are:

WORLD ENVIRONMENT DAY (05.06.2023)

Prakriti-The Environment Society of PGGCG-11, Chandigarh celebrated World Environment Day on the theme "Solutions to Plastic Pollution" on 5th June, 2023 in the College Campus. Various activities like Tree Plantation Drive, Article Writing, Workshop on Sustainable Practices and Mission LiFE and Pledge by the students' members on No to PLASTICS.



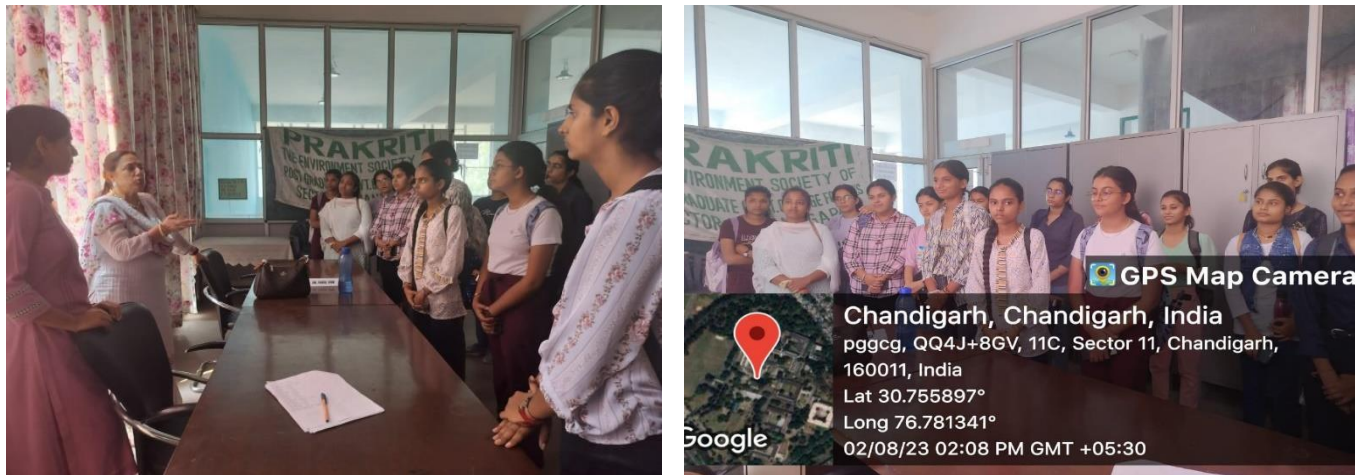
Tree Plantation by Principal, Prof (Dr.) Anita Kaushal



Article Writing Competition on World Environment Day

ORIENTATION PROGRAMME (04.07.2023)

Prakriti-The Environment Society of PGGCG-11, Chandigarh organized an Orientation Programme on 4th July, 2022. Dr. Sadhana Verma, Convener of the Society gave a brief introduction of the Society and different activities organized by PRAKRITI throughout the year. She also encouraged the students to get register themselves in the Society. About 70 Students Participated in the Programme.



Dr. Sadhana Verma, Convener- PRAKRITI – The Environment Society explaining the students about various activities of the Society

VAN MAHOTSAV (21.07.2023)

PRAKRITI – The Environment Society of Post Graduate Government College for Girls, Sector -11, Chandigarh in celebrated Van Mahotsav by organizing Plantation Drive, Pot painting activity and Pledge to save Earth on 21st July 2023. As many as 60 teaching faculty and non-teaching staff participated in the plantation activity. They planted saplings of Raat ki Rani, Imli, Amla, Kapoor, brahmi, kala vasa etc. Principal Prof (Dr) Anita Kaushal, in her address stressed the growing significance of tree plantation in the wake of sustainable development. She also encouraged post plantation care of saplings in larger interest of Environment and Society.



Principal Prof (Dr) Anita Kaushal during plantation in Herbal Garden of the College

TREE PLANTATION (03.08.23)

PRAKRITI – The Environment Society of Post Graduate Government College for Girls, Sector -11, Chandigarh in collaboration with State Bank of India and NSS organized tree plantation Drive on 3rd August 2023. As many as 20 teaching faculty, non-teaching staff and about 40 students participated in the plantation activity. They planted saplings of Kinoo, Mango, Litchi, pear, guava, chikoo etc. near student's scooter parking area. Principal Prof. (Dr) Anita Kaushal in her address stressed the growing significance of tree plantation in the wake of sustainable development. She also encouraged post plantation care of saplings in larger interest of Environment and Society.



Principal Prof. (Dr) Anita Kaushal during Plantation



Dr. Sadhana Verma Convener PRAKRITI – The Environment Society during Plantation

AKSHAY URJA DIWAS (24.08.2023)

Prakriti- the Environment Society of P.G.G.C.G-11 Chandigarh celebrated the Akshay Urja Diwas on 24th August, 2023 (Saturday) in the college. The function was sponsored by Chandigarh Renewable Energy Science and Technology Promotion Society (CREST). Various Inter college Competitions like Slogan Writing, Poster Making and Folder Making Competitions on the theme “Impact of Akshay Urja in India” were held. The registration for the various intercollege competitions started at 9.00 am. About 118 students from 11 colleges of the tricity registered for the various competitions.



Participants of Slogan writing Competition from various Colleges of tricity



Kirti Naidu giving presentation on Impact of Akshay urja in India

WORLD OZONE DAY (18.09.23)

Prakriti- The Environment Society of P.G.G.C.G-11 Chandigarh celebrated the World Ozone Day on 18th September 2023 (Monday) in the college. The function was sponsored by Department of Science and Technology, Chandigarh Administration. Various Inter college Competitions like Poster Making, Slogan Writing and Declamation Contest were organized. About 40 students from 11 Colleges of the tricity registered for the various competitions.



Participants of Slogan writing Competition



Declamation contest on Ozone Day

WILD LIFE WEEK (07.10.2023)

Prakriti- The Environment Society of P.G.G.C.G-11 Chandigarh celebrated the World Wild Life Week on 7th October 2023 in the college. The function was sponsored by Department of Science and Technology, Chandigarh Administration. Intra College Poster Making Competition and Pledge to save wild life were organized. About 40 students participated in the competition.



Students with their Posters



Students taking Pledge to Conserve Wildlife

ANTI CRACKER AWARENESS CAMPAIGN (04.11.2023 to 08.11.2023)

“PRAKRITI” The Environment Society of Post Graduate Government College for Girls, Sector-11, Chandigarh under NATIONAL GREEN CORPS PROGRAMME organized awareness campaign on safe and pollution free DIWALI from 4th to 8th November 2023. This awareness campaign was sponsored by Department of Environment, Chandigarh Administration. About 100 students participated in the Event. Following events were organized as a part of anti cracker Awareness campaign: Diya Decoration competition on theme GREEN DIWALI/ Ecofriendly Diwali, Exhibition of Decorated Diyas in Porch Area, Nukkad Natak on Anti cracker Awareness and Pledge by Students and Faculty members of the College.



Students with their Decorated Diyas



Students motivating one and all about “Say no to Crackers”

POLLUTION PREVENTION DAY (02.12.2023)

Prakriti- The Environment Society of P.G.G.C.G-11 Chandigarh celebrated the Pollution Prevention Day on 2nd December 2023 in the college. The function was sponsored by Department of Science and Technology, Chandigarh Administration. Intra College Essay Writing Competition and Pledge to prevent pollution were organized. About 30 students participated in the competition.



Students Participating in Essay Writing Competition

WORLD WETLAND DAY (02.02.2024)

Prakriti- The Environment Society of P.G.G.C.G-11 Chandigarh celebrated the World Wetland Day on 2nd February 2024 in the college. The function was sponsored by Department of Science and Technology, Chandigarh Administration. A Pledge was undertaken to save wetlands and visits to Chandigarh Bird Park and Sukhna Lake were organized. About 40 students participated in the event.



Students taking Pledge to Save Wetlands



Students during their visit to Sukhna Lake

WORLD FOREST DAY (21.03.2024)

Prakriti-The Environment Society of PGGCG-11, Chandigarh celebrated World Forest Day on the theme “Forests and Innovations: New Solutions for a better world” on 21st March 2024 in the College Campus. Various activities like Lecture on Forest Conservation, Essay writing Competition and Making Pots from waste materials were organized. About 50 students participated in different activities.



Essay Writing Competition



Lecture on Forest Conservation

World Water Day (22.03.2024)

PRAKRITI- The Environment Society in collaboration with MC Chandigarh celebrated World Water Day on 22.03.2024. On this Occasion a visit of Students along with the Faculty members to Water Treatment Plant, Sector 39 Chandigarh was organized. Students were made aware about how water reaches home and how filtration is done at Water Treatment Plant. Sh. Parag Ravish, JE (MCPH) explained to students that how filtration and storage of water is done in this plant.



Students along with Faculty members at Water Treatment Plant, Sector 39, Chandigarh



Sh. Parag Ravish, JE (MCPH) explaining about the process of water treatment

Floristic Composition

Post Graduate Government college, Sector-11, Chandigarh, affiliated to Panjab University, Chandigarh, was established in present campus in 1956. The college has established in coorelation with the floristic composition given in Table-1 and the floristic composition is itself as an educational hub in region with accreditation of Grade 'A' by NAAC. A sprawling campus of 34.93 acres has been meticulously planned in number of functional blocks separated by lush green grass lawns. Apart from records of Forest Department, the field surveys have been undertaken to study the floristic composition of the campus. The floristic composition of the college is given in Table 1.

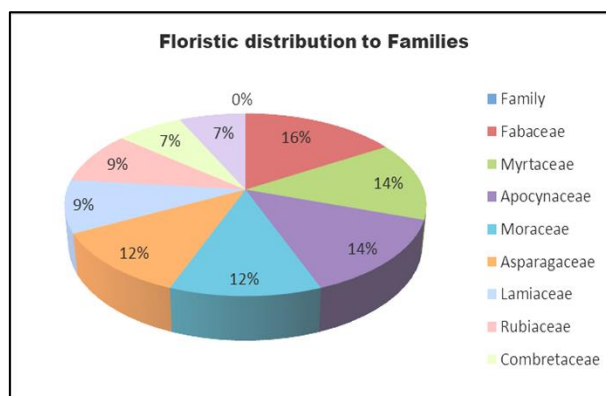
Table 1: Trees /shrubs diversity of Post Graduate Government College for Girls, Sector-11, Chandigarh

S.N	Botanical Name (Common Name)	Family
1	<i>Abrus precatorius</i> (Ratti)	Fabaceae
2	<i>Acorus calamus</i> (Vacha)	Acoraceae
3	<i>Adhatoda vasica</i> (Vasaka)	Acanthaceae
4	<i>Adina codifolia</i> (Kurmi)	Rubiaceae
5	<i>Albizia lebeck</i> (Siris)	Mimosaceae
6	<i>Aloe barbedensis</i> (Ghrit kumari)	Asphodelaceae
7	<i>Alstonia scholaris</i> (Saptaparni; Scholar tree)	Apocynaceae
8	<i>Andrographis paniculata</i> (Kalmegh)	Acanthaceae
9	<i>Anthocephalus chinensis</i> (Kadamb)	Rubiaceae
10	<i>Annona squamosa</i> (Sitaphal; custard apple)	Annonaceae
11	<i>Asparagus officinalis</i> (Asparagus)	Asparagaceae
12	<i>Asparagus racemosus</i> (Satavari)	Asparagaceae
13	<i>Artocarpus lakoocha</i> (Lakooch)	Moraceae
14	<i>Artocarpus heterophyllus</i> (Kathal;Jack tree)	Moraceae
15	<i>Azadirachta indica</i> (Neem)	Meliaceae
16	<i>Bacopa monnieri</i> (Brahmi)	Asparagaceae
17	<i>Bambusa vulgaris</i> (Bamboo)	Poaceae

18	<i>Barleria prionites</i> (Kala Bansa)	Acanthaceae
19	<i>Bougainvillea sp</i> (Bouganvillea)	Nyctaginaceae
20	<i>Bauhinia purpurea</i> (Gulabi Kachnar)	Fabaceae
21	<i>Bauhinia variegata</i> (Kachnar)	Fabaceae
22	<i>Bombax ceiba</i> (= <i>Salmalia</i> ,Silk Cotton)	Malvaceae
23	<i>Butea frondosa</i> (Dhak)	Fabaceae
24	<i>Butea monosperma</i> (<i>Palash</i>)	Fabaceae
25	<i>Cactus and Succulents</i>	Cactaceae
26	<i>Callistemon viminalis</i> (Bottle Brush)	Myrtaceae
27	<i>Carissa congesta</i> (Karonda)	Apocynaceae
28	<i>Casuarina equisetifolia</i> (Jangli Saru)	Casuarinaceae
29	<i>Catharanthus roseus</i> (Sadabahar)	Apocynaceae
30	<i>Cestrum noctuum</i> (Raat Ki Raani)	Solanaceae
31	<i>Cestrum diurnum</i> (Din Ka Raja)	Solanaceae
32	<i>Citrus limon</i>	Rutaceae
33	<i>Citrus sinensis</i> (Narangi)	Rutaceae
34	<i>Clitoria ternatea</i> (Aparajita)	Fabaceae
35	<i>Coleus barbatus</i> (Patharchat)	Lamiaceae
36	<i>Chukrasia tabularis</i> (Indian Redwood)	Meliaceae
37	<i>Cinnamomum tamal</i> (Tejpatta)	Lauraceae
38	<i>Curcuma longa</i> (Haldi)	Zingiberaceae
39	<i>Cymbopogon citratus</i> (Lemon grass)	Poaceae
40	<i>Cycas circinalis</i> (Queen Sago)	Cycadaceae
41	<i>Cycas revoluta</i> (Sago Palm)	Cycadaceae
42	<i>Dalbergia sissoo</i> (Shisham)	Fabaceae
43	<i>Datura alba</i> (Dhatura)	Solanaceae
44	<i>Delonix regia</i> (GulMohar)	Fabaceae
45	<i>Dendrocalamus strictus</i>	Poaceae
46	<i>Eclipta alba</i> (Bhringaraj)	Asteraceae
47	<i>Emblica officinalis</i> (Amla)	Euphorbiaceae
48	<i>Eriobotrya japonica</i> (Loquat)	Myrtaceae
49	<i>Eucalyptus hybrida</i>	Myrtaceae

50	<i>Ficus benghalensis</i> (Banyan)	Moraceae
51	<i>Ficus carica</i> (Anjeer)	Moraceae
52	<i>Ficus glomerata</i> (Gular)	Moraceae
53	<i>Ficus infectoria</i> (Pilkhan)	Moraceae
54	<i>Ficus panda</i>	Moraceae
55	<i>Ficus religiosa</i> (Peepal)	Moraceae
56	<i>Ficus virens</i> (Pakhar)	Moraceae
57	<i>Grevillea robusta</i> (Silver Oak)	Proteaceae
58	<i>Hamelia patens</i> (Read Head)	Rubiaceae
59	<i>Hibiscus rosa-sinensis</i> (Gurhal)	Malvaceae
60	<i>Ixora coccinea</i> (Jungle ceranium)	Rubiaceae
61	<i>Jacaranda mimosifolia</i> (Nili Gulmohar)	Bignoniaceae
62	<i>Lawsonia inermis</i> (Henna)	Lathyraceae
63	<i>Litchi chinensis</i> (Litchi)	Sapindaceae
64	<i>Lagerstroemia speciosa</i> (Pride of India)	Lathraceae
65	<i>Madhuca indica</i> (Mahua)	Sapotaceae
66	<i>Mangifera indica</i> (Mango)	Anacardiaceae
67	<i>Manilkara zapota</i> (Chiku)	Sapotaceae
68	<i>Mentha x piperita</i> (Peppermint)	Lamiaceae
69	<i>Michelia champa</i> (Champa)	Magnoliaceae
70	<i>Mimosa pudica</i> (Lajwanti)	Fabaceae
71	<i>Mimusops elengi</i> (Maulsiri)	Sapotaceae
72	<i>Moringa oleifera</i> (Moringa)	Moringaceae
73	<i>Morus alba</i> (Shahtoot)	Moraceae
74	<i>Murraya koenigii</i> (Curry patta)	Rutaceae
75	<i>Nerium oleander</i> (Kaner)	Apocynaceae
76	<i>Nyctanthes arbor-tristis</i> (Harshingar)	Nyctanthaceae
77	<i>Ocimum basilicum</i> (Kali Tulsi)	Lamiaceae
78	<i>Ocimum gratissimum</i> (Ram Tulsi)	Lamiaceae
79	<i>Ocimum sanctum</i> (Tulsi)	Lamiaceae
80	<i>Plumeria alba</i> (White Frangipani)	Apocynaceae
81	<i>Polyalthia longifolia</i> ((Asoka Tree)	Annonaceae

82	<i>Pinus roxburghii</i>	Pinaceae
83	<i>Psidium guajava</i> (Guava)	Myrtaceae
84	<i>Pterospermum acerifolium</i> (Kanak Champa)	Sterculiaceae
85	<i>Punica granatum</i> (Pomegranate)	Lythraceae
86	<i>Putranjiva roxburghii</i> (Putranjiva)	Euphorbiaceae
87	<i>Roystonea regia</i> (Royal Palm)	Arecaceae (Palmae)
88	<i>Saraca indica</i>	Caesalpinaceae
89	<i>Schleichera oleosa</i> (Kusum)	Sapindaceae
90	<i>Syzygium aromaticum</i> .(Clove)	Myrtaceae
91	<i>Syzygium cumini</i> (Jamun)	Myrtaceae
92	<i>Tabernaemontana divaricta</i> (Crape Jasmine)	Apocynaceae
93	<i>Tecoma argentea</i> (Yellow Tabebuia)	Bignoniaceae
94	<i>Tecoma capensis</i> (Honey Suckle)	Bignoniaceae
95	<i>Terminalia arjuna</i> (Arjun)	Combretaceae
96	<i>Terminalia bellirica</i> (Behera)	Combretaceae
97	<i>Terminalia chebula</i> (Harad)	Combretaceae
98	<i>Thuja compacta</i> (Vidya tree)	Cupressaceae
99	<i>Tinospora cordifolia</i> (Giloe)	Menispermaceae
100	<i>Vitex negundo</i> (Nirgundi)	Verbenaceae
101	<i>Withania somnifera</i> (Ashwagandha)	Solanaceae
102	<i>Ziziphus mauritiana</i> (Ber)	Rhamnaceae



Mapping of Plant Diversity and Forest Cover

Floristic composition provides data regarding all kinds of plants growing in the college campus which include trees, shrubs and herbs. Histograms (Figs. 1-4) are prepared on basis of this data and location maps are prepared in relation to the location of these trees in the college campus (Maps 1-2).

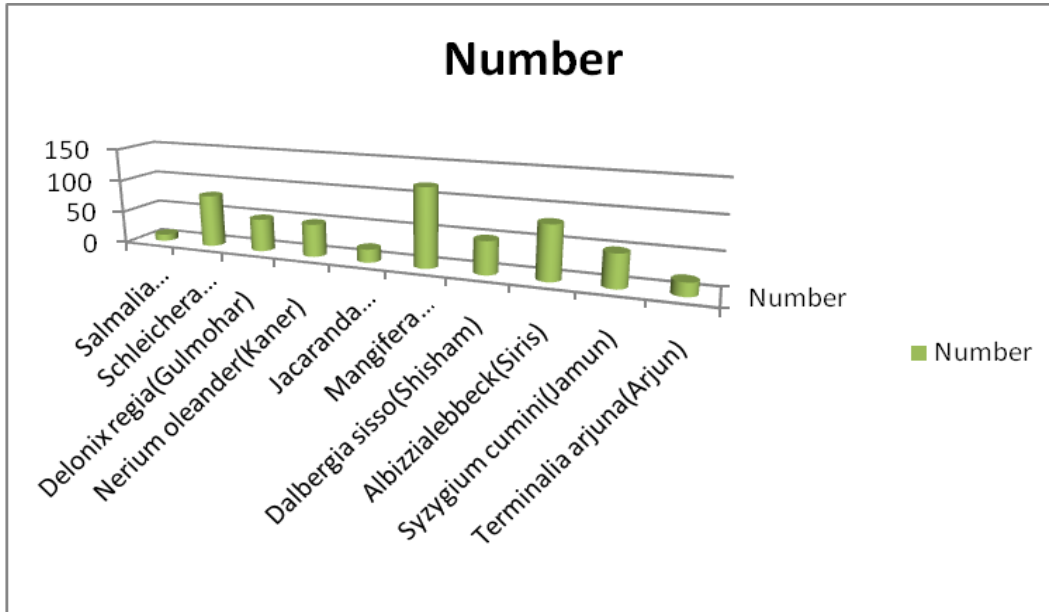


Fig1: Floristic composition(Trees) of the College Campus

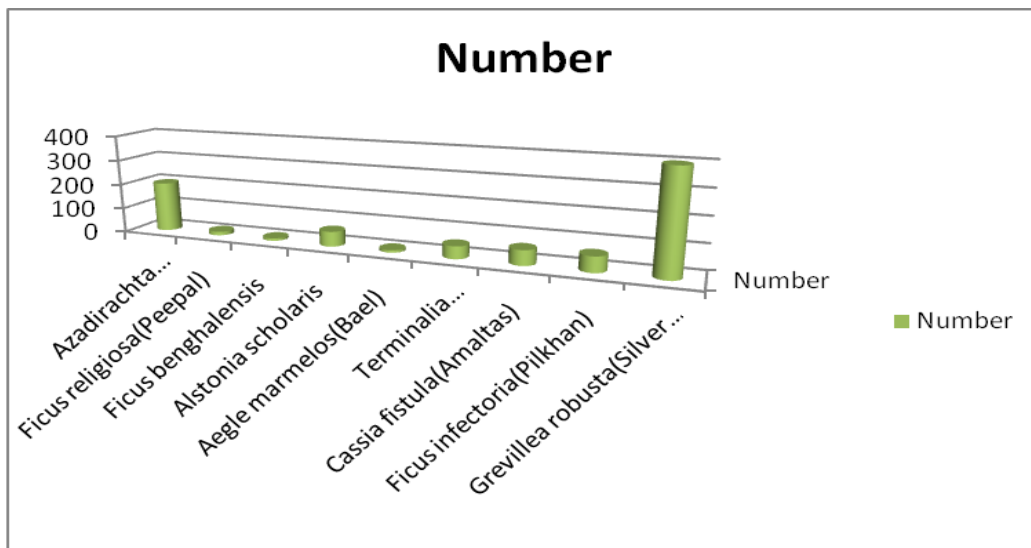


Fig2: Floristic composition(Trees) of the College Campus

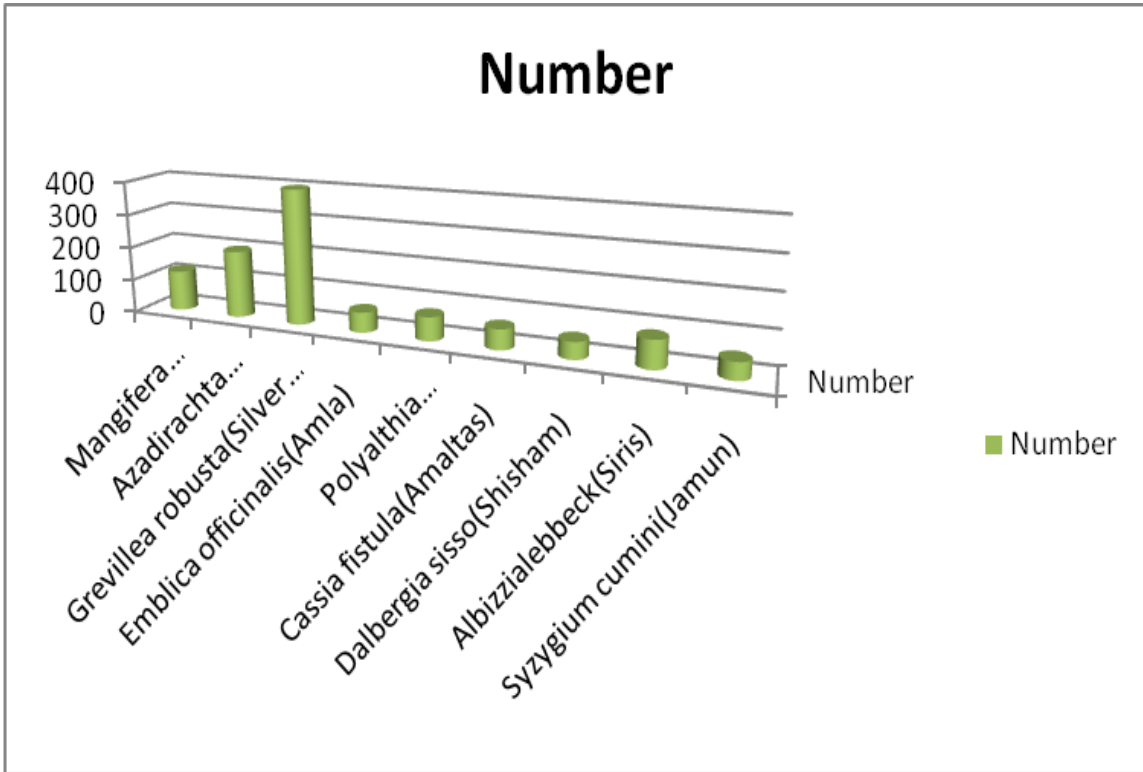


Fig3: Floristic composition of most abundant trees of the College campus

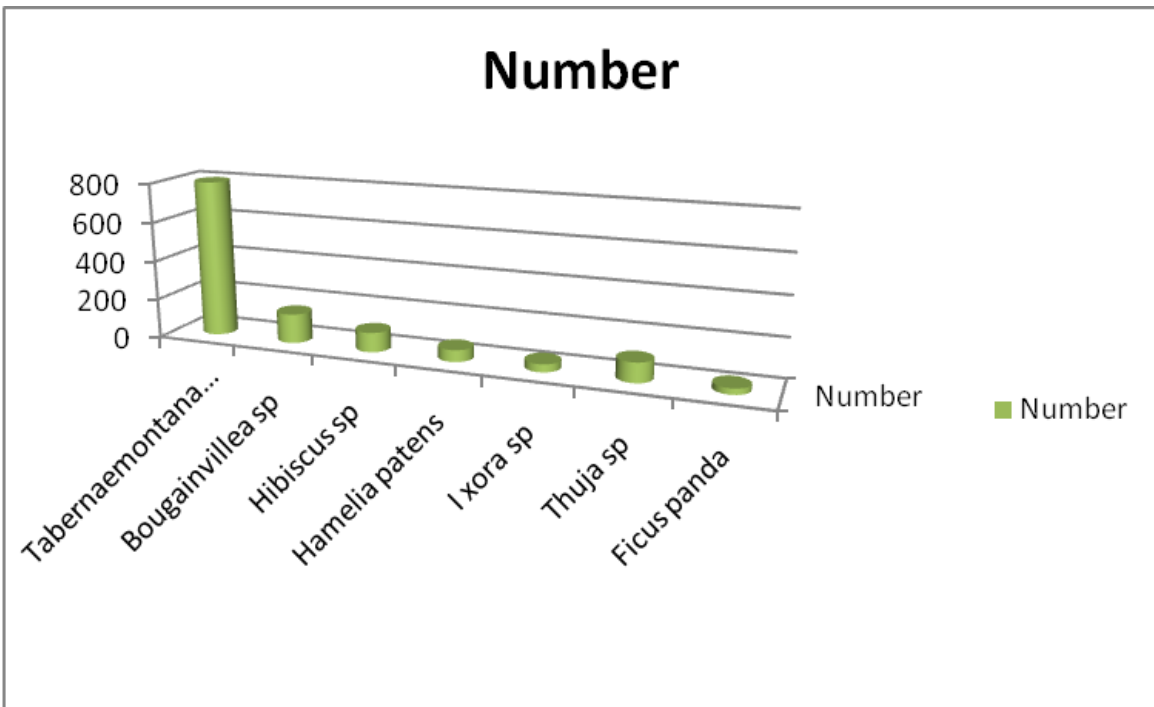


Fig4: Floristic composition of most abundant Shrubs of the College campus

Solid Waste Management – Practice and Procedure

The paradigm of waste to energy, mitigation of carbon and its sequestration is relegated to a secondary level which conversely results in India discarding 68.8 million tonne in landfills and comes third after China and US in total GHGs emission. Conforming to these, the college highlights the use of adept schemes for successful co-composting of food, fruit and green waste, with a mechanism to mitigate carbon leakage in the developing countries. The work is a pioneer attempt to produce bio-stable, organoleptic and agronomic feasible organic compost evaluating the physicochemical parameters using the two stage composting (TSC) comprising bioreactor and windrows using mixture of raw materials: 50% green waste (60% leaves, 35% grass clippings and 5% tree branches), 50% food and fruit waste of total 300 per day, to produce compatible compost in 110 days in TSC, hence making the college fully organic. The high quality final compost has 40°C temperature, 7.6 pH, 42% moisture content, 3.36 ds/m electrical conductivity and 25 C/N ratio. The main objective of practice is to analyse and overview the configuration technology, analytical parameters and feasibility of net zero energy improving building resilience, to achieve de-carbonisation target to limit the global temperature rise to 1.5°C, to meet the goals of the Paris agreement to avoid catastrophic impacts of climate change. The inference of study is the mitigation of carbon leakage of 346.7 metric ton CO₂ and generating 564 quintals organic compost to achieve sustainable zero waste future. The concept of circular economy, restorative and regenerative system by design has contributed to a paradigm shift in the transformation of Waste-to-Energy (WtE) which the management of municipal solid waste. The present study entails ascertaining how WtE can serve as a circular economy tool toward carbon foot print benefits and climate change mitigation. The study bagged **United Nations SDG Action Award 2020** and finalists **UN Green Gown International Awards 2022**.

Composting procedure

The present model has devised two strategies (i) Single stage windrow composting (SSC) (ii) Two stage windrow composting (**TSC**), to highlight best organic waste management strategies to achieve co-composting of food, fruit and green waste using aerobic windrow composting to reduce their volume and mass and achieve carbon foot print benefits.

1. Single Stage Composting (SSC)

The energy efficiency initiatives mitigate the carbon foot prints and energy requirement of the

building. The composting process was carried out in batch-wise operation in the open site windrow composting plant (30.7583° N, 76.7841° E) of 0.5 TPD capacity situated in the campus of Post Graduate Government College for Girls, Sector-11, Chandigarh. The windrow plant consists of screening facilities, solid waste separator, charging and composting units, where the organic wastes are accumulated in 3x4m brick lined charging unit with basal bulking agent (green waste) layer, which sequentially alternates with food, fruit and vegetable waste (30cm each) in three different layers. The repetition of the layers is done till the cumulative pile reaches 1.5m height. The piles in windrows are turned manually on 6th and 11th day to generate micro- positive pressure making windrows aerobic.

2. Two stage Composting (TSC)

In TSC, a mechanical -manual integration, the organic waste is initially added to a bioreactor 'FOODIE' for and after 7days the semi-digested organic cakes are de-confined from the bioreactor and transferred to windrow composting plant. The cakes are added to square 64m²open site windrow composting plant and follow the same procedure as above in SSC.

Advantages of the practice

(i) The existing solid waste management practice in the campus includes segregation of waste at source into dry waste, wet waste, E-waste and medical waste through coded dustbins (Blue, green, red and black), placed at prominent places in the college and hostels (Figs.7-10). The waste thus generated within campus is collected from labelled dustbins placed at various locations and shifted to the windrow plant site located in the campus for composting.

(ii) The practice provides a better insight on the feasibility, applicability and reproducibility of the single stage windrow composting and two stage composting technology to ensure the efficiency and effectiveness of TSC in producing bio-fertilizer. The two-stage composting (TSC) is used as an alternative process in solid waste management and this new technology can reduce the composting time, land area and GHG emission

(iii) Every region on earth is generating dry waste (grass, leaves) and wet waste (Vegetable and fruit peelings) in bulk and their dispensing and management is a global problem. The practice is aimed at converting waste into organic compost with C:N ratio 25:1, which is best for agronomic practices.

(iv) The organic compost generated increased the yield of agronomic and floriculture crops and in this era of increasing population, the both aspects help in the development of the nation.

(v) The blue prints are prepared regarding the standardization of temperature, humidity, C:N ratio in single stage and two stage composting and these blue prints are replicated with ease, irrespective of area and country.

(v) The problems solved due to the bioconversion of solid waste and its management are:

- Unscientific land filling
- Maintaining soil fertility
- Avoiding a breeding grounds for mosquitoes, casual organism of many diseases
- Saving precious Farm yard Manure (FYM), which are used in Agriculture fields and in Biogas Plants for sustainable development
- The need of market is the organic compost to have more yield, and protect human race from bio- magnification of pesticides and weedicides. The organic compost is used as an alternative renewable source of energy saving the non-renewable fossil fuels (Coal, Petroleum, Diesel etc.).
- The micro-climate of campus has become moderate, as reduction in landfills and dumping sites has reduced the emission of greenhouse gases (GHGs).
- The concept of circular economy (CE), restorative and regenerative system by design has contributed to a paradigm shift in the transformation of Waste-to-Energy (WtE) in the management of municipal solid waste. The practice entails ascertaining how WtE can serve as a circular economy tool toward carbon foot print benefits and climate change mitigation.

(vi) The computation of the meteorological data pertaining to the city average minimum and maximum temperature fluctuations ranges from 0.63-1.78⁰C due to urban heat island effect, a most documented phenomenon of climate change. However, the campus micro-climate has a moderate effect as the temperature remains on the negative side of fluctuation (i.e 1.5⁰C less than the city temperature), primarily due to 56.84% green area with tree basal area of 55% which results in evaporative cooling and mitigation of greenhouse gases due to aerobic windrow composting of campus solid waste, which prevents micro-climatic global warming, hence improving building resilience, to achieve de- carbonization target to limit

the global temperature rise to 1.5°C, to meet the goals of the Paris agreement to avoid catastrophic impacts of climate change.

Awards: The Third Party Verification

The college is a pioneer in waste management practices in country as well as in Asia. The college work on solid waste management has been acclaimed at National and International forum as follows:

1. The work was acclaimed by United Nations and bagged United Nations (UN), Sustainable Development Goals (SDG) Action award in Individual category ("Environment Sustainability") for the practice on Solid waste management (UNDP), an excellent community outreach in Covid-19 era. The present Solid waste windrow project study is the second after Mumbai to get this award and shared stage with actor Sonu Sood and Philanthropist S. P. S. Oberoi for their exemplary and humanitarian work during Covid-19.

2. Skoch awards, instituted in 2003, is the highest honour in the county, which recognise projects and institutions that go extra mile to make India a better nation and covers the best of efforts in capacity building, empowerment and excellence in technology, based on extensive documentation based on desk and secondary research followed by an evaluation presentation to the eminent jury of domain. Skoch are competitive awards, which recognise leadership and excellence in accelerating socio-economic changes and benchmark of best practice in the fields of technology and inclusive growth. The institute is a pioneer among the colleges/institutes in the country to be the winner of 66 Skoch order of Merit-Semi-finalists and joined the selected group finalists like CM Haryana, Madhya Pradesh, Rajasthan, HAL, SAIL, Ministry of Rural development, Government of India.

3. The college work on solid waste management "Windrow composting-An Aerobic Bio-Conversion and Stabilization of Municipal Solid waste (MSW) in Chandigarh" was recognised and awarded in category of 'Climate Change and Sustainability of Health Care System' in 26th International Congress of IFHE- International Award 2020 organised by IFHE (International Federation of Health Care Engineering) in Italy (Jan 24-28, 2021).

4. Green Champion Award – Swachhta Action Plan- Exemplary Performance Award-2020-2021

The college was awarded Green Champion Award (2020-2021) by Mahatma Gandhi National Council of Rural Education (MGNCRE), Department of Higher Education, Ministry of Education, Government of India for its contribution to contribution to the field of Swachhta aspects and practice and figured in the India Today's list of 400 prominent colleges in the country for work on environment sustainability.

5. The Rose festival of Chandigarh is one of the biggest rose shows held in the country. It is a colourful bonanza which showcases the diverse beauty of flowers. At the same time, the festival has also made efforts to ensure that such diversity and heterogeneity is reflected at the organization level, and to spread awareness about the need to preserve nature. The institute has been conferred with the Best Maintained Campus in 47th, 48th and 50th Rose Festival in Section H (Category H3) since the year 2018 till the year 2023; a creditable achievement by the Government institute. The flowers in the all competitions are raised through waste generated compost. an excellent '**Best of Waste scenario**'.

6. The institute work on solid waste management "Windrow Composting-An aerobic Bio-conversion and Stabilization of Municipal Solid Waste (MSW) in Chandigarh" was awarded as Innovative Environment Project by Confederation of Indian Industry (CII) in their 8th edition of National Awards on July 20-30, 2021 for their Carbon foot print Benefit.

7. The institute was acclaimed and awarded in "Innovation in Recycling process and Technology" Category, in the Business World prestigious award "Recycling for Greener Tomorrow Conclave Awards 2022" on January 16, 2022.

8. The Green Gown International Awards in partnership with Association of Common with Universities (ACU), AUF, International Association of Universities (IAU) and United Nations Environment Program (UNEP), recognized the International Sustainability initiatives being undertaken across the world. The ethos of the awards is to ensure the lessons and examples of good practice. Green Gown International Award, a prestigious award of UK, is the leading global environmental authority which promotes the coherent implementation of environmental dimensions of sustainable development, announced finalists shortlisted from 19 countries and the work "Windrow Composting: Stabilization of Municipal Solid Waste (MSW) in Chandigarh for Sustainable Zero Waste Future", was shortlisted as one of the finalists of United Nations Green Gown International Awards 2022, a pioneer project from India.

9. On Environment Day (June 5, 2022), the National Environmental Science Academy, New Delhi has conferred 'Green Technology Innovative Awards-2022 to the institute in International Conference on Agriculture Science and at ICAR-IGFRI, Jhansi, Uttar Pradesh, for the contribution in the field of mitigation of Carbon footprints and Green awards for Innovation & Environment Awareness at World Environment Expo (Pragati Maidan, New Delhi).

10. The institute was awarded "Green Technology Award 2022" in ESDA World Environment Summit (WES) organized by United Nations Environment Program (UNEP) with Ministry of Environment and Climate Change, Government of India and in association with CSRI-NEERI, CSRD JNU and foreign partner, Maldives, Nepal and Switzerland and Indian counterpart (NABARD) at Vallabhbhai Patel Chest Institute at Delhi University, New Delhi on October 16,2022.

11. Recently, PRAKRITI- The Environment Society of PGGCG-11 has won BEST ENVIRONMENT SOCIETY AWARD-2023 under NATIONAL GREEN CORPS in the College Category on 5th June 2023, awarded by Department of Environment, Chandigarh Administration. The award was conferred by His Excellency Sh. Banwari Lal Purohit, Honourable Governor of Panjab and Administrator of Chandigarh Administration. Sh. Dharampal, IAS, Adviser to the Administrator, Smt. Kiron Kher, Member Parliament and Sh. Nitin Yadav, Home Secretary, Chandigarh Administration were also present on the occasion.



Principal Prof. (Dr.) Anita Kaushal awarded by His Excellency Sh. Banwari Lal Purohit,

पीजीजीसीजी-11 में अब हर शनिवार को मनाया जाएगा नो प्लास्टिक डे

चंडीगढ़। पोस्ट ग्रेजुएट गवर्नमेंट कॉलेज फॉर गर्ल्स सेक्टर 11 में पर्यावरण दिवस पर नो प्लास्टिक डे : बी पार्ट ऑफ द सॉल्यूशन की शुरुआत की गई। अब कॉलेज हर शनिवार को नो प्लास्टिक डे मनाएगा। इसका मकसद है युवाओं और आम लोगों को प्लास्टिक के खतरे के बारे में बताना। नॉन बायोडिग्रेडेबल प्लास्टिक प्रोडक्ट पर्यावरण के लिए सबसे बड़ा खतरा है। इस कॉलेज को हाल ही में मिनिस्ट्री ऑफ एजुकेशन की ओर से ग्रीन चैंपियन अवार्ड मिला है। कॉलेज की प्रिंसिपल प्रो अनीता कौशल के अनुसार ऐसी चोट में करीब 170 किलो सॉलिड वेस्ट प्रतिदिन होता है जिसमें से 17.6 फीसदी प्लास्टिक वेस्ट है। इसी को कंट्रोल करने के लिए हर शनिवार अब नो प्लास्टिक डे मनाया जाएगा।

प्लास्टिक प्रदूषण के खिलाफ की वर्चुअल रैली

चंडीगढ़। पोस्ट ग्रेजुएट गवर्नमेंट कॉलेज फॉर गर्ल्स के वनस्पति विज्ञान ने वीरवार को प्लास्टिक प्रदूषण के खिलाफ वर्चुअल रैली निकाली। इसमें छात्रों, शिक्षण संकायों और सफाई कर्मचारियों ने भाग लिया। प्लास्टिक प्रदूषण कम करने के प्रेरक कदम के रूप में करीब 100 छात्रों ने पोस्टर व नारों के साथ हिस्सा लिया। कॉलेज प्राचार्या प्रोफेसर डॉ. अनीता कौशल ने छात्रों को प्रोत्साहित किया और पर्यावरण की बहाली के लिए प्लास्टिक के कम से कम उपयोग पर जोर दिया। धूरों

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न्यूज बीफ

अंतर्राष्ट्रीय प्लास्टिक बैग मुक्त दिवस मनाया

चंडीगढ़, 3 जुलाई (आशीष) उच्च शिक्षा निदेशालय के तत्वावधान में शिक्षा संस्थानों ने शनिवार को प्लास्टिक बैग नही पर एक अभियान शुरू किया। 3 जुलाई को अंतर्राष्ट्रीय प्लास्टिक बैग मुक्त दिवस के रूप में मनाया जाता है।

यह एक वैश्विक पहल है जिसका उद्देश्य प्लास्टिक बैग के उपयोग को खत्म करना है। पोस्ट ग्रेजुएट गवर्नमेंट कॉलेज फॉर गर्ल्स, सेक्टर-11 की प्रिंसिपल प्रो. अनीता कौशल ने कहा कि अभियान ने संस्थानों में लगभग 17.6 फीसदी प्लास्टिक कचरे के प्रबंधन के लिए प्लास्टिक बैग को कम करने, पुन उपयोग, रि-साइकिल प्लास्टिक बैग को बढ़ावा दिया है। अभियान का उद्देश्य पर्यावरण को संरक्षित करने के सरकारी प्रयासों का समर्थन करना और पर्यावरण की बहाली पर परिवारों के बीच ज्ञान जागरूकता में सुधार करना है। इस दौरान 50 हजार से अधिक छात्रों और कॉलेजों के शिक्षण और गैर-शिक्षण कर्मचारियों ने एकल उपयोग प्लास्टिक और प्लास्टिक की वस्तुओं के नकारात्मक प्रभावों को कम करने का संकल्प लिया।

स्वच्छता एक्शन प्लान बिजली की 30 से 32 फीसद कम खपत के लिए मिला सम्मान

जीसीजी-11 को मिला ग्रीन चैंपियन अवॉर्ड

जासं, चंडीगढ़ : पोस्ट ग्रेजुएट गवर्नमेंट कॉलेज फॉर गर्ल्स (जीसीजी) सेक्टर-11 को ग्रीन चैंपियन अवार्ड मिला है। यह अवॉर्ड महात्मा गांधी नेशनल काउंसिल ऑफ रूलर एजुकेशन, मिनिस्ट्री ऑफ एजुकेशन भारत सरकार की तरफ से स्वच्छता एक्शन प्लान के तहत दिया गया है। अवॉर्ड में कॉलेज को पांच हजार रुपये कैश अवॉर्ड के साथ प्रशस्ति पत्र हासिल हुआ है। गवर्नमेंट ऑफ इंडिया की तरफ से अवॉर्ड घोषित होने के बाद मंगलवार को डायरेक्टर स्कूल एजुकेशन आरएस बराड़ ने अवार्ड प्रिंसिपल डा. अनीता कौशल को हैडओवर किया।

यह किया है कॉलेज ने : जीसीजी-11 ने एनर्जी सेविंग की दिशा में काम किया और 30 से 32 फीसद बिजली की खपत कॉलेज कैम्पस में कम करके दिखाई है। इस प्रोजेक्ट के लिए कॉलेज के लेक्चरर



बिजली बचाने के लिए पोस्ट ग्रेजुएट गवर्नमेंट कॉलेज फॉर गर्ल्स सेक्टर-11 को ग्रीन चैंपियन अवॉर्ड मिला। यह अवॉर्ड गवर्नमेंट ऑफ इंडिया की तरफ से मंगलवार को डायरेक्टर स्कूल एजुकेशन आरएस बराड़ ने प्रिंसिपल अनीता कौशल को सौंपा।

डा. विशाल शर्मा ने काम किया है। बिजली के अलावा कूड़ा निपटान और जल संरक्षण की दिशा में भी कॉलेज कैम्पस में काम किया गया है, जिसके लिए एमएचआरडी पहले भी कॉलेज को सम्मानित कर चुकी है। कूड़ा निपटान के लिए सीआइआइ भी कॉलेज को बेस्ट प्रैक्टिस में चुन

चुकी है।

एक हजार आवेदन में जीसीजी को मिला पहला स्थान : ग्रीन चैंपियन अवार्ड पाने के लिए चंडीगढ़ सहित पंजाब से एक हजार से ज्यादा आवेदन गए थे। जिसमें से जीसीजी-11 को पहला स्थान मिला है। कॉलेज प्रिंसिपल डा. अनीता

यह रहा है खास

यूनाइटेड नेशन (यूपन) कमरे में चलने वाले एसी का तापमान 26 स्वास्थ्य के लिए बेहतर घोषित कर चुकी है। डा. विशाल बीते तीन सालों से कॉलेज कैम्पस में चलने वाले एसी का तापमान 26 तक चला रहे हैं। डा. विशाल के अनुसार यदि एसी का तापमान 26 डिग्री तक रहता है तो सबसे पहले बिजली की खपत 30 से 32 फीसद कम होगी और कमरे में बैठने के लिए बेहतरीन माहौल मिल सकेगा। कमरे में ऑक्सीजन का स्तर ठीक रहेगा और ऑक्सीजन का स्तर ठीक रहने से शरीर में थकान और सुस्ती नहीं आएगी और हंसान सामान्य लाइफस्टाइल जी सकता है।

कौशल ने बताया कि पर्यावरण की सुरक्षा के लिए सहयोग जरूरी है।

SOLID WASTE AUDITING



Fig.1. Design of Windrow composting plant, Fig.2. Layout windrow composting plant in PGGCG-11, Chandigarh, Figs.3-4. Field layout of membrane covered charging and curing windrow unit (0.5 TPD)

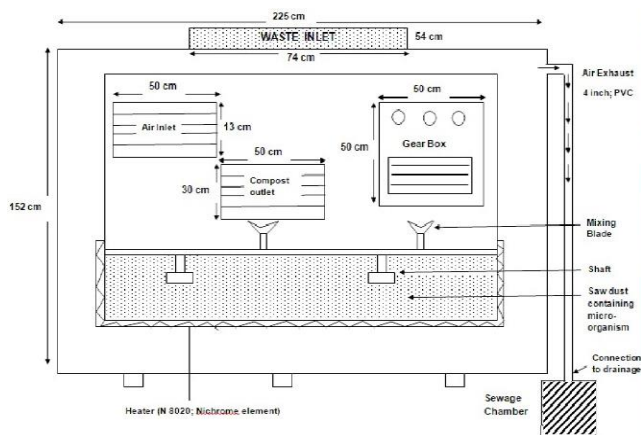
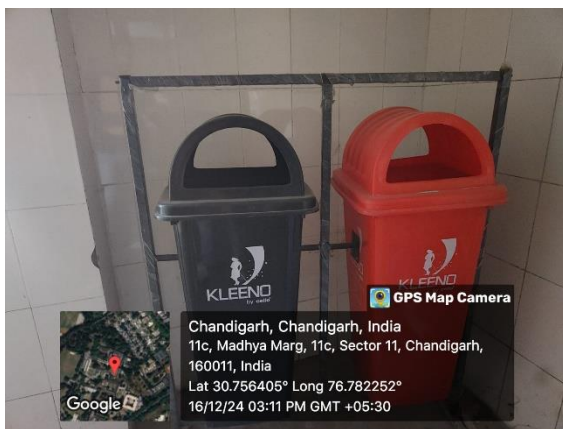


Fig.5. Outlay of Bioreactor, Fig.6. Bioreactor 'Foodie'



Figs. 7-10. Segregation of waste materials

Challenges faced during the Composting process

1. **Solid waste auditing:** The first and foremost if the solid waste auditing, which plays an important role in devising the composting strategy i.e. Layout designing, sizing and capacity.
2. **Segregation:** The segregation at source presents a major challenge, as composite culture is dumped in landfills which results in greenhouse gases (GHGs) emission. It also hampers the composting process.
3. **House hold composting:** The major obstacle stands in way of household composting is the misconception that the composting is smelly and attract flies and maggots.
4. **Budgetary constraint:** The budget limitations concerning community composting can be addressed by starting low cost windrow composting.
5. **Designing of the windrow plant:** While designing the plant, its economic aspect and land saving has to be kept in mind.
6. **Maintenance:** Due to financial constraint, manual turning has to be done on every 6th and 11th day.
7. **Standardizing the compost monitoring:** The physico-chemical parameters (Temperature, pH, Moisture content, Electrical conductivity and C/N ratio) to make compost feasible to floriculture

and Landscaping operation.

Table2: Total Waste Generated:

S.No.	Number of students	Total Faculty (Teaching & Non-teaching)	Collection of SolidWaste	Total waste Generated
DAY SCHOLAR@50gram/day				
1.	2960	192	3152x50 gram	157.6Kg/day
HOSTELERS@200 gram /day				
2.	832	4	836x200 gram	167.2 Kg/day

Total waste generated as per Strength and formula of MGNCRE, GOI: $157.6+167.2=324.8$ Kg/day

Plastic waste=70 Kg

Wet waste= $324.8-70=254.8$ Kg/day ----- 1

Waste Generated in Month of August, 2023

Wet waste generated per Day (Actual)= $3239/27=119.9$ Kg/day

Wet waste generated as per strength (Formula; as depicted in reference 1) = 254.8 Kg/day

Wet waste Saved from generation=134.9 kg/day

Waste Generated in Month of September, 2023

Wet waste generated per Day= $3296/25=131.8$ Kg/day

Wet waste generated as per strength (Formula; as depicted in reference 1) = 254.8 Kg/day

Wet waste Saved from generation=123 Kg/day

Summary of annual data in enclosed below:

Total Solid Waste Generated as per MGNCRE Formula = 115953.6 Kg

Total waste actually generated: 34919 Kg

Reduction in Annual Waste Generation: $115953.6-34919=81034.6$ Kg

(This Reduction in annual waste generation has been achieved by carrying out constant workshops, surveys and awareness of stakeholders).

MONTHLY LOGBOOK FOR BULK WASTE MANAGEMENT

Month, Year	July-2023			
DATE	TOTAL WASTE GENERATED	WET WASTE	DRY WASTE	WET WASTE PROCESSED THROUGH COMPOSTING
01-07-2023	67	56	11	56
03-07-2023	65	57	8	57
04-07-2023	80	71	9	71
05-07-2023	62	56	6	56
06-07-2023	69	59	10	59
07-07-2023	80	71	9	71
08-07-2023	62	56	6	56
10-07-2023	63	51	12	51
11-07-2023	67	53	14	53
12-07-2023	64	56	8	56
13-07-2023	67	54	13	54
14-07-2023	64	51	13	51
15-07-2023	67	53	14	53
17-07-2023	90	77	13	77
18-07-2023	85	76	9	76
19-07-2023	88	78	10	78
20-07-2023	95	81	14	81
21-07-2023	90	82	8	82
22-07-2023	96	86	10	86
24-07-2023	92	88	8	88
25-07-2023	88	80	8	80
26-07-2023	85	78	7	78
27-07-2023	86	74	12	74
28-07-2023	93	77	16	77
31-07-2023	98	89	9	89
TOTAL IN (KG)	1963	1710	257	1710
AVERAGE	78.52	68.4	10.28	68.4

MONTHLY LOGBOOK FOR BULK WASTE MANAGEMENT

Month, Year	August-23			
DATE	TOTAL WASTE GENERATED	WET WASTE	DRY WASTE	WET WASTE PROCESSED THROUGH COMPOSTING
01-08-2023	107	100	7	100
02-08-2023	117	109	8	109
03-08-2023	125	119	6	119
04-08-2023	120	115	5	115
05-08-2023	121	113	8	113
06-08-2023	0	0	0	0
07-08-2023	108	105	3	105
08-08-2023	128	118	10	118
09-08-2023	130	119	11	119
10-08-2023	119	104	15	104
11-08-2023	125	109	16	109
12-08-2023	110	100	10	100
13-08-2023	0	0	0	0
14-08-2023	128	120	8	120
15-08-2023	129	122	7	122
16-08-2023	115	106	9	106
17-08-2023	126	120	6	120
18-08-2023	117	111	6	111
19-08-2023	114	109	5	109
20-08-2023	0	0	0	0
21-08-2023	108	100	8	100
22-08-2023	129	120	9	120
23-08-2023	134	124	10	124
24-08-2023	111	100	11	100
25-08-2023	134	122	12	122
26-08-2023	129	114	15	114
27-08-2023	0	0	0	0
28-08-2023	112	103	9	103
29-08-2023	115	110	5	110
30-08-2023	108	100	8	100
31-08-2023	120	110	10	110
TOTAL IN (KG)	3239	3002	237	3002
AVERAGE	119.96	111.18	8.78	111.18

MONTHLY LOGBOOK FOR BULK WASTE MANAGEMENT

Month, Year	September-2023			
DATE	TOTAL WASTE GENERATED	WET WASTE	DRY WASTE	WET WASTE PROCESSED THROUGH COMPOSTING
01-09-2023	128	118	10	118
02-09-2023	122	112	10	112
03-09-2023	0	0	0	0
04-09-2023	126	118	8	118
05-09-2023	140	127	13	127
06-09-2023	120	112	8	112
07-09-2023	0	0	0	0
08-09-2023	178	165	13	165
09-09-2023	133	118	15	118
10-09-2023	0	0	0	0
11-09-2023	130	120	10	120
12-09-2023	174	165	9	165
13-09-2023	127	114	13	114
14-09-2023	121	112	9	112
15-09-2023	125	108	17	108
16-09-2023	132	114	18	114
17-09-2023	0	0	0	0
18-09-2023	126	110	16	110
19-09-2023	127	127	0	127
20-09-2023	132	118	14	118
21-09-2023	124	112	12	112
22-09-2023	128	119	9	119
23-09-2023	127	115	12	115
24-09-2023	0	0	0	0
25-09-2023	128	120	8	120
26-09-2023	120	112	8	112
27-09-2023	128	118	10	118
28-09-2023	126	118	8	118
29-09-2023	134	125	9	125
30-09-2023	140	127	13	127
TOTAL IN (KG)	3296	3024	272	3024
AVERAGE	131.84	120.96	10.88	120.96

MONTHLY LOGBOOK FOR BULK WASTE MANAGEMENT

Month, Year	October-2023			
DATE	TOTAL WASTE GENERATED	WET WASTE	DRY WASTE	WET WASTE PROCESSED THROUGH COMPOSTING
01-10-2023	0	0	0	0
02-10-2023	0	0	0	0
03-10-2023	140	127	13	127
04-10-2023	126	118	8	118
05-10-2023	120	112	8	112
06-10-2023	133	118	15	118
07-10-2023	130	120	10	120
08-10-2023	0	0	0	0
09-10-2023	127	114	13	114
10-10-2023	132	114	18	114
11-10-2023	125	108	17	108
12-10-2023	121	112	9	112
13-10-2023	174	165	9	165
14-10-2023	178	165	13	165
15-10-2023	0	0	0	0
16-10-2023	128	118	10	118
17-10-2023	122	112	10	112
18-10-2023	126	110	16	110
19-10-2023	127	127	0	127
20-10-2023	132	118	14	118
21-10-2023	124	112	12	112
22-10-2023	0	0	0	0
23-10-2023	0	0	0	0
24-10-2023	0	0	0	0
25-10-2023	110	100	10	100
26-10-2023	112	103	9	103
27-10-2023	115	110	5	110
28-10-2023	0	0	0	0
29-10-2023	0	0	0	0
30-10-2023	0	0	0	0
31-10-2023	108	100	8	100
TOTAL IN (KG)	2710	2483	227	2483
AVERAGE	87.42	80.10	7.33	80.10

MONTHLY LOGBOOK FOR BULK WASTE MANAGEMENT

Month, Year	November-2023			
DATE	TOTAL WASTE GENERATED	WET WASTE	DRY WASTE	WET WASTE PROCESSED THROUGH COMPOSTING
01-11-2023	122	112	10	112
02-11-2023	126	118	8	118
03-11-2023	120	112	8	112
04-11-2023	140	127	13	127
05-11-2023	0	0	0	0
06-11-2023	127	114	13	114
07-11-2023	130	120	10	120
08-11-2023	121	112	9	112
09-11-2023	133	118	15	118
10-11-2023	174	165	9	165
11-11-2023	125	108	17	108
12-11-2023	0	0	0	0
13-11-2023	0	0	0	0
14-11-2023	85	78	7	78
15-11-2023	96	86	10	86
16-11-2023	128	118	10	118
17-11-2023	132	114	18	114
18-11-2023	126	110	16	110
19-11-2023	0	0	0	0
20-11-2023	110	100	10	100
21-11-2023	124	112	12	112
22-11-2023	178	165	13	165
23-11-2023	127	127	0	127
24-11-2023	134	125	9	125
25-11-2023	117	111	6	111
26-11-2023	0	0	0	0
27-11-2023	0	0	0	0
28-11-2023	112	103	9	103
29-11-2023	108	100	8	100
30-11-2023	115	110	5	110
TOTAL IN (KG)	3010	2765	245	2765
AVERAGE	100.34	92.17	8.17	92.17

MONTHLY LOGBOOK FOR BULK WASTE MANAGEMENT

Month, Year	December-2023			
DATE	TOTAL WASTE GENERATED	WET WASTE	DRY WASTE	WET WASTE PROCESSED THROUGH COMPOSTING
01-12-2023	133	118	15	118
02-12-2023	128	118	10	118
03-12-2023	0	0	0	0
04-12-2023	174	165	9	165
05-12-2023	130	120	10	120
06-12-2023	126	118	8	118
07-12-2023	140	127	13	127
08-12-2023	120	112	8	112
09-12-2023	132	114	18	114
10-12-2023	0	0	0	0
11-12-2023	125	108	17	108
12-12-2023	121	112	9	112
13-12-2023	127	114	13	114
14-12-2023	178	165	13	165
15-12-2023	124	112	12	112
16-12-2023	132	118	14	118
17-12-2023	0	0	0	0
18-12-2023	126	110	16	110
19-12-2023	122	112	10	112
20-12-2023	127	127	0	127
21-12-2023	132	114	18	114
22-12-2023	126	110	16	110
23-12-2023	128	118	10	118
24-12-2023	0	0	0	0
25-12-2023	0	0	0	0
26-12-2023	109	101	8	101
27-12-2023	106	97	9	97
28-12-2023	116	108	8	108
29-12-2023	112	103	9	103
30-12-2023	110	100	10	100
31-12-2023	108	100	8	100
TOTAL IN (KG)	3312	3021	291	3021
AVERAGE	106.84	97.45	9.39	97.45

MONTHLY LOGBOOK FOR BULK WASTE MANAGEMENT

Month, Year	January-2024			
DATE	TOTAL WASTE GENERATED	WET WASTE	DRY WASTE	WET WASTE PROCESSED THROUGH COMPOSTING
01-01-2024	62	56	6	56
02-01-2024	69	59	10	59
03-01-2024	80	71	9	71
04-01-2024	85	78	7	78
05-01-2024	86	74	12	74
06-01-2024	88	80	8	80
07-01-2024	0	0	0	0
08-01-2024	108	100	8	100
09-01-2024	121	112	9	112
10-01-2024	126	118	8	118
11-01-2024	125	108	17	108
12-01-2024	132	114	18	114
13-01-2024	122	112	10	112
14-01-2024	0	0	0	0
15-01-2024	127	127	0	127
16-01-2024	178	165	13	165
17-01-2024	0	0	0	0
18-01-2024	124	112	12	112
19-01-2024	133	118	15	118
20-01-2024	132	118	14	118
21-01-2024	0	0	0	0
22-01-2024	174	165	9	165
23-01-2024	120	112	8	112
24-01-2024	126	110	16	110
25-01-2024	110	100	10	100
26-01-2024	0	0	0	0
27-01-2024	115	110	5	110
28-01-2024	127	114	13	114
29-01-2024	122	112	10	112
30-01-2024	112	103	9	103
31-01-2024	128	118	10	118
TOTAL IN (KG)	3032	2766	266	2766
AVERAGE	97.81	89.23	8.58	89.23

MONTHLY LOGBOOK FOR BULK WASTE MANAGEMENT

Month, Year	February-2024			
DATE	TOTAL WASTE GENERATED	WET WASTE	DRY WASTE	WET WASTE PROCESSED THROUGH COMPOSTING
01-02-2024	120	112	8	112
02-02-2024	122	110	12	110
03-02-2024	116	108	8	108
04-02-2024	0	0	0	0
05-02-2024	120	110	10	110
06-02-2024	120	110	10	110
07-02-2024	122	116	6	116
08-02-2024	128	120	8	120
09-02-2024	114	108	6	108
10-02-2024	118	108	10	108
11-02-2024	0	0	0	0
12-02-2024	122	114	8	114
13-02-2024	118	110	8	110
14-02-2024	120	110	10	110
15-02-2024	128	122	6	122
16-02-2024	116	110	6	110
17-02-2024	114	106	8	106
18-02-2024	0	0	0	0
19-02-2024	122	114	8	114
20-02-2024	124	114	10	114
21-02-2024	120	110	10	110
22-02-2024	130	120	10	120
23-02-2024	126	118	8	118
24-02-2024	120	112	8	112
25-02-2024	0	0	0	0
26-02-2024	120	110	10	110
27-02-2024	124	118	6	118
28-02-2024	128	116	12	116
29-02-2024	126	118	8	118
TOTAL IN (KG)	3038	2824	214	2824
AVERAGE	104.7586207	97.37931034	7.379310345	97.37931034

MONTHLY LOGBOOK FOR BULK WASTE MANAGEMENT

Month, Year	March-2024			
DATE	TOTAL WASTE GENERATED	WET WASTE	DRY WASTE	WET WASTE PROCESSED THROUGH COMPOSTING
01-03-2024	120	114	6	114
02-03-2024	122	114	8	114
03-03-2024	0	0	0	0
04-03-2024	126	120	6	120
05-03-2024	130	118	12	118
06-03-2024	124	118	6	118
07-03-2024	120	122	8	122
08-03-2024	122	116	6	116
09-03-2024	128	118	10	118
10-03-2024	0	0	0	0
11-03-2024	118	110	8	110
12-03-2024	128	118	0	118
13-03-2024	116	110	6	110
14-03-2024	118	110	8	110
15-03-2024	120	114	6	114
16-03-2024	124	116	8	116
17-03-2024	0	0	0	0
18-03-2024	122	112	10	112
19-03-2024	126	118	8	118
20-03-2024	120	114	6	114
21-03-2024	118	102	6	102
22-03-2024	114	110	4	110
23-03-2024	116	108	8	108
24-03-2024	0	0	0	0
25-03-2024	120	110	10	110
26-03-2024	128	116	12	116
27-03-2024	122	114	8	114
28-03-2024	124	116	8	116
29-03-2024	126	116	10	116
30-03-2024	120	112	8	112
31-03-2024	0	0	0	0
TOTAL IN (KG)	3239	3002	237	3002
AVERAGE	104.483871	96.83870968	7.64516129	96.83870968

MONTHLY LOGBOOK FOR BULK WASTE MANAGEMENT

Month, Year	April-2024			
DATE	TOTAL WASTE GENERATED	WET WASTE	DRY WASTE	WET WASTE PROCESSED THROUGH COMPOSTING
01-04-2024	125	117	8	117
02-04-2024	126	117	9	117
03-04-2024	124	115	9	115
04-04-2024	122	112	10	112
05-04-2024	116	109	7	109
06-04-2024	115	110	5	110
07-04-2024	0	0	0	0
08-04-2024	123	116	7	116
09-04-2024	129	120	9	120
10-04-2024	128	118	10	118
11-04-2024	119	109	10	109
12-04-2024	128	120	8	120
13-04-2024	127	116	11	116
14-04-2024	0	0	0	0
15-04-2024	128	120	8	120
16-04-2024	124	115	9	115
17-04-2024	123	115	8	115
18-04-2024	127	122	5	122
19-04-2024	123	117	6	117
20-04-2024	117	113	4	113
21-04-2024	0	0	0	0
22-04-2024	114	109	5	109
23-04-2024	118	110	8	110
24-04-2024	127	119	8	119
25-04-2024	114	105	9	105
26-04-2024	121	116	5	116
27-04-2024	126	120	6	120
28-04-2024	0	0	0	0
29-04-2024	115	110	5	110
30-04-2024	126	120	6	120
TOTAL IN (KG)	3185	2990	195	2990
AVERAGE	106.1666667	99.66666667	6.5	99.66666667

MONTHLY LOGBOOK FOR BULK WASTE MANAGEMENT

Month, Year	May-2024			
DATE	TOTAL WASTE GENERATED	WET WASTE	DRY WASTE	WET WASTE PROCESSED THROUGH COMPOSTING
01-05-2024	124	120	4	120
02-05-2024	118	110	8	110
03-05-2024	119	114	5	114
04-05-2024	111	105	6	105
05-05-2024	0	0	0	0
06-05-2024	113	110	3	110
07-05-2024	117	109	8	109
08-05-2024	120	114	6	114
09-05-2024	120	110	10	110
10-05-2024	125	116	9	116
11-05-2024	127	122	5	122
12-05-2024	0	0	0	0
13-05-2024	124	120	4	120
14-05-2024	128	120	8	120
15-05-2024	118	110	8	110
16-05-2024	123	116	7	116
17-05-2024	129	120	9	120
18-05-2024	123	118	5	118
19-05-2024	0	0	0	0
20-05-2024	123	120	3	120
21-05-2024	115	109	6	109
22-05-2024	129	120	9	120
23-05-2024	113	105	8	105
24-05-2024	125	116	9	116
25-05-2024	124	117	7	117
26-05-2024	0	0	0	0
27-05-2024	125	120	5	120
28-05-2024	133	123	10	123
29-05-2024	114	105	9	105
30-05-2024	116	110	6	110
31-05-2024	114	109	5	109
TOTAL IN (KG)	3270	3088	182	3088
AVERAGE	105.483871	99.61290323	5.870967742	99.61290323

MONTHLY LOGBOOK FOR BULK WASTE MANAGEMENT

Month, Year	June-2024			
DATE	TOTAL WASTE GENERATED	WET WASTE	DRY WASTE	WET WASTE PROCESSED THROUGH COMPOSTING
01-06-2024	80	71	9	71
02-06-2024	0	0	0	0
03-06-2024	64	55	13	55
04-06-2024	65	60	5	60
05-06-2024	64	54	10	54
06-06-2024	65	57	8	57
07-06-2024	68	54	14	54
08-06-2024	70	60	10	60
09-06-2024	0	0	0	0
10-06-2024	69	59	10	59
11-06-2024	68	56	12	56
12-06-2024	68	56	12	56
13-06-2024	67	53	14	53
14-06-2024	64	56	8	56
15-06-2024	67	54	13	54
16-06-2024	0	0	0	0
17-06-2024	0	0	0	0
18-06-2024	64	51	13	51
19-06-2024	68	55	13	55
20-06-2024	67	56	11	56
21-06-2024	80	71	9	71
22-06-2024	62	56	6	56
23-06-2024	0	0	0	0
24-06-2024	69	58	11	58
25-06-2024	63	51	12	51
26-06-2024	68	51	17	51
27-06-2024	74	62	8	62
28-06-2024	68	52	16	52
29-06-2024	63	51	12	51
30-06-2024	0	0	0	0
TOTAL IN (KG)	1625	1359	266	1359
AVERAGE	56.16666667	45.3	8.866666667	45.3

Topic 4: Vermi Composting

PGGCG-11, Chandigarh is carrying out vermicomposting in four pits below ground level inoculated with red earthworms (*Eisenia fetida*). The entire leaf litter of the college is periodically being added to the pits (10x3x2 feet) along with farm yard manure (FYM). Cow dung and chopped dried leafy materials are mixed in the proportion of 1:1 and are kept for partial decomposition for 15 – 20 days. A layer of 20cm of chopped dried leaves/grasses is kept as bedding material at the bottom of the bed and middle layer 10 cm of cow dung. Red earthworm (1500-2000) is released on the upper layer of bed. Bed is kept moist by sprinkling of water (daily), and it should be turned once after 30 days for maintaining aeration and for proper decomposition. Compost gets ready in 60 days. The finished product is 40-50% of the raw materials. Every 2-3 months the black and granular vermi-compost is being harvested, sieved, graded and utilized



Picture showing a view of vermicomposting unit

Total Greenery of the campus (PGGCG-11, CHD)

Total Area of Campus: 1521600 Sq.ft.

Covered Area (Building Area): 603485.88 Sq.ft. (39.66%)

Total Green Area = 918114.12 Sq.ft (60.34%)

Water Harvesting Area = 21666.5 Sq.ft.

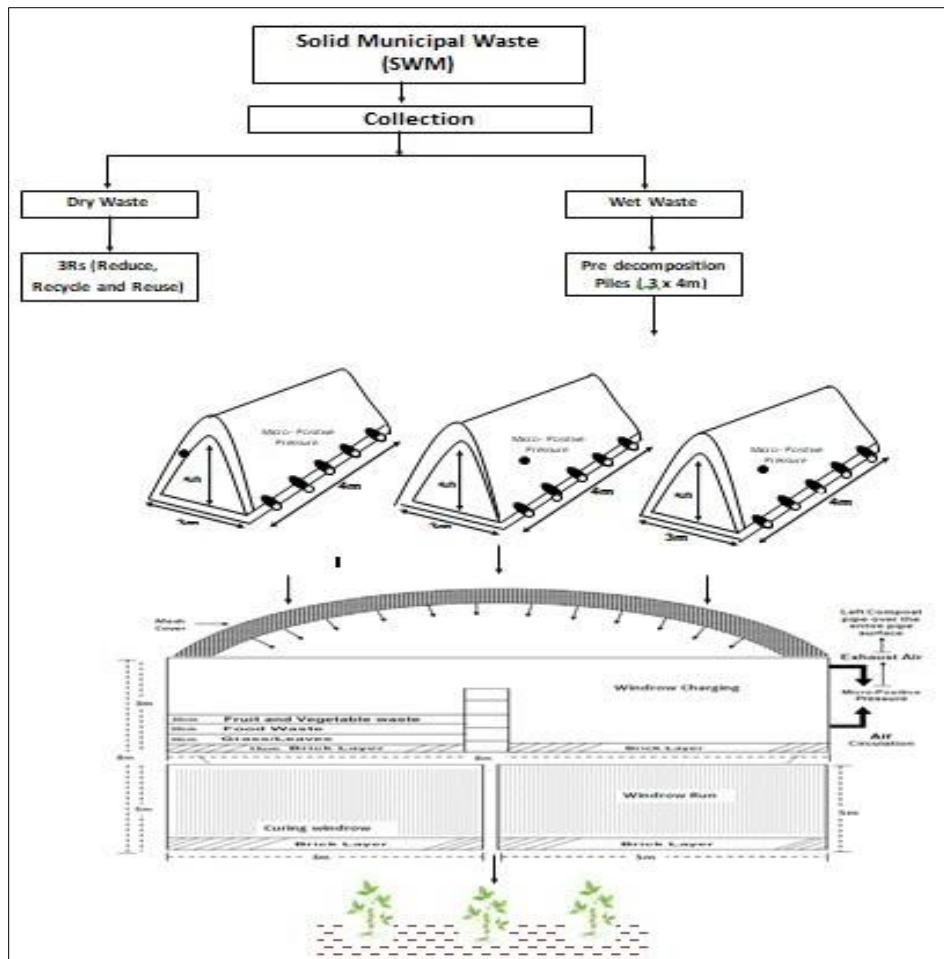
Windrow Composting Plant and Bioreactor = 1496 Sq.ft.

Vermicomposting = 344.4 Sq.ft.

Total Area for Greenery and Environment Services including Water Harvesting, Windrow Composting plant and Bioreactor = $918114.82 + 21666.5 + 1496 + 344.4 = 941621.02$ Sq.ft.

Percentage of Greenery and Environment Services including Water Harvesting, Windrow Composting plant and Bioreactor = $\frac{941621.72}{1521600} \times 100 = 61.88\%$

Basal Tree cover Area = 504962.77 (55%)



(i) Layout of Windrow plant

Audit of Campus Green Infrastructure, site planning and layout

POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS, SECOR 11, CHANDIGARH

RAIN WATER HARVESTING UNIT



FILTRATION TANK

(35 ft x 11.5 ft x 6 ft)



RAINWATER TRAP UNIT

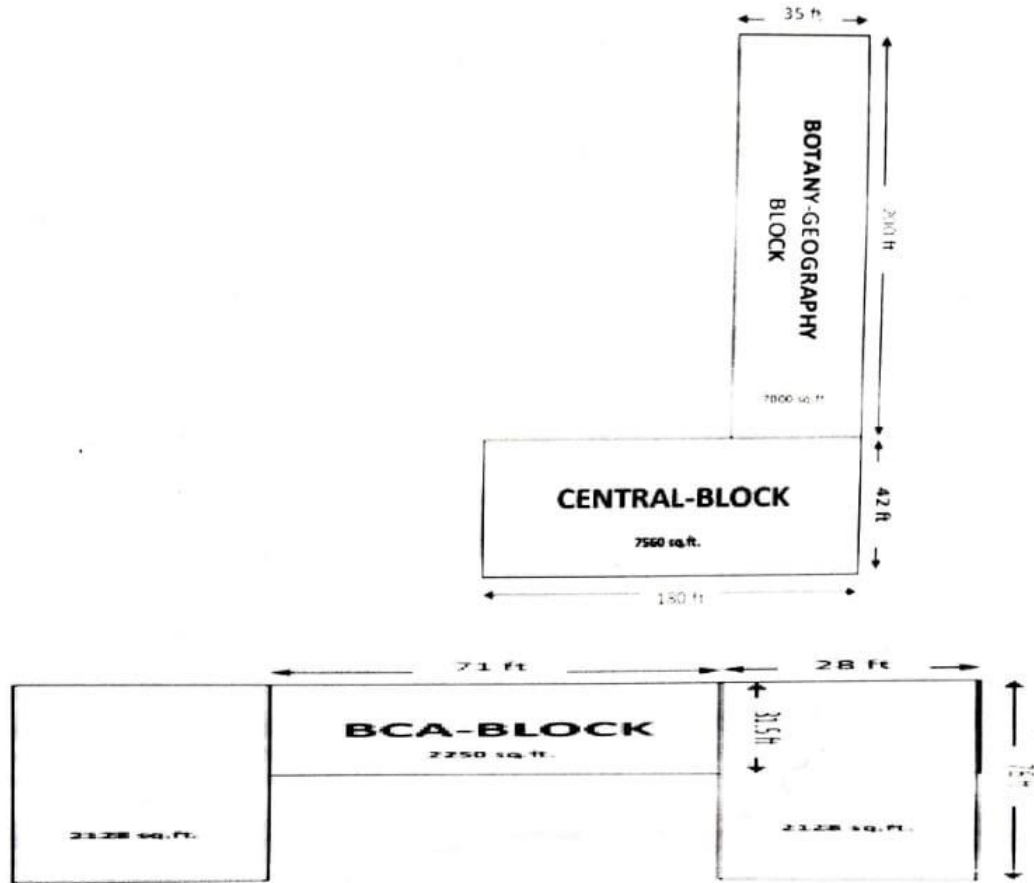
(3 ft x 3 ft x 3 ft)

Total roof top area for rain water harvesting

Botany Geography Block:	7000 sq. ft.
Central Block:	7560 sq. ft.
BCA Block:	6506 sq. ft.
TOTAL AREA:	21,066 sq. ft.

Total rainwater trap units connected to above said rooftop area: 22

Rain Water Harvesting UNIT Roof Top Measurements in Blocks



(iii) Solar Grid System



BIRD MAPPING AT POST GRADUATE GOVT. COLLEGE FOR GIRLS, SECTOR-11, CHANDIGARH

Birds are sensitive indicators of biological richness and environmental trends and fulfil many key ecological functions; they contribute to our understanding of natural processes; they are an important economic resource; and they have inspired and delighted people of many cultures for centuries, which makes them excellent ambassadors for the promotion of conservation awareness and international collaboration. Birds play an essential role in the functioning of the world's ecosystems causing a direct impact on human health, economy and food production. They occupy many levels of trophic webs, from mid-level consumers to top predators. Birds help to maintain sustainable population levels of their prey and predator species and, after death, provide food for scavengers and decomposers. Many birds are important in plant reproduction through their services as pollinators or seed dispersers. Post Graduate Govt College for Girls, Sector-11, organised a bird watching activity under the supervision of Dr. Umesh Bharti, Department of Zoology to familiarise the students of MSc Zoology with the habits and day today activities of birds visiting the campus of college. They recorded the following birds in the campus in the month of October. Every month the record will be made.

1. Common name– Grey bellied cuckoo

Scientific name-*Cacomantis passerinus*

Classification-:

Kingdom- Animalia

Phylum- Chordata

Class- Aves

Order- Cuculiformes

Family- Cuculidae

Genus- Cacomantis

Species- C. passerinus



Location- found near hostel -4 in PGGCG-11, Chandigarh (Submitted by –Shreya Sharma; Msc zoology ; Roll no- 62748)

Habits and habitat – the species prefer light woodland and cultivated areas. This species breeds in tropical southern Asia from India and Sri Lanka to South China and Indonesia.

- Comments- .One of smaller cuckoos, a total length of 23 cm.
- White patches are present on wings.
- Adults are mainly grey with white lower belly and undertail.
- Some females are dark brown in color.
- The juveniles resembles female but is of duller colour.
- They show brood parasitism.

Diet- feeds on variety of insects and caterpillar. They produce a sound pee- pip-pee- pee... ..

2. Common name: Common ground dove

Scientific name: *Columbina passerina*

Classification:

Kingdom:Animalia

Phylum:Chordata

Class: Aves

Order:Columbiformes

Family:Columbidae

Genus:Columbina



Location in college: Near cafe shop of college on wires. Time: Around 2:40 pm (By: Meenakshi MSc-1st zoology, Roll No 62740)

Habits:

- . It feeds predominantly on tiny seeds of grasses, weeds and crop milk.
- . It breeds nearly year round but breeding appears to peak in response to resource availability.
- . It has a less tendency to form flocks and appears to have a relatively limited repertoire of social behaviours.
- . It builds flimsy nests and lay 2 eggs.
- . Nestlings have rapid growth rates and can fly as early as 11 days post hatching.

3. Common name– Grey bellied cuckoo

Scientific name-*Cacomantis passerinus*

Classification-: Kingdom- Animalia

Phylum- Chordata

Class- Aves

Order- Cuculiformes

Family- Cuculidae

Genus- Cacomantis

Species- C. passerinus

Location- found near hostel -4 in PGGCG-11 , chandigarh (Submitted by –Sukhmeen Kaur ; Msc zoology ; Rollno- 62749)



Habits and habitat – the species prefer light woodland and cultivated areas. This species breeds in tropical southern Asia from India and Sri Lanka to South China and Indonesia.

- Comments- .One of smaller cuckoos, a total length of 23 cm.
- White patches are present on wings.
- Adults are mainly grey with white lower belly and undertail.
- Some females are dark brown in color.
- The juveniles resembles female but is of duller colour.
- They show brood parasitism.

Diet- feeds on variety of insects and caterpillar and they produce a sound pee- pip-pee- pee...

4. Common Name: Indian rose ringed parakeet

Scientific Name: *Psittacula krameri*

Classification:

Kingdom: Animalia

Phylum: Chordata

Class: Aves

Order: Psittaciformes

Family: Psittaculidae

Genus: Psittacula

Species: P. krameri

Location in the College: Near main gate of college
(Anjali, Roll no. – 62735, MSc. Zoology 1st year)



Time: around 9:00 am

Habits: 1) Usually feed on buds, fruits, vegetables, nuts, berries, and seeds.

2) Breeding season: These parrots typically breed between February and March.

3) Nesting Cavities: Old holes previously excavated by woodpeckers or barbets work well for these medium sized birds.

4) Egg Laying: Females lay an average clutch of between two and six small, whitish eggs. For the three weeks after laying, she incubates her eggs. Parental care is done by both father and mother.

5) They are herbivorous and non migratory species.

6) Both males and females have the ability to mimic human speech

5. Common Name: Red Wattled Lapwing

Classification:

Kingdom: Animalia

Phylum: Chordata

Class: Aves

Order: Charadriiformes

Family: Charadriidae

Genus: Vanellus

Species: indicus



LOCATION: College Playground, near stage, PGGCG 11 (Devyani Sharma, M. Sc Zoology I 62737)

HABIT AND HABITAT: Usually keeps in pairs or trios in well watered open country, ploughed fields, grazing land and margins

Occasionally form large flocks ranging from 26 to 200 birds.

COMMENTS:

- Measures 30 to 35 cms in length and weighs 110 to 230 grams. Wingspan: 80 to 85 cms.
- A prominent white patch runs from the sides of the crown to the flanks along the sides of the neck.
- Bill is reddish with black tip.
- Male and female are similar in plumage.
- Diet: Consists mainly of insects, Beetles, ants, termites, butterflies, small gastropods. Also feed on seeds, grains and other plant matter.
- Reproduction: Breeding season is from March to September (In India)

These are monogamous and highly territorial. Prefer nesting sites close to water.

Both of the pair takes part in nest building, incubation and care of chicks. The chicks hatch out in about 25 days.

6. Common Name: Teetar or Bhoora Teetar

Classification:

Kingdom: Animalia

Phylum: Chordata

Class: Aves

Order: Galliformes

Family: Phasianidae

Genus: Francolinus

Species: pondicerianus



LOCATION IN PGGCG 11 - Near parking, Beside compost pit. TIME (2:20 pm) by Sunil (62751)

- Grayish brown game birds with short stubbed tail. Usually seen in small groups
- Males are larger than females and have an anchor shaped black mark on throat.
- Resident in drier areas mostly plains throughout India upto about 1500ft. in the Himalayas.
- Normally found foraging on bare or low grass covered ground in shrubs.
- Feed on seeds, grains, insects particularly termites and beetles.
- Fast runners. They take to wing only when surprised in bushes.
- Average life span is 8 years

7. Common Name – Yellow footed green pigeon

Zoological Name – *Treron phoenicoptera*

CLASSIFICATION:

Kingdom – Animalia

Phylum – Chordata

Class – Aves

Order – Columbiformes

Family – Columbidae

Genus – Treron

Species-T.phoenicoptera

Location- In garden backside of hostel number 4, PGGCG-11(Timing-5:30pm) (Pallavi Sharma

Roll number-62743)

Habit and habitat

- They prefer semi evergreen forests, deciduous forest, wooded habitats and secondary forests up to 800 meter. They commonly found in road side trees particularly Banyan and Peepal trees. Also visits gardens even inside towns.



- They also found in a wide range of wooded habitats including dry and moist deciduous forest, secondary growth, scrubland, groves of trees in open country, agricultural land, villages, overgrown gardens and tree lined roads.
- They are social birds. They found in pairs or small groups (up to 5 to 10 Individuals) and sometime large groups. They are gregarious and arboreal, only rarely descending to the ground.
- The flight is noisy, swift, strong, and direct, and the call is a series of about ten beautiful, mellow, musical whistles, which usually give the first indication of their presence in a locality.
- Yellow footed green pigeons are herbivores. They feed on various fruits, berries and crops. They also feed on buds, shoots and various grains.
- They forage in flocks. In the early morning they are often seen on the tops of emergent trees in dense forest areas. At the time of resting, they often perch on the highest branches of a tall tree in pairs or small groups.

8. Common name- Sath Bhai

Scientific name–*Argya striata*

Classification

Kingdom - Animalia

Phylum - Chordata

Class - Aves

Order - Passeriformes

Family -Leiothrichidae

Genus - *Argya*

Species –*A. striata*

Location- On roof of tuck shop;Time – 2:15 pm (Deepti Siwach Roll no. – 62736)

Habits

- These are gregarious and social.
- These feed mainly on insects but also eat grains, nectar and berrirs.
- They are long lived and have been noted to live as long as 16.5 years in capitivity.



- Young birds have a dark iris. Older birds have a pale creamy colour iris.
- These breed throughout the year. Peak breeding is noted between March- April and July – September.
- These lay 3-4 eggs (can be 7) and are deep grey in colour.

9. Common name: Indian myna

Scientific name : *Acridotheres tristis*

Classification

Kingdom : Animalia

Phylum. : Chordata

Class : Aves

Order. : Passeriformes

Family. : Sturnidae

Genus. : *Acridotheres*

Species. : *Tristis*



Location in college : hostel entrance gate Time : 2:30 pm (Deepti Siwach Roll no. – 62736)

- The common myna is brown with a black head .It has a yellow bill, legs and brown eye skin.
- Habitat: it is closely associated with human habitation
- They are accomplished scavengers , feeding on almost anything, including insects , fruits and vegetables, scraps and even fledging sparrows.
- They mate for life and compete for nesting sites. Favoured location are walls , ceilings of buildings ,tree hollows etc.

10. COMMON NAME : Common Pigeon/ Rock Dove

SCIENTIFIC NAME : *Columba livia*

*CLASSIFICATION :

Kingdom - Animalia

Phylum - Chordata

Class - Aves

Order - Columbiformes

Family - Columbidae

Genus– *Columba*



LOCATION : Hostel number 4 window ledge PGGCG-11 (PRACHI GUPTA, Roll No. – 12957)

HABITAT : Has a restricted natural resident range in Western and Southern Europe, North Africa and South Asia. Naturally occur on cliffs, usually on coasts but also found on artificial cliff faces created by apartment buildings.

HABITS:

- Often found in pairs during the breeding season but usually gregarious.
- They are generally monogamous with two young/ squabs per brood.
- Feed on the ground in flocks/ individually.
- They are scavengers.
- Two prominent black bars distinctive on its pale grey wings.
- When disturbed, a pigeon in group will take off with a noisy clapping sound that is a cue for others in the flock to take flight.
- They are able to dip their bills into water and drink continuously without having to tilt their heads back like in most birds.
- Best in flimsy platform of straw and sticks, often laid on window ledges of buildings.
- Breed at anytime of the year but peak times are spring and summer.

11. Common Name: **Pigeon; Dove; white rock dove**

SCIENTIFIC NAME: - *Columba livia*

CLASSIFICATION

KINGDOM – Animalia

PHYLUM - Chordata

CLASS - Aves

ORDER - Columbiformes

GENUS - Columba



LOCATION IN PGGCG -11- Near parking, TIME 12:45PM (Devyani Sharma, M. Sc Zoology I 62737)

HABITS :

- Small pigeon {7.6 to 8.4 inches}
- Found in pairs, groups, flocks
- Fly in rapid, undulating motion
- Found commonly in streets and ground

- Breeding occur from October and January; March and June

12. Common Name: Lesser Golden-backed Woodpecker

SCIENTIFIC NAME: - *Dinopium benghalense* CLASSIFICATION

KINGDOM – Animalia
 PHYLUM - Chordata CLASS
 - Aves ORDER
 - Piciformes GENUS
 - *Dinopium*



LOCATION IN PGGCG -11- On trees backside of H number 4, PGGCG-11(Timing-5:30pm) (Pallavi Sharma, number-62743)

HABITS:

- Most woodpeckers live solitary lives
- Aggressive behaviors include bill pointing and jabbing, head shaking, wing flicking, chasing, drumming, and vocalizations.
- Woodpeckers are diurnal, roosting at night inside holes and crevices.
- Most woodpecker species feed on insects and other invertebrates living under bark and in wood, but overall, the family is characterized by its dietary flexibility, with many species being both highly omnivorous and opportunistic.
- They nest in cavities, nearly always in the trunks and branches of trees, well away from the foliage. Breeds in late-May or early June to mid-May
