



The New Miraj Education Society's

Kanya Mahavidyalaya, Miraj

Clean and Green Campus Initiatives



Prepared by

Department of Environmental Science,

Shivaji University, Kolhapur- 416004

2023- 24



Chief Editor

Dr. (Mrs.) Aasawari S. Jadhav

Editor

Ms. Priya R. Vasagadekar

Field Team

Dr. (Mrs.) Pallavi R. Bhosale

Ms. Priya R. Vasagadekar

Ms. Sanjivani T. Chougale

.....

Prepared by
Department of Environmental Science,
Shivaji University, Kolhapur.



The New Miraj Education Society, Miraj
Affiliated to Shivaji University, Kolhapur

Ph. (0233) 2223347

KANYA MAHAVIDYALAYA, MIRAJ

Post Box No. 29, Shivaji Road, Miraj - 416 410. (Dist. Sangli)

Email : kanyamahavidyalayamiraj@gmail.com

Website : kmmiraj.org

Ref. No. :

Date :

Principal's Message



The Institute realizing the need of Green, Energy and Environment Audit for Environment friendly campus is serious for the assessment of the campus for such audits. In the Globalized world, many environmental issues have to face and it has become our prime duty to protect the earth from all types pollutions.

Our institute has framed the 'Eco-Friendly Campus Cell' which takes initiatives to keep the environment of the campus clean and green. Under the guidance of this cell our departments of N.S.S. and N.C.C. organize cleanliness drive regularly. Similarly, various programmes are organized for our students to increase awareness about environment protection and sustainability. The institute has set up Rain-Harvesting and Compost Fertilizer project for waste management.

The roll of HEI institutes in Environment Sustainability is crucial today. Hence our institute not only takes efforts inside the campus but also outside the campus for eco-friendly activities. The collection of e-waste is also done to increase the awareness of society about the dangers of e-waste and plastic.

Along with this programmes, the record is maintained to assess the environmental performance of our institution and to find out solutions for eco-friendly campus. All the programmes are in relation to the objectives to improve the environmental conditions in and around the institute.

So, I am happy that our institution is conducting these audits very keenly under the guidance of a team from the Shivaji University, Kolhapur. It certainly helps us to act in response to the environmental issues in future.

Thank you,

Place: Miraj

Date: 25/04/2024




Principal
Kanya Mahavidyalaya, Miraj.

Dr. U.M.Malkar



SHIVAJI UNIVERSITY, KOLHAPUR
DEPARTMENT OF ENVIRONMENTAL SCIENCE

Vidyanagar, KOLHAPUR - 416 004, Maharashtra, India

Tel. : 0231-2609333 / 9304, Gram: "UNISHIVAJI"
Fax : 0091-0231-2691533/2333
E-mail : envsc@unishivaji.ac.in

Ref. No./SUK/ENV

Date: 11/06/2024

Certificate

This is to certify that the Department of Environmental Science, Shivaji University, Kolhapur has conducted detailed "Clean and Green Campus Initiatives" of "Kanya Mahavidyalaya, Miraj" during the academic year 2023-2024. This report was conducted in accordance with the applicable standards prescribed by the Indian Institute of Remote Sensing, Dehradun, India, Ministry of Environment, Forest and Climate Change, New Delhi and Intergovernmental Panel on Climate Change (IPCC) and Central Pollution Control Board (CPCB), New Delhi. The report involves Solid waste generation, safe waste disposal practices, green inventory, biomass estimation, carbon sequestration potential of the campus. 'Environmental Management Plan', is also included in the report which can be followed to minimize environmental impacts. The performance of college was found to have good quality with respect to sustainable Clean and Green Practices. Even though ample amount of work can be done in this area.

The opportunities of sustainable green practices and well consideration of suggested Environmental Management Plan can make the college role model to other institutions as well. In an opinion and to the best of our information and according to the information given to us, said Clean and Green Initiatives gives a true and fair view in conformity with environmental auditing principles accepted in India.

Head

Dr. (Mrs.) Aasawari Jadhav
HC. Head & Assistant Professor
Department of Environmental Science.
Shivaji University, Kolhapur

INDEX

Sr. No.	Contents	Page No.
1	1.1 Clean campus initiatives 1.1.1 Generation of solid waste in College 1.1.2 Status of solid waste generation in College 1.1.3 Plastic waste generation in the college 1.1.4 Hazardous waste audit of the college 1.1.5 E-waste generation in the College 1.2 Eco-friendly solid waste management practices	1-7
2	2.1 Green Campus Initiatives of Kanya Mahavidyalaya, Miraj 2.1.1 Total No. of trees enumerated on Kanya Mahavidyalaya, Miraj, Maharashtra Campus 2.1.2 Total No. of species identified on Kanya Mahavidyalaya, Miraj, Maharashtra Campus	8 9 9
3	2.2 Species with the highest population	9
4	2.3 Total Biomass	10
5	2.4 Carbon Stock	11
6	2.5 Carbon Sequestration	12
7	2.6 Oxygen Released	12
8	2.7 List of tree species observed on campus	13
9	Conclusion and Recommendations	15
10	Environment Management Plan (EMP)	16

List of Tables

Table No.	Content
Table No.1.1.1	Category wise solid waste generation in college (kg/month)
Table No. 1.1.2	Percentage of category wise solid waste in the college (kg/month)
Table No. 1.1.3	Plastic waste generation and its distribution in the college
Table No.2.1	Species with the Highest Population
Table No.2.2	Total biomass of trees in tons on the campus
Table No.2.3	Carbon stock of trees in tons on the campus

Lists of Graphs

Graph No.	Content
Graph No. 1.1.1	Category wise solid waste generation in college (kg/month)
Graph No. 1.1.2	Percentage of solid waste generation in the college (kg/month)
Graph No.2.1	Dominant tree species on campus
Graph No.2.2	Species with highest total biomass in tons on the campus
Graph No.2.3	Species with highest carbon stock in tons on the campus

1.1 Clean campus initiatives:

Waste management is very important issue to solve many environmental problems. It is a process of regular identification, quantification, documenting, reporting and monitoring of environmentally important components in a specified area. Through this process is the regularly monitored within and outside of the concerned sites which have direct and indirect impact on surroundings. It can be one of the initiative for such institutes to account their energy, water resource use as well as wastewater, solid waste, E-waste, hazardous waste generation.

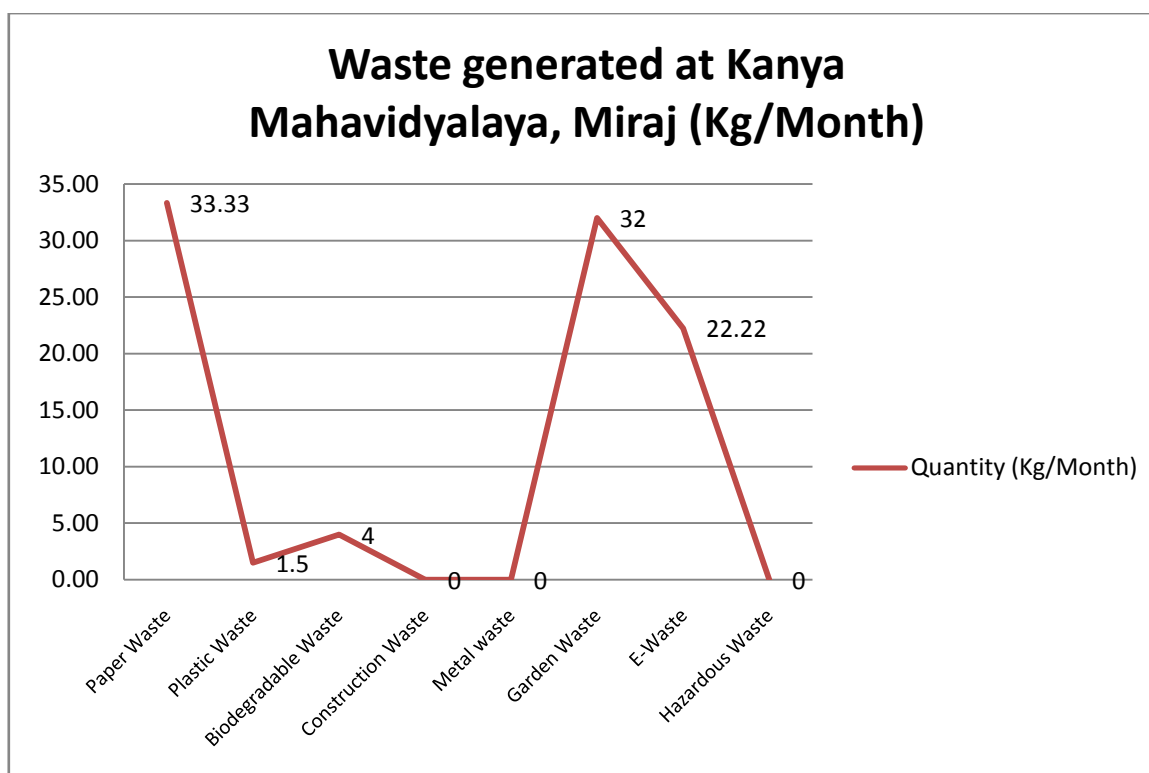
Solid waste management is a term that refers to the process of collecting and treating solid wastes. As long as people have been living in settlements, garbage and solid waste has been an issue. In recent years, it is observed that per capita waste generation has increased due to the changing life style. Improper disposal of solid waste is responsible for pollution of air, water and soil. Disposal of solid waste on open area leads to develop bad odour in the surrounding also it may develop unhygienic conditions. Improper waste disposal is root cause for spreading the infectious diseases among the human and animal. So, it is important to take some steps for the proper management of solid waste followed by reduce, reuse and recycle 3R principle. The intention of this inventory is to find out the quantity of waste generation and disposal methods which are currently followed at Kanya Mahavidyalaya, Miraj.

Solid waste audit of college was conducted by grouping the college into Main building and college premises. Different types of waste are generated in the college campus. Dustbins are fixed in the building which is used for collection of waste.

1.1.1 Generation of solid waste in college:

Table No.1.1.1: Category wise solid waste generation in college (kg/month)

Waste type	Paper Waste	Plastic Waste	Biodegradable Waste	Construction Waste	Metal waste	Garden Waste	E-Waste	Hazardous Waste
Quantity (Kg/Month)	33.33	1.5	4	0	0	32	22.22	0
Quantity (Kg/ Year)	300	13.5	36	0	0	288	200	0



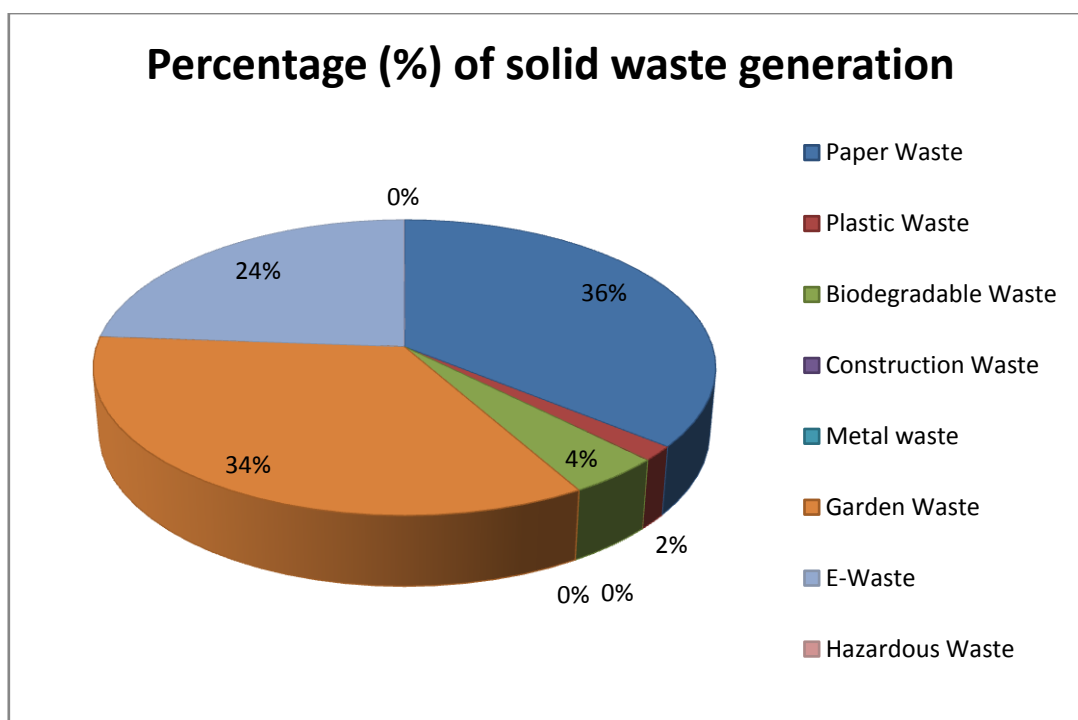
Graph No. 1.1.1: Category wise solid waste generation in college (kg/month)

The average amount of solid waste generated per month in Kanya Mahavidyalaya, Miraj is approximately 93.06 kg/month. On the basis of observations, the highest quantity of solid waste generated is paper waste which is about 33.33 kg/month. This waste is produced because of leaf litter and other garden waste.

Besides, the above mentioned waste, plastic waste is generated in the form of plastic wrappers of food items. Approximately 14 kg/ month paper waste is generated in the institution and that is given to the vendor.

Table No. 1.1.2: Percentage of category wise solid waste in the college (kg/month)

Category	Paper Waste	Plastic Waste	Biodegradable Waste	Construction Waste	Metal waste	Garden Waste	E-Waste	Hazardous Waste
Percentage (%)	35.82	2.9	7.7	0.0	0.0	34.39	23.88	0.0



Graph No. 1.1.2: Percentage of solid waste generation in the college (kg/month)

Percentage wise distribution of different sources of solid waste is shown in the above graph. The maximum percentage of solid waste generated is of paper waste which is approximately 36 % and minimum percentage of plastic waste generated is about 2%.

1.1.3 Plastic Waste:

Table No. 1.1.3: Plastic waste generation and its distribution in the college

Category	Plastic Kg/month				Total
	Hard	Soft	Carry Bags and Water bottles	Other	
Quantity	0	0.3	1	0.2	1.5
Percentage	0	20	66.7	13.3	100

Plastic waste in the form of packaged food wrappers, carry bags etc. is approximately 1.5 kg/ month. Plastic wastes are difficult to dispose because it is non-biodegradable waste or it takes many years to degrade naturally. It can cause adverse impacts on environment.

1.1.4 Hazardous waste audit of the college:

Hazardous waste is waste that has substantial or potential threats to public health and environment. The sources of hazardous waste in the college are very less. Very less quantity

of hazardous waste generated through Sanitary napkins. For disposal of sanitary napkins incinerator is provided in college.

1.1.5 E-waste generation in the college:

Generation of e-waste is found in every educational institute. All discarded electronic appliances are called as E-waste. This waste requires special treatment for disposal. So it is also called as special waste. It is observed that the e-waste generated at College is of Schedule II category. Computers, printers, scanners, CPU's, UPS, fused bulbs and tubes are used for administrative work. The wire required for the network connectivity and for electricity also gets included in the E-waste.

1.2 Eco-friendly solid waste management practices:

The college follows following eco-friendly solid waste management practices.

1. Paper waste recycling:

Paper waste is handed over to the vendor for recycling. This waste includes newspapers as well as office work paper.

2. E waste recycling:

All the E waste generated in college premises is recycled through vendor.

3. Collection of waste:

For waste collection dustbins are provided wherever required on the campus, different dustbins are provided according to nature of waste such as, dry waste, wet waste and plastic waste. In classrooms carton boxes from some unpacked material is recycled and used as dustbins.



Figure 1: Dustbins are provided for waste collection

4. Hazardous waste disposal:

For the disposal of sanitary napkins incinerator is installed in college.



Figure 2: Incinerator

5. Composting of garden waste:

Garden waste is utilized in vermicomposting plant which is present on campus.



Figure 3: Vermicomposting unit

6. Segregation of plastic waste:

Plastic waste generated on the campus and in college is segregated at source by providing different dustbins for plastic waste collection.



Figure 4: Dustbin for collection of plastic waste

8. Outreach programme by the institute:

The institute has done outreach activities in year 2023-24. Under the National Service Scheme (NSS), cleaning camp was organized by the institute during 20th January to 26th January 2024 at Erandoli villege, Miraj. The students have actively participated in the residential camp under NSS.



Figure 5: Cleanliness camp under NSS

The institute has participated in “E- Yantran Abhiyan 2024”. On January 29th, the institute has handover 200 kg of E-waste to Purnam Ecovision Foundation, Pune.



PEF/2024-25/MAY/045

15th May 2024

प्रति,
प्राचार्य,
कन्या महाविद्यालय, मिरज

विषय: ई-कचरा संस्थेकडे सुपूर्त करणेबाबत....

महोदया/महोदय,

पूर्णम इकोव्हिजन फाऊंडेशन ही पुणे येथे कार्यरत संस्था कंपनी कायद्याच्या अंतर्गत सेक्शन ८ खाली नोंदणीकृत संस्था असून गेली ९ वर्षे कचरा व्यवस्थापन आणि पर्यावरण या क्षेत्रांत काम करत आहे. संस्थेतर्फे ई-कचरा व प्लॅस्टिक कचरा जनजागृती व संकलन करण्यात येते आणि त्याचे सुयोग्य व्यवस्थापन केले जाते.

प्रजासत्ताक दिनांिमित्त इ-यंत्रण अभियान २०२४ आपल्या शहरात राबविण्यात आले. दिनांक २९ जानेवारी रोजी आपल्या महाविद्यालयाकडून २०० किलो ई-कचरा पूर्णम इकोव्हिजन फाऊंडेशन या आमच्या संस्थेस नि:शुल्क सुपूर्त करण्यात आला आहे. संकलित ई-कचऱ्याचे व्यवस्थापन योग्य प्रकारे होईल, याची आम्ही खात्री देतो. आपण याद्वारे पर्यावरण संरक्षणासाठी पूक कार्य करत आहात. त्याबद्दल आपले अभिनंदन!

यापुढील काळातही आमच्या संस्थेशी आपण संपर्कात राहून सामाजिक आणि पर्यावरण पूक कामामध्ये सहभाग नोंदवाल, अशी आशा आहे.

कळावे,

आपला विश्वासू



डॉ. राजेश मणेरीकर,
मुख्य कार्यकारी अधिकारी

Poornam Ecovision Foundation

9405391980 | contact@poornamecovision.org | www.poornamecovision.org

Office Address - Ratnaprabha Bungalow, Near Moha E-Service Kendra,

Punchnal Sweet Lane, Vaidgagan Budruk, Gopinath, Shirgaon Road, Pune 411041

Registered Office Address: A-19, Sai Residency, S. No. 13/3, Lane No. 30/31, Dhawal, Pune 411041

Figure 6: Appreciation letter by Purnam Ecovision Foundation, Pune

Key Observations:

- The average waste generated in the college is app. 93.6 Kg /month
- Highest quantity of solid waste is garden waste which is around 32 Kg/month.
- Over all the waste generated in the college is handed over to vendor named “Waste cart”.
- Paper waste is given to the vendor for recycling to waste cart.
- Cleanliness is maintained at college.
- E-waste is recycled to vendor waste cart.
- Solid waste is disposed instead of burning it on campus.
- Incinerator is in operating condition.

2.1 Green Campus Initiatives of Kanya Mahavidyalaya, Miraj, Dist. Sangli

A green campus increases energy efficiency, conserves resources, and enhances environmental quality by supporting sustainability and creating healthy living and learning environments. The college community's dedication to long-term environmental betterment is acknowledged by Green College. In spite of its age, the structure is quite sustainable and environmentally friendly. Many of their buildings include natural lighting, which improves the quality of the air and uses less water and energy. In urban environments, trees are essential for maintaining public health and enhancing the beauty of the city. Planting trees without taking into account their species, location, and upkeep won't provide all the desired results, though. It's crucial to plan the trees' location and continuing maintenance in order to optimize future advantages and guarantee their survival and growth throughout time.

Kanya Mahavidyalaya, Miraj is situated in Sangli district Maharashtra at longitude 74°38'36.56"E and latitude 16°49'27.65"N the elevation of the institute from the sea level is 1911 ft. The Institute's campus is 1.27 acres in size. The climate in the area is ideal for the cultivation of a wide variety of plants.



Figure 7: Google Earth image of Kanya Mahavidyalaya, Miraj

A total of 94 trees were counted, each having a girth of more than 10 cm and a height of more than 4 ft. Based on data supplied by the Institution, a total of 22 species of woody trees were recognized during the visit. The campus has a higher concentration of native woody tree

species, which is good for biodiversity. During the inventory, *Dypsis lutescens* was discovered the most on campus. Kanya Mahavidyalaya, Miraj has planted trees that have a better capability for carbon sequestration. The Institute took the initiative to plant native plants, which is the best way to protect the area's biodiversity.

2.1.1 Total number of trees enumerated on Kanya Mahavidyalaya, Miraj, Maharashtra campus: 94

Total 94 numbers of trees with more than 10 cm girth and height more than 4 feet have been enumerated. Girth and height of every tree has been measured.

2.1.2 Total No. of species identified on Kanya Mahavidyalaya, Miraj, Maharashtra campus: 22

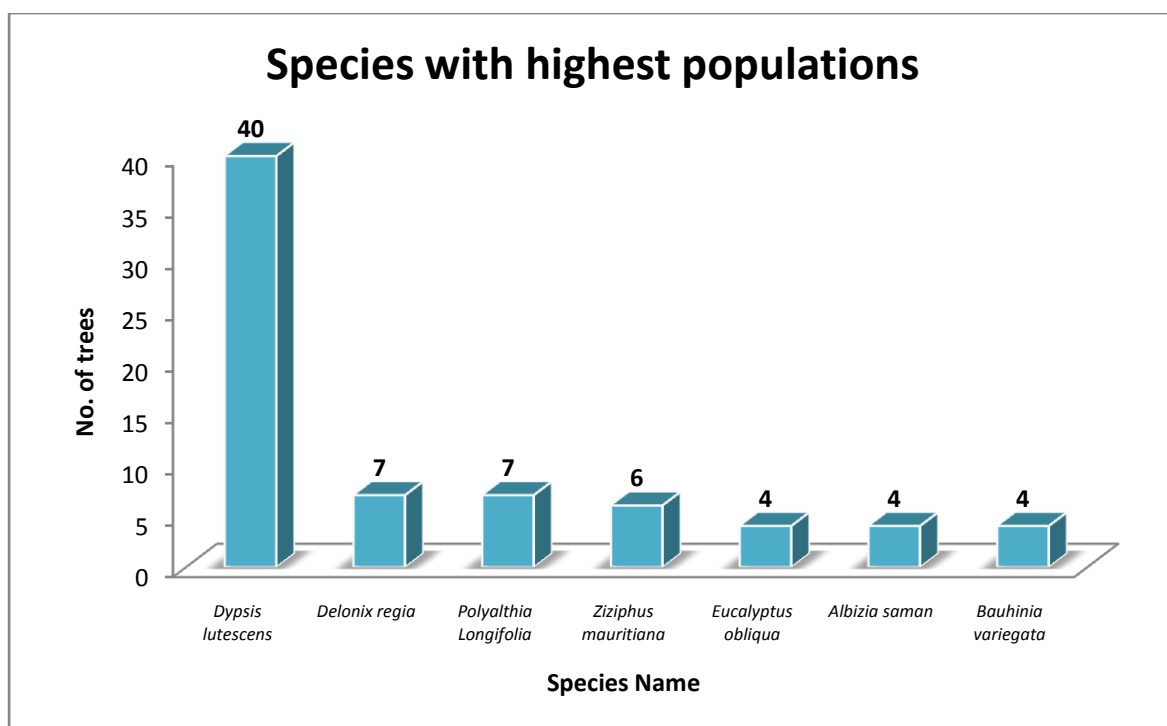
About 22 species have been identified during the census. It shows a comparatively good diversity of tree species on the campus.

2.2 Species with the highest population:

Table No.2.1: Species with the Highest Population

Sr. No.	Botanical Name	No. of trees observed
1	<i>Dypsis lutescens</i>	40
2	<i>Delonix regia</i>	7
3	<i>Polyalthia Longifolia</i>	7
4	<i>Ziziphus mauritiana</i>	6
5	<i>Eucalyptus obliqua</i>	4
6	<i>Albizia saman</i>	4
7	<i>Bauhinia variegata</i>	4

During the inventory, *Dypsis lutescens* was discovered to have the greatest population on campus, followed by *Delonix regia* and *Polyalthia Longifolia*. The species *Dypsis lutescens*, which has a population of 40 individuals, is the most populous species on campus. The *Delonix regia* and *Polyalthia Longifolia* make a total of 14 trees on the campus which each contributes equally i.e. 7. *Ziziphus mauritiana* enumerated 6 trees on the campus while *Eucalyptus obliqua*, *Albizia saman* and *Bauhinia variegata* are enumerated with 4 trees each on the campus.



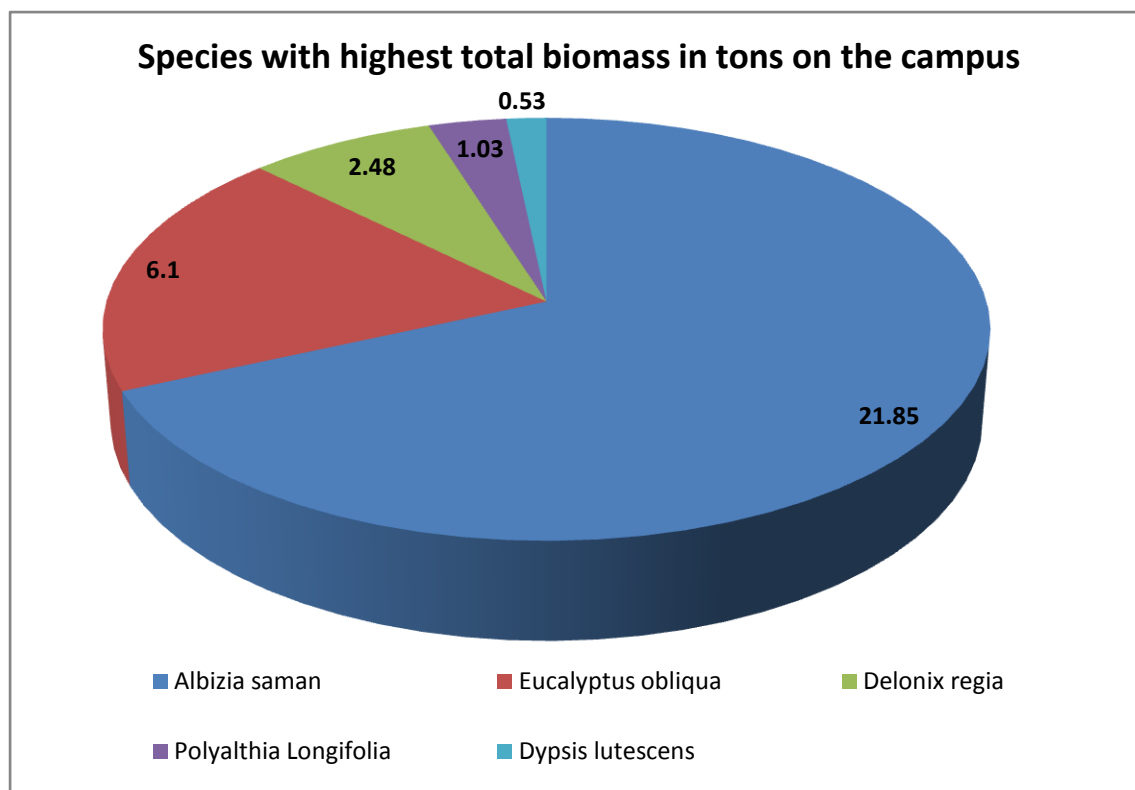
Graph No.2.1: Dominant tree species on campus

2.3 Total Biomass:

Biomass, in ecology, is the mass of living biological organisms in a given area or ecosystem at a given time. Biomass can refer to *species biomass*, which is the mass of one or more species, or to *community biomass*, which is the mass of all species in the community. It can include microorganisms, plants or animals. The mass can be expressed as the average mass per unit area, or as the total mass in the community. 33.81 tones of total biomass of woody vegetation have been recorded in Kanya Mahavidyalaya, Miraj campus during the current tree census.

Table No.2.2: Total biomass of trees in tons on the campus

Sr. No.	Botanical Name	Common Name	Total Biomass in tons
1	<i>Albizia saman</i>	Raintree	21.85
2	<i>Eucalyptus obliqua</i>	Nilgiri	6.10
3	<i>Delonix regia</i>	Gulmohar	2.48
4	<i>Polyalthia Longifolia</i>	Ashok	1.03
5	<i>Dypsis lutescens</i>	Areca Palm	0.53



Graph No.2.2: Species with highest total biomass in tons on the campus

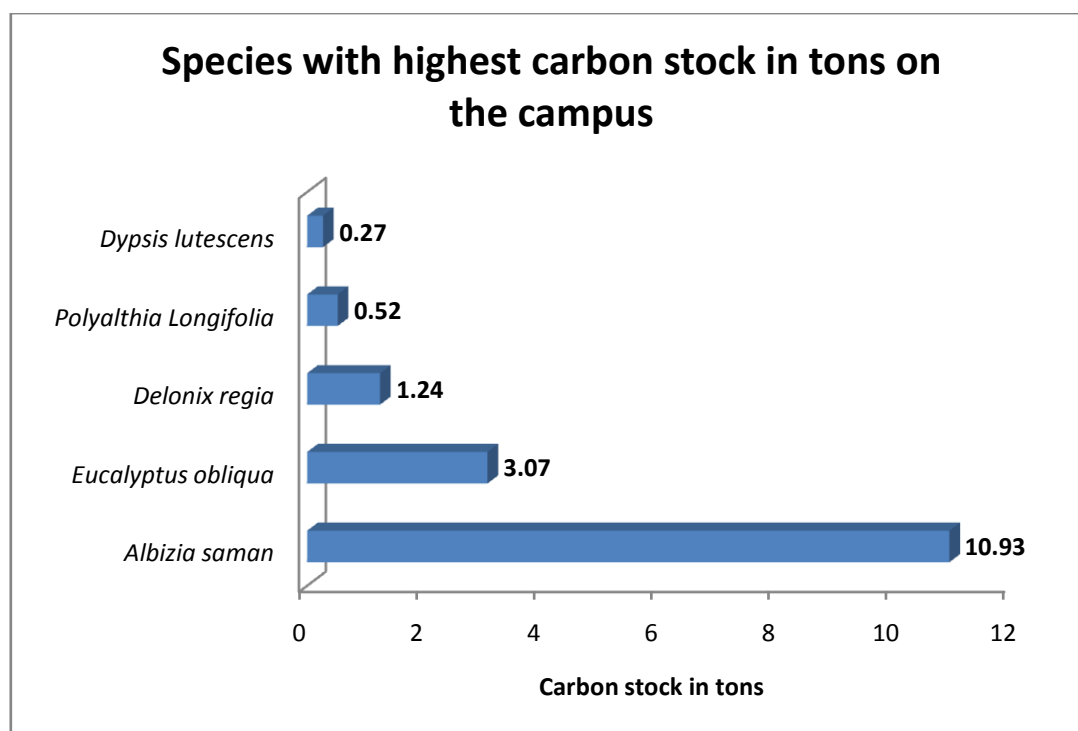
Albizia saman shows the highest biomass on the campus. Followed by *Eucalyptus obliqua* and *Delonix regia* are ranked at second and third place.

2.4 Carbon stock:

Forests and trees act as natural carbon stores, but this carbon is released when the trees are fallen and the area deforested. The amount of carbon stored within an area of land varies according to the type of vegetation cover. 16.90 tones of total carbon stock is present on the campus.

Table No.2.3: Carbon stock of trees in tons on the campus

Sr. No.	Botanical Name	Common Name	Carbon stock in tons
1	<i>Albizia saman</i>	Raintree	10.93
2	<i>Eucalyptus obliqua</i>	Nilgiri	3.07
3	<i>Delonix regia</i>	Gulmohar	1.24
4	<i>Polyalthia longifolia</i>	Ashok	0.52
5	<i>Dypsis lutescens</i>	Areca Palm	0.27



Graph No.2.3: Species with highest carbon stock in tons on the campus

2.5 Carbon Sequestration:

Carbon sequestration describes long-term storage of carbon dioxide or other forms of carbon to either mitigate or defer global warming and avoid dangerous climate change. It has been proposed as a way to slow the atmospheric and marine accumulation of greenhouse gases, which are released by burning fossil fuels. Vegetation carbon pool having the potential of 560 Pg (Pg: Petagram= billion ton) of carbon storage globally. In the current study the focus is given on the assessment of existing carbon stock stored Kanya Mahavidyalaya, Miraj campus in the form of woody vegetation by enumerating every tree species. Overall 62.04 tons of CO₂ has captured and stored by the woody plants present in the college campus. A single tree consumes 0.0218 tons of CO₂ approximately annually consequently, as the campus possess 94 mature woody plants 2.05 tons of CO₂ is consumed yearly by all woody vegetation on the college campus.

2.6 Oxygen released :

Woody vegetation on Kanya Mahavidyalaya, Miraj campus has released 165.64 tones of oxygen in their lifetime till date. It is assumed that a single tree supports oxygen demand of two people for their life. Therefore, total 94woody vegetation in college campus is supporting 188 people around the campus. As the institute placed at the center of Miraj City, it's an

opportunity for the Institute to become Lungs of the City by planting more trees on the campus.

2.7 List of tree species observed on campus:

Sr. No.	Name of species	Botanical Name
1	Areca palm	<i>Dypsis lutescens</i>
2	Ashok	<i>Polyalthia longifolia</i>
3	Babhul	<i>Acacia nilotica subsp. indica</i>
4	Badam	<i>Terminalia catappa</i>
5	Bahava	<i>Casia fistula</i>
6	Bor	<i>Ziziphus mauritiana</i>
7	Buchache zad	<i>Millingtonia hortensis</i>
8	Andiroba	<i>Carapa guianensis</i>
9	Chendufal	<i>Parkia biglandulosa</i>
10	Gulmohar	<i>Delonix regia</i>
11	Kanchan	<i>Bauhinia variegata</i>
12	Karanj	<i>Pongamia pinnata</i>
13	Neem	<i>Azadirachta indica</i>
14	Nilgiri	<i>Eucalyptus obliqua</i>
15	Peltophorum	<i>Peltophorum pterocarpum</i>
16	Peru	<i>Psidium guajava</i>
17	Raintree	<i>Albizia saman</i>
18	Satvin	<i>Alstonia scholaris</i>
19	Crape Jasmine	<i>Tabernaemontana divaricata</i>
20	Audumber	<i>Ficus glomarata</i>
21	Vad	<i>Ficus benghalensis</i>
22	Yellow Trumpetbush	<i>Tecoma stans</i>

Key Observation:

- Institute has common campus with other school and college.
- The Institute takes good initiative for green cover by planting trees.
- Well-maintained vegetation on campus.

- Composting unit is installed on the campus which is used by the institute for converting leaf litter into organic compost.



Figure 8: Composting unit on the campus

CONCLUSION

In the academic year 2023-24, Kanya Mahavidyalaya, Miraj had a Green Audit by the Department of Environmental Science at Shivaji University, Kolhapur. The process of discovering and evaluating whether institutional policies are sustainable and environmentally friendly is known as "green audits." The major goal of the college's green audit is to examine the green practices that are being used in the institution and to carry out a well-planned audit to determine where we stand on a scale of environmental soundness.

- **Conclusions:**

The following are some findings from the team's green audit that can be used to improve the college campus and make it more environmentally friendly:

1. The institute has made attempts to keep the campus green.
2. Because the Institute's site is older, there is higher carbon stock there.
3. The campus's tree biodiversity is particularly strong.

- **Recommendations:**

The primary recommendations for enhancing the campus environment are listed below.

1. The institute needs to put up a report on flora.
2. It is possible to start drip irrigation for gardens and botanical gardens.
3. Events involving human-made fire should be avoided on campus.
4. In order to prevent fire occurrences on campus, fire lines should be getting ready.

ENVIRONMENT MANAGEMENT PLAN:

We have created an Environment Management Plan (EMP) for the Kanya Mahavidyalaya, Miraj, Maharashtra by comprehending the dynamics of the current scenario of resource usage and current practises of clean and green campus. This strategy will not only outline the advantages, disadvantages, and solutions for maintaining a green and clean campus, but it will also prioritise the areas in which the college needs to make greater environmental improvements.

Environment Management Plan 2023-24

Sector	Strengths	Weakness	Suggestions	Priority
Paper waste	Paper waste is disposed through vendor.	-	Use paper less policy	Medium
Plastic waste	Segregation of waste at the source and sending plastic waste for recycling	-	-	Medium
Garden waste	Garden waste is used for the vermicomposting.	-	-	High
Tree Vegetation	There is lots of space for plantation	-	Avoid, monoculture, variety of species should be planted in campus area	Medium