



# Mhaisal Mahavidyalaya, Mhaisal

## Clean and Green Campus Initiatives



Prepared by

**Department of Environmental Science,**

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**2022-23**



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**Senapati Prataprao Gujar Shikshan Sanstha Kandewadi's**  
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**Principal Message**

Today, the universe is facing problems like global warming and deforestation. There are several aspects responsible for climate change. Safe drinking water scarcity, drought, and flood are nowadays. All these environmental issues are only discussed at the global level, but the fact is that regional and local activities are responsible for making such cases global.



In the dire need to protect our planet from environmental pollution, it is the responsibility of everyone not to contribute to activities that may harm the environment. College is where students, faculty and staff gather daily to run the teaching and learning process. This process requires infrastructure, energy, water, chemical and support facilities. The college has to look after these things' optimum and economical use. It is necessary to conserve energy from non-traditional sources. Also, it is essential to avoid the entry of monoxide and other gaseous pollutants into the environment. The scarcity of water and its pollution are the hot topics. We must save the available water and keep it free from pollution. The campus must be clean and green to have a pleasant atmosphere for the teaching-learning process. We must make maximum efforts towards carbon neutrality. In this direction, along with plantation, the origination of other nature-related activities and the creation of awareness among the people is necessary.

To be environmentally conscious, every college must undertake a green audit of the premises and facilities. I am pleased to state that the Department of Environmental Science, Shivaji University Kolhapur, is under the guidance of the green audit team, and they have conducted the green audit of our college very keenly. Their suggestions are undoubtedly helpful for us for the improvement.



*Gwalke*  
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## Certificate

This is to certify that the Department of Environmental Science, Shivaji University, Kolhapur has assessed detailed "Clean and Green Campus Initiatives" of "Senapati Prataprao Gujar Shikshan Kandewadis, Mhaisal Mahavidyalaya, Mhaisal" during the academic year 2022-2023. This report was evaluated 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.



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## Index

Sr. No.	Contents	Page No.
<b>Introduction</b>		
1.	Clean and Green Audit: Clean campus initiatives, waste generated	1-3
2.	Hazardous waste audit of the college, E-Waste	4
3.	Environmental activities	5
4.	Green Campus Initiatives of Mhaisal, Mahavidyalaya, Mhaisal College. Total number of trees enumerated on Mhaisal, Mahavidyalaya, Mhaisal College campus. Total Biomass, Carbon stock, Carbon sequestration, Oxygen released	6-12
5.	Conclusion	13
6.	Environment Management Plan	14

### List of graphs

Sr. No.	Contents	Page No.
1.	Graph No. 1.1.1: Category wise solid waste generation in college (kg/month)	2
2.	Graph No. 1.1.2: Percentage of solid waste generation in the college (kg/month)	3
3.	Graph No.2.1: Dominant tree species on campus	8
4.	Graph No.2.2: Species with highest total biomass in tons on the campus	9
5.	Graph No.2.3: Species with highest carbon stock in tons on the campus	10

### List of Figures

<b>Sr. No.</b>	<b>Contents</b>	<b>Page No.</b>
1.	Figure1: Some construction waste and metal waste	2
2.	Figure2: Dustbins are provided for waste collection	4
3.	Figure 3: Collection of banners from a college campus	5
4.	Figure 4: Google Earth Image Mhaisal, Mahavidyalaya, Mhaisal (Source: Google Earth)	7
5.	Figure 5: campus	11
6.	Figure 6: Well-maintained campus	12

## 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 initiatives for such institutes to account their energy, water resource use as well as wastewater, solid waste, E-waste, hazardous waste generation.

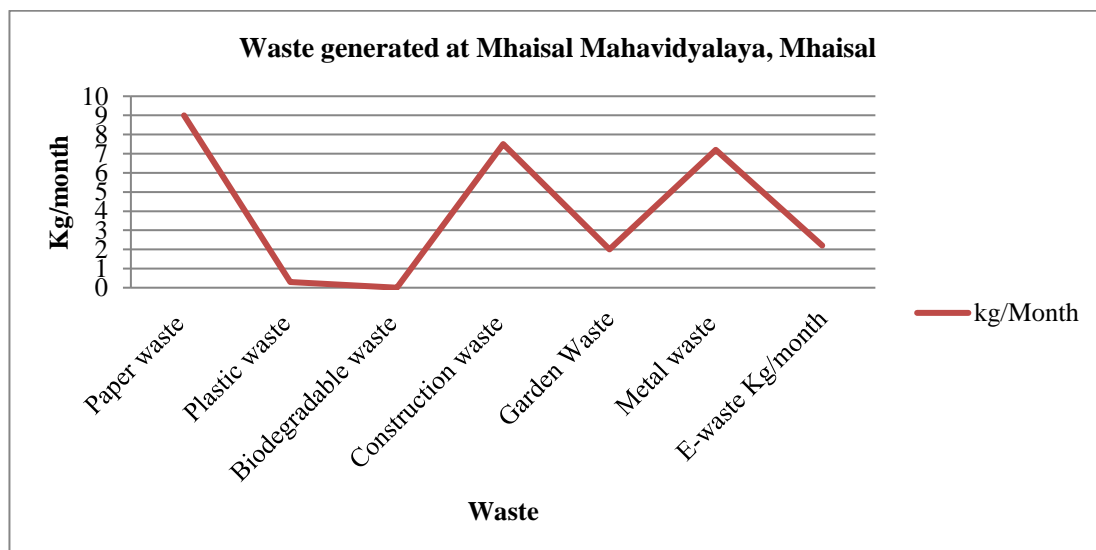
Solid waste management is a term that refers to the process of collecting and treating solid wastes. As long as people have been living in settlements, garbage and solid waste has been an issue. In recent years, it is observed that per capita waste generation has increased due to the changing life style. 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 odor 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 Mhaisal Mahavidyalaya, Mhaisal.

Solid waste audit of college was conducted by grouping the college into Office and Library and Staffroom and Classroom. 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)	9	0.3	0	7.5	7.2	2	2.2	0
Quantity (Kg/ Year)	90	03	0	75	72	20	22	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 Mhaisal Mahavidyalaya, Mhaisal is approximately 28.2 kg/month. On the basis of observations, the highest quantity of solid waste generated is Paper Waste which is about 9 kg/month is generated in the institution and that is given to the vendor every six month.

Besides, the above mentioned waste, Metal Waste is generated in the form of Iron road and roof top. Approximately 7.5 kg/ month Construction Waste is generated in the wooden waste.

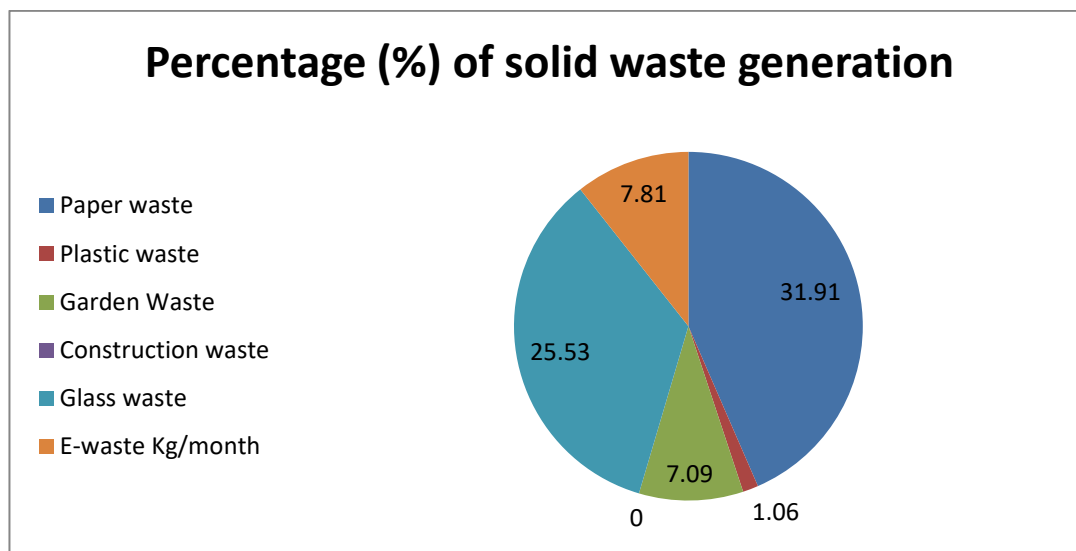


*Figure 1: Some construction waste and metal waste*



**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 (%)	31.91	1.06	0	26.60	25.53	7.09	7.81	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 31.91 % and minimum percentage of Plastic waste generated is about 1.06 %.

### 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	0.2	0	0.1	0	0.3
Percentage	66.7	0	33.3	0	100

Plastic waste in the form of packaged food wrappers, carry bags etc. is approximately 0.3 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 do not exist. In addition, there are no laboratories.

#### **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, 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. This E-waste consists of 2 desktops.

#### **1.4 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 every six months. This waste includes newspapers (Sakal newspaper- Lokmat newspaper) as well as office work paper.

##### **2. 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 and wet waste. In classrooms also dustbins are provided.



*Figure2: Dustbins are provided for waste collection*

### 3. Environmental activities

Six banners were placed on the college campus, containing encouraging phrases not to use plastic and to preserve the planet.



*Figure 3: Collection of banners from a college campus*

#### **Key Observations:**

- The average waste generated in the college is app.28.2 Kg /month
- Highest quantity of solid waste is Paper waste which is around 9 Kg/month.
- Over all the waste generated in the college is handed over to Municipal Corporation.
- Paper waste is given to the vendor for recycling to Nilesh Traders.
- Cleanliness is maintained at college.
- waste is stored at site.
- Solid waste is disposed instead of burning it on campus.

## 2.1 Green Campus Initiatives of Mhaisal, Mahavidyalaya, Mhaisal College

The area is diversified, with a good variety of tree types providing various functions. The bulk of these tree species currently make up an important part of the campus because they were planted throughout a variety of time periods through various planting programmes managed by the authority. The college's trees have improved the quality of life for not only the college fraternity but also the surrounding community by enhancing air quality, reducing climate change, conserving water, preserving soil, supporting wildlife, and regulating climate by reducing the effects of the sun, rain, and wind. In order to keep things cool in the summer, leaves absorb and filter the sun's radiant radiation. These trees provide shelter and food for a variety of birds, among others. Birds and numerous insects enjoy the nectar of flowers and plants. Numerous creatures, including birds and squirrels, are protected from predators by the leaf-covered branches. Numerous species exhibit an almost infinite range of shapes, forms, textures, and vivid colours. Even individual trees alter in appearance as the seasons change throughout the year. The durability, longevity, and regal grandeur of trees give them the appearance of monuments. They also serve as a reminder of the institution's illustrious past. It has been determined that a belt of shady trees inside or/and around the college's perimeter reduces noise, dust, and storms. As a result, the institution has been essential in preserving the environment of the entire village of Mhaisal and its surroundings.

Mhaisal, Mahavidyalaya, Mhaisal is situated in Sangli district Maharashtra at longitude 74.7038940E and latitude 16.745320N the elevation of the institute from the sea level is 578 m.

The climate in the area is ideal for the cultivation of a wide variety of plants. A total of 100 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 5 species of woody trees were recognized during the visit. During the inventory, *Ficus Microcarpa* and *Dyopsis lutescens* were observed the most on campus. Though the campus is very small, but Mhaisal, Mahavidyalaya, Mhaisal Collage 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.



**Figure 4: Google Earth Image Mhaisal, Mahavidyalaya, Mhaisal (Source: Google Earth)**

**2.1.1 Total number of trees enumerated on Mhaisal, Mahavidyalaya, Mhaisal College campus: 100**

Total 100 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 Mhaisal, Mahavidyalaya, Mhaisal campus: 5**

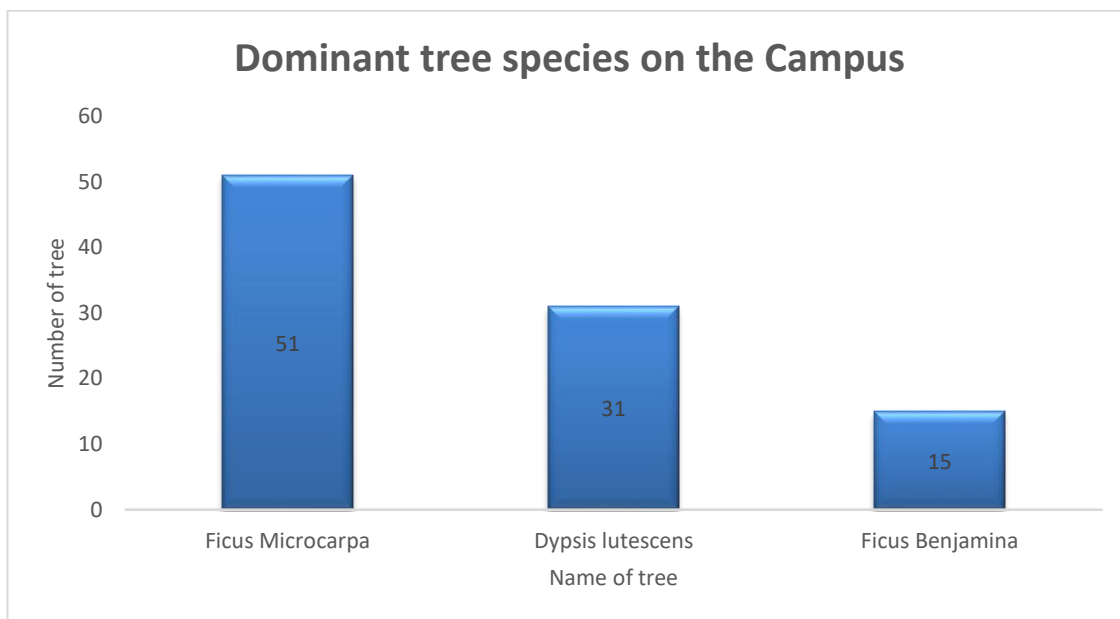
About 5 species have been identified during the census. It shows a comparatively good diversity of tree species on the campus.

**2.2 Species with the highest population:**

**Table No.2.1: Species with the Highest Population**

Sr.No.	Species name	Common Name	No. of trees observed
1	Ficus Microcarpa	Chinese banyan	51
2	<i>Dypsis lutescens</i>	Bamboo palm	31
3	Ficus Benjamina	Benjamin	15

During the inventory, Ficus Microcarpa and *Dypsis lutescens* were discovered to have the greatest population on campus, followed by Ficus Benjamina. The species *Dypsis lutescens* and Ficus Microcarpa, which has a population of 81 individuals, is the most populous species on campus. The Ficus Benjamina contributes 15 trees on the campus.



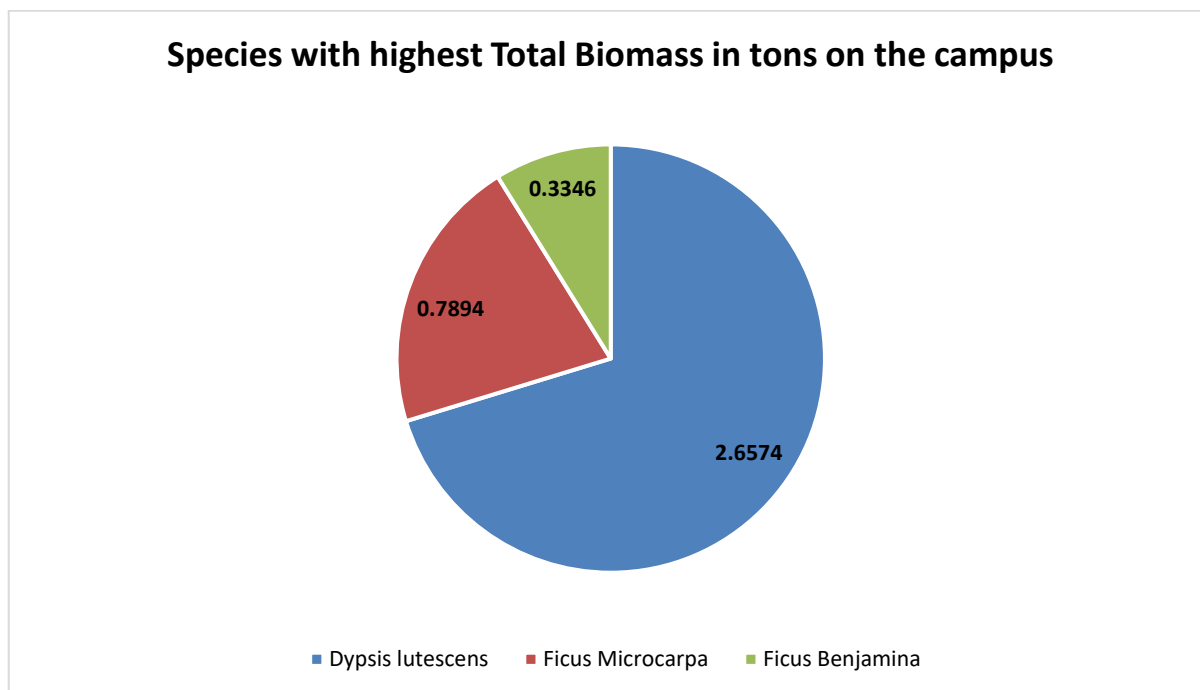
**Graph No.2.1: Dominant tree species on campus**

### 2.3 Total Biomass:

The mass of biological organisms that are alive and moving around in an environment at any particular time is known as biomass in ecology. Species biomass, which is the mass of one or more species, or community biomass, which is the mass of all the species in a community, are both examples of biomass. Microorganisms, plants, and animals can all be a part of it. The mass can be expressed as the overall mass in the community or as the average mass per unit area. During the most recent tree census, 3.88 tonnes of total biomass of woody vegetation were discovered on the campus of Mhaisal, Mahavidyalaya, Mhaisal College.

**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>Dypsis lutescens</i>	Bamboo palm	2.6574
2	Ficus Microcarpa	Chinese banyan	0.7894
3	Ficus Benjamina	Benjamin	0.3346



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

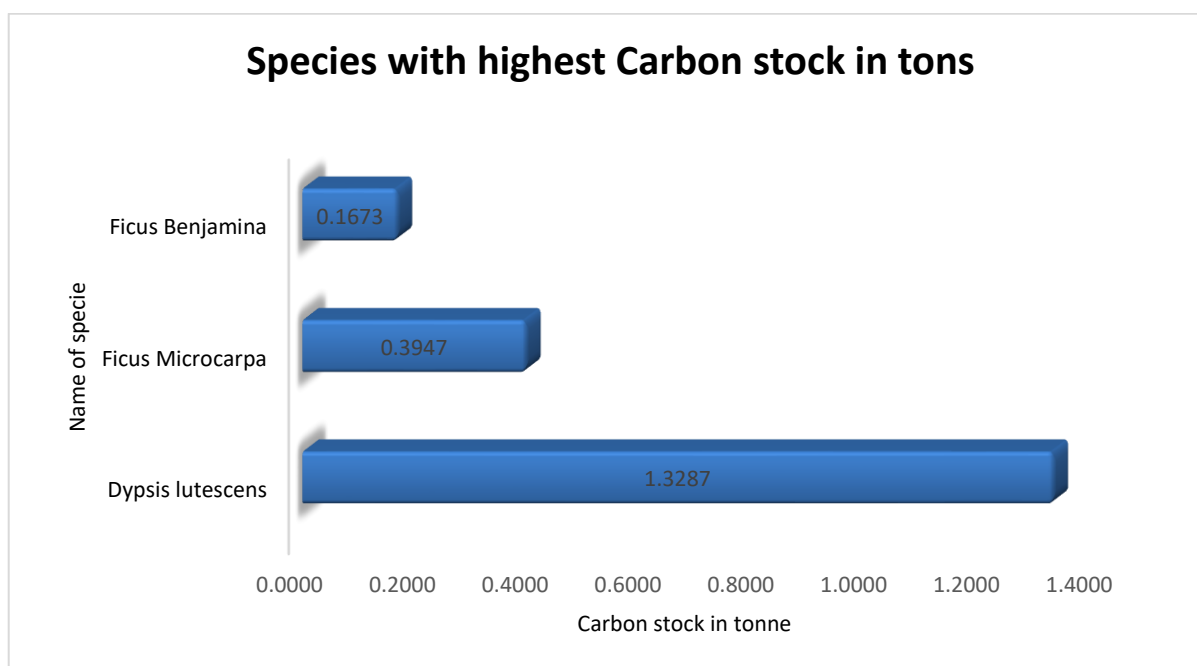
*Dypsis lutescens* shows the highest biomass on the campus. Followed by *Ficus Microcarpa* and *Ficus Benjamina* are ranked at second and third place.

#### 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. 1.94 tons of total carbon stock are 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>Dypsis lutescens</i>	Bamboo palm	1.3287
2	<i>Ficus Microcarpa</i>	Chinese banyan	0.3947
3	<i>Ficus Benjamina</i>	Benjamin	0.1673



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

## 2.5 Carbon Sequestration:

Long-term storage of carbon dioxide or other types of carbon is referred to as carbon sequestration, and it is done to either delay or mitigate global warming and prevent disastrous climate change. It has been suggested as a strategy to reduce the amount of greenhouse gases that are released when fossil fuels are burned and accumulate in the atmosphere and ocean. The worldwide storage capacity of the vegetation carbon pool is 560 Pg (Pg: Petagram = billion tones). The current study focuses on evaluating the amount of carbon that is currently stored on the campus of Mhaisal, Mahavidyalaya, Mhaisal College, in the form of woody vegetation by listing every type of tree that grows there. Overall, the woody plants on the college campus have been able to trap and store 7.128 tons of CO<sub>2</sub>. A single tree consumes 0.0218 tons of CO<sub>2</sub> approximately annually consequently, as the campus possess 100 mature woody plants 2.27 tons of CO<sub>2</sub> is consumed yearly by all woody vegetation on the college campus.

## 2.6 Oxygen released:

19.1 tonnes of oxygen have been released by the vegetation on the campus of Mhaisal, Mahavidyalaya, Mhaisal College. Released oxygen and CO<sub>2</sub> sequestration are compared 32:12, which shows a direct correlation. Therefore, it will only emit oxygen once each year. One tree is said to be able to meet the oxygen demands of two people for the rest of their lives. As a result, the 100 trees on the college campus offer shade to the over 200 residents of the area.

### List of tree species observed on campus:

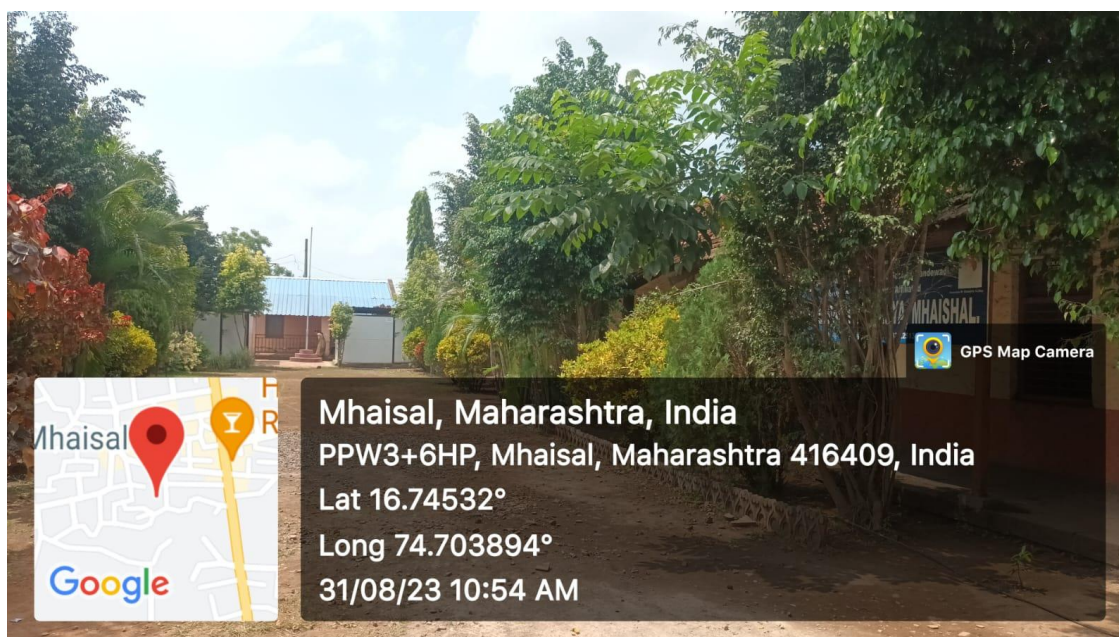
Sr. No.	Name of species	Botanical Name
1	<i>Dypsis lutescens</i>	Bamboo palm



2	Ficus Microcarpa	Chinese banyan
3	Ficus Benjamina	Benjamin
4	<i>Monoon Longifolium</i>	Ashoka
5	<i>Aclypha Wilkesiana</i>	copperleaf

**Key Observation:**

- Institute does not have common campus with other school and college.



*Figure 5: campus*

- The Institute takes good initiative for green cover by planting trees on the campus.
- Well-maintained tree plantation on the campus.



*Figure 6: Well-maintained campus*

## CONCLUSION

The Department of Environmental Science at Shivaji University, Kolhapur, conducted a green audit at Mhaisal, Mahavidyalaya, Mhaisal College, during the academic year 2022–2023. "Green audits" are procedures used to identify and assess whether institutional policies are ecologically responsible and sustainable. Examining the green practices being implemented at the college and conducting a well-planned audit to ascertain where we are on an environmental soundness scale are the main objectives of the college's green audit.

### **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. The campus's tree biodiversity is particularly strong.

### **• Recommendations:**

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

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

**ENVIRONMENT MANAGEMENT PLAN:**

For the Mhaisal, Mahavidyalaya, Mhaisal College, Maharashtra, we have developed an Environment Management Plan (EMP) by understanding the dynamics of the current scenario of resource usage and current practises of green inventory. This plan will prioritise the areas where the institution needs to make more environmental improvements while outlining the benefits, drawbacks, and solutions for maintaining a clean, green campus.

**Environment Management Plan 2022-23**

<b>Sector</b>	<b>Strengths</b>	<b>Weakness</b>	<b>Suggestions</b>	<b>Priority</b>
<b>Tree Vegetation</b>	There is lots of space for plantation	-	Avoid monoculture, variety of species should be planted in campus area	Medium
<b>Paper waste</b>	Paper waste is disposed through vendor.	-	Use paper less policy	Medium
<b>Plastic waste</b>	-	-	Segregation of plastic waste should be done at source by using designated dustbin.	Medium
<b>Garden waste</b>	Garden waste is used for the composting.	-	-	High
<b>E-waste</b>	-	There is no authorized vendor for disposal of E-waste	E-waste should be disposed properly through authorized vendor only.	High