

# GREEN AUDIT REPORT

SESSION – 2022-23

**PANDIT DEENDAYAL UPADHYAYA ADARSHA MAHAVIDYALAYA,  
TULUNGIA, NORTH SALMARA, BONGAIGAON, ASSAM**

পণ্ডিত দীনদয়াল উপাধ্যায় আদর্শ মহাবিদ্যালয়, তুলুঙীয়া  
উত্তৰ শালমাৰা, বঙাইগাঁও, অসম





## GREEN AUDIT COMMITTEE

| Name & Designation                                                         | Portfolio       |
|----------------------------------------------------------------------------|-----------------|
| Dr. Pranjal Morang, Principal (i/c)                                        | Chairperson     |
| Mrs. Chetana Hasnu, HoD, Dept. of Botany                                   | Co-ordinator    |
| Miss Trishna Roy Prodhani, Asst. Prof, Dept. of Botany, Abhayapuri College | External Member |
| Dr. Samim Sultana, HoD, Dept. of Chemistry                                 | Member          |
| Mr. Sourav Bhattacharjee, Asst. Prof, Dept. of Botany                      | Member          |
| Miss Barsha Devi, Asst. Prof, Dept. of Botany                              | Member          |
| Miss Gayatree Hazarika, Asst. Prof, Dept. of Zoology                       | Member          |
| Mr. Tirthanath Doley, Asst. Prof, Dept. of Mathematics                     | Member          |

| NAME                      | SIGNATURE                                                                            |
|---------------------------|--------------------------------------------------------------------------------------|
| Dr. Pranjal Morang        |  |
| Mrs. Chetana Hasnu        | Chetana Hasnu                                                                        |
| Miss Trishna Roy Prodhani | Trishna Roy Prodhani                                                                 |
| Dr. Samim Sultana         | Samim Sultana                                                                        |
| Mr. Sourav Bhattacharjee  | Sourav Bhattacharjee                                                                 |
| Miss Barsha Devi          | Barsha Devi                                                                          |
| Miss Gayatree Hazarika    | Gayatree Hazarika                                                                    |
| Mr. Tirthanath Doley      | Tirthanath Doley                                                                     |

## MESSAGE FROM THE PRINCIPAL'S DESK

Rapid urbanization and economic development has led to various environmental problems in the past few decades. It is thus the responsibility of every individual to contribute towards a greener and more sustainable environment. The contribution of an educational institution through Green Audit is one of the prime factors of development associated with a greener and sustainable environment.

Green Audit increases overall consciousness towards the environment among the people working in institutions. Green auditing and the implementation of mitigation measures upgrade the environmental conditions in and around the institution.

Our institution has been putting great efforts to keep the environment green and clean, since its establishment by promoting botanical gardens, medicinal gardens, solid waste management, rain water harvesting, recycling of plastic bottles and many other initiatives.

I am happy that our institution is taking a step forward with this first Green Audit Report which compiles the initiatives taken under the guidance of the Green Audit Committee, PDUAMT, Bongaigaon.

I also look forward to more such green initiatives ensuring a healthy environment in the near future.

Place: Tulungia, Bongaigaon

Date: 19/06/2023



(Dr. Pranjal Morang)

Principal (i/c)

PDUAMT (i/c)  
Principal, Tulungia  
Pandit Deendayal Upadhyaya  
Adarsha Mahavidyalaya  
Tulungia, Bongaigaon

**IQAC: PDUAM, Tulungia**  
(A Govt. Model College and Affiliated to UGC u/s 2(f))  
P.O.-North Salmara :: Dist.-Bongaigaon:: Pin-783383

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**Message from IQAC Co-ordinator's desk**

Integrating sustainable initiatives within educational institutions is crucial for fostering a healthy learning environment. The presence of well-maintained green spaces positively impacts the mental well-being of students and staff. Moreover, a commitment to sustainability reflects an institution's social responsibility and prepares students to be environmentally conscious global citizens. In this direction, I am happy to witness the initiatives undertaken by PDUAM, Tulungia.

I am delighted to write a Message for the first Green Audit Report of the institution, which stands as a comprehensive documentation of our commitment to sustainable practices and environmental stewardship. This report is a result of the dedicated and relentless efforts of the Green Audit Committee.

Some of the key green initiatives of the committee include land use analysis, impactful environmental awareness campaigns, the installation of a rainwater harvesting system, identification of floral and faunal diversity, certified water testing, and measurement of the carbon footprint of faculty members. The community engagement initiatives, successful waste reduction projects, and the nurturing of a medicinal plant garden further demonstrate institution's dedication to fostering a greener campus.

Anticipating forthcoming green initiatives with a focus on inspiring innovative projects that contribute to the ecological health of our academic institution and positively influence the broader community. I extend my gratitude to all involved in making the initiatives, as outlined in the current report, a reality and look forward to the continued dedication and collaborative spirit to future green endeavours.



(Dr. Nitashree Barman)

IQAC, Coordinator

PDUAM, Tulungia

Coordinator, IQAC  
Pandit Deendayal Upadhyaya  
Adarsha Mahavidyalaya  
Tulungia, Bongaigaon



## ACKNOWLEDGEMENT

The Green Audit Committee would hereby like to express gratitude towards hon'ble principal (i/c) Dr. Pranjal and Dr. Nitashree Barman, Co-ordinator, IQAC for their appraisal and encouragement during the whole process. The Committee would also like to thank all the faculty members of the college and concerned stakeholders for their co-operation and inputs during the initiative.

The Committee would also like to thank the students of the college for their support as well.

Finally, the committee would also like to express gratitude towards National Assessment and Accreditation Council (NAAC) and all the concerned higher authorities to include such a crucial marker in the higher educational institutions that enables us to improve the environmental awareness, biodiversity richness and sustainable practices within the campus and beyond.



(Mrs. Chetana Hasnu)

Co-ordinator

Green Audit Committee, PDUAMT



# DEPARTMENT OF BOTANY GAUHATI UNIVERSITY

Gauhati University  
Assam 781014, India  
[botany@gauhati.ac.in](mailto:botany@gauhati.ac.in)

12 December, 2023

## Certificate

This is to certify that Pandit Deendayal Upadhyaya Adarsha Mahavidyalaya, Tulungia, Assam has conducted a detailed “Green Audit” for its campus during the academic year 2022-2023. The green audit was conducted in accordance with the applicable standards prescribed norms of the Ministry of Environment, Forest and Climate Change, New Delhi. The audit involves water, waste water, energy, air, green inventory, solid waste, etc., and gives an 'Environmental Management Plan', which the college can follow to minimize the impact on the institutional working framework. In an opinion and to the best of my knowledge and according to the information given to me, said green audit gives a true and fair view in conformity with environmental auditing principles' accepted in India.

(Bhaben Tanti)

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Dr. Bhaben Tanti, M.Sc. (GU); Ph.D. (TU); Postdoc (USA); FLS (London)  
Professor & Head, Department of Botany  
Director, Research and Development Cell  
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## Chapter 1 – Introduction

### 1.1: About PDUAM, Tulungia

PANDIT DEENDAYAL UPADHYAYA ADARSHA MAHAVIDYALAYA, TULUNGIA was established ambitiously at Tulungia in the district of Bongaigaon under the co-venture of the Central Government and the Government of Assam with the financial assistance from centrally sponsored scheme - Rashtriya Uchchatar Shiksha Abhiyan (RUSA). The institution was named after Pandit Deendayal Upadhyaya, a great thinker and philosopher responsible for the ultimate unity of our country. The college has a beautiful campus situated at a rural green surrounding covering an area of 20837.39 sq. meters. The main motto behind establishment of this college is to provide quality and affordable higher education accessible equally to all sections of the society. The government established the college as model higher educational institution in the field of commerce. The first batch of students were successfully enrolled from the academic year 2017-2018. After years of success and quality delivery in the field of commerce, the Government of Assam in association with Rashtriya Uchchatar Shiksha Abhiyan (RUSA) keeping view of the public demand, decided to begin higher education in the field of science in this institution with high hopes of scientific upliftment and propagation of scientific knowledge in the region. The science stream was finally inaugurated and put into action on 01st November 2021 by Dr. Ranoj Pegu, Hon'ble Education Minister, Govt. of Assam.



**পণ্ডিত দীনদয়াল উপাধ্যায় আদর্শ মহাবিদ্যালয়, তুলুঙীয়া**

**Total land area of PDUAM, Tulungia - 30463.34 sq. meters**

#### GPS Coordinates

Latitude

26.388752

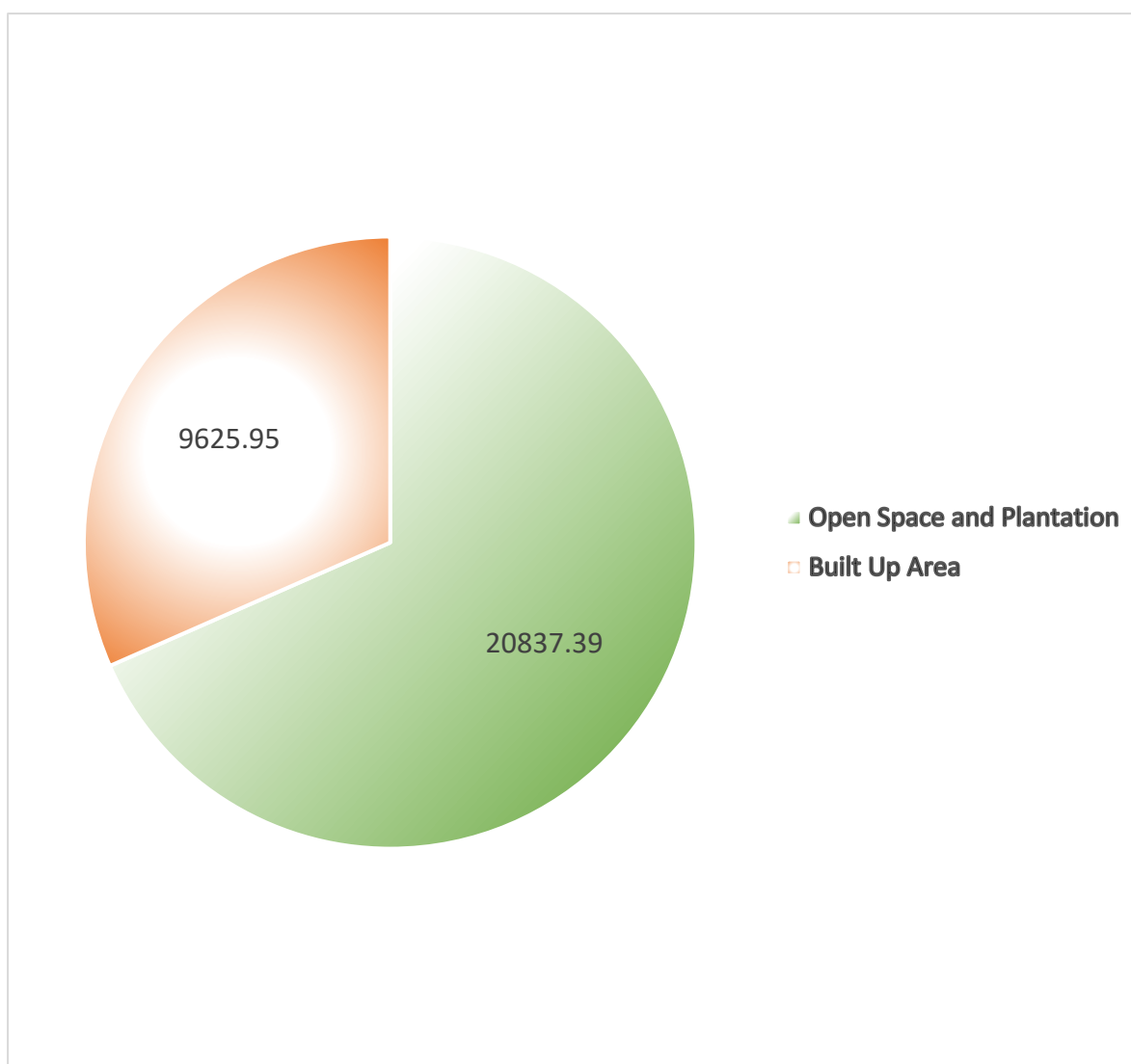
Longitude

90.633427

## **LAND USE DATA**

Table 1.1

| <b>Categories of land use</b>    | <b>Area in Square Meters</b> |
|----------------------------------|------------------------------|
| <b>Open Space and Plantation</b> | 20837.39                     |
| <b>Built Up Area</b>             | 9625.95                      |
| <b>Total</b>                     | 30463.34                     |



The total land area of PDUAM, Tulungia is 30463.34 square meters out of which the built up area is 31.60 % (i.e., 9625.95 square meters) and open space and plantation area is 68.40 % (i.e., 20837.39 square meters) indicating a significant greenery throughout the campus.



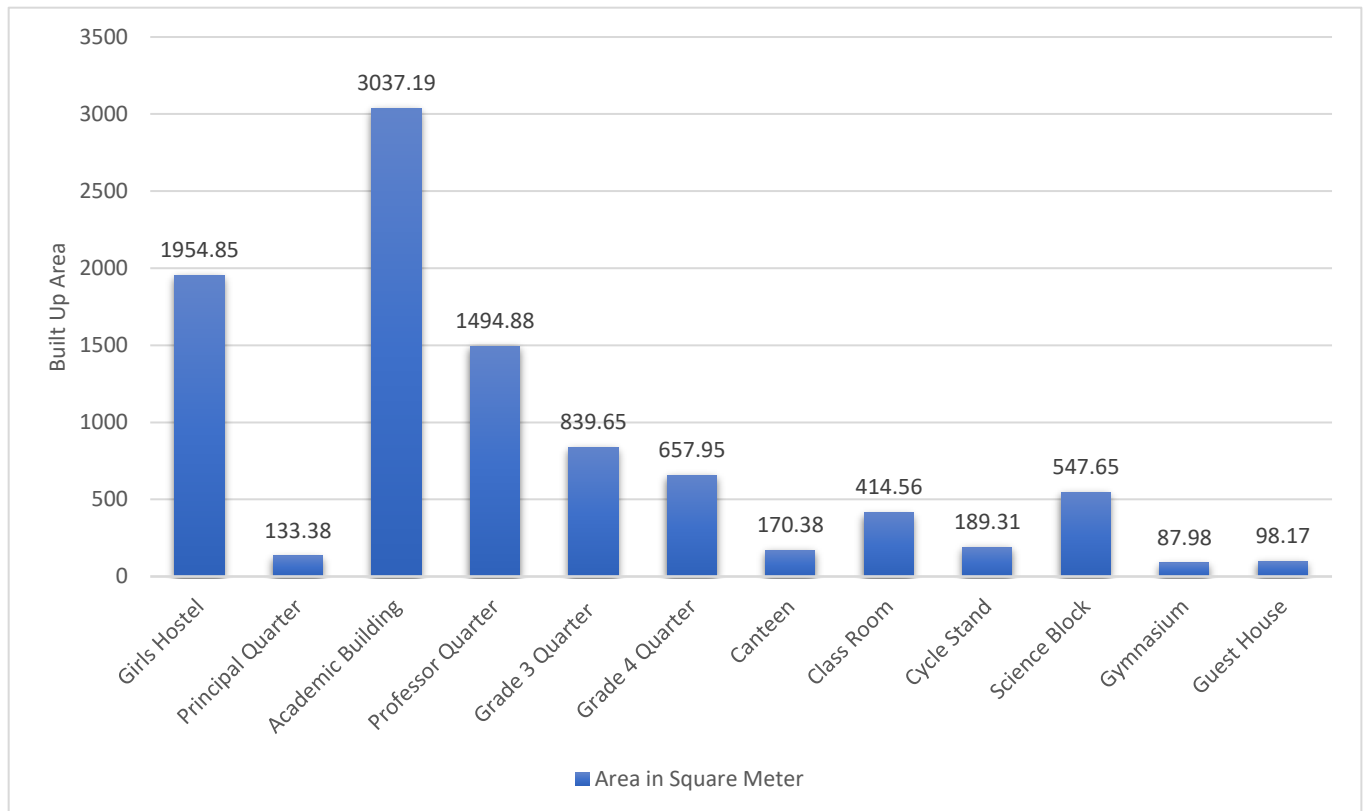
## Land Use (Built Up Area) Analysis

Table 1.2

| Sl. No.      | Categories of land use (Built Up Area) | Area in sq. Meters            |
|--------------|----------------------------------------|-------------------------------|
| 1            | Girls Hostel                           | 1954.85                       |
| 2            | Principal Quarter                      | 133.38                        |
| 3            | Academic Building                      | 3037.19                       |
| 4            | Professor Quarter                      | $(186.86 \times 8) = 1494.88$ |
| 5            | Grade 3 Quarter                        | $(167.93 \times 5) = 839.65$  |
| 6            | Grade 4 Quarter                        | $(131.59 \times 5) = 657.95$  |
| 7            | Canteen                                | 170.38                        |
| 8            | Class Room                             | 414.56                        |
| 9            | Cycle Stand                            | 189.31                        |
| 10           | Science Block                          | 547.65                        |
| 11           | Gymnasium                              | 87.98                         |
| 12           | Guest House                            | 98.17                         |
| <b>Total</b> |                                        | <b>9625.95</b>                |

### Land Use Analysis for Built Up Area (In Square Meters)

**PDUAM, Tulungia, Bongaigaon, Assam**



**Graphical Representation of Built-up Area analysis**

## 1.2 GREEN AUDIT

Green Audit is the effort of methodical observation, identification, quantification and analysis of various environmental and biodiversity-related aspects of an establishment or institution. Green Auditing enriches the documentation and monitoring of various environmental markers throughout the campus for maintaining a green campus following the principles of sustainable development. It enriches the records for a year wise compilation and comparative analysis in order to understand the gradual changes and environmental markers that need attention for future remedial strategies.

As the higher educational institution of an area needs to take up the leading role in promotion of eco-friendly practices for sustainable development throughout the campus, it also thus propagates an awareness message among the students and surrounding local people on the importance of biodiversity conservation, environment-friendly practices and sustainable development. Keeping this in mind, the National Assessment and Accreditation Council (NAAC), New Delhi has made it mandatory that all Higher Educational Institutions of the country to prepare and submit an annual Green Audit Report in order to show their adherence towards environment conservation and sustainable development practices throughout the campus and beyond.

### 1.3 Objectives of Green Audit Committee

**The specific objectives of Green Audit Committee are –**

- To record the existing biodiversity within the campus.
- To develop various eco-friendly sustainable development practices within the campus.
- To test the human health markers of the campus.
- To develop initiatives for enrichment of campus biodiversity.
- To develop initiatives for promoting eco-friendly practices among the surrounding rural areas of the college.
- To conduct extension activities for environmental awareness.

### 1.4 Methodology of Green Audit

The methodology adopted for the process include: supply and filling up of questionnaires through official e-mail or offline mode, observation, photo-walk, inspection and survey of the campus area. Examination of documentation records, taking opinions of various stakeholders, visit for inspection of adopted village, data analysis and recommendations were done to finalize the report.

## **Chapter 2 – Detailed Analysis**

### **2.1 Water Quality Assessment**

Water sample from the college was collected and analyzed for its quality parameters. Quality of drinking water within the college campus was assessed by EREC India Research Laboratory, an ISO 9001:2015 and ISO 17025:2017 certified, Government of Assam Recognised laboratory.

The primary water sources of the campus are:

1. Ground water through boring and tap
2. Rain water harvesting

Two (2) litres of tap water from the campus was taken as a sample source for drinking water assessment and two major parameters were analyzed which include:

2.1.1 Physical and Chemical Analysis.

2.1.2 Microbiological Analysis.





# EREC India Research Laboratory

(ISO 9001:2015/ISO 17025:2017 Certified/Govt. of Assam Recognized Lab)

## TEST REPORT

(Water Report)

Report Date : 26/07/2023

Form No.: EREC/FM/53

Ref. No.: EREC/DW/2023/326

|                        |                                                                |                           |            |
|------------------------|----------------------------------------------------------------|---------------------------|------------|
| Customer Name          | Dr. Pranjal Morang, Principal I/C                              | Sample ID. No.            | DW-23/326  |
| Address & Ph:          | Pandit Deendayal Upadhyaya Adarsvidyalaya Tulungia, Bongaigaon |                           |            |
| Location of sample     | Bongaigaon                                                     | Source                    | Tap Water  |
| Submitted By           | Client                                                         | Sample Quantity           | 2 ltr      |
| Condition of sample    | Good                                                           | Date of Sample Collection | 18/07/2023 |
| Sample Received Date   | 18/07/2023                                                     | Test Start Date           | 19/07/2023 |
| Customer Reference No. | Nil                                                            | Test Completed On         | 26/07/2023 |

### PHYSICAL AND CHEMICAL ANALYSIS :

| Sl. No. | Test Parameters        | Test Method                                                  | Unit  | Requirement (Max. Desirable Limit) (As per IS 10500:2012) | Result    |
|---------|------------------------|--------------------------------------------------------------|-------|-----------------------------------------------------------|-----------|
| 1.      | Colour                 | IS 3025(pt-4):1983, Reaff 2002<br>Platinum Cobalt Method     | Hazen | 5                                                         | 1         |
| 2.      | Taste                  | IS 3025:1984 (Part 8)                                        | ----- | Agreeable                                                 | Agreeable |
| 3.      | Odour                  | IS 3025(pt-5):1983,Reaff 2002                                | ----- | Agreeable                                                 | Agreeable |
| 4.      | Turbidity (NTU)        | IS 3025(pt-10):1984,Reaff 2002                               | NTU   | 1                                                         | 0         |
| 5.      | pH value               | IS 3025(pt-11):1983,Reaff 2002,<br>Electrometric Method      | ----- | 6.5-8.5                                                   | 7.01      |
| 6.      | Total Dissolved Solids | IS 3025(pt-16):1984, Reaff 2006                              | mg/l  | 500                                                       | 52        |
| 7.      | Residual free chlorine | IS3025(pt-26):1986,Reaff2003,<br>Iodometric Method           | mg/l  | 0.2                                                       | 0         |
| 8.      | Total Hardness         | IS 3025 EDTA Titrimetric Method                              | mg/l  | 200                                                       | 36.78     |
| 9.      | Iron                   | IS 3025(pt-53):2003<br>1,10 Phenanthroline Method            | mg/l  | 0.3                                                       | 0.03      |
| 10.     | Chloride               | IS 3025(pt-32):1988,Reaff<br>2002,Argentometric Method       | mg/l  | 250                                                       | 3.90      |
| 11.     | Fluoride               | APHA 23 <sup>rd</sup> Edition 4500 F-D.<br>SPADNS Method     | mg/l  | 1.0                                                       | 0.32      |
| 12.     | Calcium                | IS3025(pt-40): 1991, Reaff<br>2003,EDTA Titrimetric Method   | mg/l  | 75                                                        | 12.83     |
| 13.     | Magnesium              | IS3025(pt-46):1994,Reaff2003,<br>Volumetric Method usingEDTA | mg/l  | 30                                                        | 1.65      |
| 14.     | Sulphate               | IS3025(pt-24):1986, Reaff 2003<br>Turbidity Method           | mg/l  | 200                                                       | 6.79      |
| 15.     | Arsenic                | IS 3025:1988 (Part 37) Reaff 2003                            | mg/l  | 0.01                                                      | 0.008     |
| 16.     | Alkalinity             | IS 3025(pt-23):1986,Reaff 2003                               | mg/l  | 200                                                       | 10        |



Page 1 of 2

Office : EREC Lab, Rupnagar, Guwahati – 781032, Assam. ([www.erecindia.com](http://www.erecindia.com))  
Phone No. : 90850-66613, 98640-66613, E-mail: [mpguw2@rediffmail.com](mailto:mpguw2@rediffmail.com)



# EREC India Research Laboratory

(ISO 9001:2015/ISO 17025:2017 Certified/Govt. of Assam Recognized Lab)

Ref. No.: EREC/DW/2023/326

## PHYSICAL AND CHEMICAL ANALYSIS :

|     |         |                                                            |      |    |      |
|-----|---------|------------------------------------------------------------|------|----|------|
| 17. | Nitrate | IS 3025(pt-34):1988,Reaff<br>2003,Chromotropic acid Method | mg/l | 45 | 3.26 |
|-----|---------|------------------------------------------------------------|------|----|------|

## MICROBIOLOGICAL ANALYSIS:

| Sl. No. | Test parameters  | Test Method                                | Requirement<br>(Max. Desirable Limit)<br>(As per IS 10500:2012) | Results |
|---------|------------------|--------------------------------------------|-----------------------------------------------------------------|---------|
| 1.      | Fecal Coliform   | APHA -9221B (23 <sup>rd</sup> Edition.)    | Absent in 250ml                                                 | Absent  |
| 2.      | Escherichia Coli | APHA -9213D/3a (23 <sup>rd</sup> Edition.) | Absent in 250ml                                                 | Absent  |

\*\*\* END OF THE REPORT \*\*\*

Authorized Signature

Dr. M. Pathak  
CEO cum T M



N.B: 1. Result corresponds to sample submitted only 2). This report is prepared based upon the test results only.

Page 2 of 2

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### 2.1.1 Physical and Chemical Analysis:

The water assessment result confirms the color below the maximum desirable limit with agreeable taste and odour.

- **Turbidity:** It is the measure of relative clarity of water and is measured in Nephelometric Turbidity Units (NTU). The sample test result confirms zero turbidity indicating it's clearness.
- **pH value:** As per the drinking water specifications from the Bureau of Indian Standards, acceptable drinking water pH range between 6.5 to 8.5. Water above or below the recommended range is not safe for consumption. pH level of the sample drinking water is 7.01 which is within the recommended range and safe for consumption.
- **Total Dissolved Solids (TDS):** It represents the total concentration of substances like inorganic salts and small amounts of organic matter dissolved in water. According to EPA secondary drinking water regulations, 500 mg/L is the recommended maximum amount of TDS for drinking water. The test result of the water sample is 52 mg/L which is considered acceptable for drinking.
- **Total hardness, Calcium and Magnesium:** The hardness of the water refers to the amount of dissolved Calcium and Magnesium in the water. It is determined by the milligrams of Calcium Carbonate or Magnesium Carbonate per Litre. Total hardness of sample water is 36.78 mg/L indicating it as soft water. Calcium level is 12.83 mg/L which is below the desirable limit of 75 mg/L and Magnesium is 1.65 mg/L which is also below the desirable limit of 30 mg/L.
- **Iron:** Iron is not hazardous to health, but it is considered as a secondary or aesthetic contaminant. Taste or odour is not usually noticeable at iron concentrations below 0.3mg/L. The test result of the water sample indicate minute presence of iron at 0.03 mg/L.
- **Chloride:** High levels of Chloride result in salty water. The recommended limit for Chlorides is 250 mg/L and the test result of the water sample is 3.90 mg/L which is much below the recommended limit.
- **Fluoride:** The WHO notes that long term exposure to drinking water that contains more than 1 mg/L fluoride can cause health problems like dental fluorosis, arthritis, skeletal fluorosis, bone damage etc. Moderate drinking water fluoride levels of 0.6 to 0.8 mg/L are recommended for oral health and prevention of dental caries. The water analysis result showed 0.32 mg/L of fluoride in the sample.
- **Sulphate:** High amount of sulphate in drinking water gives bitter or medicinal taste and can lead to health issues like diarrhea. Based on aesthetic effects (taste and odour), sulphate in drinking water currently has a secondary maximum contaminant level (SMCL) of 200 mg/L and the water sample indicate minute amount of 6.79 mg/L.

- **Arsenic:** As per BIS standards ( IS 10500:2912) the maximum permissible limit of arsenic in drinking water is 0.01 mg/L. Long- term exposure to arsenic in drinking water is related to increased risk of cancer. The result for the water sample is 0.008 mg/L which is much lower than the recommended limit.
- **Alkalinity:** It refers to the measure of the capacity of the water to neutralize the acids. High pH can cause an upset stomach. Recommended range for drinking water is 20- 200 mg/L and the test result indicate very low alkalinity of 10 mg/L.
- **Nitrate:** Drinking water with nitrate above 45 mg/L is unsafe for consumption. The test result indicates a very low nitrate level of 3.26 mg/L.

### 2.1.2 Microbiological Analysis:

- **Fecal Coliform:** The presence of fecal Coliform indicate contamination of water with the fecal matter of humans or animals. In presence of fecal Coliform, the water is not safe to consume until it is disinfected or boiled. The test result for the sample contains no fecal coliform as per the report.
- ***Escherichia coli*:** Presence of *E. coli* in water is a strong indicator of sewage or animal waste contamination and consumption of which may result in severe illness. The test sample resulted in absence of *E. coli*.

**Inference** - It can be inferred from the above water test report that the sample of drinking water satisfies the two major parameters and is safe for drinking.



## 2.2 Carbon Footprint Estimation

### Methodology –

The carbon footprint, amount of carbon dioxide (CO<sub>2</sub>) emissions associated with all the activities of a person was estimated for the faculty members and non-teaching staff of the college based on online questionnaires as designated by the standard internationally recognized carbon footprint calculator – **myclimate**, that has been recognized to be reliable by the United Nations Framework Convention on Climate Change (UNFCCC) in 2015.

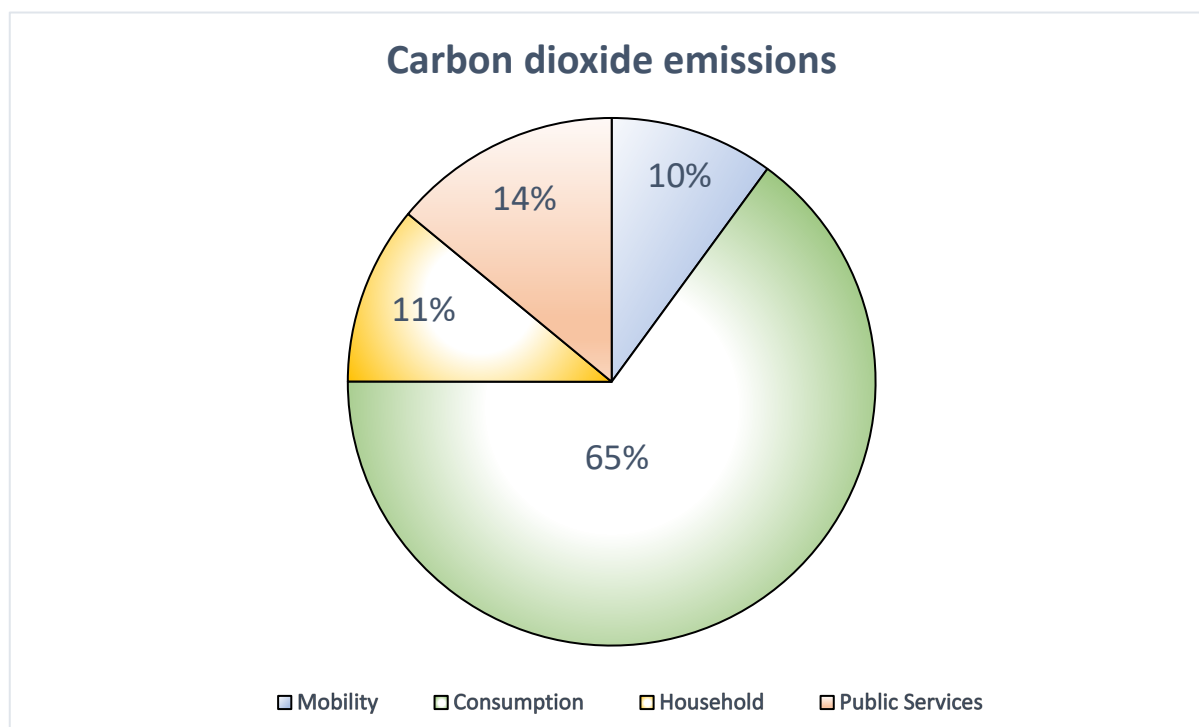
The experts and environmental engineers at myclimate have individually created the calculation basis for each CO<sub>2</sub> emission calculator. The methodologies are based on international standards as well as the latest scientific studies and knowledge. In addition, all CO<sub>2</sub> emission calculators are regularly checked and updated. This ensures that the model calculations are as precise as possible and that the calculation results are always up to date with the latest scientific findings.

The values of various parameters corresponding to annual CO<sub>2</sub> emissions was collected through official email communications of green audit committee viz. [deptbot.official.pduamt@gmail.com](mailto:deptbot.official.pduamt@gmail.com) from various faculty members and non-teaching staffs of the college.

The average data obtained is represented as follows –

Average Carbon Footprint was found to be -- **8.79 tonnes / year**

**Avg. Carbon dioxide emissions corresponding to various parameters were as follows --**



## **2.3 Rain Water Harvesting**

### **Introduction:**

Water, the essential component for human body is the basic building block in maintaining the quality of life. It is essential for drinking as well as other domestic purposes. In most of the regions of the world groundwater is the main source of drinking water. But in recent years, because of the frequent change of climate or the environment, it has become necessary for us to search alternatives for water resources other than ground water resources in order to meet human needs. One of such resources is the surface water usage, of which rain water is considered as the main source that is more or less fresh and its collection is very easy and the cost is quite low. Rivers and canals, lakes and wetlands, ponds and drywells etc. all can catch and hold rainwater directly and its indirect source, the run-off storm water. The closed tanks can also be used to collect and store rain water that is free from contaminants to some extent.

Hence, keeping on mind the rising demand for water among the fast growing human population, there can be a great opportunity to harvest rainwater by any means in order to meet the necessity, probable scarcity thereby avoiding the destruction of the normal groundwater level. The advantage of rainwater harvesting is that, the unused or extra water which remains after use by the human settlements, can be sent down the aquifer to charge the groundwater level too.

Rainwater Harvesting is one of the best and eco-friendly methods to collect and store surface water without causing any disturbance to groundwater. It is a green practice and should be encouraged in the form of Community Development Program. Storing of rain water or run-off storm water in a planned manner can protect the earth by preventing soil erosion and flood and recharge the aquifers to increase the groundwater. In urban areas, the increased population density at some particular places leads to uneven utilization of groundwater resulting to draught and drying up of river bed in areas with increasing domestic and industrial use of water. Therefore, use of rainwater may bring back the normal level of groundwater to some extent thereby maintaining the eco-balance. The wide and unplanned use of groundwater not only disturbs the normal water balance but also leads to contamination and in some areas it becomes completely unhealthy / unfit to use. Hence, collecting and storing rainwater or run-off storm water would balance the risks that would have been raised in these regions for the future generations to come. This approach is simple, environmentally benign as well as cost effective. The roof-top rain water can be collected in large tanks that are connected through pipes in a planned manner. It can further be purified using sand gravels filters depending upon the necessities.

The campus of the college PDUAM, Tulungia is rich in biodiversity with 68.40 % area for open and plantation. The remaining 31.60 % are built up area comprising of Academic Building, Girls Hostel, residential areas for the faculty members as well as other non-teaching staffs etc. Therefore, the green approach of rainwater harvesting within the campus will not only be advantageous for plantation purposes but can also be helpful for some domestic uses as well. Therefore, installation of such an approach within this campus is a very important initiative for not only today but in the days to come.

A closed tank has been connected to the roof-top through pipes for collection and harvesting of rain water and an outlet for its use in times of need. At present, the tank has been placed in the botanical garden of the college that helps in watering the plants and some washing purposes whenever necessary. This approach not only stores and supplies water in times of need but also act as a natural coolant within the nearby areas.

**Objectives:**

- To maintain the eco-balance of groundwater by collecting and storing rainwater through the process of rainwater harvesting from roof-top run-offs
- To store rainwater for watering plants, washing purposes etc

**Need for rain water harvesting:**

- Rising demand of water
- Variations of water availability proportions
- Responsibility towards protecting the nature and the environment
- Beneficial of collecting and storing it near places of use
- Quality of water supplies in urban areas

**Context of rainwater harvesting:**

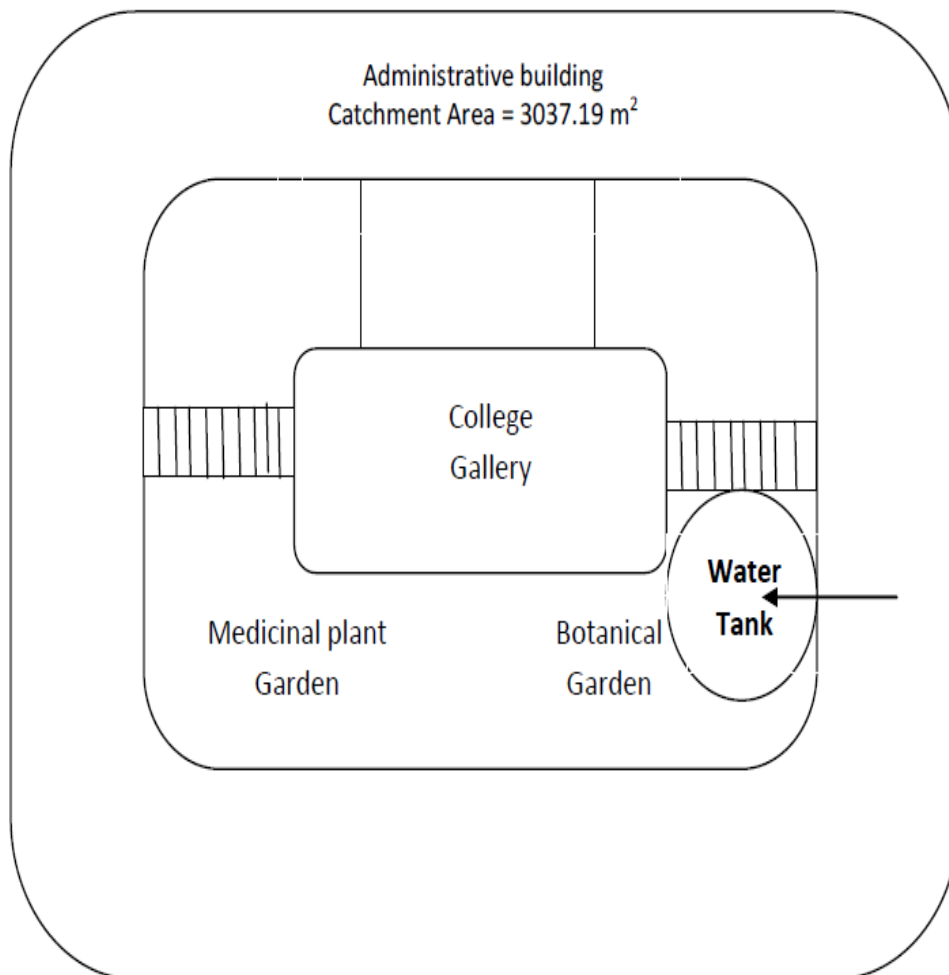
- The tank is about 2000 L in volume
- The botanical garden requires about 750 L of water per day
- Washing purposes requires huge quantity of water
- The climate of the district Bongaigaon is moderate in winter. It is hot and humid from May to October varying the temperature from 13 degree Celsius to 32 degree Celsius. Monsoon starts in the district from April. The heaviest rainfall occurs during the month of May-June-July and August. The average rainfall is 250 cm to 350 cm.

### Roof Rainwater Harvesting System:



Typical rainwater harvesting system

### Rainwater Harvesting System schematic diagram







**Pipeline system of Rain-water harvesting**

**Practice:**

In the PDUAM, Tulungia campus Rainwater Harvesting has been initially installed only at the administrative building. The roof run-off water have collected through pipeline network and stored in the closed tank. At present, there is only one such tank where the roof run-off water have stored. The total capacity of storage is 2000 L. The remaining roof run-off water is allowed to flow to the gardens during rainy seasons. The stored water is used for the watering the gardens in time of need as well as washing purposes.





**Outcome:**

The region witnesses monsoon from April with heaviest rainfall during the month of May-June-July and August. The average rainfall is 250 cm to 350 cm. But due to less rainfall during winter there may be some scarcity of water in this region.

This green practice has solved the problem of water deficiency during winter which may also raise the groundwater level to some extent. The stored water acts as the supplement for both the botanical as well as medicinal plant gardening as well as washing purposes.

**Rainwater harvesting capacity of PDUAM, Tulungia:**

The campus of PDUAM, Tulungia has installed the Rainwater harvesting only at the administrative building with area of 3037.19 m<sup>2</sup>. At present, the total capacity of storage available is 2000 L.



**Photograph of tank showing collection of rainwater**

## 2.4 Vermicomposting

The Internal Quality Assurance Cell (IQAC), Green Audit Committee (GAC) and National Service Scheme (NSS) Unit of Pandit Deendayal Upadhyaya Adarsha Mahavidyalaya, Tulungia is hereby pleased to set up a vermicomposting unit at Tulungia Pt. II, Bongaigaon, Assam.

The Vermicomposting unit has been hereby prepared after an awareness campaign on 29/01/2023 during the NSS Special Camp among the local people of Tulungia Pt. II on the phenomenon and benefits of vermicomposting for increasing the efficiency of agricultural practice as a step towards organic farming. This was followed by a demonstration and hands-on training session regarding the process of vermicompost unit preparation given by Mr. Sourav Bhattacharjee, Assistant Professor, Dept. of Botany, PDUAM, Tulungia.

The Vermicomposting unit has been prepared in the form of a concrete tank with dried organic kitchen waste and raw material deposits from the college campus, homes of local people and nearby vegetable market of Tulungia pt. II. The floor of the concrete tank was covered with soil to prepare the bed for layers of raw dried organic waste material layer deposition. Earthworm species as inoculum were added above the raw material layer which was then covered with sawdust and gunny bags. The unit was built with a tin roof to ensure complete protection from direct sunlight and rains.

The Vermicomposting unit was handed over to the officials of Kakoijana Gaon Panchayat by Dr. Pranjal Morang, Hon'ble Principal, PDUAM, Tulungia in presence of Mr. Keshav ch. Dev Sharma, Hon'ble President, Governing Body, PDUAM, Tulungia and other faculty members from various departments of the college.

The Unit was constructed with the sole noble objective of achieving the goal of eco-friendly, efficient and scientific waste management approach within the college campus as well as all over the surrounding village area adjacent to the college. The vermicomposting unit can also be a step towards increasing the agricultural output among the fields of the locality using an eco-friendly and inexpensive approach of increasing soil fertility and water resistance for better crop yield. The liquid extract obtained from the vermicomposting bed can also be used as an organic fertilizer for crop plants in the form of Vermiwash. This can reduce the dependence on expensive chemical fertilizers and can boost the concept of organic farming in the area.





### Demonstration of Vermicomposting process during NSS Camp, 2023





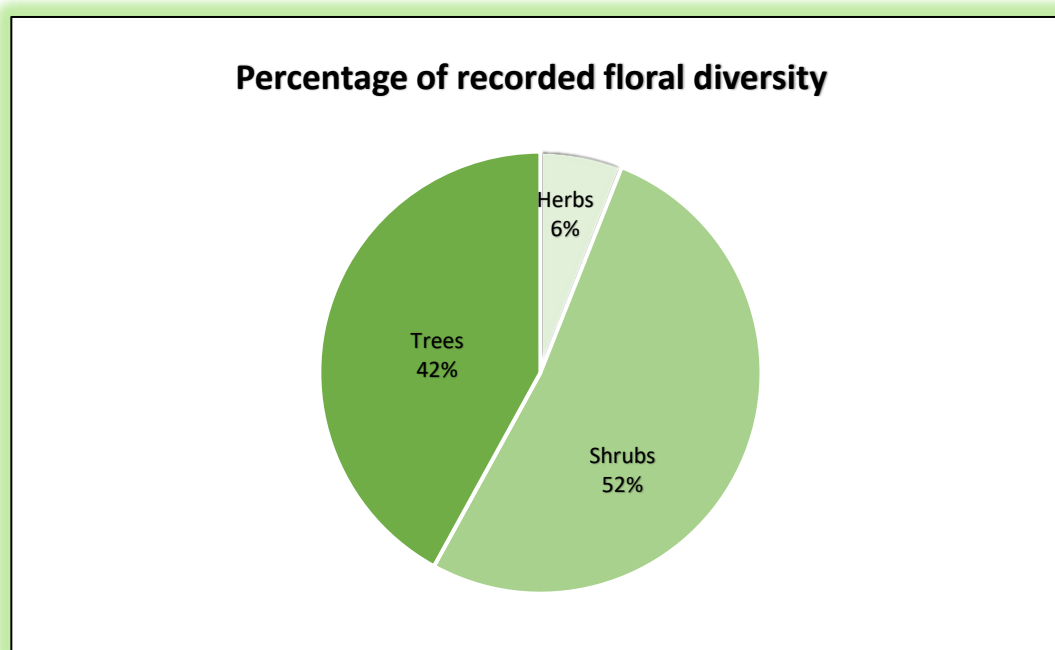
## 2.5 Plant Diversity

Campus inspections were followed by identification of the various plants throughout the campus and construction of Floral Nomenclature Boards and Posters.

Table 2.1 FLORAL DIVERSITY OF THE COLLEGE

| SL. No. | Name of Plants                                           |                               | Family        | Habit |
|---------|----------------------------------------------------------|-------------------------------|---------------|-------|
|         | Scientific Name                                          | Common Name                   |               |       |
| 1.      | <i>Tradescantia spathacea</i> Sw.                        | Boat Lily                     | Commelinaceae | Shrub |
| 2.      | <i>Pinus roxburghii</i> Sarg.                            | Chir Pine                     | Pinaceae      | Tree  |
| 3.      | <i>Mussaenda erythrophylla</i> Schumach. & Thonn.        | Ashanti blood                 | Rubiaceae     | Shrub |
| 4.      | <i>Ficus elastica</i> Roxb.                              | Indian Rubber fig             | Moraceae      | Tree  |
| 5.      | <i>Leucas aspera</i> (Willd.) Link                       | Thumbai                       | Lamiaceae     | Herb  |
| 6.      | <i>Caladium sp.</i>                                      | Elephant ear                  | Araceae       | Shrub |
| 7.      | <i>Psidium guajava</i> L.                                | Guava                         | Myrtaceae     | Shrub |
| 8.      | <i>Dypsis lutescens</i> (H. Wendl.) Beentje & J. Dransf. | Areca palm                    | Arecaceae     | Tree  |
| 9.      | <i>Polyscias fruticosa</i> L.                            | Aralia Golden ball            | Araliaceae    | Shrub |
| 10.     | <i>Hibiscus rosa-sinensis</i> L.                         | China Rose                    | Malvaceae     | Shrub |
| 11.     | <i>Bougainvillea glabra</i> Choisy                       | Paperflower                   | Nyctaginaceae | Shrub |
| 12.     | <i>Capsicum annum</i> L.                                 | Chilli pepper                 | Solanaceae    | Shrub |
| 13.     | <i>Tradescantia zebrina</i> Bosse                        | Silver inch plant             | Commelinaceae | Shrub |
| 14.     | <i>Aloe barbadensis</i> Miller                           | Aloe vera                     | Liliaceae     | Herb  |
| 15.     | <i>Swertia chirata</i> Roxb.                             | Chiretta                      | Gentianaceae  | Shrub |
| 16.     | <i>Aglonema modestum</i> Schott ex Engl.                 | Chinese Evergreen             | Araceae       | Herb  |
| 17.     | <i>Bauhinia variegata</i> L.                             | Orchid Tree                   | Fabaceae      | Tree  |
| 18.     | <i>Ixora chinensis</i> Lam.                              | Scarlet Ixora                 | Rubiaceae     | Shrub |
| 19.     | <i>Bombax ceiba</i> L.                                   | Silk-cotton tree, Simal       | Bombacaceae   | Shrub |
| 20.     | <i>Syzygium 20rutico</i> J.C. Wendl. Ex Link             | Brush cherry, Jamun           | Myrtaceae     | Tree  |
| 21.     | <i>Platycladus orientalis</i> L.                         | Chinese thuja                 | Cupressaceae  | Shrub |
| 22.     | <i>Cycas revoluta</i> Thunb.                             | Sago palm                     | Cycadaceae    | Shrub |
| 23.     | <i>Carica papaya</i> L.                                  | Papaya                        | Caricaceae    | Tree  |
| 24.     | <i>Cupressus macrocarpa</i> Hartw. Ex Gord               | Lemon cypress                 | Cupressaceae  |       |
| 25.     | <i>Phoenix roebelenii</i> O'Brien                        | Pigmy Date Palm               | Arecaceae     | Tree  |
| 26.     | <i>Bambusa multiplex</i> (Lour.) Raeusch. Ex Schult.f.   | Chinese Dwarf Bamboo          | Poaceae       | Tree  |
| 27.     | <i>Artocarpus heterophyllus</i> Lam.                     | Jackfruit                     | Moraceae      | Tree  |
| 28.     | <i>Nyctanthes arbor-tristis</i> L.                       | Night Jasmine                 | Oleaceae      | Shrub |
| 30.     | <i>Cordyline 20ruticose</i> (L.) A. Chev.                | Palm lily                     | Asparagaceae  | Shrub |
| 31.     | <i>Adenanthera pavonine</i> L.                           | Ronga-chandan, Red Sandalwood | Fabaceae      | Tree  |
| 32.     | <i>Mimusops elengi</i> Linn.                             | Spanish cherry                | Sapotaceae    | Tree  |
| 33.     | <i>Syzygium cumini</i> L.                                | Indian blackberry (Jamun)     | Myrtaceae     | Tree  |

|     |                                                                              |                      |                     |       |
|-----|------------------------------------------------------------------------------|----------------------|---------------------|-------|
| 34. | <i>Delonix regia</i> (Bojer ex Hook.) Raf.                                   | Krishna Chura        | Fabaceae            | Tree  |
| 35. | <i>Ixora chinensis</i> Lam.                                                  | Chinese ixora        | Rubiaceae           | Shrub |
| 36. | <i>Dracaena</i> sp.                                                          | Corn plant           | Asparagaceae        | Shrub |
| 37. | <i>Codiaeum variegatum</i> L.                                                | Croton               | Euphorbiaceae       | Shrub |
| 38. | <i>Melastoma malabathricum</i> L.                                            | Malabar melastome    | Melastomataceae     | Shrub |
| 39. | <i>Magnolia champaca</i> (L.) Baill.<br>Ex-Pierre / <i>Michelia champaca</i> | Champak              | Magnoliaceae        | Tree  |
| 40. | <i>Terminalia chebula</i> Retz.                                              | Chebulic myrobalan   | Combretaceae        | Tree  |
| 41. | <i>Mangifera indica</i> Linn.                                                | Mango                | Anacardiaceae       | Tree  |
| 42. | <i>Eugenia</i> sp.                                                           | Nereedu              | Myrtaceae           | Shrub |
| 43. | <i>Cymbopogon nardus</i> (L.) Rendle                                         | Citronella Grass     | Poaceae (Gramineae) | Herb  |
| 44. | <i>Hibiscus rosa-sinensis</i>                                                | China rose           | Malvaceae           | Shrub |
| 45. | <i>Ixora coccinea</i> L.                                                     | Scarlet jungle flame | Rubiaceae           | Shrub |
| 46. | <i>Tabernaemontana divaricata</i>                                            | Crape jasmine        | Apocynaceae         | Tree  |
| 47. | <i>Ziziphus mauritiana</i>                                                   | Indian jujube        | Rhamnaceae          | Tree  |
| 48. | <i>Monoon longifolium</i> (Sonn.) B. Xue & R.M.K. Saunders                   | False Ashoka         | Annonaceae          | Tree  |
| 49. | <i>Neolamarckia cadamba</i> (Roxb.) Bosser.                                  | Kadam                | Rubiaceae           | Tree  |
| 50. | <i>Ziziphus jujuba</i> Mill.                                                 | Red Date             | Rhamnaceae          | Tree  |



## 2.6 Dominance of Tree Species

The Dominance of woody Tree species was calculated by **Diameter at Breast Height (DBH)** which is a standard method of measuring the diameter of tree trunk for standing trees. It is one of the most common densitometric measurements. Tree trunk diameters are measured at the height of an adult's breast, which is defined differently in different countries and situations. In most countries, DBH is measured at approximately 1.3 m (4.3 ft) above ground. DBH measurement can be used to estimate the volume, biomass and carbon storage of trees.

It can directly provide us the record of the most dominant tree species in the college campus that can be correlated with the climatic and soil conditions of the area being optimum for the growth of those specific types of tree species.

Table 2.2 Top 5 dominant Tree species of the college campus

| SN | Name of Tree Species                            | Circumference measured (C) | Diameter ( $C/\pi$ ) |
|----|-------------------------------------------------|----------------------------|----------------------|
| 1. | <i>Delonix regia</i> (Bojer ex Hook.) Raf.      | 130.00 cm                  | 41.40 cm             |
| 2. | <i>Magnolia champaca</i> (L.) Baill. ex-Pierre. | 86 cm                      | 26.38 cm             |
| 3. | <i>Artocarpus heterophyllus</i> Lam.            | 67 cm                      | 21.33 cm             |
| 4. | <i>Neolamarckia cadamba</i> (Roxb.) Bosser.     | 62.5 cm                    | 19.90 cm             |
| 5. | <i>Mimusops elengi</i> Linn.                    | 33 cm                      | 10.50 cm             |

5



DBH Method for measurement of dominance



## 2.7 Faunal Diversity

The campus of PDUAM, Tulungia lies adjacent to the Kakoiijana reserve forest which is a habitat to endangered and Schedule I species, the golden langurs. As such the college campus is bestowed with a rich faunal diversity. The different species of insects, amphibians, reptiles, birds and mammals tend to play an important role in maintaining the ecosystem. The documentation of the faunal diversity in the campus is underway which includes random sightings as well as photographic records of a few of these.

**Table 2.3 : Checklist of Butterflies of PDUAMT**

| Sl. No. | Common Name          | Scientific Name                    |
|---------|----------------------|------------------------------------|
| 1.      | Common Mormon        | <i>Papilio polytes romulus</i>     |
| 2.      | Common Rose          | <i>Atrophaneura aristolochiae</i>  |
| 3.      | Common Batwing       | <i>Atrophaneura varuna</i>         |
| 4.      | Common Grass yellow  | <i>Eurema hecabe contubernalis</i> |
| 5.      | Common Emigrant      | <i>Catopsilia pomona</i>           |
| 6.      | Indian cabbage white | <i>Pieris brassicae</i>            |
| 7.      | Glassy Tiger         | <i>Parantica aglea</i>             |
| 8.      | Plain Tiger          | <i>Danaus genutia</i>              |
| 9.      | Common Sailor        | <i>Neptis hylas adara</i>          |
| 10.     | Common Sergeant      | <i>Athyma perius</i>               |
| 11.     | Common Five-ring     | <i>Ypthima baldus</i>              |
| 12.     | Common Four-ring     | <i>Ypthima huebneri</i>            |
| 13.     | Common Pierrot       | <i>Castalius rosimon</i>           |

**Table 2.4 : Checklist of Amphibians of PDUAMT**

| Sl. No. | Common Name       | Scientific Name                     |
|---------|-------------------|-------------------------------------|
| 1.      | Common Toad       | <i>Duttaphrynus melanostictus</i>   |
| 2.      | Indian Bull frog  | <i>Hoplobatrachus tigerinus</i>     |
| 3.      | Common Water Frog | <i>Hoplobatrachus cyanophlyctis</i> |

**Table 2.5 : Checklist of Reptiles of PDUAMT**

| Sl. No. | Common Name               | Scientific Name                  |
|---------|---------------------------|----------------------------------|
| 1.      | Indian Garden Lizard      | <i>Calotes versicolour</i>       |
| 2.      | Brook's House gecko       | <i>Hemidactylus brookii</i>      |
| 3.      | Asian House Gecko         | <i>Hemidactylus platyrus</i>     |
| 4.      | Brahminy Worm snake       | <i>Indotyphlops brahminus</i>    |
| 5.      | Diard's Worm snake        | <i>Argyrophis diardii</i>        |
| 6.      | Indo-Chinese Rat snake    | <i>Ptyas korros</i>              |
| 7.      | Indian Rat snake          | <i>Ptyas mucosa</i>              |
| 8.      | Red-necked keelback snake | <i>Rhadophis subminiatus</i>     |
| 9.      | King Cobra                | <i>Ophiophagus hannah</i>        |
| 10.     | Monocled Cobra            | <i>Naja kaouthia</i>             |
| 11.     | Banded Krait              | <i>Bungarus fasciatus</i>        |
| 12.     | Burmese Python            | <i>Python molurus bivittatus</i> |

**Table 2.6 : Checklist of Birds of PDUAMT**

| Sl. No. | Common Name               | Scientific Name               |
|---------|---------------------------|-------------------------------|
| 1.      | Spotted Dove              | <i>Spilopelia chinensis</i>   |
| 2.      | Asian Koel                | <i>Eudynamis scolopacea</i>   |
| 3.      | Indian Cuckoo             | <i>Cuculus micropterus</i>    |
| 4.      | House swift               | <i>Apus nipalensis</i>        |
| 5.      | Cattle Egret              | <i>Bubulcus ibis</i>          |
| 6.      | Intermediate Egret        | <i>Ardea intermedia</i>       |
| 7.      | Asian Barred Owlet        | <i>Glaucidium cuculoides</i>  |
| 8.      | Common Kingfisher         | <i>Alcedo atthis</i>          |
| 9.      | White throated Kingfisher | <i>Halcyon smyrnensis</i>     |
| 10.     | Blue tailed Bee-eater     | <i>Merops philippinus</i>     |
| 11.     | Blue-throated Barbet      | <i>Psilopogon asiaticus</i>   |
| 12.     | Black hooded Oriole       | <i>Oriolus xanthornus</i>     |
| 13.     | Red vented Bulbul         | <i>Pycnonotus striatus</i>    |
| 14.     | Black Drongo              | <i>Dicrurus macrocercus</i>   |
| 15.     | House crow                | <i>Corvus splendens</i>       |
| 16.     | Common Myna               | <i>Acridotheres tristis</i>   |
| 17.     | White breasted Water hen  | <i>Amaurornis phoenicurus</i> |

## 2.8 Medicinal Plant Garden

The construction of a medicinal plant garden has been initiated by the Green Audit Committee of the college with appraisal from the hon'ble principal (i/c), PDUAM, Tulungia. The medicinal plant garden has a collection of locally available, medicinally important plants.

- It aims to enrich the floral diversity of the campus with some plants having well-known medicinal application.
- It can enrich the scope of future research and exploration in the field of plant sciences.
- The collection of such medicinally important plants within the campus can be of a great addition for practical learning of the students in the field of plant sciences.
- It can be a step towards biodiversity conservation.

**Table 2.7 : Data of plants in the medicinal garden of the college campus**

| SL. No. | Scientific name                          | Local name      | Family                    | Medicinal use                                                                                                                                                                                                                                                                                          |
|---------|------------------------------------------|-----------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.      | <i>Ocimum tenuiflorum</i> L.             | Tulsi           | Lamiaceae                 | Well known for its medicinal and spiritual properties in Ayurveda which includes aiding cough, asthma, diarrhea, fever, dysentery, arthritis, eye diseases, indigestion, gastric ailments, etc.                                                                                                        |
| 2.      | <i>Aloe barbadensis</i> miller           | Aloe vera       | Asphodelaceae (Liliaceae) | Traditionally used to treat skin injuries (burns, cuts, insect bites, and eczemas) and digestive problems because of its anti-inflammatory, antimicrobial, and wound-healing properties                                                                                                                |
| 3.      | <i>Swertia chirayita</i>                 | Chirota         | Gentianaceae              | Chirata is taken by mouth for seizures, high blood pressure, asthma, diabetes, and hiccups, or in combination with other medications for scorpion bites.                                                                                                                                               |
| 4.      | <i>Bryophyllum pinnatum</i> (Lam.) Oken. | Dupor bon tenga | Crassulaceae              | Used for treating fever, smallpox, otitis, cough, asthma, headache, convulsion, and general debility.                                                                                                                                                                                                  |
| 5.      | <i>Datura stramonium</i> L.              | Datura          | Solanaceae                | The seeds of Datura are analgesic, anthelmintic, and anti-inflammatory and as such, they are used in the treatment of stomach and intestinal pain that results from worm infestation, toothache, and fever from inflammation. Fruit juice is applied to the scalp, to treat dandruff and falling hair. |

|     |                                             |                |                |                                                                                                                                                                                                                                       |
|-----|---------------------------------------------|----------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6.  | <i>Murraya koenigii</i>                     | Noro-Xingho    | Rutaceae       | It helps in the treatment of dysentery, diarrhea, diabetes, morning sickness, and nausea                                                                                                                                              |
| 7.  | <i>Phlogacanthus thyrsoiflorus</i> Nees     | Bahok teeta    | Acanthaceae    | Used in treating diabetes, whooping cough, menorrhagia, wounds, and tumours and as a blood purifier.                                                                                                                                  |
| 8.  | <i>Nyctanthes arbor-tristis</i>             | Sewali         | Oleaceae       | The plant is used as an anti-helminthic, anti-pyretic, as a laxative, in rheumatism, and skin ailments, and as a sedative.                                                                                                            |
| 9.  | <i>Loropetalum chinense</i>                 | Chinese fringe | Hamamelidaceae | The whole plant is depurative, haemostatic and pectoral. A decoction is used in the treatment of coughing in tuberculosis, dysentery, enteritis, etc. The leaves can be crushed and pulverized for external application on the wound. |
| 10. | <i>Bacopa monnieri</i>                      | Brahmi         | Plantaginaceae | Brahmi tea that is made by brewing Brahmi leaves helps to manage cold, chest congestion, and bronchitis by clearing out the mucus from the air passages which helps ease breathing.                                                   |
| 11. | <i>Catharanthus roseus</i>                  | Nayantara      | Apocynaceae    | It is used for treating a host of health anomalies including diabetes, sore throat, lung congestion, skin infections, and eye irritation.                                                                                             |
| 12. | <i>Curcuma longa</i>                        | Halodhi        | Zingiberaceae  | It strengthens the overall energy of the body, relieving gas, dispelling worms, improving digestion, regulating menstruation, dissolving gallstones, and relieving arthritis.                                                         |
| 13. | <i>Zingiber officinale</i><br>Roscoe.       | Ada            | Zingiberaceae  | Used for the treatment of numerous ailments, such as colds, nausea, arthritis, migraines, and hypertension.                                                                                                                           |
| 14. | <i>Citrus limon</i> (L.)<br><i>Burm. f.</i> | Nemu Tenga     | Rutaceae       | Used in the treatment of high blood pressure, the common cold, and irregular menstruation.                                                                                                                                            |





Medicinal Plant Garden



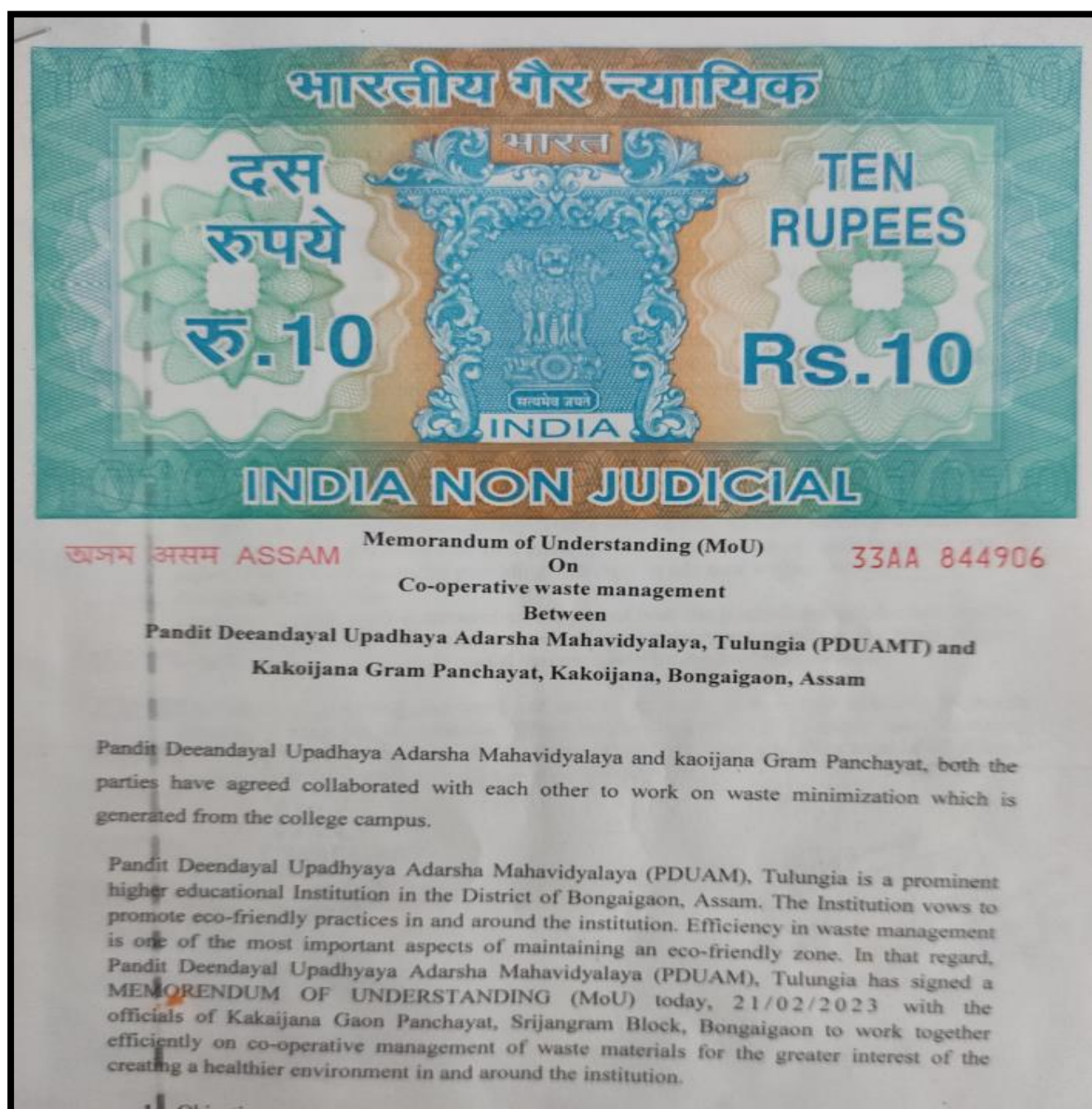


## 2.9 Solid Waste Management

The Green Audit Committee of PDUAM, Tulungia has hereby prepared concrete tanks for solid waste sorting and management. The waste materials from the campus are collected by specially appointed employees and are then sorted according to their biodegradable and non-biodegradable nature. The waste materials are then deposited in the labelled concrete tanks after sorting.

The Green Audit Committee, PDUAM, Tulungia with appraisal from Hon'ble Principal (i/c) has signed an MoU with the officials of kakojana G.P for collection of the sorted waste materials for further processing and management.

The collected bio-degradable wastes are taken for application as inoculum for the vermicomposting unit set up by the college at Tulungia pt. II.



**(a) Methodical Collection of waste materials**

The students and employees of Pandit Deendayal Upadhyaya Adarsha Mahavidyalaya (PDUAM), Tulungia shall deposit the waste materials generated daily throughout the campus in a time-bound manner under the overall supervision of an assigned employee for further processing.

**(b) Accurate Sorting of collected waste materials**

The collected waste materials are to be sorted on the basis of Biodegradable / Non-Biodegradable nature inside specific collection bins installed throughout the campus of PDUAM, Tulungia.

**(c) Handing over the sorted waste materials**

The collected and effectively sorted waste materials will be handed over in a time bound manner daily to representatives from Kakaijana Gaon Panchayat, Srijangram Block, Bongaigaon for further processing and management.

**2. Coordination**

Pandit Deendayal Upadhyaya Adarsha Mahavidyalaya (PDUAM), Tulungia and Kakaijana Gaon Panchayat, Srijangram Block, Bongaigaon shall appoint one member as coordinator to coordinate the whole process on its behalf.

**3. Validity**

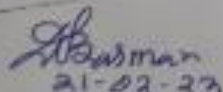
The Memorandum of Understanding (MoU) shall remain in force initially for a period of three years w.e.f. the final date of signing. This Memorandum of Understanding may be terminated by either party by providing 180 days in advance written notice.

**4. Financial implication**

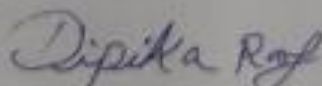
There is no financial commitment on the part of both the institutions and the host institute will bear all expenses in implementation of any program mentioned in the MoU. Further, if there involves any other financial matter, it will be dealt with separately.

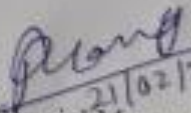
The MoU as prepared and read out loudly in front of the high officials of Pandit Deendayal Upadhyaya Adarsha Mahavidyalaya (PDUAM), Tulungia and Kakaijana Gaon Panchayat, Srijangram Block, Bongaigaon will continue for a term of 03 (Three) years with effect from 21/02/2023 March 2023.

  
21/02/2023.  
Secretary  
Kakaijana G.P.  
Kakaijana Gaon Panchayat

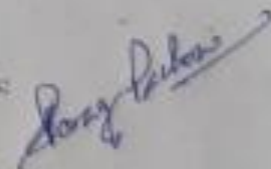
  
21-02-23  
President  
Kakaijana G.P.  
Kakaijana Gaon Panchayat

Witness:



  
21/02/23  
Dr. Pranjal Morang  
Principal (i/c)  
PDUAM, Tulungia  
Pandit Deendayal Upadhyaya  
Adarsha Mahavidyalaya  
Tulungia, Bongaigaon

Witness:









Solid Waste Sorting and Management System



## **Chapter 3 – Photographs of Green Initiatives**

### **3.1 Aquarium Keeping Facility**

The Department of Zoology as per the directions of the Green Audit Committee also undertook an initiative for the construction of an aquarium by the students of the Department. This initiative not only helped the students to learn a new skill but also to learn the basics of aquarium keeping.



Construction and maintenance of aquarium by Department of Zoology as a part of Green Audit Initiative



### 3.2 Fauna Information Board



Fauna Information Board, PDUAM Tulungia



### 3.3 Posters for Environmental Awareness

The College campus displays various posters for environmental awareness at different locations with the following objectives:

- **Biodiversity conservation**
- **Water conservation**
- **Avoidance of littering**
- **Cleanliness around the campus**
- **No smoking throughout the campus**



### Posters for water conservation





**Poster for Biodiversity conservation**



**Poster for 'No Litter Zone'**



**'Tobacco-free' campus**



### Noise pollution management:

Pressure horns are not allowed on the College campus, so no one of the staff and students uses pressure horns to keep the College campus noise-free.



Poster for 'Noise-free' campus



### 3.4 World Environment Day Celebration, 2023

World Environment Day Celebrations, 2023

*Art Competition on – theme: Save the Environment*

*Cleanliness drive, Tree Plantation drive and Student sensitization program at Kakoijana High school, Kakoijana*

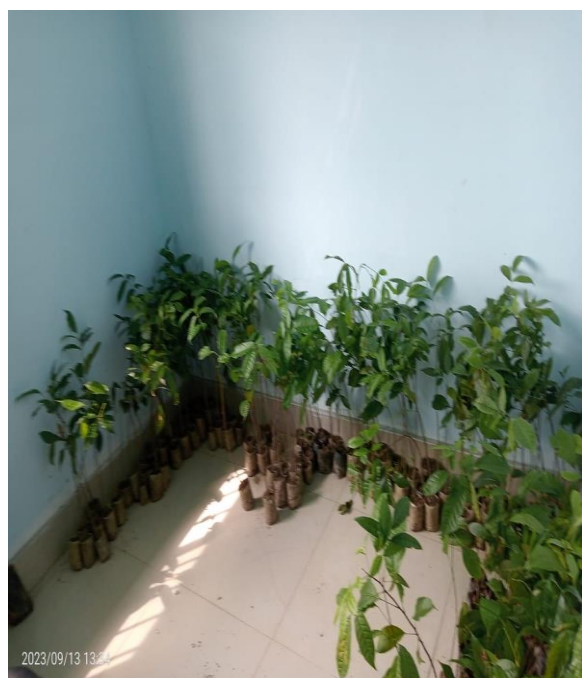




### 3.5 Amrit Brikhya Andolan

Mega Tree Plantation World Record, 2023

No. of Saplings planted – 100



অমৃত বৃক্ষ আন্দোলন

Home



|                     |                                                                                                                                                                         |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Registration Number | : ED00064813                                                                                                                                                            |
| Category            | : EDUCATION : (COLLEGE)                                                                                                                                                 |
| Institute Details   | : Pandit Deendayal Upadhyaya Adarsha Mahavidyalaya, Tulungia                                                                                                            |
| Full Name           | : Dr. Pranjal Morang                                                                                                                                                    |
| Mobile Number       | : 9864327718                                                                                                                                                            |
| Age & Gender        | : 40 (MALE)                                                                                                                                                             |
| Address             | : Tulungia, North Salmara, Bongaigaon , Post Office: North Salmara, Police Station: Abhayapuri, Pin Code: 783383GP: KOKAIJANA, Block: SRIJANGRAM , District: BONGAIGAON |
| Identity Card       | : AADHAR_CARD                                                                                                                                                           |

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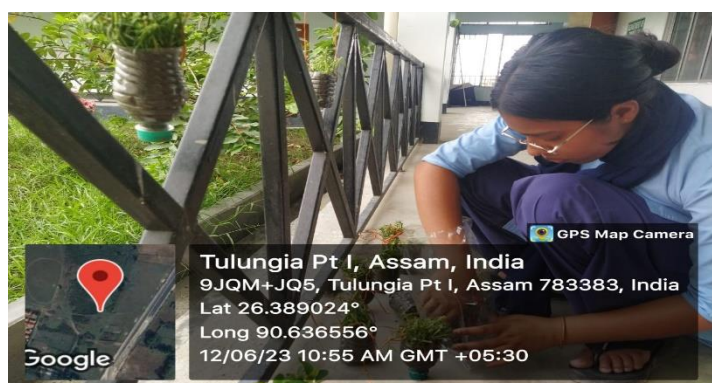


### 3.6 Reduce – Reuse – Recycle initiative

The Green Audit Committee of Pandit Deendayal Upadhyaya Adarsha Mahavidyalaya, Tulungia has taken steps towards popularization of sustainable, environment-friendly practices in the college campus. In that regard, the students of various semesters from science and commerce were engaged in preparation of useful plant containers by cutting waste plastic bottles in attractive designs leading to construction of a beautiful bottle garden inside the campus.

This can be an important step towards --

- Reduction of plastic waste generation
- Re-use of the plastic bottles
- Reduction of Carbon Footprint
- Eco-Friendly Gardening
- Control of excess water wastage during irrigation
- Budget-Friendly Gardening
- Budget-Friendly Gardening



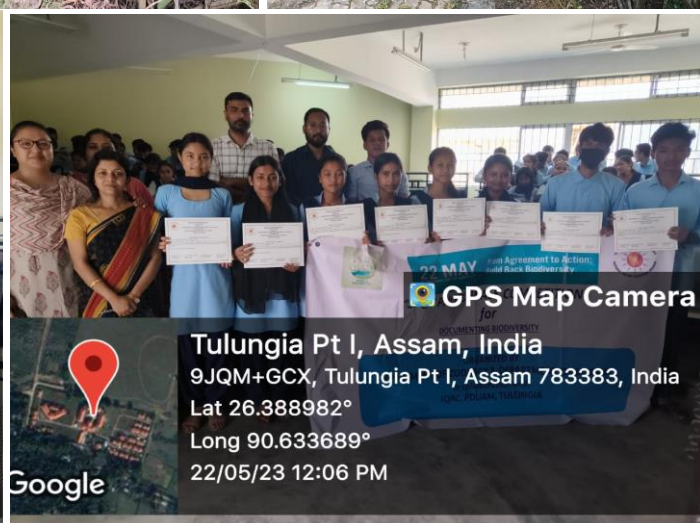






### 3.7 Extension Activities

*Spot Photo Walk competition – World Biodiversity Day, 2023*





*Plantation Drive and Student Sensitization Program at Kakoijana High School, Kakoijana –  
World Earth Day, 2023*



## **Chapter 4 -Recommendations**



## Chapter 5 – Future Plans

The Green Audit Committee hereby aims for the following future plans –

- Enrichment of Floral diversity and documentation
  - Enrichment of Faunal diversity and documentation
  - Enrichment of the medicinal garden
  - Enrichment of the pisciculture facility
  - Installation of Incinerator plant for waste disposal
  - Construction of a Mushroom culture facility
  - Construction of Orchidarium
  - Construction of Aquatic plant culture facility
  - Construction of Butterfly house
  - Reg. Rainwater Harvesting System -Future Extension Plan
- The PDUAM, Tulungia campus has an Academic Building, a Science Block, Girls' Hostel, residential areas for quarters of both teaching and non-teaching staffs and other Assam type houses with areas of 3037.19 m<sup>2</sup>, 547.65 m<sup>2</sup>, 1954.85 m<sup>2</sup>, 3125.86 m<sup>2</sup> and 960.4 m<sup>2</sup> respectively. Therefore, there is a large scope of setting/installing more tanks/wells for Rainwater Harvesting techniques in the future which will be very advantageous for the academic and medicinal gardens as well as domestic purposes.