

# GREEN AUDIT REPORT (2022-23)

## SBMS COLLEGE Sualkuchi



**OFFICE OF THE PRINCIPAL**  
**S.B.M.S. COLLEGE SUALKUCHI, ASSAM**  
**(SUALKUCHI BUDRAM MADHAB SATRADHIKAR COLLEGE)**

An Institution of Higher Education Affiliated to Gauhati University, Provincialized by the Govt. of Assam, recognized under Section 2(f) & 12(B) of the UGC Act, 1956 and accredited with Grade B (Cycle II) by NAAC

*From*  
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**FORWARDING**

The present report is a Green Audit of SBMS College, Sualkuchi conducted internally by the Green Audit Assessment Team for the session 2022-23. This Green Audit report will be an important and meaningful documentation throwing light on sustainability of the college campus.

I am thankful to Dr. Bhaben Tanti, Professor and Head Department of Botany, Gauhati University for his guidance and suggestions to carry out this Green Audit, I also offer my thanks to Mr. Mridul Sarma, Electrical Engineer for completion of Energy Audit.

I convey my best wishes to the members of the Green Audit Team for their vision to prepare the Green Audit of the college campus and welcome our well wishers.

I hope, this Green Audit Report of the College will be a valuable documentation for our institution to go for regular monitoring of the campus environment.

**Principal I/c**  
**S.B.M.S. College**  
**SUALKUCHI**



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10 May, 2023

**Certificate**

This is to certify that SBMS College, Sualkuchi, 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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SBMS COLLEGE



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**Joint Coordinator IQAC**

**S. B. M. S. COLLEGE, SUALKUCHI**

## ACKNOWLEDGEMENT

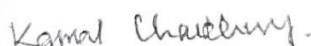
This Green audit Report is for the fulfillment of the commitment of SBMS College, Sualkuchi towards a sustainable future. It assists in the process of attaining an eco-friendly approach to the sustainable development of the college. The Green Audit Assessment Team sincerely thanks the SBMS College authorities for assigning the task and the cooperation extended to our team during the entire process.

I offer my special thanks to Mr. Gopal Sarma, Principal (i/c), SBMS College, Sualkuchi, the IQAC Coordinator (s) of the college, Dr. Nihar Ranjan Kalita and Dr. Anima Baishya for their valuable suggestion throughout the course of our Audit.

On behalf of the Green Audit team, I express my deepest sense of gratitude to Dr. Bhaben Tanti, Professor and Head, Department of Botany, Gauhati University for his suggestions and guidance extended at different stages of green audit preparation. I also offer my sincere thanks to Mr. Mridul Sarma, Consultant Electrical Engineer for verifying and certifying the Energy Audit. I also offer thanks to Mr. Arup Jyoti Bora, Research Scholars of Geography, Gauhati University for conducting Campus Survey and GPS mapping.

Moreover, my sincere thanks go to the members of the Green Audit Team for their selfless cooperation throughout the course of this Green Audit.

Hope this report will serve as a useful tool to determine the degree of maintenance of the college campus in an eco-friendly manner. We are happy to submit this Green Audit report to the authorities of SBMS College, Sualkuchi.



(Dr. Kamal Choudhury)  
Coordinator, Green Audit

**CONTENTS**  
**Green Audit Report**

<b><u>Title</u></b>	<b><u>Page No.</u></b>
<b>Forwarding</b>	<b>i</b>
<b>Certificate</b>	<b>ii</b>
<b>Green Audit Assessment Team</b>	<b>iii</b>
<b>Acknowledgement</b>	<b>iv</b>
<b>Contents</b>	<b>v</b>
<b>1. Introduction</b>	<b>1 - 2</b>
<b>2. Objectives and Methodology</b>	<b>3- 4</b>
<b>3. Campus Mapping and Land Use and Land Cover Assessment</b>	<b>5 - 8</b>
<b>4. Auditing for Biodiversity of the College Campus</b>	<b>9 - 21</b>
<b>4.1. Floral Diversity</b>	
<b>4.2. Faunal Diversity</b>	
<b>5. Weather and Air quality Audit</b>	<b>22 - 25</b>
<b>5.1 Weather Quality</b>	
<b>5.2 Air Quality</b>	
<b>6. Water Quality Audit</b>	<b>26 - 28</b>
<b>7. Energy Audit</b>	<b>29 - 34</b>
<b>8. Waste Management Audit</b>	<b>35 - 38</b>
<b>9. Environmental Consciousness for sustainability of College Campus</b>	<b>39 - 43</b>
<b>10. Recommendations and Conclusion</b>	<b>44</b>

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## **1. INTRODUCTION**

Environmental sustainability is the capacity of nature to continue, to endure; and for human beings it is about the potential for long term preservation of well-being, with ecological, economic, political and cultural dimensions. Green ambience of the campus of an educational institute is vital to guarantee the best learning environment and healthy ecosystem for everyone associated with the campus.

With the above perspective, UGC (University Grants Commission) has attached great importance on the concept of “Green Campus, Clean Campus” in higher educational institutes across the country. ‘Green audit’ plays the pivotal role in assessment of key parameters related to environmental sustainability and **analyze environment friendly practices adopted by selected institute area.**

The green audit follows the basic philosophy and approach summarized by the definition adopted by the International Chambers of Commerce (ICC) in its publication of Environmental Auditing (1989). The ICC defines Environmental Auditing as a management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of safeguarding the environment and natural resources in its operation. Green audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of the area. With modernization, the uses of resources and chemicals have increased which have negatively impacted the environment creating an imbalance in nature which is now a great matter of concern. Green or Environmental audit is a way to ensure that such negative impacts on the environment of a given area, due to the development and other activities are kept at a minimum.

The Government of India declared the National Environment Policy 2006, and made green audit compulsory for each industry. In a follow-up measure, NAAC, under the guidance of the UGC has included the Green Audit as an accreditation parameter for universities and colleges.

Sualkuchi Budram Madhab Satradhikar College is a premier institute of higher education situated on the northern bank of the river Brahmaputra in Kamrup district, Assam. The college is

**Green Audit Report, 2022 - 2023**  
**SBMS College, Sualkuchi**

situated at village Sualkuchi, which is about 35 km away from the Guwahati city. There are large numbers of cottage handloom industries for which it is also known as the "Manchester of the East". Although the modern construction of the College includes various Departments housed in 2-3 storied buildings, the greenery of the campus captures the soul of the college.

To nurture an eco-friendly environment and to motivate the students for sustainable practices like save greenery, save electricity, save water, create plastic free environment, waste management etc. the college has formed an eco-club with a mandate to prepare a Green Audit report for the college periodically.

SBMS college, Sualkuchi, has been diligently fulfilling its responsibility and commitment towards a healthy environment. The Green Audit report (2022-22) of SBMS College, Sualkuchi is in continuation of its effort to the assessment of environment quality in the college campus along with its peripheral areas and is a transparent and honest attempt of self-assessment of the status of some major environmental parameters. The audit takes stock of the efforts to nurture environment friendly practices like reduction of Energy consumption, proper waste management, conservation of water and monitoring of its quality and proper utilization of natural resources. It also records the floral and faunal diversity within the campus which is essential for monitoring the ecological balance. The report also brings to light the initiatives and futuristic approaches adopted by the college community that are essential for continuation and upgradation of the greener ambience of the college campus.



## 2. OBJECTIVES AND METHODOLOGY

### Objectives:

The Green Audit of an institution has been becoming an important task for self-assessment of the institution which reflects the role of the institution in mitigating the present environmental problems. SBMS College is always aware and been putting efforts to keep its environment clean to maintain sustainability. With an idea to create a healthy environment where youth can be educated to live a sustainable life in harmony with nature, the College has formulated the eco-friendly policy with the following objectives-

- ✚ Ensuring the sustenance of biodiversity by maintenance of the natural environment in addition to conservation, restoration, and remediation of existing land and water.
- ✚ To record the weather and air quality of the college campus.
- ✚ Managing waste generated in the Campus through proper Management system.
- ✚ Encouraging students to participate in environment awareness programs like World Environment Day, Science Day, Biodiversity Day, Wetland Day etc.
- ✚ Protecting, monitoring, and conserving flora and fauna of the Campus and preservation of their natural habitat.
- ✚ To estimate the Energy consumption of the college.
- ✚ To make students realize the core of environmental consciousness for a sustainable future

### Methodology

In order to conduct the Green Audit of SBMS College, Sualkuchi, the following methodologies were applied:

**(i) Field survey:** The Green Audit (G.A.) team of the college made field survey in the campus during the assessment period.

**(ii) Water quality analysis:** The water samples were collected from the different sources of water in the college campus and are analyzed in the Pollution Control Board, Guwahati, Assam using standard methods and instruments.

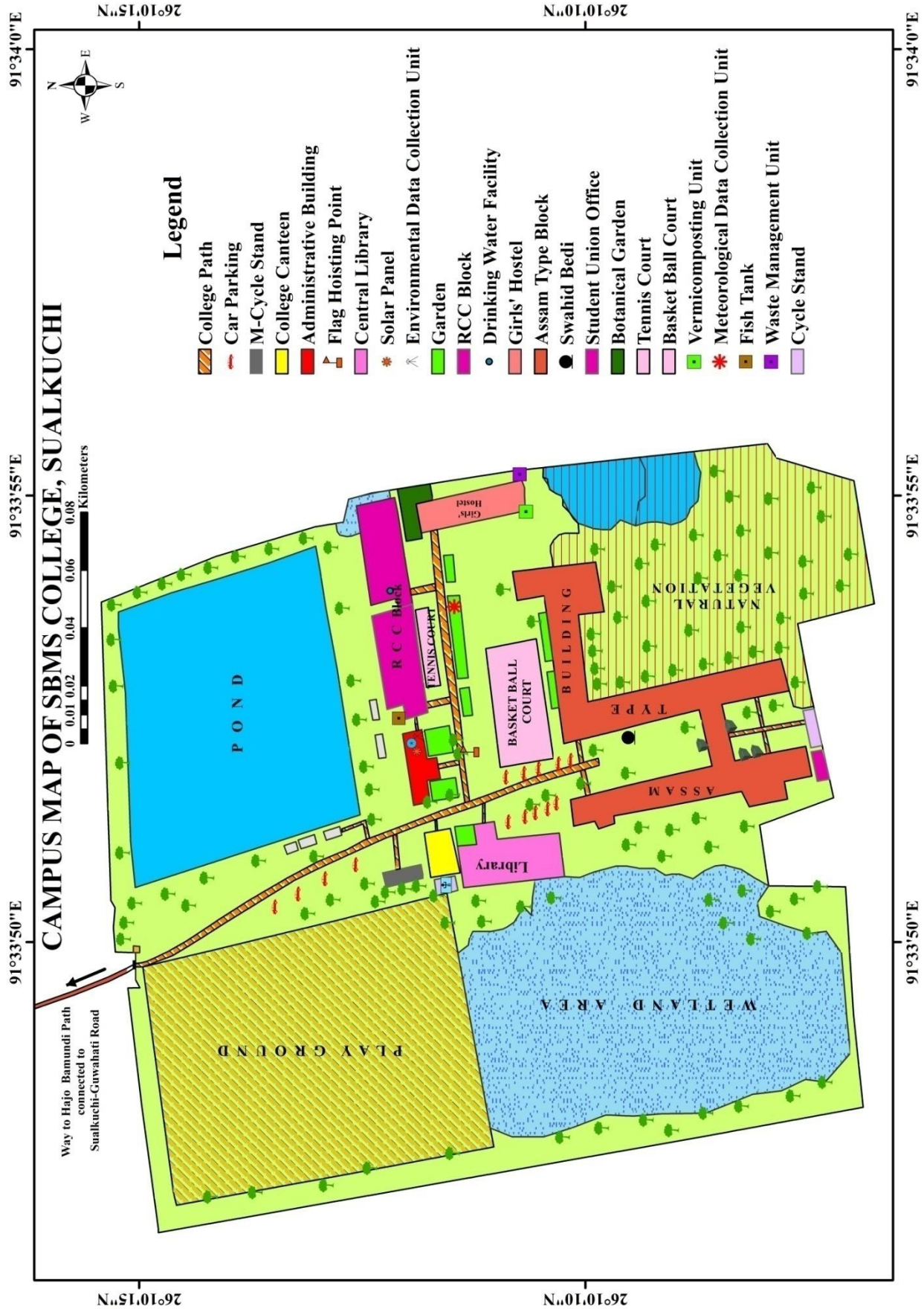
**(iii) Campus mapping and Land use land cover (LULC) Assessment:** Campus mapping and LULC assessment were conducted with the help of GIS software and the GPS survey.

**(iv) Air and weather quality monitoring:** Weather quality data are collected from the meteorological data collection unit installed at college campus by Regional Meteorological Centre, Borjhar, Guwahati. Air quality in the college campus was assessed with the help of internet using the websites- <https://www.accuweather.com> and <https://weatherspark.com>

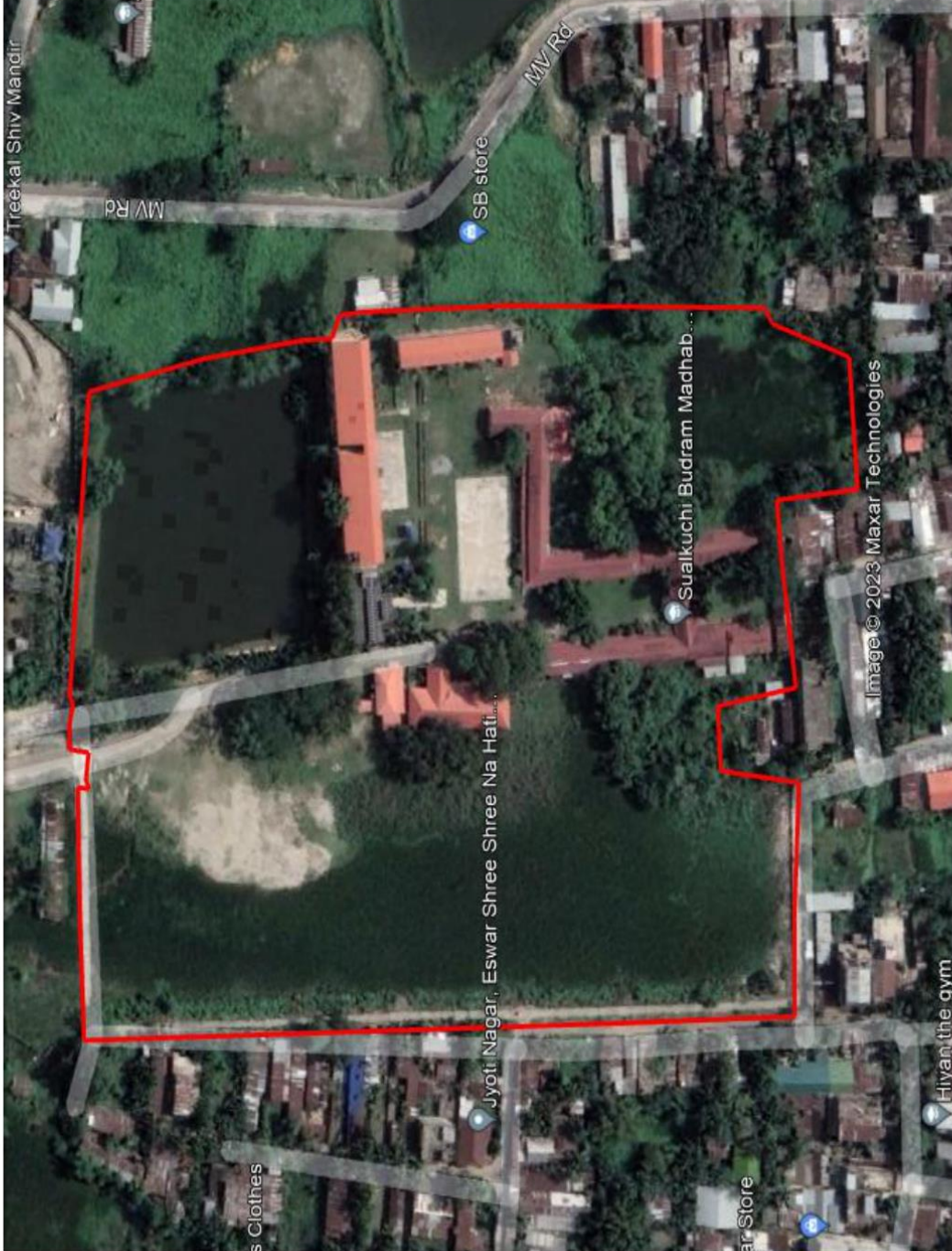
**(v) The floral and faunal diversity:** The floral and faunal diversity were recorded by the Green Audit Team and the species identifications were done using standard literature.

**(vi)The energy Audit:** The energy audit was done by monitoring various electrical facilities/ equipments/ gazettes installed in the college campus and from the available records in the college office.

**Green Audit Report, 2022 - 2023**  
**SBMS College, Sualkuchi**



**SATELLITE IMAGE OF SBMS COLLEGE SUALKUCHI**



### 3. LAND USE AND LAND COVER ASSESSMENT

The college campus is a compact one characterized by flat land surface. It has an extension of 26°10'6" N to 26°10'15" N latitude and 91°33'46" E to 91°33'55" E longitude. The campus as a whole is situated at 50 m average elevation from the mean sea level. The campus is bordered by the Lakhi Nath Play Ground on the north, village road and settlements on the south, scattered vegetative land, M V road and settlements on the east and habited area and marshy wetland on the west. A map of the college campus depicting all relevant features has been prepared with the help of GIS software and GPS survey conducted by a research scholar, Department of Geography, Gauhati University.

**Table 1: Land Use Land Cover (LULC) Statistics of SBMS College Campus**

<b>S. No.</b>	<b>LULC Types</b>	<b>Area Covered (m<sup>2</sup>)</b>	<b>Percentage of area to the total Campus Area</b>
1	Open Space	9332.91	16.50%
2	Natural Conservation Area	12480.45	22.07%
3	Garden Area	396.87	0.70%
4	Building & Establishment Area (All)	5688.67	10.06%
5	Pond	7701.95	13.62%
6	Parking Space	888.36	1.57%
7	Area under Internal roads (Paths)	696.27	1.23%
8	Botanical Garden Area	121.88	0.22%
9	Play Ground	8490.32	15.01%
10	Waste Management	2.43	0.01%
11	Vermicomposting Unit	2.43	0.01%
12	Wetland Area	10749.94	19.01%
<b>Total Area</b>		<b>56552.48</b>	<b>100 %</b>

**Source:** Based on GPS survey carried out in the campus

**Green Audit Report, 2022 - 2023**  
**SBMS College, Sualkuchi**

The total campus area of the college is 56552.48 m<sup>2</sup>, out of which the highest area of 22.07% is covered by Natural Conservation and Vegetative Area. Buildings and establishments span over 10.06% of the total campus area. Open Space covers 16.50% of the campus, while the pond, playground, waste management, vermicomposting unit, parking space, garden area and area under internal roads cover 13.62%, 15.01%, 0.01%, 0.001%, 1.57%, 0.70% and 1.23% area respectively. Wetland Area accounts for 19.01% of the campus area. It is good that there is enough open space in the campus accounting for more than half of the entire campus area. The land use land cover (LULC) types of the campus along with their area coverage are presented in tabular form.

#### 4. AUDITING FOR BIODIVERSITY OF THE COLLEGE CAMPUS

The campus of SBMS College has a spread-out diversity with a variety of different plant species from a wide spectrum of their families. There are also food plants and roosting sites of a number of bird species. A remarkable part of the college campus is spread out with wetland area including a large pond which harbours different types of macrophytes, fishes, aquatic fauna and migratory birds. This bio-diversity of the college plays an important ecological role including aesthetic beauty within the campus and also the adjoining areas.

#### FLORAL DIVERSITY OF THE COLLEGE CAMPUS

The college campus is enriched with a variety of plant species from a wide spectrum of plant families which includes timber yielding, medicinal, aromatic and ornamental plants imparting greenery and fresh air in the campus. All trees of the college campus are indexing by department of Botany with giving their local name, scientific name and family. The college has a Botanical Garden which consist medicinal, aromatic, ornamental and fruit plants. In front of the office building, library and botany department, there lies ornamental garden which enrich the aesthetic beauty of the college. Due to the construction work in the college often few trees have to cut down but college community is always aware to compensate it with planting more trees to maintain the sustainability of the campus. The beauty of the college campus is enriched with the glooms of many trees like *Cassia fistula*, *Bombux ceiba*, *Erythrina stricta*, *Samanea saman*, *Bauhinia purpurea*, *Caesalpinia pulcherrima*, *Delonix regia*, *Legerostomia speciosa*, *Nerium indicum*, *Plumeria alba*, *P. rubra*etc

**Table 2: List of Tree species (with indexing) in the college campus**

S. No.	Name of species	Family	Local Name	No of plants
1	<i>Magnolia champaca</i> L.	Magnoliaceae	Titasapa	1
2	<i>Dillenia indica</i> L.	Dilleniaceae	Ou	5
3	<i>Albizia procera</i> Roxb.	Mimosaceae	Karas	1
4	<i>Samanea saman</i> Jacq.	Mimosaceae	Siris/Rain tree	5
5	<i>Albizia lebeck</i> L.	Mimosaceae	Karoi	3

**Green Audit Report, 2022 - 2023**  
**SBMS College, Sualkuchi**

6	<i>Cassia fistula</i> L.	Caesalpiniaceae	Sonaru	5
7	<i>Senna siamea</i> Lam.	Caesalpiniaceae		25
8	<i>Bauhinia variagata</i> L.	Caesalpinaceae	Kanchan	1
9	<i>Erythrina stricta</i> Roxb.	Papilionaceae	Madar	2
10	<i>Terminalia chebula</i> Retz.	Combretaceae	Silikha	5
11	<i>Trema orientale</i> (L.) Bl.	Ulmaceae	Japang gas	1
12	<i>Zizyphus jujuba</i> Lamk	Rhamnaceae	Bagari	3
13	<i>Shorea robusta</i> Gaertn.	Dipterocarpaceae	Sal	35
14	<i>Tectona grandis</i> L.	Verbinaceae	Segun	5
15	<i>Bombax ceiba</i> Linn.	Bombacaceae	Simalu	10
16	<i>Polyalthia longifolia</i> Thw.	Annonaceae	Debadaru	30
17	<i>Mangifera indica</i> L.	Anacardiaceae	Am	5
18	<i>Spondias pinnata</i> Wild.	Anacardiaceae	Amara	3
19	<i>Lannea coromandelica</i> (Hout) Merr	Anacardiaceae	Jiya	5
20	<i>Azadirachta indica</i> A. Juss.	Meliaceae	Nim	6
21	<i>Melia azedarach</i> L.	Lamiaceae	Ghora nim	15
22	<i>Ficus racemosa</i> Kurz.	Moraceae	Dimoru	4
23	<i>Ficus hispida</i> Vahl.	Moraceae	Khaksadimoru	2
24	<i>Ficus religiosa</i> L.	Moraceae	Ahat	1
25	<i>Streblus aspera</i> Lour	Moraceae	Sarua	2
26	<i>Delonix regia</i> (Bojr.) Ref.	Caesalpinaceae	Krishnasura	2
27	<i>Mimusops elengi</i> L.	Sapotaceae	Bakul	6
28	<i>Elaeocarpus floribundus</i> Bl	Elaeocarpaceae	Jalpai	1
29	<i>Terminalia arjuna</i> Roxb.	Combretaceae	Arjun	20
30	<i>Neolamarckia cadamba</i> Miq.	Rubiaceae	Kadam	2
31	<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	Jamu	1
32	<i>Callistemon citrinus</i> (Curts.) Stapff.	Myrtaceae	Bottle brush	2
33	<i>Psidium guajava</i> L.	Myrtaceae	Madhuriam	4
34	<i>Emblica officinalis</i> Gaertn.	Euphorbiaceae	Amlakhi	1
35	<i>Alstonia scholaris</i> R. Br.	Apocynaceae	Satian	3
36	<i>Plumeria alba</i>	Apocynaceae	Gulanch	10
37	<i>Nerium indicum</i> Mill.	Apocynaceae	Rakta karabi	2
38	<i>Nyctanthes arbor-tristis</i> Linn.	Oleaceae	Sewali	1
39	<i>Ravenala madagascariensis</i> Gamble	Streliziaceae	Dam kal	2
40	<i>Phoenix sylvestris</i> Roxb.	Arecaceae	Khejur	1
41	<i>Coccus nucifera</i> L.	Aracaceae	Narikal	4
42	<i>Moringa oleifera</i> Lam.	Moringaceae	Sajina	1
43	<i>Legerstomia speciosa</i> L.	Lythraceae	Ajar	2
44	<i>Areca catechu</i> L.	Arecaceae	Tamol	5



45	<i>Cocos nucifera</i> L.	Arecaceae	Narikal	3
46	<i>Phoenix sylvestris</i> (L.) Roxb.	Arecaceae	Khejur	1
47	<i>Chrysalidocarpus lutescens</i> Wend.	Arecaceae	Momai tamol	15

Despite the tree plant diversity, the college campus is enriched with more than 100 species of herbs and shrubs in wild and conserved state.

**Table 3: List of herbs and shrubs of college campus**

S. No.	Name of Species	Family	Local Name
1	<i>Tinospora cordifolia</i> (Wild.) Miler	Menispermaceae	Sagunilata, Giloi
2	<i>Argemone mexicana</i> L.	Papavaraceae	Sialkata
3	<i>Rorippa indica</i> (L.) Hiern	Brassicaceae	Ban sariah
4	<i>Cleome viscosa</i> L.	Cleomaceae	Bhutmula
5	<i>Garcinia cowa</i> Roxb. ex. DC	Clusiaceae	Kuji thekera
6	<i>Hibiscus rosa-sinensis</i> L.	Malvaceae	Ghanta phul
7	<i>H. mutabilis</i> L.	Malvaceae	Sthala-padma
8	<i>Sida cordifolia</i> L.	Malvaceae	Son-borial
9	<i>S. rhombifolia</i> L.	Malvaceae	Borial
10	<i>Urena lobata</i> L.	Malvaceae	Bonagra
11	<i>Oxalis corniculata</i> L.	Oxalidaceae	Tengesi
12	<i>Glycosmis pentaphylla</i> Corr.	Rutaceae	Pakmol
13	<i>Cissus quadrangularis</i> L.	Vitaceae	Har-joralata
14	<i>Mimosa pudica</i> L.	Mimosaceae	Lajukilata
15	<i>Cassia alata</i> L.	Caesalpinaceae	Kharapat
16	<i>C. occidentalis</i> L.	Caesalpinaceae	Madelua
17	<i>Cassia sophera</i> L.	Caesalpinaceae	Madelua
18	<i>C. tora</i> L.	Caesalpinaceae	Saru medelua
19	<i>Clitoria ternatea</i> L.	Pappilionaceae	Aparajita
20	<i>Crotalaria pallida</i> Aiton.	Pappilionaceae	Ghantakarna
21	<i>Tephrosia purpurea</i> (L.) Pers.	Pappilionaceae	Ban-nil
22	<i>Kalanchoe pinnta</i>	Crassulaceae	Pategaja
23	<i>Lawsonia inermis</i> L.	Lythraceae	Jetuka
24	<i>Opuntia dillenii</i> (Ker Gawl.) Haw.	Cactaceae	Sagar-phena
25	<i>Centella asiatica</i> (L.) Urb.	Apiaceae	Manimuni
26	<i>Hydrocotyle vulgaris</i>	Apiaceae	Bor-manimuni
27	<i>Coriandrum sativum</i> L.	Apiaceae	Dhania
28	<i>Eryngium foetidum</i> L.	Apiaceae	Man-dhania

29	<i>Paederia foetida</i> L.	Apiaceae	Bhebeli-lata
30	<i>Oldenlandia corymbosa</i> L.	Apiaceae	Bon jaluk
31	<i>Ageratum conyzoides</i> L.	Asteraceae	Ganheli-ban
32	<i>Artemisia indica</i> Wild.	Asteraceae	Sirta
33	<i>Chromolaena odorata</i> (L.) Voigt	Asteraceae	Jarmani ban
34	<i>Eclipta prostrata</i> (L.) L.	Asteraceae	Kehraj
35	<i>Elephantopus scaber</i> L.	Asteraceae	Hati-khoj
36	<i>Emilia sonchifolia</i> (L.) DC.	Asteraceae	Kurkuchi
37	<i>Enhydra fluctuans</i> DC.	Asteraceae	Helachi
38	<i>Mikania micrantha</i> Kunth	Asteraceae	Jarmani lata
39	<i>Spilanthes paniculata</i> DC	Asteraceae	Mahavingaraj
40	<i>Tagetes erecta</i> L.	Asteraceae	Narjiphul
41	<i>Tridax procumbens</i> (L.) L.	Asteraceae	
42	<i>Xanthium strumarium</i> L.	Asteraceae	Agora
43	<i>Sphagneticola calendulacea</i> Lees.	Asteraceae	Vhimraj
44	<i>Catharanthus roseus</i> (L.) G. Don	Apocynaceae	Natantara
45	<i>Rauwolfia serentina</i> Benth	Apocynaceae	Sarpagandha
46	<i>R. tetraphylla</i>	Apocynaceae	
47	<i>Cuscutareflexa</i> Roxb.	Cuscutaceae	Raghumala
48	<i>Calotropis gigantea</i> L.	Asclepiadaceae	Akan
49	<i>Evolvulus nummularius</i> L.	Convolvulaceae	Alasa ban
50	<i>Datura metal</i> L.	Solanaceae	Dhatura
51	<i>D. stramonium</i> L.	Solanaceae	Dhatura
52	<i>Nicotiana tobacum</i> L.	Solanaceae	Dhopat
53	<i>Physalis minima</i> L.	Solanaceae	Kapal-phota
54	<i>Solanum ferox</i> L.	Solanaceae	Bon-bengana
55	<i>S. nigrum</i> L.	Solanaceae	Titbhakuri
56	<i>S. torvum</i> Swartz.	Solanaceae	Bhotbengena
57	<i>Withania somnifera</i> Dun	Solanaceae	Ashagandha
58	<i>Bacopa monnieri</i> (L.) Wetts.	Scrophulariaceae	Brahmi-sak
59	<i>Scoparia dulcis</i> L.	Scrophulariaceae	Bon-dhania
60	<i>Andrographis paniculata</i> Nees.	Acanthaceae	Kalmegh
61	<i>Justicia adhatoda</i> L.	Acanthaceae	Bahka
62	<i>Clerodendrum colebrookianum</i> Walp.	Acanthaceae	Nephaphu
63	<i>C. viscosum</i> Vent.	Acanthaceae	Vetetita
64	<i>Vitex negundo</i> L.	Acanthaceae	Pasatia
65	<i>Anisomales ovalifolia</i> (L.) O. Ktze	Lamiaceae	Bantil
66	<i>Leucas plukentii</i> (Roth) Spreng	Lamiaceae	Doron
67	<i>Leonurus sibiricus</i> L.	Lamiaceae	Ranga- doron

68	<i>Ocimum sanctum</i> L.	Lamiaceae	Kala-tulasi
69	<i>O. basilicum</i> L.	Lamiaceae	Bon-tulasi
70	<i>Hyptis suaveolens</i> Poit.	Lamiaceae	Tokma-tita
71	<i>Mentha spicata</i> L.	Lamiaceae	Pudina
72	<i>Mirabilis jalapa</i> L.	Nyctaginaceae	Godhuligopal
73	<i>Amaranthus spinosus</i> L.	Amaranthaceae	Kata khutura
74	<i>A. viridis</i> L.	Amaranthaceae	Khutura
75	<i>Achyranthes porphyristachya</i> Wall.	Amaranthaceae	Obhota-kata
76	<i>Alternanthera sessilis</i> R. Br.	Amaranthaceae	Mati-kaduri
77	<i>Chenopodium album</i> L.	Chenopodiaceae	Bhotua-sak
78	<i>Basella alba</i> L.	Basellaceae	Pui-sak
79	<i>Polygonum barbatum</i> L.	Polygonaceae	Bonghehu
80	<i>P. hydropiper</i> L.	Polygonaceae	Bihlayani
81	<i>P. microcephala</i> D. Don.	Polygonaceae	Madhu-saleng
82	<i>Rumex nepalensis</i> Spreng.	Polygonaceae	Tor-boura
83	<i>Piper longum</i> L.	Polygonaceae	Pipali
84	<i>P. nigrum</i> L.	Polygonaceae	Jaluk
85	<i>Houttynia cordata</i> Thunb.	Saururaceae	Mosundori
86	<i>Acalypha indica</i> L.	Euphorbiaceae	Mukuta-manjuri
87	<i>Croton bonplandianum</i> Baill.	Euphorbiaceae	Ban-tulasi
88	<i>Euphorbia neriifolia</i> L.	Euphorbiaceae	Siju
89	<i>E. hirta</i> L.	Euphorbiaceae	Gakhirati-bon
90	<i>E. pulcherima</i> Willd.	Euphorbiaceae	Lalpata
91	<i>Jatropha curcas</i> L.	Euphorbiaceae	Bhatora
92	<i>Ricinus communis</i> Linn.	Euphorbiaceae	Era
93	<i>Cannabis sativa</i> L.	Cannabaceae	Bhang
94	<i>Curcuma aromatica</i> Salisb	Zingiberaceae	Keturi
95	<i>C. longa</i> L.	Zingiberaceae	Haldhi
96	<i>Costus speciosus</i> (Koen.) Smith.	Costaceae	Jam lakhuti
97	<i>Canna indica</i> L.	Cannaceae	Parijat
98	<i>Agave cantala</i> (Haw.) Roxb.	Agavaceae	Dager-plant
99	<i>Dioscorea alata</i> L.	Dioscoreaceae	Kath-alu
100	<i>D. bulbifera</i> L.	Dioscoreaceae	Goch-alu
101	<i>Aloe vera</i> (L.) Burm.f.	Liliaceae	Chal-kuori
102	<i>Asparagus racemosus</i> Willd.	Liliaceae	Satamul
103	<i>Commelina benghalensis</i> L.	Commelinaceae	Kona-shimolu
104	<i>Acorus calamus</i> L.	Araceae	Boch
105	<i>Alocasia indica</i> (Lour) Koch.	Araceae	Man-kochu
106	<i>Amorphophallus campanulatus</i> BL.	Araceae	Olkachu

107	<i>Cyperus rotundus</i> L.	Cyperaceae	Kenga-bon
108	<i>C. brevifolius</i> L.	Cyperaceae	Tupi-bon
107	<i>Cymbopogon citratus</i> (DC) Stapf	Poaceae	Nemugandhi ban
108	<i>C. nardus</i> (L.) Rendle	Poaceae	Citranala
109	<i>Cynodactylon</i> (L.) Pers.	Poaceae	Dubori-bon
110	<i>Crysopogon aciculatus</i> Tinn	Poaceae	Banguti

The wetland areas of college campus harbour different types of macrophytic plants. In the following table, listed 24 macrophyte plants presently available in the wetlands of college campus.

**Table 4: List of macrophytic flora of college campus**

S. No.	Name of Species	Family
1	<i>Eichhornia crassipes</i> Solms	Pontederiaceae
2	<i>Pistia stratiotes</i> L.	Araceae
3	<i>Lemna perpusilla</i> Torr.	Lemnaceae
4	<i>Jussiaea repens</i> L.	Onagraceae
5	<i>Enhydra fluctuans</i> Lour.	Asteraceae
6	<i>Azolla pinnata</i> R.Br	Salvinaceae
7	<i>Salvinia natans</i> Hoffins.	Salvinaceae
8	<i>Hydrilla verticillate</i> (Lf.) Royle	Hydrocharitaceae
9	<i>Ipomoea aquatica</i> Forsk.	Convolvulaceae
10	<i>I. carnea</i> Jaeg.	Convolvulaceae
11	<i>Alternanthera philoxeroides</i> L.	Amaranthaceae
12	<i>Marsilea quadrifolia</i> L.	Marsiliaceae
13	<i>Monochoria hastata</i> L.	Pontederiaceae
14	<i>Floscopan scandens</i> L.	Commelinaceae
15	<i>Polygonum barbatum</i> L.	Polygonaceae
16	<i>P. hydropiper</i> L.	Polygonaceae
17	<i>P. orientale</i> L.	Polygonaceae
18	<i>Jussiaea repens</i> L.	Onagraceae
19	<i>Sagittaria sagittifolia</i> L.	Alismataceae
20	<i>Floscopa scedens</i> L.	Commelinaceae
21	<i>Alternanthera sessilis</i> L.	Amaranthaceae
22	<i>Polygonum barbatum</i> L.	Polygonaceae
23	<i>P. hydropiper</i> L.	Polygonaceae
24	<i>Rumex nepalensis</i> Spreng.	Polygonaceae

**Comment:**

The greenery of the college encompasses- a wide natural conservative area, wetland area, botanical garden, ornamental gardens and open space. The college campus abodes a rich variety of plant species which promotes fresh air circulation and helps combat air pollution which has a positive impact on the teaching – learning environment and academic performance of the students as well.

The beauty of the college campus is enriched with the glooms of shrubs like *Cassia fistula*, *Cassia siamea*, *Bombux ceiba*, *Samanea saman*, *Bauhinia purpurea*, *Delonix regia*, *Butea monosperma*, *Erythrina indica*, etc. Beside these college gardens has the blooms of many ornamental plants like *Hibiscus rosa-sinensis*, *Rosa alba*, *Nerium odoratum*, *Ixora coccinea*, *Mussaenda erythrophylla*, *Rosa alba*, *Plumeria alba*, *Bougainvella spectabilis*, *Gardenia florida*, *Tabarnomontana divericata*, *Manosa alliacea*, *Mirabilis jalapa* etc

**PHOTO GALLERY**



*Tnospora cordifolia*



*Cissas quadrangularis*



*Acorus calamus*



*Cymbopogon citratus*



*Musa velutina*



*Heliconia rostrata*

## 4.2 FAUNAL DIVERSITY OF THE COLLEGE CAMPUS

The natural landscape of SBMS College campus includes green vegetation covers, open water bodies and marshy land which provide a unique environmental screening conducive for a wide range of floral and faunal diversity. A variety of invertebrate and vertebrate species have been found in the campus exhibiting a healthy coexistence. This includes mammalian, avian, reptilian, amphibian, fishes and many invertebrate groups.

**Table 5: Vertebrates listed from the college campus:**

S. No.	Name of Species	Family
<b>Mammals</b>		
1	<i>Macaca mulatta</i>	Cercopithecidae
2	<i>Rattus rattus</i>	scuridae
3	<i>Fanumbulus pulmarum</i>	scuridae
4	<i>Pipistrellus coromandra</i>	Vespertilionidae
5	<i>Herpestes javanicus</i>	Herpestidae
6	<i>Vulpes vulpes</i>	Canidae
<b>Birds</b>		
7	<i>Oriolus xanthornus</i>	Oriolidae
8	<i>Nectarinia asiatica</i>	Nectarinidae
9	<i>Aegithina tiphia</i>	Irenidae
10	<i>Ploceus manyar</i>	Ploceidae
11	<i>Ploceus philippinus</i>	Ploceidae
12	<i>Bubo coromandus</i>	Strigidae
13	<i>Bubo bengalensis</i>	Strigidae
14	<i>Acridotheres tristis</i>	Sturidae
15	<i>Corvus splendens</i>	Corvidae
16	<i>Corvus macrorhynchos</i>	Corvidae
17	<i>Passer domesticus</i>	Ploceidae
18	<i>Alcedo atthis</i>	Alcedinidae
19	<i>Cerylerudis</i>	Alcedinidae
20	<i>Streptopelia chinensis</i>	Columbidae
21	<i>Eudynamys scolopaceus</i>	Cuculidae
22	<i>Amaurornis phoenicurus</i>	Rallidae
23	<i>Dicrurus macrocercus</i>	Dicruridae

<b>Reptiles</b>		
24	<i>Varanus bengalensis</i>	Varanidae
25	<i>Hemidactylus brookii</i>	Gekkonidae
26	<i>Eutropis macularia</i>	Scincidae
27	<i>Ramphotyphlops braminus</i>	Typhlopidae
28	<i>Python molurus</i>	Pythonidae
29	<i>Xenochrophis piscator</i>	Colubridae
30	<i>Amphiesma stolatum</i>	Colubridae
31	<i>Naja naja</i>	Elapidae
<b>Amphibia</b>		
32	<i>Duttaphrynus melanostictus</i>	Bufoidea
33	<i>Ptychocheilus teraiensis</i>	Rhacophoridae
34	<i>Bufo stomaticus</i>	Bufoidea
35	<i>Euphlyctis cyanophlyctis</i>	Dicroglossidae
36	<i>Humarana humeralis</i>	Ranidae
<b>Fish</b>		
37	<i>Cirrhinus mrigala</i>	Cyprinidae
38	<i>Catla catla</i>	Cyprinidae
39	<i>Amphipnous cuchia</i>	Synbranchidae
40	<i>Anabus testudineus</i>	Anabantidae
41	<i>Channa punctatus</i>	Channidae
42	<i>Glassogobius giuris</i>	Gobiidae
43	<i>Heteropneustes fossilis</i>	Heteropneustidae
44	<i>Mystus vittatus</i>	Bagridae
45	<i>Mystus eavasius</i>	Bagridae
46	<i>Labeo gonius</i>	Cyprinidae
47	<i>Ambylpharyngodon mola</i>	Cyprinidae
48	<i>Puntius sophre</i>	Cyprinidae
49	<i>Labeo rohita</i>	Cyprinidae
50	<i>Acanthocobitis botia</i>	Balitoridae
51	<i>Ompok bimaculatus</i>	Siluridae
52	<i>Wallago attu</i>	Siluridae
53	<i>Eutropiichthys vacha</i>	Schilbeidae
54	<i>Clarius batrachus</i>	Clariidae
55	<i>Ctenopharyngodon idella</i>	Cyprinidae
56	<i>Cyprinus carpio</i>	Cyprinidae
57	<i>Hypothalmichthys molitrix</i>	Cyprinidae
58	<i>Colisa fasciatus</i>	Belontiidae



Table 6: Invertebrates listed from the college campus

S. No.	Name of Species	Family
<b>Annelida</b>		
1	<i>Pheretima posthuma</i>	Megascolecidae
2	<i>Nereis pelagic</i>	Nereididae
3	<i>Hirudinaria granulosa</i>	Hirudinidae
<b>Mollusca</b>		
1	<i>Pila globosa</i>	Pilidae
2	<i>Cornu aspersum</i>	Helicidae
3	<i>Helix pomatia</i>	Helicidae
4	<i>Lissachatina fulica</i>	Achantinidae
<b>Arthropoda</b>		
1	<i>Scolopendra abnormis</i>	Scolopendridae
2	<i>Iridomyrmex purpureus</i>	Formicidae
3	<i>Anax junius</i>	Aeshnidae
4	<i>Gryllus campestris</i>	Gryllidae
5	<i>Sympetrum flaveolum</i>	Aeshnidae
6	<i>Periplanata americana</i>	Blattidae
7	<i>Vespula vulgaris</i>	Vespidae
8	<i>Apis indica</i>	Apidae
9	<i>Mantis religiosa</i>	Mantidae
10	<i>Omocestus viridulus</i>	Acrididae
11	<i>Coccinella septempunctata</i>	Coccinellidae
<b>Butterfly</b>		
1	<i>Papilio polytes</i>	Papilionidae
2	<i>Graphium doson</i>	Papilionidae
3	<i>Catopsilia pomona</i>	Pieridae
4	<i>Appias libythea</i>	Pieridae
5	<i>Hypolycaena erylus</i>	Lycaenidae
6	<i>Zizeeria karsandra</i>	Lycaenidae
7	<i>Danaus genutia</i>	Nymphalidae
8	<i>Tirumala limniace</i>	Nymphalidae
9	<i>Sarangesa purendra</i>	Hisperiidae
10	<i>Pseudocoladenia dan</i>	Hisperiidae
<b>Spider</b>		
11	<i>Argiope pulchella</i>	Arneidae
12	<i>Phintella vittate</i>	Salticidae
13	<i>Nephilia pilipes</i>	Nephilinae

Aquatic Insect		
14	<i>Micronecta haliploides</i>	Corixidae
15	<i>Paraplea frontalis</i>	Pleidae
16	<i>Rantra varipes</i>	Nepidae
17	<i>Brosus sp.</i>	Hydrophilidae
18	<i>Culex sp.</i>	Culicidae
19	<i>Cloeonsp</i>	Baetidae
20	<i>Neogerris sp.</i>	Gerridae
21	<i>Geeris sp.</i>	Gerridae
22	<i>Anisops bouvieri</i>	Notonectidae
23	<i>Laccobius sp.</i>	Hydrophilidae
24	<i>Donacia sp.</i>	Chrysomelidae

### Comment

The greenery in the campus supports diverse variety of terrestrial and aquatic vertebrate and invertebrate species. The wetland and the natural conservative areas of the college campus gives opportunity for college community to connect with the wildlife in their natural habitat and survive in peaceful coexistence.

**PHOTO GALLERY**



*Tirumala limniacu*



*Papilio polytes*



*Danaus genutia*



*Alcedo atthis bengalensis*



*Streptopelia chinensis*



*Nectarinia asiatica*

**5. WEATHER AND AIR QUALITY AUDIT**

Good weather and air quality is significantly important in any educational institution. Failing to provide good air quality can lead to an increase in long-term and short-term health issues for students and staff as well. Accordingly, the weather inside the SBMS college campus is closely monitored, and some relevant data were acquired from authentic government sources.

### 5.1 WEATHER QUALITY AUDIT

#### Observation:

Table 7: Monthly average of temperature, rainfall and humidity in the college

S. No.	Year	Month	Average temperature (°C)		Average Humidity (%)	Average rainfall (mm)
			Max	Min		
1	2022	July	32	26	81	326
2		August	32	26	78	271
3		September	31	25	65	210
4		October	30	22	62	114
5		November	28	18	52	18
6		December	25	13	54	7
7	2023	January	22	10	55	10
8		February	28	9	53	17
9		March	30	18	61	69
10		April	32	20	70	158
11		May	35	22	76	242
12		June	36	24	81	306

\*\* Data are collected from the meteorological data collection unit installed at college campus by Regional Meteorological Centre, Borjhar, Guwahati.

#### Comment

The overall data depicts a normal weather in the region. However, annual average temperature has been steadily increasing. This is no exception to the current national and global trend and is mainly due to the ongoing urbanization and rapid deforestation, (due to widening of roads, construction of mini stadium, power houses etc.), decline in wet land area, industrialization (a large number of brick industries in the nearby areas). The locality experienced warmest month in August 2022. Similarly, the coldest month was December 2022.

## 5.2 AIR QUALITY AUDIT

### Observation

Table 8: Average data of the air quality inside the college campus from April 2022- May, 2023.

S. No.	Parameters	Average data	AQI (Annual average)
1*	Humidity	62%	80
2*	Air temperature	25 °C	
3*	Wind direction (degree)	180	
4 <sup>#</sup>	NO <sub>2</sub>	13µg/m <sup>3</sup>	
5 <sup>#</sup>	SO <sub>2</sub>	6µg/m <sup>3</sup>	
6 <sup>#</sup>	PM <sub>2.5</sub>	41.23 µg/m <sup>3</sup>	
7 <sup>#</sup>	PM <sub>10</sub>	115µg/m <sup>3</sup>	
8 <sup>#</sup>	CO	1120µg/m <sup>3</sup>	

\*Data are collected from <https://www.accuweather.com> and <https://weatherspark.com>

# Data obtained from Ambient Air Quality Report of NAMP Station at SBMS College, Sualkuchi Station, Pollution Control Board, Assam.

NA – Not applicable

PM<sub>10</sub> is particulate matter 10 micrometres or less in diameter

NO<sub>2</sub> - Nitrogen Dioxide

CO - Carbon Monoxide

SO<sub>2</sub> - Sulphur Dioxide

µg/m<sup>3</sup> - Micrograms per Cubic Meter of Air

AQI – Air Quality Index

### Comment

The overall data signifies the satisfactory air quality index inside the college campus (AQI 19). The air quality with AQI in the range between 0-50 is satisfactory, and air pollution poses no risk (Central Pollution Control Board; Ministry of environment, forest and climate change, Govt. of India). Although, the annual average AQI depicts no threat to human health, AQI recorded in the dry months (October- December and February-April) is quite above the satisfactory. This has been primarily due to robust land-filling and tree-felling for the purpose of making state highways connecting Bongshor and Hajo, which needs proper regulation.



## Pollution Control Board, Assam

Central Laboratory, Bamunimaidam, Guwahati


অসম প্ৰদূষণ নিয়ন্ত্ৰণ পৰিষদ  
কেন্দ্ৰীয় পৰীক্ষাগাৰ, বামুনীমৈদাম, গুৱাহাটী



**Ambient Air Quality Report of NAMP Station at  
Sualkuchi Budram Madhab Satradhikar College,  
Sualkuchi, District-Kamrup  
(based on 24 hrs. Avg. Monitoring)  
(from 04.04.2023 to 24.05.2023)**

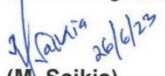
Sampling Date:	Parameters			
	SO <sub>2</sub> (µg/m <sup>3</sup> )	NO <sub>2</sub> (µg/m <sup>3</sup> )	PM <sub>10</sub> (µg/m <sup>3</sup> )	PM <sub>2.5</sub> (µg/m <sup>3</sup> )
04.04.23	5.8	14.5	164.2	31.0
06.04.23	5.2	12.6	173.6	61.0
10.04.23	5.4	11.0	163.0	70.0
13.04.23	5.6	14.2	171.7	75.0
17.04.23	5.5	13.4	179.0	82.0
19.04.23	5.4	13.6	105.8	50.0
25.04.23	4.9	12.0	77.3	35.0
29.04.23	5.5	12.8	67.4	32.0
02.05.23	5.2	12.6	72.7	30.0
04.05.23	5.4	13.5	44.4	20.0
09.05.23	5.0	12.3	70.5	33.0
11.05.23	5.2	12.8	79.4	25.0
15.05.23	4.5	12.2	92.3	39.0
17.05.23	5.2	12.9	50.9	33.0
22.05.23	4.4	12.2	28.7	15.0
24.05.23	4.4	12.4	45.3	24.0
National AAQ Standard for Residential Area for 24 hrs. Data ((in µg/m <sup>3</sup> )	80	80	100	60

Checked by:

  
(P. K. Sarmah)  
Exe. Env. Scientist



Reviewed and Signed by

  
(M. Saikia)  
Addl. Chief Env. Scientist

Head Office : Bamunimaidam, Guwahati - 781021, Assam : India.  
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E-mail : membersecretary@pcbassam.org ; Website : www.pcbassam.org  
Regional Offices at : Dibrugarh, Golaghat, Sibsagar, Tezpur, Guwahati, Bongaigaon, Nagaon & Silchar.



**METERIOLOGICAL DATA COLLECTION UNIT  
GOVT OF INDIA**



**ENVIRONMENTAL DATA COLLECTION UNIT  
POLLUTION CONTROL BOARD, ASSAM**

## 6. WATER QUALITY AUDIT

Water is one of the most important and vital natural resources. Water keeps the life-support system alive and active. Health of the environment mostly depends on the status and quality of water resources. It is a precious resource on the earth which can be established from the fact that out of the total water on the globe (100%), only 0.26% water is available for human use. Moreover, there is every possibility of getting water polluted due to increasing human activities on the earth. Thus, there arises an imperative objective and need to keep water resources clean and safe from being polluted and contaminated in the environment. Such objective and need are also certainly required to be pursued in the campus environment of SBMS College for proper monitoring, use and management of water resources.

Water is used by the college communities for the purposes like drinking, washing, cleaning, use in the toilets, hostels, canteen, flower gardens etc.

Ground water is the main source of all types of water use including drinking water in the college campus. Ground water from three different sources namely - 1) Deep tube-well, 2) Tape water and 3) Pond in the college campus were collected, preserved and transported to Pollution Control Board, Assam, (PCBA) Guwahati for quality analysis in respect of 11 quality parameters namely pH, conductivity, Turbidity, Total Alkalinity, Total Hardness, Calcium, Magnesium, Chloride, Fluoride, Sulphate, and Nitrate N.

**Table 9: Water Quality Results for Water Samples Collected from Different Sources in the College Campus**

S. No.	Parameters	Pond Water	Deep Tube Well water	Deep Boring Water
1	pH	7.3	7.4	7.7
2	Conductivity ( $\mu\text{S}/\text{cm}$ )	469	426	396
3	Turbidity (mg/L)	8.6	1.4	1
4	Total Alkalinity (mg/L)	176	256	232
5	Total Hardness (mg/L)	144	160	160
6	Calcium (mg/L)	76	104	92



**Green Audit Report, 2022 - 2023**  
**SBMS College, Sualkuchi**

7	Magnesium (mg/L)	68	56	68
8	Chloride (mg/L)	116	14	16
9	Sulphate (mg/L)	8.6	5.7	5.6
10	Nitrates (mg/L)	1.4	1.2	0.5
11	Fluoride (mg/L)	0.427	0.420	0.390

**Source:** Based on water sample analysis done in Pollution Control Board, Guwahati

**Comment:** From results of the analysis, it can be concluded that the water samples are although safe for drinking purpose from the perspective of majority of the parameters but with respect to turbidity and Calcium/Magnesium content the water sample is chemically unsatisfactory and needs proper treatment /filtration. It is worth mentioning here that a number of water purifier systems are functional in several locations of the college campus which includes office of Principal, Professors common room and at common points for students.



**Pollution Control Board, Assam**  
Bamunimaidam, Guwahati-21



**Analysis Report of Water Samples submitted by SBMS College, Sualkuchi**

Sl. No.	Source	Date of Collection	Date of Receipt	pH	Conductivity (µS/cm)	Turbidity (mg/L)	Total Alkalinity (mg/L)	Total Hardness (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Chlorides (mg/L)	Sulphate (mg/L)	NitrateN (mg/L)	Fluoride (mg/L)	Standards (IS 10500 : 2012)
1.	Deep tube well water from SBMS College, Sualkuchi	19.04.2023	26.04.2023	7.4	426	1.4	256	160	104	56	14	5.7	1.2	0.420	pH : 6.5 – 8.5 Conductivity : Turbidity : 1 NTU Total Alkalinity : 200 mg/l Total Hardness : 200 mg/l Calcium : 75 mg/l Magnesium : 30 mg/l Chlorides : 200 mg/l Sulphate : 200 mg/l Nitrate N : 45 mg/l Fluoride : 1 mg/l
2.	Tap water from SBMS College, Sualkuchi	19.04.2023	26.04.2023	7.7	396	1	232	160	92	68	16	5.6	0.5	0.390	

(Authorised Signatory)  
 Sr. Env. Scientist



**Pollution Control Board, Assam**  
Bamunimaidam, Guwahati-21



**Analysis Report of Water Samples submitted by SBMS College, Sualkuchi**

Sl. No.	Source	Date of Collection	Date of Receipt	pH	Conductivity (µS/cm)	Turbidity (mg/L)	Total Alkalinity (mg/L)	Total Hardness (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Chlorides (mg/L)	Sulphate (mg/L)	NitrateN (mg/L)	Fluoride (mg/L)	Standards (IS – 2296)
1.	Pond water from SBMS College, Sualkuchi	19.04.2023	26.04.2023	7.3	469	8.6	176	144	76	68	116	8.6	1.4	0.427	pH : 6.5 – 8.5 Conductivity : 1000 Turbidity : – Total Alkalinity : – Total Hardness : – Calcium : – Magnesium : – Chlorides : – Sulphate : – Nitrate N : – Fluoride : –

(Authorised Signatory)  
 Sr. Env. Scientist

## ***Certificate***

*This is to certified that the Energy Audit Report of SBMS College, Sualkuchi is based on original energy consumption data during the period of study (2022-2023). The necessary information, facts and data are collected and compiled by Green Audit Team consulting original records available in the college office. The information and data incorporated in the report have been thoroughly checked with spot verification for their reliability and the data used in this report are original in nature.*

*Mridul Sarma*

**Mr. Mridul Sarma**  
**Consulting Electrical Engineer**

## **7. ENERGY AUDIT REPORT**

This indicator includes energy use, energy sources, energy monitoring, lighting, appliances, and cars. It is evident that energy use is an important part of a sustainable campus, thus there is no need to justify its inclusion in the assessment. Energy auditing focuses on finding ways to reduce energy consumption without negatively affecting the environment. As a result, it is imperative that any organization concerned with the environment assess how it uses energy.

### ***Electricity Consumption:***

- ❖ Avg. Electricity Consumption per year was 36300 KWh
- ❖ Avg. Electrical Consumption per month was 3025 KWh.
- ❖ Avg. Electrical Consumption per day was 99.45 KWh.
- ❖ Mean Electricity charges Rs.22,742/- per month.

### ***Electricity saving methods adopted in the college:***

- ❖ When not in use, turn off electrical supplies. Electrical devices should be switched off while not in use.
- ❖ Put computers and other electrical devices in power-saving mode.
- ❖ Updating outdated appliances and maintaining defect-free appliances.
- ❖ Replace incandescent and CFL light bulbs with energy-efficient LED ones.

### ***Energy Audit Observations:***

- ❖ Monthly use of electricity in the college is very high because of the high range of college activities and longer working hours.
- ❖ Maintenance of a fault free appliances and replacement of old appliances, usage of LED light help in reducing the used amount of electrical energy.
- ❖ Day to day checking of equipments and quick correction of any problems.
- ❖ Awareness on protection of energy, water and fuel consumption among the stakeholders

**Energy Consumption Data:**

Assam Power Distribution Company Limited provides electricity to S.B.M.S. College. The energy consumed by S.B.M.S. College falls under HT IV Bulk Supply (Government Education) Category. The connected load is 35.0 KW and the contracted demand is 41.18 KVA. The energy consumption of the whole campus is facilitated through a Transformer having rating of 250 KVA.

**Table 10:** Electricity Consumer Details

<b>Name of the Consumer</b>	<b>Tariff category</b>	<b>Consumer Account No</b>
S.B.M.S. College	HT IV Bulk Supply (Government Education)	025000000904

The College facility also has 2 DG sets having total capacity of 20 KVA. These DG sets used mainly during the power failure of APDCL.

**Table 11:** Details of the DG set use in the college

<b>S. No.</b>	<b>Name of the equipments</b>	<b>Make</b>	<b>Capacity in KVA</b>
1	DG-1	Kirloskar	20 KVA
2	DG-2	Kirloskar	20 KVA

On the other hand installation of solar panel has also been done in the college campus. The Details are given below.

**Table 12:** Details of the solar Panel installed in the college

<b>S. No.</b>	<b>Capacity</b>	<b>Available area and required area</b>
1	20 KWP	270 m <sup>2</sup>

**Table 13:** List of the electrical installations in the college

<b>S. No.</b>	<b>Name of equipments</b>	<b>Quantities</b>
1	Photocopier machines	4
2	Desktop and laptop computers	81
3	Projectors	14
4	Duplicator	1
5	Refrigerators	6

**Green Audit Report, 2022 - 2023**  
**SBMS College, Sualkuchi**

6	Air conditioners	6
7	Fans	306
8	Halogen bulbs	14
9	CFL bulbs	36
10	LED lights	177
11	Tube lights	85
12	Water pumps	5
13	Aqua guard	5
14	Recording microphones	3
15	Generator	2
16	Hot air Oven	3
17	Maple Furnace	2
18	Distillation Plant	3
19	Water Bath	3
20	Binocular & Trinocular Microscope	6
21	Hote Plate	3
22	Incubator	3
23	Digital pH meter	2
24	Laminar Air Flow Chamber	1
25	CCTV (closed-circuit television)	67

**Table 14: Monthly Energy Consumption during 2022-2023**

Month	KWH	PF	Maximum Demand (KVA)	Billed Demand (KVA)	Total Current Bill
June,2022	977.39	0.93	15.45	41.18	13977.42
July, 2022	1027.86	0.93	15.3	41.18	13935.32
August, 2022	718.89	0.92	12.3	41.18	12133.71
September, 2022	729.7	0.93	12.2	41.18	12367
October, 2022	1147.16	0.94	15.0	41.18	15172.4
November, 2022	2048.57	0.95	12.3	41.18	21,368.12
December, 2022	954.44	0.92	8.1	41.18	13613.27
January, 2023	1018	0.99	7.29	41.18	13953
February, 2023	1029.38	0.93	11.55	41.18	14,109.59
March, 2023	1046	0.96	10.26	41.18	14336
April, 2023	1095	0.94	13.7	41.18	15008
May, 2023	1142	0.91	14.2	41.18	15652

***Recommendations:***

- ❖ Energy saving through the replacement of tube lights by LED lights.
- ❖ Buy Electrical Appliances with 5-Star BEE Rating only
- ❖ Automated power switch off system should be employed.
- ❖ Switching over to green energy in fullest potential by installation of more solar panels and other renewable sources.
- ❖ Switch off light and electrical appliances when not using them.
- ❖ Switch off the power point rather than leave appliances on standby.
- ❖ Harness Solar Energy with Solar Pannels
- ❖ Conduct awareness programs among students to save energy.

*Mridul Sarma*

**Mr. Mridul Sarma**  
**Consulting Electrical Engineer**



**SOLAR PANNEL IN THE COLLEGE**



## 8. AUDITING FOR WASTE MANAGEMENT IN COLLEGE CAMPUS

A scientific waste management protocol and efficient waste disposal mechanism is a pre-requisite for maintaining a healthy and livable environment in the college campus in particular and the greater locality in general. The college has more than 2000 stakeholders, including students, teaching staff, non-teaching staff and part-time work force which produce a sizeable amount of waste material. Waste composition includes: Biodegradable- Organic waste, Paper Waste; Non-biodegradable- Plastic waste, laboratory waste (Chemicals, Glassware, metal waste), electronic waste (E-waste) and liquid waste (Both biodegradable and non-bio-degradable). The major sources of wastes generated in the college campus, their types and approximate quantity are enlisted below:

**Table15:** Sources of wastes generated in the college campus

S. No.	Source	Type of waste generated	Quantity of waste generated/ day in the College
1	Administrative office	Paper, plastic file, plastic bottles, pens, metal clips, pins, rubber band, Desktop monitor, computer UPS, old printer cartridges etc.	Approximately 40 kg including 15 kg (approx) of organic waste.
2	Laboratories	Paper, filter paper, plastic wares, broken glass wares, Chemicals and solvents (both hazardous and non-hazardous), microbiological growth media	
3	Classrooms	Paper, plastic taps, Chalk pencil, pens, cardboard	
4	Library	Paper, pen, plastics	
5	Computer Sc Dept	Paper, metal clips, pins, old printer cartridges, old CDs, monitors, chips, non-working UPS, and other e-wastes.	
6	College canteen	Disposable plates, cups, paper boxes, plastic wrappers, aluminium foil, vegetable peels, rotten vegetables, leftover food, plastic bottles	
7	Staff-rooms	Paper, plastic wrappers, plastic bottles, pens, leftover food	
8	Toilets	Paper, plastic, sanitary napkins	
9	College ground	Grass cuttings, dry leaves	

### **WASTE DISPOSAL PRACTICES ADOPTED**

#### **Solid waste:**

Adequate numbers of blue and Green covered/pedal-pushed waste-bins are placed on each floor, in corridors, washrooms, and canteen and in campus area of the college. Solid waste generated from the campus such as paper, tree leaves, twigs, waste food items from the canteen are regularly collected by cleaners appointed in the college and are stored for the compost preparation by proper methods. College has a vermin-composting unit for the treatment of horticulture waste. Segregation of dry and wet waste is practiced by using different colored bins in the campus. The college encourages minimum use of paper and digitization in as many areas as possible is practiced. For instance, internal notices and communications to students/teachers are managed through e-mail / WhatsApp message.

The non-bio degradable wastes are disposed in the landfill sides, within the campus. Single use plastics are discouraged inside the campus. Dissertation reports, Laboratory note books journals and internal exam answer scripts are stored as per the University rules. Remaining paper waste is sent to local vendor for recycling. ) College strictly follows the guidelines regarding plastic usage and has strongly discouraged single use plastic e.g. carry-bags, glasses, spoons etc., in the campus.

#### **Liquid wastes:**

A major source of liquid waste is the canteen, laboratories and toilets. A proper drainage facility is at work in order to avoid stagnation. Sweepers are engaged on a regular basis to maintain the drainage system to avoid stagnation of liquid wastes in the drains of the college campus.

#### **E-Wastes:**

E-wastes poses a big Challenges for every institution. The E-wastes such as non Working computers, printers, monitors, hard disc, ink cartridge etc are stored in separate E-wastes store rooms and are repaired for further use. Non-repairable items are sent to authorised vendor for recycling/ disposal.

### **Laboratory Waste Management:**

The chemistry lab in the college generates hefty amount of waste, which include used disposable laboratory glassware, aqueous solutions, solvents and chemicals (both hazardous and nonhazardous). The labs are properly ventilated and have functional fume exhaust facility. For disposal of lab wastes there is a lab-waste management set-up of approximately 12 cubic meter volume maintained by Dept. of Chemistry. This facility comprises of three built-up chambers to store solid chemicals in one chamber, broken glassware and plastic materials in another chamber and liquid waste/solvents in the third one. Re-use of distillation solvents is practiced in order to minimize the use of solvents.

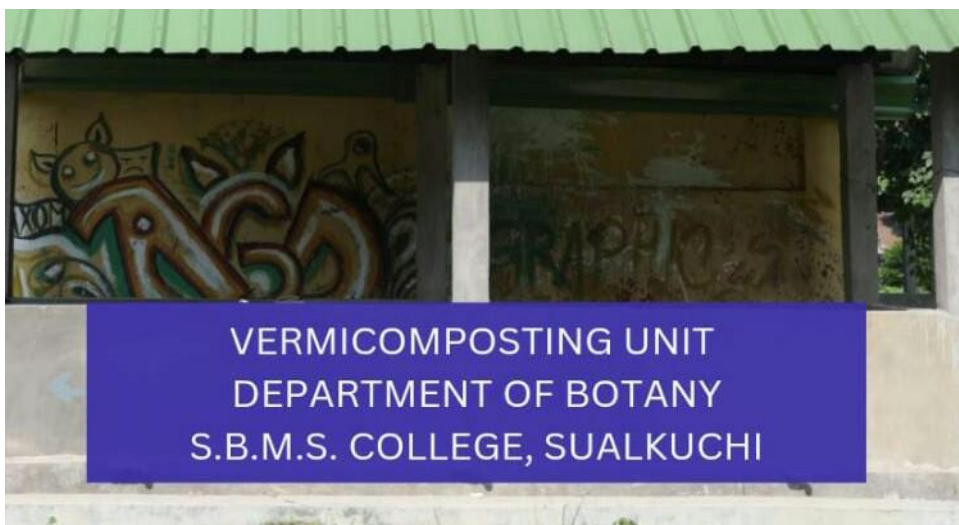
The waste solvents are transferred to the waste management unit for disposal.

Broken glassware and plastic wastes are segregated separately and sent to local vendors for recycling. Hazardous wastes from chemical laboratories include aqueous waste (cyanide, chromium VI, lead sulfide); organic liquids (solvents, oils); and solids (glass, sharps, resins, alloys). These wastes are identified, stored upon in the waste management chamber and finally disposed of by incineration. Hazardous liquid wastes from the laboratories are treated with suitable chemical so as to avoid hazardous impact on environment.

### **Waste Management through Vermicomposting**

The department of Botany of the college has established a vermicomposting unit. There are three vermicomposting beds in the unit. The dry leaves and leaf litters generated in the college campus are collected in the vermicomposting unit and used for the generation of the vermicompost. The overall vermicomposting process is regulated by the introduction of earthworm *Eisenia fetida*. The unit is maintained properly by watering and other necessary management practices. Harvested vermicompost is applied in the college gardens and other vegetations in the campus.

**WASTE MNGEMENT**



## 9. ENVIRONMENTAL CONSCIOUSNESS FOR SUSTAINABILITY OF THE COLLEGE CAMPUS

To generate interest on the nature conservation and also to inculcate social responsibility towards a green and clean environment, our college undertakes several eco-friendly initiatives within and outside the campus. Some initiatives are –

- **Plantation drive and Routine Green Practices**

The institute has organized various Plantation drive in and outside the college campus and adopted village etc. through NSS unit, environment cell and department of Botany. Generally, this activity is done on the occasion of the celebration of different Days like college foundation day, World Environment Day, Bio-diversity Day, College Week and different government programs etc. Accordingly, we give emphasis on the awareness programs among the students and local people to maintain the sustainability of college campus and surroundings. These, overall practices enhance to maintain eco-friendly environment within and outside the campus as well. During 15<sup>th</sup> July, 2022 to 15<sup>th</sup> August, 2022 teachers and students of the college have planted more than 100 nos. of plants in the campus under the CM Plantation Program. On the occasion of Bir Lachit Birth Anniversary Department of Botany have conducted a Plantation Drive on 20<sup>th</sup> November, 2022. On 5<sup>th</sup> June, 2023 on the occasion of World Environment Day, Department of Botany of the college have organized a Plantation Drive along with Health Camp and awareness Program, where former Vice Chancellor Gauhati University Professor Amarjyoti Choudhury had participated as Guest of Honour.

- **Botanical Garden**

The Department of Botany of the College has a Botanical Garden that harbour many medicinal, aromatic and ornamental plants like *Acorus calamus*, *Rauvolfia serpentina*, *R. tetraphylla*, *Tinospora cordifolia*, *Lawsonia inermis*, *Acorus calamus*, *Musa velutina*, *Heliconia rostrata*, *Oscimum sanctum*, *Hibiscus rora-sinensis*, *Centella asiatica*, *Cissus quadrangularis*, *Clitoria ternatia*, *Tertmenalia arjuna*, *Withania somnifera*, *Garcinia morella*, *Oxalis corniculata*, *Catharanthus roseus*, *Houttuynia cordata*, *Cassia tora*, *Cassia alata*, *Cymbopogon citratus*, *C.*

*nardus, Phyllanthus acidus, Santalum album, Leucas plukenetii, Ageratum conyzoides, Citrus limon, Zamia furfuracea, Cycas revoluta, etc.*

- **Wetlands and Natural conservation Area**

More than 20% of the total area of the college is covered with wetlands which enriched the aquatic floral and faunal diversity. In the college there is a natural conservative area situated in the back-side of the Botany and Chemistry department. The area is covered with many timber yielding trees like *Shorea robusta, Tectona grandis, Mengifera indica, Ficus sp.* etc and different types of herbs and shrubs. It is a natural ecological conservative area which is the natural habitat of many insects, animals like fox, snakes, lizard and bird etc. This untouched natural ecosystem helps to maintain different species diversities and conservation of habitats of variety of flora and fauna.

- **Eco-friendly Practices among the Students**

As per UG Course curriculum of Gauhati University Environmental Studies is a compulsory course imparted to the students of all the disciplines. For fulfilling this task, we have ensured the participation of students in different environment awareness programs conducted by college like World Environment Day, Biodiversity Day etc. In accordance of the course the students have assigned Project Work on different environment related topics, different eco-friendly practices such as plastic free campus, green campus, save energy, save water etc. for increasing their environmental consciousness.

## **BIODIVERSITY OF COLLEGE CAMPUS**



### GREEN CAMPUS INITIATIVES





**ENVIRONMENT AWARENESS PROGRAM**



## **10. RECOMMENDATIONS AND CONCLUSION**

Following recommendations and suggestions are put forth by the green audit team to the college community to make the college more sustainable and eco-friendlier in near future.

- (i) The greenery of the campus needs to be maintained with due care.
- (ii) Routine monitoring of water fittings and proper maintenance of the water leakages to reduce water loss.
- (iii) Necessary measures should be taken to follow time table for switch off and switch on of electric devices, bulbs, fans etc. in the classrooms, laboratories and different locations within the campus to avoid loss of energy.
- (iv) More emphasis and importance should be given for use of alternative energy sources like solar energy in near future.
- (v) Measures should be taken to reduce the use of plastic items and to totally ban the single use plastic bags, water bottles etc. in the college campus.

It may be concluded that the green audit is a continuous process where the stakeholders should be made aware of the concept of 'Green and Clean Campus' which requires collective involvement and participation to continue the green practices and efforts in the campus.

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