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GOVERNMENT OF INDIA
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE
CHANGE

भारतीय वनस्पति सर्वेक्षण / BOTANICAL SURVEY OF INDIA
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फाइल संख्या/File No. File No.: 295/1/Misc. 2024-Tech. / 1570 दिनांक /Date : 06th August, 2024

सेवा में / To

The Principal
Sarat Centenary College,
Dhaniakhali,
Hooghly - 712302, WB

विषय / Subject: Green Audit Report of Sarat Centenary College, Dhaniakhali, Hooghly,
West Bengal- reg.

संदर्भ / Ref.: Letter No. SCC/2024/64, dated 20.04.2024.

महोदय / Sir,


With reference to your Letter No. SCC/2024/64, dated 20.04.2024 for conducting Green Audit in your College, I am directed to inform you that the Green Audit of your college was carried out by the BSI team (Dr. Sudhir Kumar Yadav, Botanist and Shri Sanjay Kumar, Botanist) on 20th July, 2024, vide letter no. BSI-295/1/2024 – Tech. / 1269, dated 15th July, 2024.

In this connection, I am sending herewith the **Green Audit Report 2024** of your college. Kindly acknowledge the receipt of the same.

This issues with the approval of Director, Botanical Survey of India.

सधन्यवाद/ Thanking you,

भवदीय / Yours sincerely,


एस. एस. दाश / S. S. Dash)
वैज्ञानिकएफ/ Scientist 'F'
(प्रभारी, तकनीकीअनुभाग / In- charge, Tech. Section)

Encl.: As above

GREEN AUDIT REPORT

2024



SARAT CENTENARY COLLEGE

(Affiliated to University of Burdwan)
Dhaniakhali, Hooghly -712302, West Bengal,
<https://sccollegednk.ac.in>

By

Dr. S. S. Dash, Scientist-F
Dr. Sudhir Kumar Yadav, Botanist
Mr. Sanjay Kumar, Botanist



Botanical Survey of India, Kolkata

Ministry of Environment, Forest and Climate Change, Govt. of India

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ACKNOWLEDGEMENT

The Green Audit team is thankful to Dr. A.A. Mao, Director, Botanical Survey of India, Kolkata for granting permission and facilities for conducting green audit of the College. This initiative to promote environmental consciousness and sustainable practices within educational institutions through green Audit was supervised by Dr. S. S. Dash, Scientist-F & Incharge Technical Section, BSI, Kolkata. The team also expresses gratitude to Dr. Sandip Kumar Basak, Principal, Sarat Centenary College and Dr. Ramanuj Konar, Co-ordinator of IQAC of Sarat Centenary College, Dhaniakhali, Hooghly, West Bengal for extending support for green audit. The team also acknowledge Dr. Ramanuj Konar, IQAC coordinator, Prof. Jagannath Chatterjee from the Department of Zoology, Prof. Sasim Gangopadhyay from the Department of History, Prof. Pankaj Sen from the Department of Philosophy, Prof. Biswajit Pakhira from the Department of Sanskrit, Dr. Sunetra Banerjee from the Department of Bengali, Prof. Sanjay Mondal from the Department of Chemistry, Mr. Shyamal Bhattacharya, Head Clerk, Mr. Tarun Majhi, Cashier, Shri Harishankar Kumar and all esteemed faculty members of the Green Audit Committee, Non-Teaching Staff, students and NSS volunteers for their kind help and cooperation during visit.

SUMMARY

The Green Audit, also referred to as an ‘*Environmental Audit*’ is the process of systematic identification, quantification, recording, reporting and analysis of components related to the environmental and eco-friendly approach of any establishments. Its main objective is to analyse and promote eco-friendly practices in the campuses with an aim to conserve biodiversity.

The rapid urbanization and economic and industrial development at local, regional, national and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutions which will lead to sustainable development. The National Assessment and Accreditation Council (NAAC) New Delhi has made it mandatory (Criteria # 7) that all Higher Educational Institutions should submit an annual Green Audit Report. Moreover, it is part of Corporate Social Responsibility (CSR) of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures. Green Audit or Environment Audit focuses on the Carbon Footprint reduction measures being implemented by the College Management.

In accordance with the Green Campus Evaluation Plan, **Prof. (Dr.) Sandip Kumar Basak, Principal, Sarat Centenary College, Hooghly**, through its Internal Quality Assessment Cell (IQAC) requested the **Director, Botanical Survey of India, Kolkata** to conduct Green Audit of the campus *vide* **Letter No. SCC/2024/64, Dated 20.04.2024 (Annex. 1)**.

In this regard, the scientific team of Botanical Survey of India, as a pioneer institution in the field of Plant Taxonomy and Floristic Survey, under the Ministry of Environment, Forest and Climate Change, Government of India, conducted Green Audit of the campus *vide* **Letter No. BSI-295/1/2024-Tech./1269, Dated 15.07.2024 (Annex. 1)**. The team visited the college campus on **20th July, 2024** and conducted a field survey. The information and baseline data provided by the Principal were reviewed and noted as background of this study. The team collected field data on floristic diversity of the campus along with other aspects as prescribed for the Green Audit. During the visit, it was observed although, this college maintains good infrastructures for imparting degree level quality education in Arts, Science and Commerce streams. Under Science stream, the college maintains lab facilities for core subjects like Botany, Zoology, Physics,

Chemistry, Maths etc.). Under general courses, the college offers degree in Bengali, Sanskrit, Santali, English, Political Science, Philosophy, Education, History, Geography, Physical Education and Commerce. The college authority and the Internal Quality Assessment Cell (IQAC) of the college have maintained and promoted many eco-friendly initiatives in its campus in well organised manner.

During visit to the campus, it was also observed that some of the departments are well developed and well equipped with scientific instruments. Notably, Department of Botany, Zoology, Physics, Chemistry, Geography etc. are well equipped for undertaking practicals. Under green initiatives to save electricity, the LED bulbs were found in use, which is a good practice. Similarly, for the conservation of the rain water, the college also maintains a very big pond and a rain water harvesting unit. Besides, the college also has a Medicinal Garden, many aquatic plants, Indigenous plants, Ornamental plants and few exotic plants in its campus. In addition, the college is endowed with a very old sacred tree *Tamarindus indica* L. ('Imli') in its premise. As per the information provided, historically the tree is a witness of centuries past of this area and being worshipped by local inhabitants since long for their belief. The most popular place for the students is underneath the tree for 'adda' and for spending leisure time for a long time. The dimension of this tree is *ca* Height 24 m, Canopy radius 50 m and Trunk circumference 4 m. Its fruits are edible, rich in vitamin C, tartaric, malic and citric acid. Fruits are used in traditional medicine. Ecologically this flagship species serves as a key-stone species, enhances campus biodiversity and plays an important role in carbon sequestration.

The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution. The methodology included: preparation and filling up of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations. It works on the several facets of 'Green Campus' including Plantation, Waste Management, Energy efficient measures and mapping of Biodiversity. With this in mind, the specific objectives of the audit was to evaluate the adequacy of the management control framework of environment sustainability as well as the degree to which the Departments are in compliance with the applicable standards. It can make a tremendous impact on student health and learning college operational costs and the environment.

The main findings of the present green audit of this college show that, in general, all the departments and students are aware about the importance and need of a green and eco-friendly measures and environmental conservation. It was also observed that several green practices such as maintaining Botanic / Medicinal garden, planting trees in the campus, water conservation, and proper maintenance of waste etc. are followed in the campus.

The dedication of the College Authority, particularly the Principal, the Internal Quality Assessment Cell (IQAC), and the Departments of Science streams of the college is well reflected by observing the maintenance of its eco-friendly buildings and campus, and also high standards in curricular and co-curricular spheres of the institution, with its available limited resources. It offers an ideal vision of education and responsive to the challenges of an emerging India in a globalized world, by bringing in a positive difference in the socio economic-educational status of the state and the nation.

INTRODUCTION

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of institute. It aims to analyse environmental practices within and outside of the concerned place, which will have an impact on the eco-friendly atmosphere. Green audit is a valuable means for a college to determine how and where they are using the most energy or water or other resources; the college can then consider how to implement changes and make savings. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of Green impact on campus. If self-enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self-enquiry is a natural and necessary outgrowth of a quality educational institution. Thus it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent. The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutes which will lead for sustainable development and at the same time reduce a sizable amount of atmospheric CO₂ from the environment. The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory that all Higher Educational Institutions should submit an annual Green Audit Report. The Green Audit falls under Criterion 7 of NAAC, an autonomous organization in India that classifies institutions into Grades A, B, or C based on their accreditation results. In response to the NAAC directive on green auditing, the College management opted to conduct an external environmental assessment study employing a competent external organisation. The objective of the green audit is to scrutinize both internal and external environmental practices that have direct or indirect implications on the atmosphere. Furthermore, this initiative is in line with the social responsibility of the Universities and Higher Educational Institutions and emphasizes their contribution to reducing global warming through carbon footprint reduction measures.

GENERAL PROFILE OF THE COLLEGE

SARAT CENTENARY COLLEGE, Dhaniakhali, Hooghly was established on **8th July, 1976**. It was the ardent zeal for advancement of higher education that the people of Dhaniakhali to establish Sarat Centenary College, named after one of the greatest Bengali novelists, Sarat Chandra Chattopadhyay, in 1976 as a Junior College with the Higher Secondary Course which was later upgraded into a Degree College in 1978 with all the three streams Arts, Science and Commerce being affiliated under the University of Burdwan. The college stands at the heart of Dhaniakhali. It is under grants-in-aid Scheme of the Government of West Bengal.

The college provides **Honours in Bengali, Sanskrit, English, Political Science, Philosophy, History, Geography, Mathematics, Chemistry, Botany, Zoology and Accountancy**. General courses offered by the college are **Bengali, Sanskrit, Santali, English, Political Science, Philosophy, Education, History, Geography, Physical Education, Mathematics, Physics, Chemistry, Botany, Zoology and Commerce**

Presently, a sufficient number of Associate Professors, Assistant professors, State Aided College Teachers are catering academic needs of all the three streams. The standard of education and academic results are good and encouraging. The students evaluate the teaching standard of the departments as per the university norms. A good number of teachers have national and international linkage through their academic activities. A sufficient number of academic support staff of the college, including part-time and contractual staff, are rendering their service.

The college regularly organizes seminars, inter-departmental talks, debates, quizzes and other academic ventures. The Principal and the Governing Body monitor all the developmental works.

The main building encompasses a good garden along with Ayurvedic Plants. The laboratories are relatively well-equipped. Microphone systems are available in Classrooms where it is necessary. Smart classroom infrastructure has been constructed with financial support from the Government of West Bengal.

The college has a spacious playground and a pond surrounded by the shady green trees. The NSS adds much to the progress in the academic atmosphere of the college. It is worth mentioning that the NSS has already imprinted its valuable marks for the total development

of the college. The Gymnasium has been opened up for the college students. A Yoga Center is also operative. Apart from academic development, the college is keen on the all-round development of the students. Regular counselling by the teachers is offered to the students for guidance towards an exact route for their establishment in multifarious segments of life. The college has already left its mark of success in different spheres. The 2nd cycle accreditation by NAAC has been completed in 2016.

Vision:

Imparting quality education at the undergraduate level to the students of the locality with a focus on the underprivileged section.

Mission:

To make our students (i) Academically confident (ii) Mentally tolerant (iii) Morally upright (iv) Environmentally conscious.

Objectives:

- Minimizing the gap between privileged and underprivileged sections of the society regarding attaining higher education.
- Ensuring holistic development of the students.
- Encouraging the students for co-curricular activities.
- Making students socially responsible.
- Creating more space for interaction with local people through NSS and cultural programme.

INTERNAL QUALITY ASSESSMENT CELL (IQAC)

The Internal Quality Assessment Cell (IQAC) of the college is one of the important parts of the college management and helps in maintenance of the quality culture in the campus. The purpose of the IQAC is to ensure excellent standards of all the stakeholder so that it would secure them leadership roles in tomorrow's challenging world. It interacts with students, teachers, non-teaching staffs, and authority to ensure co-ordination for quality maintenance.

The IQAC team analyzes the adequacy of the facilities which are given to the stakeholders. IQAC team is always receptive to new ideas generated for improvement in the quality of education and research for higher education. Each academic session IQAC has set certain plan of action.

The plan of action of the academic session 2022-23 is represented in the table1.

Table1. Plan of action

1	IQAC have decided to keep academic ambience as prior and introduce some new source of learning which is matched with New Education Policy.
2	IQAC have decided to take endeavor for enhancing the knowledge on online teaching, learning and evaluation by using LMS, e-resources.
3	Take necessary steps to maintain the information of passed students and motivate teachers to take initiative to run Alumni association properly.
4	Feedback should be collected from all the stake holder like students, teachers, non-teaching employees and the employers.
5	IQAC have decided to suggest some proposals to promote research initiative and interest among the members of faculties.
6.	IQAC should perform social responsibilities through NSS unit and counsel the students through psychological counselling.
7.	IQAC have decided to take steps to open Add on/certificate /value added courses.
8.	IQAC have decided to conduct skill-development programme in collaboration with reputed NGOs to work with well-known corporate companies as well as public sector domain.
9.	To Prepare Gender audit report for academic session 2022-23.
10.	To Prepare academic and administrative audit report for academic session 2022-23.
11.	To Prepare Green audit report for academic session 2022-23.
12.	To conduct awareness programmes on financial literacy, career counselling, gender

	sensitization, legal-aid etc.
13.	Take initiative to sign memorandum -of -understanding with other HEI as well as NGOs.

As a regular activity, the IQAC of the college has felt the necessity of introducing the concept of Green Audit in the campus with the following objectives:

- 1) To frame and proclaim a Green Policy of the college.
- 2) To build awareness and consciousness amongst the stakeholders about the several concerns and threats of the environment within the college and around.
- 3) To set certain 'green standards' which the college will ever try to compliances.
- 4) To get the opinion of the experts for promoting eco-friendly activities by a certified third-party auditor.

GREEN AUDITING

The Green Audit or 'Environmental Audit' is the process of systematic identification, quantification, recording, reporting and analysis of components related to the environmental and eco-friendly approached of any establishments. Its main objective is to analyse and promote eco-friendly practices in the campuses with an aim to conserve biodiversity. The college has implemented the "Green Campus" concept to promote sustainability and environmental preservation. The three primary pillars are: environmental literacy; zero environmental footprint; and positive influence on occupant health and performance. Reducing energy, water, and CO₂ emissions while fostering a healthy and educational environment for students is the aim.

In recent time, the Green Audit of an institution has been becoming a paramount important for self-assessment of the institution which reflects the role of the institution in mitigating the present environmental problems. The college has been putting efforts to keep our environment clean since its inception. Therefore, the purpose of the present green audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards with an aim to conserve biodiversity and maintain Green Campus. Keeping these facts in mind, the college's IQAC ensures to implement the Green Audit idea on campus as a regular activity, with the following goals in mind:

- To create and announce the college's green policy.
- To increase the stakeholders' knowledge and sensitivity of the various environmental issues and dangers that the college and its surroundings face.
- To establish a set of "green standards" that the college will always strive to meet.
- To have a professional third-party auditor provide expert advice on how to promote environmentally friendly operations.

OBJECTIVES

In recent time, the Green Audit of an institution has been becoming a paramount important for self-assessment of the institution which reflects the role of the institution in mitigating the present environmental problems. The college has been putting efforts to keep our environment clean since its inception. Therefore, the purpose of the present green audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards. The main objectives of carrying out Green Audit are:

- To map the Geographical Location of the college
- To document the Biodiversity of the college
- To record the meteorological parameter of the campus
- To document the ambient environmental condition of weather, air, water and noise of the college
- To document the waste disposal system
- To estimate the Energy requirements of the college.

METHODOLOGY

The methodology followed to conduct green audit of the campus consists of visit and physical inspection of the campus, documentation of the biodiversity, observation, review and analysis of the data and resources available in the campus. Besides, it is intended to make sure that campus policies and practices align with the nation's green policy.

FINDINGS ON FLORAL DIVERSITY OF THE CAMPUS

SARAT CENTENARY COLLEGE, Dhaniakhali, Hooghly, Howrah, under the University of Burdwan serves as an important education centre in the vicinity of Dhaniakhali, Hooghly district, West Bengal. Established in 1976, this college started its journey by imparting as a Junior College with the Higher Secondary Course which was later upgraded into a Degree College in 1978 with all the three streams Arts, Science and Commerce being affiliated under the University of Burdwan. Presently, this college serves as one of the important educational institutions for the Degree level courses (including Honours and General) in many core subjects *i.e.* Honours in Bengali, Sanskrit, English, Political Science, Philosophy, History, Geography, Mathematics, Chemistry, Botany, Zoology and Accountancy. General courses offered by the college are Bengali, Sanskrit, Santali, English, Political Science, Philosophy, Education, History, Geography, Physical Education, Mathematics, Physics, Chemistry, Botany, Zoology and Commerce.

Sprawling in about 4.23-acre campus in the heart of Dhaniakhali, the college premise supports significant diversity of Biodiversity. The campus is flourished with 74 taxa of plants, ranging from herbs to shrubs and trees (**Table 1**). Most of the plants are native species. The medicinal garden in the campus has very good collection of medicinal and economically important plants. Besides, there are several aquatic plants, shade loving plants, Ornamental plants and few exotic plants in the campus. The most fascinating floristic attraction of the premise is the gigantic sacred tree *Tamarindus indica* L. ('Imli') which is about *ca* 24 m in Height, 50 m of Canopy radius and 4 m of circumference of the Trunk Ecologically, this plant serves here as a key-stone species, supports significant diversity of the fauna and epiphytic orchids and other flora. Possibilities may also be searched of scientific age calculation of this tree. Therefore, proper attention may be given for the conservation and maintainance of this old sacred tree of *Tamarindus indica*. The rich floral diversity in the campus plays significant role in carbon sequestration and maintaining greenery in the premises.

In order to create awareness about the Botanical names / scientific names of the plants, the team observed that presently, name plates for the plants present in the gardens are not provided. Therefore, the team recommends that **name plates of plants**, mentioning the Botanical names / Scientific names, local name with family, and their medicinal uses (if

available), may be tagged for spreading awareness among the students and faculty members. Besides, the **barcodes** on the plants, particularly trees and medicinal shrubs may be initiated for increasing curiosity among the students of non-Botany backgrounds. Further, considering the importance of rich biodiversity, proper maintenance and cataloguing of biodiversity of the campus in the form of **Herbarium** will be of significant use. In addition to the plants available in the campus (as mentioned in Table 1), BSI team also suggested for further plantation of few more plant in the MEDICINAL / HERBAL GARDEN as suggested (**Table 2**). Besides, It was also observed that the flora of the campus support significantly as habitats for many common birds, reptiles and animals. Therefore, it should be maintained properly and sustainably in order to maintain an eco-friendly **green and clean campus**.

Table 1. List of the Plant taxa documented in the College campus of Sarat Centenary College, Dhaniakhali

Sr. No.	Scientific Name	Family	Bengali Name	Common Name
1.	<i>Justicia adhatoda</i> L.	Acanthaceae	বাসখ	Malabar nut
2.	<i>Alternanthera sessilis</i> (L.) DC.	Amaranthaceae	মাটি কন্দুরি	Sessile joyweed
3.	<i>Gomphrena serrata</i> L.	Amaranthaceae		
4.	<i>Crinum latifolium</i> L.	Amaryllidaceae		Pink lily
5.	<i>Polyalthia longifolia</i> (Sonn.) Benth. & Hook.f. ex Thwaites	Annonaceae	দেবদারু	Indian Mast Tree
6.	<i>Alstonia scholaris</i> (L.) R.Br.	Apocynaceae	ছাতিম	Blackboard tree
7.	<i>Catharanthus roseus</i> (L.) G.Don	Apocynaceae	নয়নতারা	Madagascar periwinkle
8.	<i>Calotropis procera</i> (Aiton) W.T.Aiton	Apocynaceae		
9.	<i>Rauvolfia serpentina</i> (L.) Benth. ex Kurz	Apocynaceae		
10.	<i>Tabernaemontana divaricata</i> (L.) R.Br. ex Roem. & Schult.	Apocynaceae		
11.	<i>Dracaena reflexa</i> Lam.	Asparagaceae		
12.	<i>Parthenium hysterophorus</i> L.	Asteraceae	পাথেনিয়াম	Whiteweed
13.	<i>Tridax procumbens</i> L.	Asteraceae	ত্রিধারা	Coatbuttons
14.	<i>Bixa orellana</i> L.	Bixaceae	লটকান	Annatto
15.	<i>Carica papaya</i> L.	Caricaceae	পেঁপে	Papaya
16.	<i>Chara zeylanica</i> Klein ex Willd.	Characeae		
17.	<i>Chara vulgaris</i> L.	Characeae		
18.	<i>Cleome viscosa</i> L.	Cleomaceae		Asian spider flower
19.	<i>Cleome viscosa</i> L.	Cleomaceae		
20.	<i>Terminalia chebula</i> Retz.	Combretaceae		
21.	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Combretaceae		
22.	<i>Acalypha indica</i> L.	Euphorbiaceae	মুক্তঝুরি	Indian Copperleaf
23.	<i>Acalypha lanceolata</i> Willd.	Euphorbiaceae		
24.	<i>Croton bonplandianus</i> Baill.	Euphorbiaceae	বন তুলসী	Ban tulsi
25.	<i>Tamarindus indica</i> L.	Fabaceae	তেঁতুল	Tamarind
26.	<i>Pongamia pinnata</i> (L.) Pierre	Fabaceae		
27.	<i>Bauhinia variegata</i> L.	Fabaceae	রক্তকাঞ্চন	Orchid

28.	<i>Bauhinia acuminata</i> L.	Fabaceae		Orchid
29.	<i>Saraca asoca</i> (Roxb.) W.J.de Wilde	Fabaceae	অশোক	Ashoka
30.	<i>Sesbania sesban</i> (L.) Merr.	Fabaceae		
31.	<i>Dalbergia sissoo</i> Roxb. ex DC.	Fabaceae	শিশু	Shisham
32.	<i>Albizia lebeck</i> (L.) Benth.	Fabaceae	শিরীষ	Frywood
33.	<i>Indigofera tinctoria</i> L.	Fabaceae		
34.	<i>Butea monosperma</i> (Lam.) Kuntze	Fabaceae	পলাস	Palas
35.	<i>Mimosa pudica</i> L.	Fabaceae	লজ্জাবতী	Touch-me-not
36.	<i>Vitex negundo</i> L.	Lamiaceae	নিশিন্দা	Chaste Tree
37.	<i>Cinnamomum tamala</i> (Buch.-Ham.) T.Nees & C.H.Eberm.	Lauraceae		
38.	<i>Barringtonia acutangula</i> (L.) Gaertn.	Lecythidaceae		
39.	<i>Lagerstroemia speciosa</i> (L.) Pers.	Lythraceae	জারুল	
40.	<i>Magnolia champaca</i> (L.) Baill. ex Pierre	Magnoliaceae	চাঁপা	Champak
41.	<i>Grewia asiatica</i> L.	Malvaceae		
42.	<i>Azadirachta indica</i> A. Juss.	Meliaceae	নিম	Neem
43.	<i>Swietenia macrophylla</i> King	Meliaceae	মেহগনি	Big-Leaf Mahogany
44.	<i>Toona ciliata</i> M.Roem.	Meliaceae		
45.	<i>Ficus variegata</i> Blume	Moraceae		
46.	<i>Artocarpus heterophyllus</i> Lam.	Moraceae	কাঁঠাল	Jackfruit
47.	<i>Morus alba</i> L.	Moraceae		
48.	<i>Ficus benghalensis</i> L.	Moraceae	বট	Banyan tree
49.	<i>Ficus variegata</i> Blume	Moraceae	ডুমুর	Common Red-Stem Fig
50.	<i>Psidium guajava</i> L.	Myrtaceae	পেয়ারা	Guava
51.	<i>Syzygium samarangense</i> (Blume) Merr. & L.M.Perry	Myrtaceae	জামরুল	Wax apple
52.	<i>Jasminum officinale</i> L.	Oleaceae	জুই	Jasmine
53.	<i>Vanda tessellata</i> (Roxb.) Hook. ex G.Don.	Orchidaceae	রসনা	Grey orchid
54.	<i>Oscillatoria obscura</i> Bruhl et Biswas	Oscillatoriaceae		
55.	<i>Phyllanthus niruri</i> L.	Phyllanthaceae	ভুই আমলা	Bhumi Amla
56.	<i>Phyllanthus emblica</i> L.	Phyllanthaceae	আমলা	Amla
57.	<i>Piper cubeba</i> L.f.	Piperaceae	শীতল চিনি	Kubeben pepper
58.	<i>Grevillea speciosa</i> (Knight) McGill.	Proteaceae	নাগদামিনী	Red spider

59.	<i>Rosa chinensis</i> Jacq.	Rosaceae	গোলাপ	Rose
60.	<i>Neolamarckia cadamba</i> (Roxb.) Bosser	Rubiaceae	কোডম	Burflower-tree
61.	<i>Ixora coccinea</i> L.	Rubiaceae	রঙ্গুন	Jungle geranium
62.	<i>Ixora chinensis</i> Lam.	Rubiaceae		
63.	<i>Rondeletia odorata</i> Jacq.	Rubiaceae		
64.	<i>Murraya koenigii</i> (L.) Sprengel	Rutaceae	কারিপাতা	Curry leaf
65.	<i>Murraya paniculata</i> (L.) Jack.	Rutaceae	কামিনী	Orange jasmine
66.	<i>Manilkara zapota</i> (L.) P.Royen	Sapotaceae	সবেদা	Sapodilla
67.	<i>Manilkara hexandra</i> (Roxb.) Dubard	Sapotaceae		
68.	<i>Mimusops elengi</i> L.	Sapotaceae	বকুল	Spanish cherry
69.	<i>Withania somnifera</i> (L.) Dunal	Solanaceae		
70.	<i>Ravenala madagascariensis</i> Sonn.	Strelitziaceae	পান্থপাদপ	The traveller's tree
71.	<i>Petrea volubilis</i> L.	Verbenaceae	নীলমনীলতা	Purple Wreath
72.	<i>Lippia alba</i> (Mill.) N.E.Br. ex Britton & P.Wilson	Verbenaceae		
73.	<i>Spirogyra setiformis</i> (Roth) Kuetz.	Zygnemataceae		
74.	<i>Spirogyra plena</i> (W.& G.S.West) Czurda	Zygnemataceae		

Table 2. Suggested medicinal Plants for further plantation in the College Garden.

SL. No.	Name of the medicinal plants	Uses
1	<i>Rauwolfia serpentina</i> (L.) Benth. ex Kurz	Hypertension, high blood pressure.
2	<i>Justicia adhatoda</i> L.	Bronchial disease, cough,
3	<i>Holarrhena pubescens</i> Wall. ex G. Don	Dysentery, diarrhoea, fever, diabetes, malaria.
4	<i>Vitex negundo</i> L.	Skin disease, Eczema, ringworm, liver disorder spleen enlargement.
5	<i>Saraca asoca</i> (Roxb.) Willd.	Dysmenorrhoea, Depression, leucorrhoea
6	<i>Lawsonia inermis</i> L.	Skin disease, anti hemorrhagic, leprosy
7	<i>Nyctanthes arbor-tristis</i> L.	Sciatica arthritis, fever, dry cough ringworm,
8	<i>Catharanthus roseus</i> (L.) G. Don	Diabetes, malaria, leucemia
9	<i>Aloe vera</i> (L.) Burm.f.	Antioxidants.
10	<i>Tinospora cordifolia</i> (Willd.) Hook.f. & Thomson	Fever, jaundice, chronic diarrhea, cancer, dysentery, bone fracture, pain, asthma, skin disease, poisonous insect, snake bite, eye disorders.
11	<i>Phyllanthus emblica</i> L.	Source of Vitamin C, Improves Immunity and nourishes eyes, hair and skin.
12	<i>Ocimum tenuiflorum</i> L.	Useful in cough, asthma and fever, anti-oxidant
13	<i>Centella asiatica</i> (L.) Urb.	Diarrhoea, dysentery, healing property
14	<i>Oxalis corniculata</i> L.	Use for treatment of influenza, fever, urinary tract infections, enteritis, diarrhoea, traumatic injuries and sprains.
15	<i>Eclipta prostrata</i> (L.) L.	Ayurvedic medicine, the leaf extract is considered a powerful liver tonic, rejuvenate, and especially good for the hair.

INFRASTRUCTURE OF THE COLLEGE

Geographical Location:

The college has a 4.23-acre campus in the heart of Dhaniakhali. The Location of the college is in 22.96778017356493, 88.1043721786996 coordinate. Our campus area Green is representing with yellow color in google map.

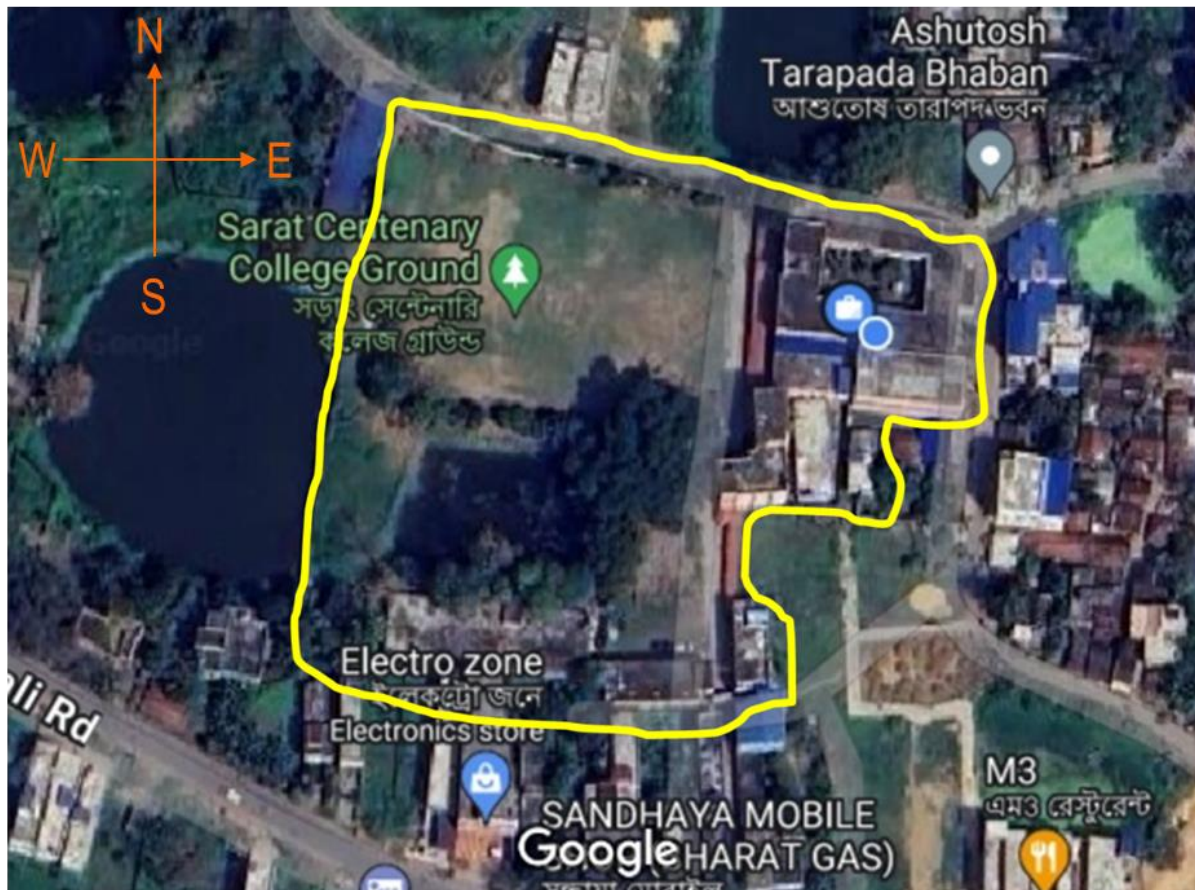


Figure 1: Google map view of our campus

MAP OF SARAT CENTENARY COLLEGE CAMPUS

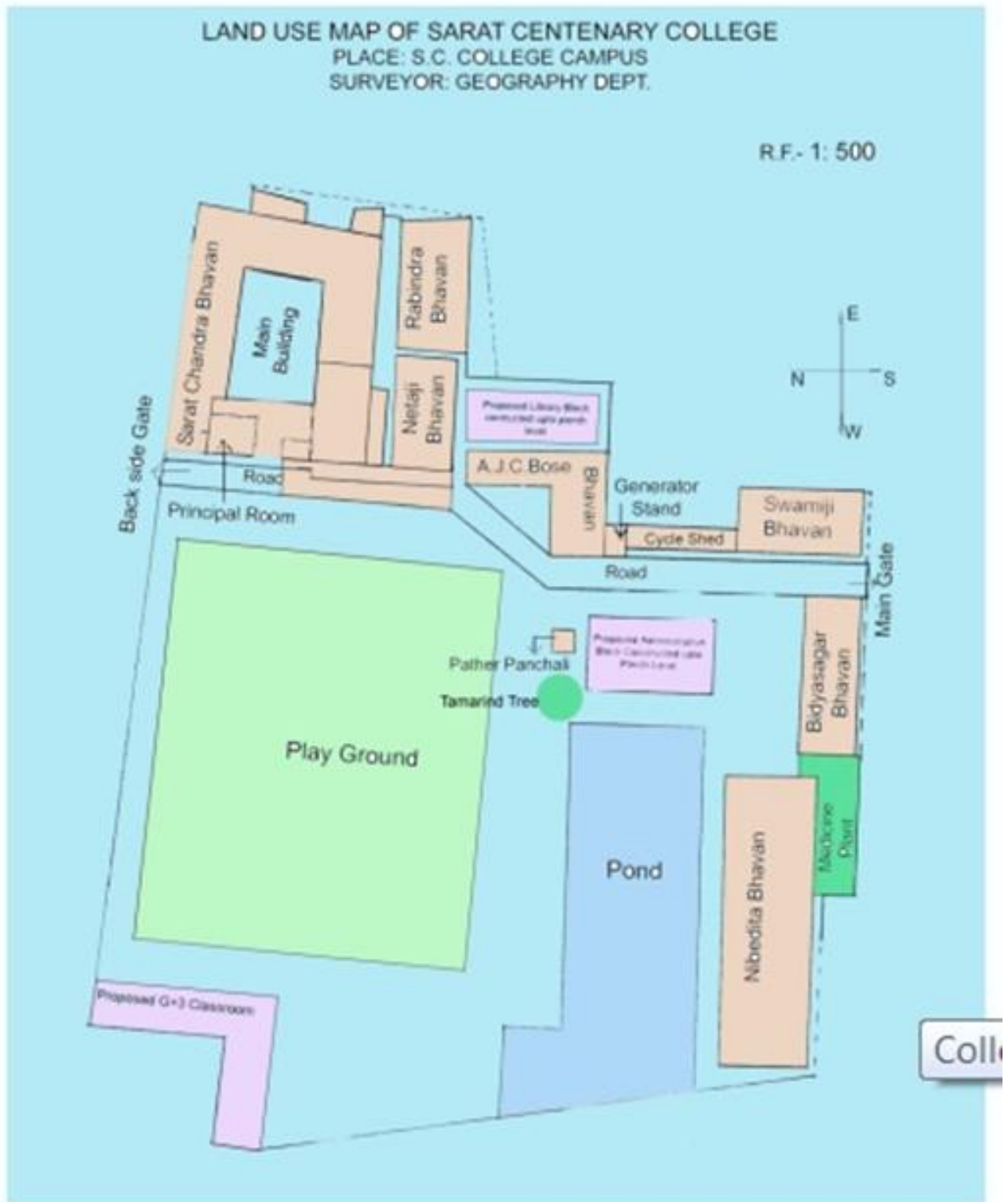


Figure 2: Campus sketch of Sarat Centenary College, Dhaniakhali, Hooghly

Land Used information of our Campus

Categories of Land	Area (in acre)
Plantation Area	0.2662
Built Up Area	0.543
Open space (Include roads and playground)	3.42
Total Area	4.23

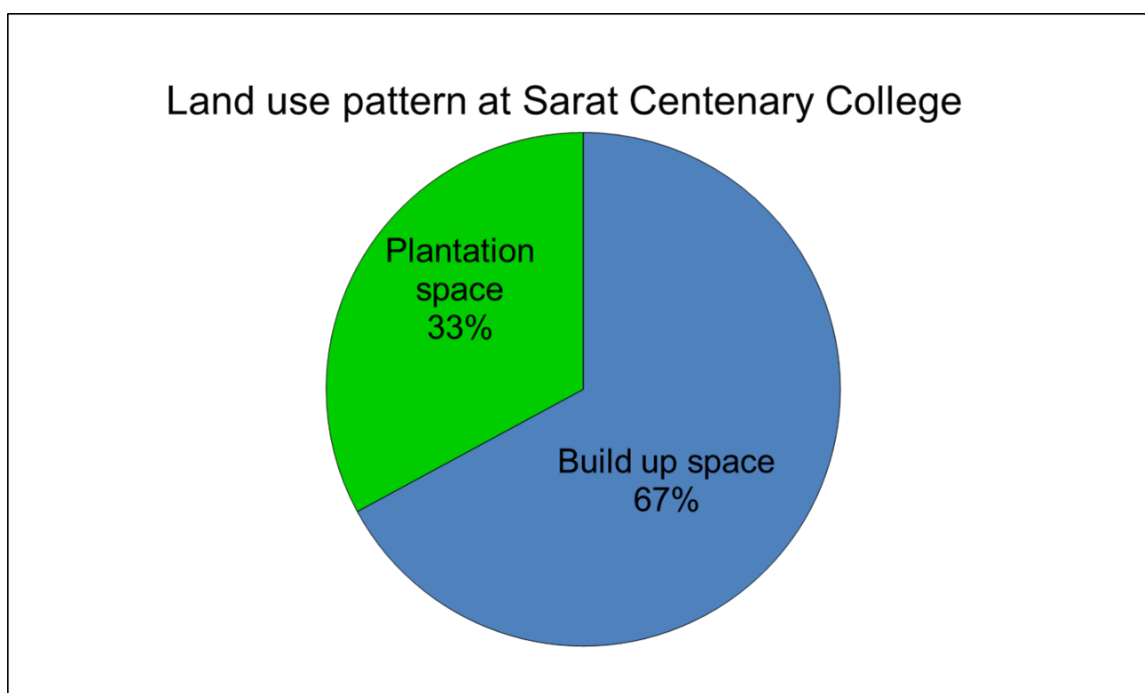


Figure 3: Pie-chart diagram of plantation space and building space in our campus

Area occupied by various buildings

SL No	Name of Building	Number of Floors	Build up Area(sq feet)
1	Nivedita Bhavan	1	6133.8
2	Jagadish Chandra Bhavan	3	2616.66
3	Auditorium	2	1994.27
4.	Main building	2	7636.33
5.	Netaji Bhavan	2	1384.12
6.	Rabindra Bhavan	3	2527.22

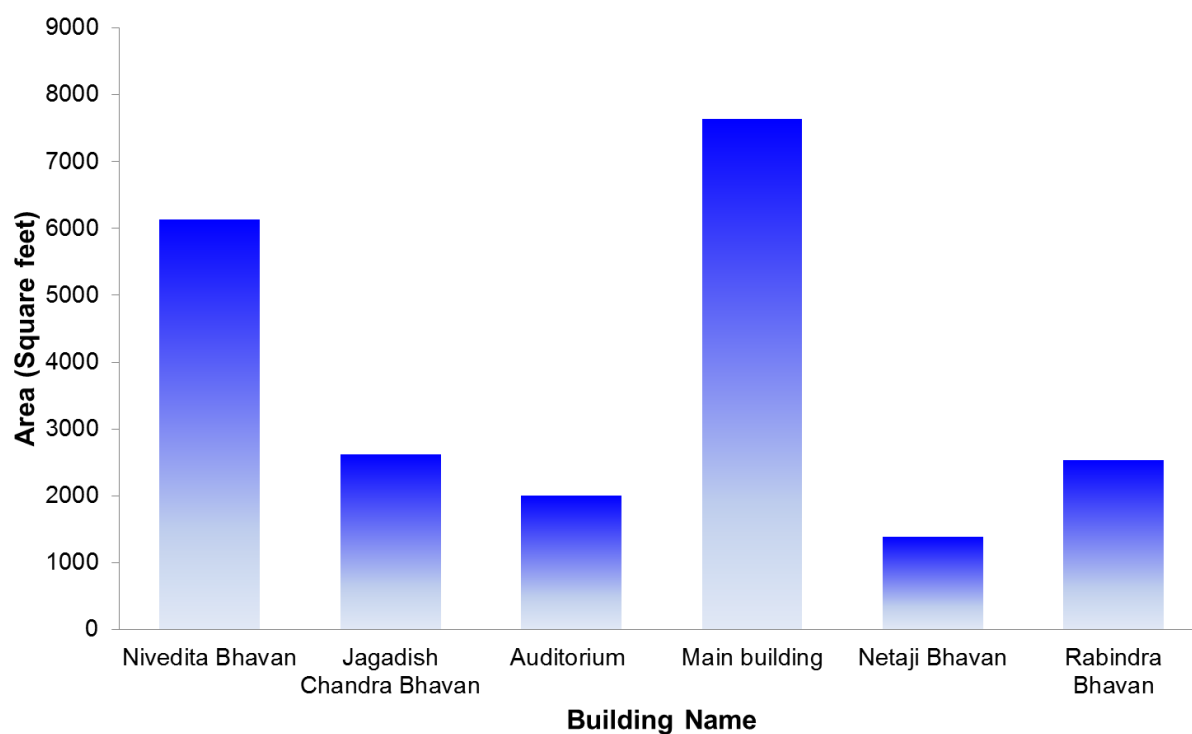


Figure 4: Bar-diagram represent the area occupied by different building in our campus

Climate and monthly weather forecast at Sarat Centenary College, Dhaniakhali

The Climate are very pleasant at Dhaniakhali in the month of February-March, October, December. During summer time (April-May) highest temperature reaches around 37-40 °C and lowest temperature reaches in the month of December to January around 10-13 °C. The month (August and September) with the highest relative humidity is September (~81 %). The month (February) with the lowest relative humidity is March (~41 %). The month with the highest number of rainy days is July and August (~98 mm). The month with the lowest number of rainy days is December and January (below 5 mm). Dhaniakhali climate is classified as warm.

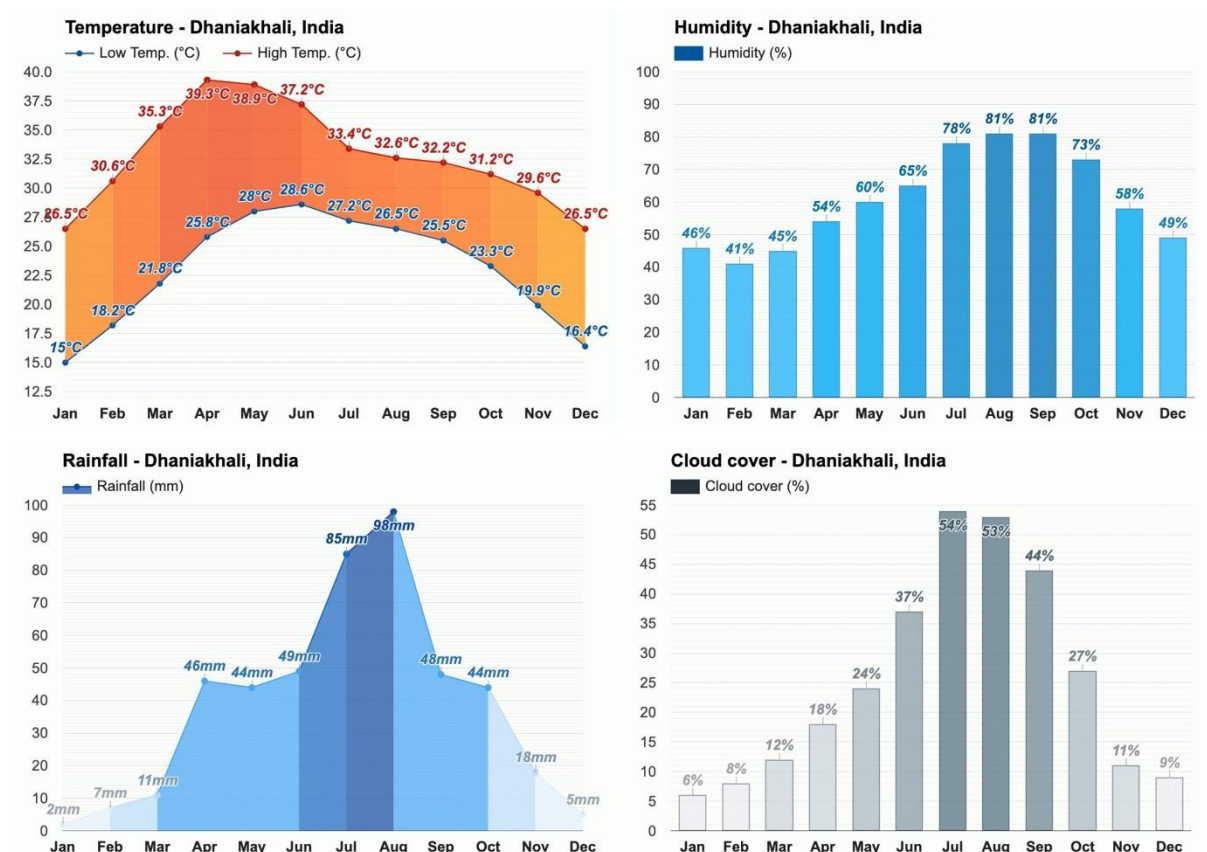


Figure 5: Temperature, Humidity, Rainfall and cloud cover month-wise at Dhaniakhali

Edaphic criteria (Physical & Biochemical) evaluation of Sarat Centenary

College:

Source: Data generated by Environmental Biotechnology Laboratory, West Bengal State University, Barasat, Kolkata-700126 (a major collaborator institution of Sarat Centenary College)

Soil sources	EC (Electrical conductivity)	pH	Organic Carbon (%)	Phosphorus (mg/Kg)	Ammonia- N (mg/Kg)	Nitrate- N (mg/Kg)	Comments
Pond bottom surface soil	2.442 dS/m	5.96	1.37	17.85	0.0342	10	Salinity is higher at the bottom of the pond, nitrate-N high, other criteria normal
Playground 1 soil	493.9 μ S/cm	5.62	2.10	26.91	1.98	0.85	All criteria normal
Playground 2 soil	538.6 μ S/cm	4.85	2.30	12.19	1.47	7.11	Soil is slightly acidic, other criteria normal
Garden soil	470.7 μ S/cm	7.33	1.61	89.38	2.58	3.98	Except for phosphorus, all values are within normal range, phosphorus is abnormally high
Badminton ground soil	360.9 μ S/cm	6.46	1.39	24.60	0.463	10.48	Except for high nitrate- N, other criteria are normal

Water criteria evaluation of Sarat Centenary College:

Source: Data generated by the Environmental Biotechnology Laboratory, West Bengal State University, Barasat, Kolkata-700126 (a major collaborator institution of Sarat Centenary College)

Onsite evaluated physical criteria:

Water sources		Dissolved Oxygen (DO in ppm)	Turbidity (NTU)	pH	Salinity (ppt)	Electrical Conductivity (EC) in dS/m	TDS (ppm)	Comments
Pond water	Point 1	3.34	6.92	7	0.3	0.899	288	The values of pH, TDS are in the permissible range, DO value is slightly lower, while turbidity is slightly high as per CPCB permissible water quality criteria. (CPCB limits: DO \geq 4 ppm, pH in the range of 6.5-8.5, TDS \leq 500 ppm, Turbidity \leq 5 NTU)
	Point 2	3.32	6.66	7.3	0.3	0.891	294	
	Point 3	3.25	7.3	7.2	0.2	0.879	295	
	Point 4	3.23	6.45	6.9	0.3	0.738	300	
	Point 5	3.32	7.1	7.1	0.3	0.745	291	
Water drawn by submersible pump	Sample 1	2.33	0.88	6.8	0.3	0.751	218	The values of pH, TDS, Turbidity are in the permissible range, DO value is slightly lower, as per CPCB permissible water quality criteria. (CPCB limits: DO \geq 4 ppm, pH in the range of 6.5-8.5, TDS \leq 500 ppm, Turbidity \leq 5 NTU)
	Sample 2	2.26	0.87	6.9	0.3	0.906	224	
	Sample 3	2.25	0.9	6.8	0.3	0.906	225	

Biochemical criteria evaluated at laboratory:

Source: Data generated by the Environmental Biotechnology Laboratory, West Bengal State University, Barasat, Kolkata-700126 (a major collaborator institution of Sarat Centenary College)

Water sources			Biochemical Oxygen demand (BOD) in ppm	Chemical Oxygen Demand (COD) in ppm	Phosphorus (ppm)	Ammonia-N (ppm)	Nitrate-N (ppm)	Comments
Pond water	Point 1	All samples are mixed in equal proportion to make a composite sample and then tested	57	133.33 (Average)	1.67	5.24	0.254	BOD, COD and NH ₄ -N, values are higher, NO ₃ ⁻ -N, and soluble phosphate values are within the permissible limits as per CPCB water quality criteria. (CPCB Limits: BOD ₅ at 20°C ≤ 3 ppm, COD ≤ 20 ppm, NH ₃ -N ≤ 1.2 ppm, NO ₃ ⁻ -N ≤ 45 ppm, soluble phosphate ≤ 5 ppm)
	Point 2							
	Point 3							
	Point 4							
	Point 5							
Water drawn by submersible pump	Sample 1	All samples are mixed in equal proportion to make a composite sample and then tested	39	66.667	1.72	5.18	0.142	
	Sample 2							
	Sample 3							

SUGGESTIONS AND RECOMMENDATIONS

During Green Audit, based on the observation and availability of the resources, BSI team, recommends the following suggestions and recommendations, to draw the kind attention of the college authority.

1. All plants available in the campus need to be labeled with a proper name plate, mentioning its botanical name, family, local name and economic or medicinal importance, if any, to increase awareness among the students and faculty members.
2. The Medicinal /Herbal Garden in the campus may be maintained and developed by introducing more indigenous medicinal (Herbal) and economically important plants (a suggested list of plant is provided in table 2).
3. Outreach activities / Trainings/ Workshops on eco-friendly initiatives involving green skill development, environmental Awareness, debates on objectives of mission LiFE etc. may be organized in the campus regularly for increase general awareness among the students towards biodiversity conservation.
4. Waste management of the college may be strengthened by increasing the number of bins. Non-Biodegradable and laboratory waste may be disposed by engaging registered and professional agencies.
5. The bio-degradable wastes may be used for generating bio-compost / vermi-compost that can be reused for gardening for self-sustainability.
6. Water restoration and conservation measures may be strengthened in the campus.
7. Sanitary napkin vending machine for Girls students may be placed at suitable places to maintain hygienicity in the campus.
8. The energy saving bulbs and electric appliances, if left out at any places, should be used to reduce the energy consumption.
9. Periodic review and green auditing of the campus should be conducted for maintaining and improving the environmental health of the campus as well as students and faculty members.
10. The Graffiti on education quotes and slogans by the eminent personalities, educationalists, scientists, may be placed suitably to inspire the students.
11. The old sacred tree of *Tamarindus indica* L. in its premise may be properly maintained and conserved. Few saplings of this species may be planted at different places in the campus for its long term conservation.

CONCLUSION

The Green Audit or ‘Environmental Audit’ is the scientific process of systematic identification, quantification, recording, reporting and analysis of components related to the environmental and eco-friendly approached of any establishments or institutions to conserve biodiversity. A green campus in the educational institution plays an important role in maintaining a healthy and eco-friendly learning and teaching environment to the students and the faculties respectively. It also helps in mitigating the environmental problems by creating environmental awareness among students, faculties, societies and other stakeholders. SARAT CENTENARY COLLEGE, Dhaniakhali, Hooghly serves as one of the important education centres in the vicinity, by imparting quality education in the field of Arts, Commerce and Science streams, with well-developed laboratories, libraries and other infrastructures in its premises. The recommendations suggested in this green audit may “**Add Value**” to management approaches being taken by the college authority. There is also scope for further improvement particularly in relation to waste, energy and water management. The college may also maintain and further strengthen an exclusive **Medicinal Garden** by introducing more indigenous species of medicinal plants. Even though the college does performed fairly well, the recommendations in this report highlights many ways in which the college may consider and work more to improve its action and become a **CLEANER, GREENER** and an **IDEAL** institution in the region.



Plate 1 : a *Phyllanthus niruri* L.; b. *Tridax procumbens* L. c. & d. *Mimusops elengi* L.. e. *Vanda tessellata* (Roxb.) Hook. ex G. Don on *Tamarindus indica* Tree

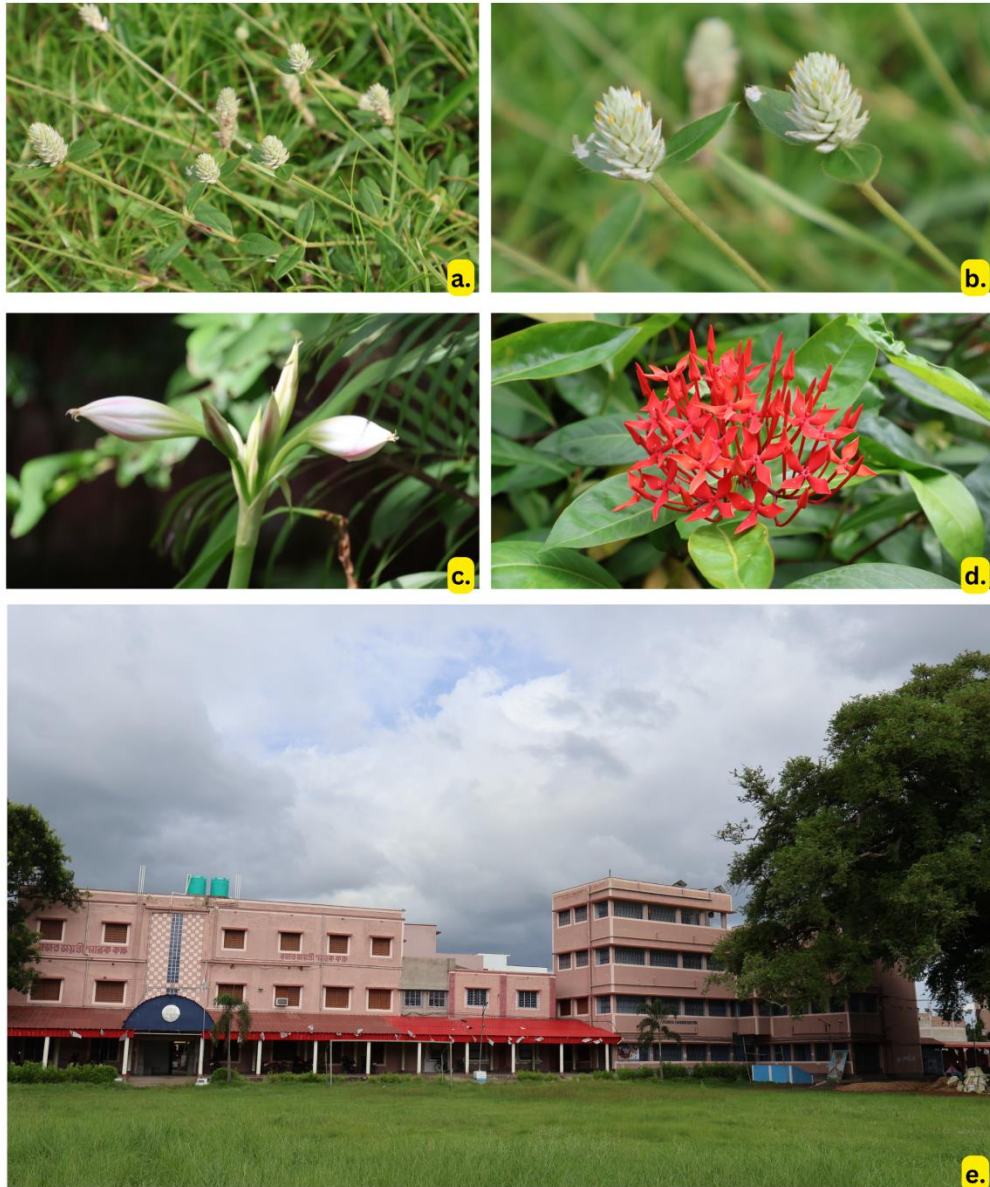


Plate 2 :a.-b. *Gomphrena serrata* L.; c.*Crinum latifolium* L.; d.. *Ixora chinensis* Lam.
e. Glipmses of Sarat Centenary College campus.



Plate 3 :a. *Rondeletia odorata* Jacq.; b. *Vitex negundo* L.
c. *Acalypha lanceolata* Willd. d. *Lagerstroemia speciosa* Pers. e. *Bauhinia variegata* L.
f. *Dracaena reflexa* Lam. [All inside the campus of the college]



Plate 4 : a. *Rosa chinensis* Jacq. b. *Tabernaemontana divaricata* (L.) R.Br. ex Roem. & Schult. .; c & d. *Cleome viscosa* L., e. *Bauhinia variegata* L. f. *Psidium guajava* L.



Plate 5: a. *Tamarindus indica* L.; b. Pond inside campus showing various plants like *Typha* spp. and Algal species.; c. *Murraya koenigii* (L.) Spreng. d. *Cinnamomum tamala* (Buch.-Ham.) T.Nees & C.H.Eberm.; e. *Neolamarckia cadamba* (Roxb.) Bosser f. *Carica papaya* L.

Green Audit : Sarat Centenary College,Dhaniakhali, Hooghly



Plate 6: a. Main building and Jagadish Chandra Bhavan of our College from playground; b. Auditorium building and Swamiji Bhavan view of College; c. and d. Pond-side view of our college campus; e. & f. Medicinal Plant Garden view; g. Play-ground of college.



Plate 7: a-e. Birds maintaining biodiversity in our campus
(picture capture by Prof. Pankaj Sen)





Plate 9: a-h. Biodiversity in our campus (picture capture by Prof. Pankaj Sen)



Plate 10:a. *Lippia alba* (Mill.) N.E.Br. ex Britton & P.Wilson; **b.** nesting sites installed on a college campus trees **c.** Dr. S. K. Yadav, recording the floristic data at campus **d.** Rain Water Harvesting system at college.; **e.** A view of front side gate of college

Green Audit : Sarat Centenary College,Dhaniakhali, Hooghly



Plate 11 : a.to e. Team of BSI officials conducting Green Audit gave overview of the objectives of it and aware all faculty members on Mission LiFE.

Green Audit : Sarat Centenary College, Dhaniakhali, Hooghly



Plate 12: a.to g. Team of BSI officials inspected the Department of Botany along with Principal and faculty members of Sarat Centenary College, Dhaniakhali, Hooghly

Green Audit : Sarat Centenary College, Dhaniakhali, Hooghly



Plate 13 : a.to g. Team of BSI officials inspected the Department of Zoology and other sites along with Principal and faculty members of Sarat Centenary College, Dhaniakhali, Hooghly

Green Audit : Sarat Centenary College, Dhaniakhali, Hooghly



Green Audit : Sarat Centenary College,Dhaniakhali, Hooghly



Plate 15: a. Plantation with Principal under Ek Ped Maa Ke Naam during Green Audit Sarat at Centenary College,Dhaniakhali, Hooghly, **b-e.** glimpses of Green Audit.



From: Principal & Secretary

+91 3213 255282
saratcentenary@gmail.com
scollegednk.ac.in
Dhaniakhali, Hooghly, 712302

Sarat Centenary College

Dhaniakhali, Hooghly

Founded: 1976
Re-Accredited by NAAC (CGPA: 2.33)
Recognised Under UGC 2F&12B
WB Govt. Aided
Affiliated to The University of Burdwan

No. SCC/2024/64

Date: - 20.04.2024

To
The Director
Botanical Survey of India
CGO Complex, DF Block,
Sector I, Salt Lake City, Kolkata – 700 064

Subject: Requesting to carry out the Green audit/ Environment audit/
Energy audit for the college

Dear Sir,

In connection to fulfill one of the criteria (Criterion 7: Quality audits on environment and energy) for the preparation of Annual Quality Assurance Report and Self-Study Report for appearing in NAAC (National Assessment and Accreditation Council) evaluation during the month of May 2024 for our college the under-signed humbly requests your esteemed organization for carrying out a comprehensive Energy, Environment-cum-Green audit exercise followed by recommendations for sustainable development and capacity building.

Looking forward for your positive response in this matter.

Your kind cooperation and help in this regard would be greatly appreciated.

Thanking you,

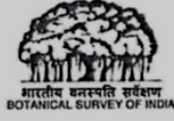
Sincerely yours,

A. K. Basak

Dr. Sandip Kumar Basak
Principal & Secretary
Principal & Secretary,
Sarat Centenary College
PO - Dhaniakhali Dist. Hooghly

Tech. sect.
for n.a.p.
Sandip
23/04/2024

TECHNICAL SECTION, OFFICE	712302
Dy. No.	T-33
Date	23.04.2024



भारतीय वनस्पति सर्वेक्षण
BOTANICAL SURVEY OF INDIA



सत्यमेव जयते



भारतसरकार
GOVERNMENT OF INDIA
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE

भारतीय वनस्पति सर्वेक्षण/BOTANICAL SURVEY OF INDIA सी.जी.ओ.
कॉम्प्लेक्स/CGO COMPLEX

तृतीय एम. एस.ओ. भवन/3RD MSO BUILDING चौचौ और छठा तल/5TH & 6TH
FLOOR डीएफ ब्लॉक, सेक्टर 1/DF BLOCK, SECTOR I
साल्टलेक, कोलकाता-६४/SALT LAKE, KOLKATA - 700064

Tel.: (033) 2321 4050 [Tech. Section] ; E-mail: tech@bsi.gov.in

फाइल संख्या/File No.: BSI-295/1/2024/Tech. /1269

दिनांक/Date : 15.07.2024

कार्यालय आदेश/OFFICE ORDER

Approval of the Director, Botanical Survey of India, is hereby conveyed towards the following officials of BSI for conducting the Green Audit at Sarat Centenary College, Dhaniakhali, Hooghly as detailed below:

Sl No.	Name and Designation	Duration of tour approved	Purpose of visit
i.	Dr. Sudhir Kumar Yadav Botanist BSI Hqtrs., Kolkata.	20 th July, 2024	To conduct the Green Audit at Sarat Centenary College, Dhaniakhali, Hooghly-712302 on 20 th July, 2024.
	Shri. Sanjay Kumar Botanist BSI-CNH. Howrah	20 th July, 2024	

The expenditure involved in this regard will be borne by the Sarat Centenary College College., Dhaniakhali, Hooghly-712302.


(एस. एस. दाश / S. S. Dash)
वैज्ञानिक एफ / Scientist 'F'

(प्रभारी, तकनीकी अनुभाग / In-charge, Tech. Section)

Distributions:

1. Officials concerned.
2. H.O.O., BSI- Hqtrs./ BSI-CNH, for information.
3. Principal & Secretary, Sarat Centenary College., Dhaniakhali, Hooghly-712302 for information and necessary action w.r.t. the letter No. SCC/2024/64, dated 20.04.2024.



Tamarindus indica L. - A giant tree inside the campus of Sarat Centenary College



BOTANICAL SURVEY OF INDIA
(Ministry of Environment, Forest & Climate Change)
CGO Complex, 3rd MSO Building, F - Wing,
5th & 6th Floor, Sector 1, Salt Lake City
Kolkata - 700064
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