

Green Audit Report, 2019-20

IQAC



UNIVERSITY OF NORTH BENGAL

RAJA RAMMOHUNPUR

DIST. DARJEELING, W.B., INDIA

MEMBERS

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Professor, Department of Geography & Applied Geography
University of North Bengal

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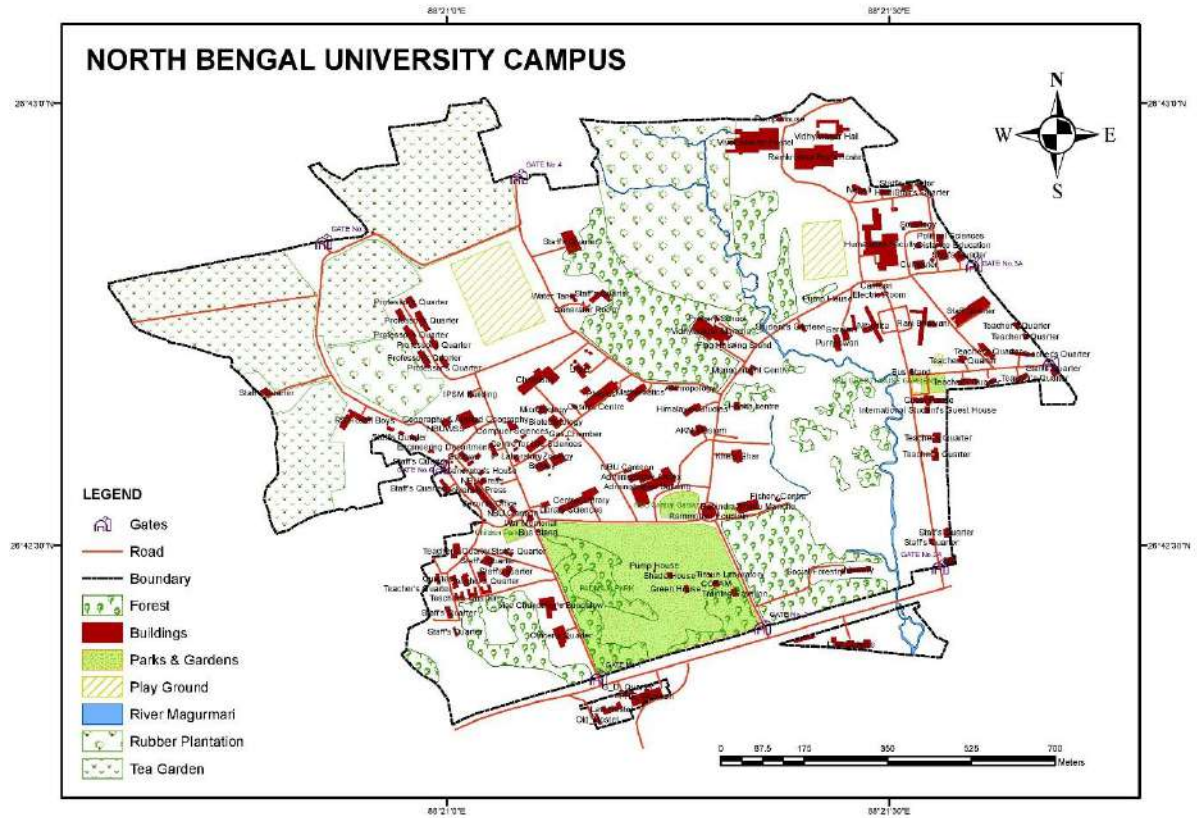
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LANDSCAPE & LAND-USE



University of North Bengal Campus

Location

The North Bengal University Campus is situated at the Mechi-Balason interfluves and is traversed by the river Magurmari along the east central part and by the river Lachka along the western boundary. The NBU Campus presently occupies an area of 133.381 hectare (1.3338 sq.km.) of Bairatishal (J.L. No. 79) and Bara Mohan Singh (J.L. No. 96) mauza of Siliguri Police Station in Darjeeling district of West Bengal. The location extents of the NBU campus is from 26⁰42'18.73" to 26⁰43'0.32" latitudes and 88⁰20'37.09" to 88⁰21'42.68" longitudes. The geographic set-up of the North Bengal University campus in the midst of the undulating *Terai* not far from the Himalayan foothills is unique of its kind. The revulet Magurmari which meanders diagonally through the campus along with its wide channel added landscape diversity of aesthetic value.

Climate/Weather Conditions:

The weather of the NBU Campus area is noteworthy because of its position, the powerful effects of the southwestern Monsoon on the Himalayan barrier and the particular configuration of the ridge and valley that either deflect or allow rain bearing wind which affect local temperature and rainfall. Table 1 shows mean monthly maximum and minimum temperature, mean humidity and mean monthly rainfall recorded at the NBU Weather Service Station located at the Department of Geography & Applied Geography. August is the warmest month while January is the coldest month in the Campus. March is the driest month which recorded 61.71% mean humidity while July recorded the highest humidity of 84.07%. Incidentally, July is also the rainiest month which contributes 1056.2 mm of rainfall (mean).

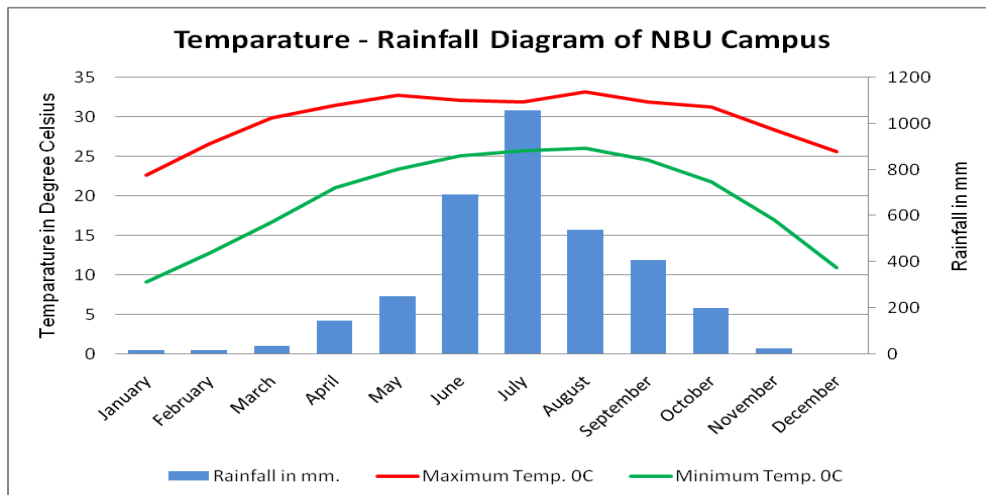


Table No. 1. Average weather records (2000 – 2019)*

Months	Mean Maximum Temp. °C	Mean Minimum Temp. °C	Mean Humidity (%)	Rainfall in mm.
January	22.63	9.11	70.04	15.5
February	26.53	12.68	69.67	16.0
March	29.84	16.66	61.71	36.5
April	31.43	21.00	73.05	144.6
May	32.76	23.42	77.74	252.0
June	32.12	25.08	81.63	693.2
July	31.92	25.66	84.07	1056.2
August	33.15	26.03	83.27	538.6
September	31.85	24.50	82.07	406.6
October	31.25	21.75	75.08	201.0
November	28.41	16.95	74.97	22.9
December	25.65	10.88	68.14	2.0
Mean	29.80	19.48		3385.1

* Based on Weather data collected at the NBU Weather Service Station since March 2000

Climate of the NBU Campus is dominated by two seasons i.e., winter and rainy. However, another two relatively short spanned seasons namely spring and autumn are also noticed.

Seasonal Temperature

Winter starts from mid November and continue till mid March with mid December to mid January being the coldest period. This is followed by a rather short-lived **spring** from mid March to May. **Rainy** season the most prolonged season in NBU Campus starts from June and continues till early October and July is the rainiest month. Early October to mid-November is **autumn**, the shortest season noticed in NBU Campus area.

Table No. 2. Seasonal Temperature and Rainfall*

Seasons	*Mean Temperature in °C			Seasonal Rainfall	
	Maximum	Minimum	Mean	In millimeter	In Percent
Winter	24.3	10.1	17.2	43.5	1.3
Spring	31.2	19.3	25.25	417.5	12.33
Rainy	32.3	25.3	28.8	2895.6	85.54
Autumn	29.9	19.4	24.65	28.5	0.84

*Based on Weather data collected at the NBU Weather Service Station since March 2000

Seasonal Rainfall:

Being situated not far from the Himalayan mountains and the powerful impact of the south western monsoon over the imposing natural barrier, the weather condition of the NBU Campus area display the unique atmospheric condition for yielding heavy rainfall of 3385.1 mm per annum (as per NBUWSS record since the year 2000). Seasonal distribution of rainfall displays that 85.54% of the total annual rain total during the rainy season (Monsoon). This is followed by Spring which contributes 12.33% of the total, which mostly contributed by local

thunderstorms. Winter season contribute only 1.3% of the total annual which is mostly caused by Western disturbances.

Land Use

The existing land use/land cover of North Bengal University Campus is very interesting to note as it contains a complex mosaic of diverse kind of utilisation (Fig. 2). These include natural Forest, Tea Gardens, Rubber plantations, Wetlands, Recreational, Transports, Academic, Administrative and Residential sectors Table 3). The uniqueness of the campus is its vast greenery an emerald green landscape 37.43% dedicated green areas and another 52.26% area of partial greenery makes the NBU campus as an ideal *Green Campus*. In fact, the “Salkunja”, the natural Sal forest, aquatic and semi-aquatic Magurmari valley along with its great flora and faunal diversity tempted to have the unique bio-diversity reserve within the NBU campus which might be treated as the backbone of the futuristic land use management plan.

Table No. 3 Land use/Land cover pattern of NBU campus

<i>Sl No</i>	<i>Land Use Category</i>	<i>Area in hectare</i>	<i>Area in Acre</i>	<i>Area in Percent</i>
1	Covered area (Buildings)	6.0913	15.052	4.57
2	Road Network	5.0781	12.548	3.8
3	Wetlands	2.5933	6.408	1.94
4	Playground	3.1179	7.704	2.34
5	Parks & Gardens	9.6234	23.779	7.22
6	Tea Garden	21.5384	53.221	16.15
7	Rubber Plantation	10.984	27.142	8.24
8	Forest	17.3962	42.986	13.04
9	Open Space (Vacant & Marginal Land)	56.9584	140.744	42.70
10	Total	133.381	329.584	100

WATER & SOIL

The soil analysis from different spots shows expected values and tap water is also within normal range.

Soil testing Report

Region	pH	Organic carbon (%)	Nitrogen (%)	Potassium (K ₂ O)ppm.	Phosphrus (P ₂ O ₅)ppm
Tea Plantation	5.0	2.026	0.25	25.2	9.8
Rubber Plantation	5.15	1.916	0.17	18.3	3.2
Mixed Forest	5.04	2.118	0.24	23.6	4.7
<i>Shorea</i> Plantation	5.7	3.646	0.39	27.9	3.9

Water Testing Report

Region	pH
Tap Water (Tea Science)	6.3

Waste Management

- A. The Medical waste disposal is through an agency called Greenzon Bio Pvt. Ltd. The house hold waste has no proper disposal system.
- B. the liquid waste is disposed off through Drainage into the Magurmari River.
- C. There is no proper disposal system for solid waste at present however collaboration with the Siliguri Municipal Corporation is being carried on for a better outcome

Greenscape

The term “Green” means eco-friendly or not damaging the environment. This can acronymically is called as “Global Readiness in Ensuring Ecological Neutrality” (GREEN). Green accounting can be defined as systematic identification, quantification, recording, reporting and analysis of components of ecological diversity and expressing the same in financial or social terms. “Green Auditing”, an umbrella term, is known by another name “Environmental Auditing”. There is a provision of

green audit in University campus. Estate Dept. has been formed to monitor the proper conservation and plantation of the plants in the campus. As per the suggestions made by IQAC and various committee. Estate Dept. is given the responsibility to do green with cooperation of the environmental experts of the University and locality.

The University was established in 1962 and reaccredited with Grade 'A' by NAAC, Bangalore, in the year 2016. Total area of the University main campus is 335.013 acres of which 34 percent is covered by herbs, shrubs and trees, including valuable medicinal plants. The plant has been systematically identified by the Divisional Forest Officer, Social Forestry and classified by the system of Bentham and Hooker. There are more than 538 plant species Ecological importance of plants are studied, diseases of plants are also studied. Tree census of campus was carried out, Birds, insects, fungi and overall the biodiversity of the campus is studied. Along with topographic study of the campus measurement of the campus is also taken. Green spot of the of the campus identified. Tree plantation and environmental awareness programmes of the university also remarkable which is mentioned by the NAAC Peer team in their last visit in the year 2016.

To increase greenery in campus. Extra efforts have been taken by the University to create environment consciousness amongst students / Scholars and Campus dwellers.

Our Jalpaiguri Campus (2nd Campus) at Jalpaiguri 45 K.M. distance from here. Total area is 31.50 acres. Development and other works are going on.

40.54 acres of land given on lease to M/S Greenol Laboratories Pvt. Ltd for Tea Plantation and 17.00 acres of land in Eastern Sector and 5.5 acres of land in Western Sector are using Rubber Plantation.

GREEN SPOTS OF THE CAMPUS.

Totally 21 gardens and many green spots are found in the campus, which are full of greenery maintained by various plant species. Medicinal garden is prepared very scientific manner, educationally important all plants are grown there. Different buildings developed their own greenery to maintain eco-friendly environment in the campus.

1. **MEDICINAL GARDEN:** The Medicinal garden of the University is rich with various important herbs, shrub, climbers and trees. In the water pond of the Medicinal Garden plant species like *Nimphya nauchati*, *Hydrilla*, *Chara* aquatic plants are also present.





2. **COFAM:** It is proud to say that we have centre for flori culture and Agri Business management (COFAM). In the green house of COFAM rare Orchids and its forms are grown in control condition. Not only that many interested farmers of all parts of India are taking proper training for scientifically cultivation of seasonal flowers, Mushroom, Dragon fruit and its marketing.





3. GARDEN IN FRON OF ADMINISTRATIVE

BUILDING : In front of Administraive building of the University three gardens are developed where various type of Rose plants and many seasonal flowers.



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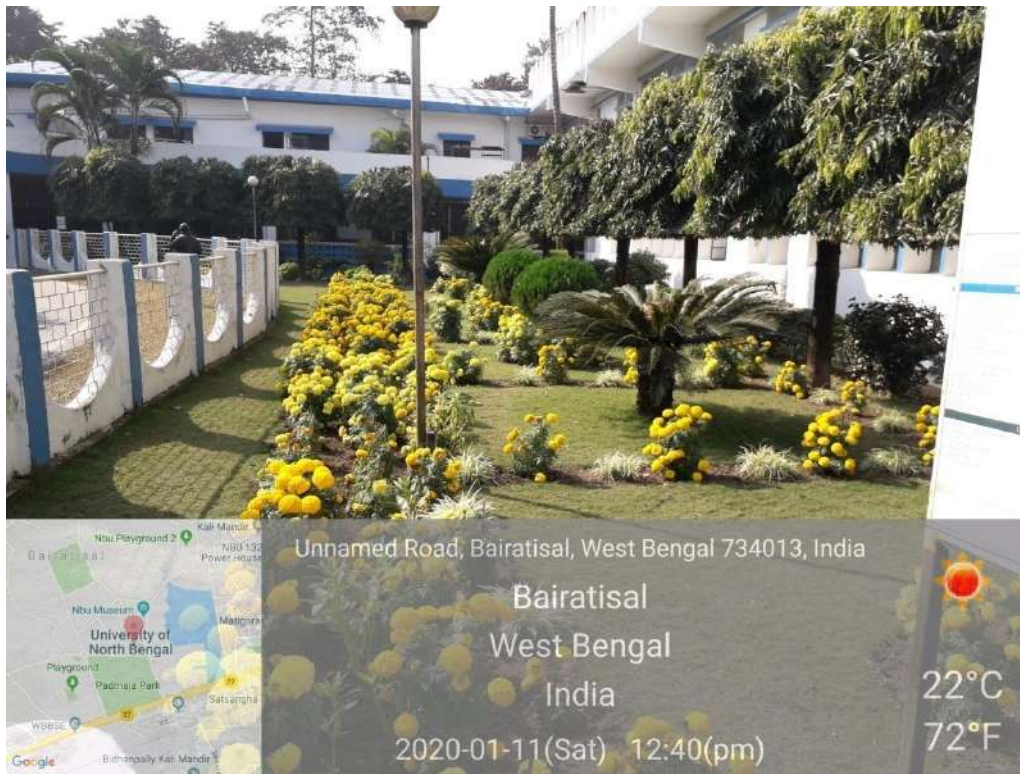
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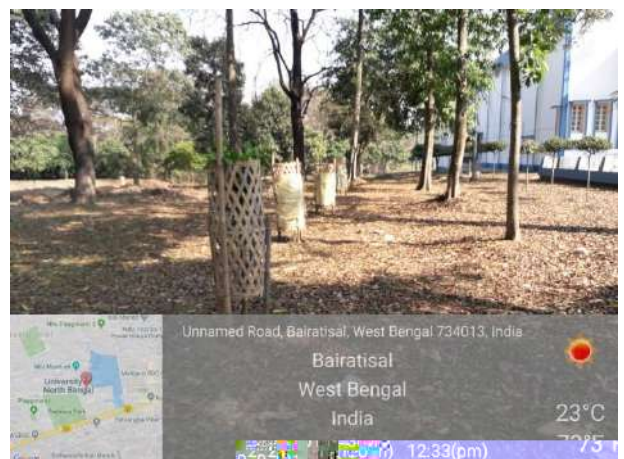


22°C

72°F



4. **FRUITS PLANTS** : The entire campus of the University various type of Fruit plants already planted both side of road for inviting Birds.





- OTHER PLANTS:** We have Sal Forest (SAL KUNJA) in the middle portion of the campus and its area 6 acres. Many green zones are in the campus and various species are there. Jarul, Ukeliptus, Krishnachura, Radhachura, Nagkeshor, Kesianudusa, Sidha, Teak, Simul etc. In this connection the Divisional Forest Officer (D.F.O.), Social Forestry Division has issued Tree card to us which are enclosed as proof.



Vice Chancellor Residence, Bairatal, West Bengal 734013, India

Bairatal
West Bengal
India

22°C
72°F

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22°C
72°F




Unnamed Road, Bairatal, West Bengal 734013, India

Bairatal
West Bengal
India

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72°F

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List of Trees in the University Campus

According to Tree Card issued by the Divisional Forest Officer (D.F.O.), Social Forestry

Sl. No.	Name of the Tree	Qty
1.	Sal	841 nos.
2.	Sishu	1320 nos.
3.	Gamar	140 nos.
4.	Chap	35 nos.
5.	Segun	125 nos.
6.	Meheguni	30 nos.
7.	Kukath	4272 nos.
8	Kadam	73 nos.
9	Ghoraneem	23 nos.
Total No. of Tree		6859 nos.

PLANTATION OF TREES LAST FIVE YEARS IN THE UNIVERSITY CAMPUS

- 2014-2015 : i) Garden developed in front of AKM Heritage Museum.
ii) 25 nos. Fruits planted in the Occasion of Celebration of “Aranya Saptaha”
- 2015-2016 : i) Garden developed in front of the Deptt. Of Mathematics.
ii) 30 nos. ornamental plants planted by the NSS Team.
- 2016-2017 : i) 25 nos. Fruits planted by the Law Students in the Law Deptt. Complex.
ii) 30 nos. Fruits plants planted in “Aranya Saptaha”
- 2017-2018 : i) 20 nos. Fruits plants planted by the North Bengal University Alumni Association.
ii) Garden Developed in front of the Auditorium (R.B. Manch)
- 2018-2019 : i) Developed the garden in front of the H.R.D.C.
ii) 15 nos. Fruit plants planted by the Golden Jubilee Committee of the Dept. of Commerce.

BUDGET ALLOCATION TO KEEP CAMPUS “GREEN”
NAME OF THE HEAD OF ACCOUNT: “CAMPUS MAINTENANCE & BEAUTIFICATION”

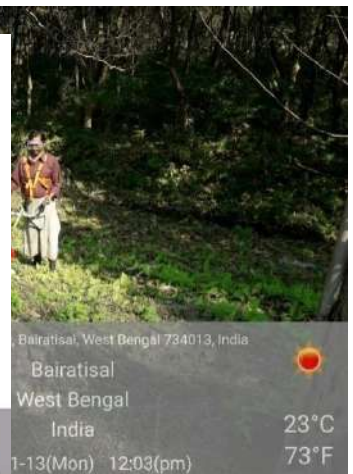
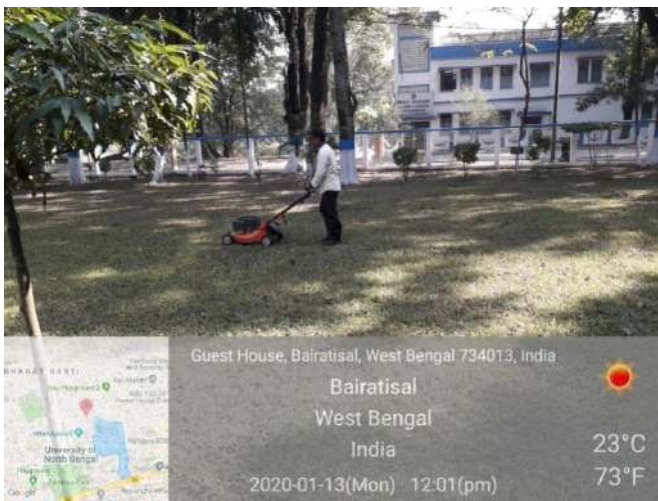
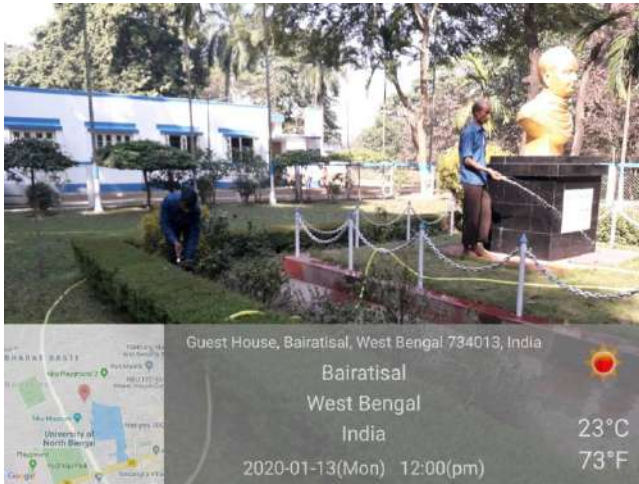
Year	Amount
2014-2015	Rs. 9,32,000.00 (Rupees Nine Lakh Thirty Two Thousand Only)
2015-2016	Rs. 12,30,000.00 (Rupees Twelve Lakh Thirty Thousand Only)
2016-2017	Rs. 13,55,000.00 (Rupees Thirteen Lakh Five Thousand Only)
2017-2018	Rs. 18,65,000.00 (Rupees Eighteen Lakh Sixty Five Thousand Only)
2018-2019	Rs. 20,50,000.00 (Rupees Twenty Lakh Fifty Thousand Only)
2019-2020	Rs. 22,55,000.00 (Rupees Twenty Two Lakh Fifty Five Thousand Only)

LIST OF FRUITS PLANTS IN THE UNIVERSITY CAMPUS

Sl. No.	Name of the Tree	Qty
1.	Mango	65 nos.
2.	Jamun	29 nos.
3.	Jack fruit	38 nos.
4.	Lichi	34 nos.
5.	Kamranga	21 nos.
6.	Jamrul	11 nos.
7.	Guava	29 nos.
8.	Bedana	17 nos.
9.	Chery	04 nos.
10.	Sabeda	26 nos.
11.	Chalta	14 nos.
12.	Coconut	16 nos.

IRRIGATIONAL FACILITIES

We have different types pump sets. Moveable and immovable sets for watering purpose. Many places of growing plants we are doing manually watering of that plants.



PLANT DISEASES OF THE CAMPUS

Scientific study of plant diseases is known as plant pathology, diseases caused to plants by pathogens (infectious organism) and environmental conditions (physical factors). Organisms that cause infectious disease include fungi, Bacteria, viruses, protozoa, nematodes and parasitic plants also. Plant diseases also involve the study of pathogen identification, disease etiology, disease cycles, economic impact, plant disease epidemiology, plant disease resistance and management of plant disease.

In the campus of the University 6859 plants (tree, shrubs, climbers and herbs) are present, out of these only few plants are infected by some diseases,. The observations of present investigation found only 72 plants are diseased by different pathogens and remaining plants are found disease free. Fungi like Fusarium, Phytophthora, and Alternaria causes disease like leaf spot, leaf blight, canker disease to certain plants, some Mycorrhiza found causes diseases to root of some tree species, Mycoplasmal diseases are also found to Santalum albus, little leaf of Santalum , economically and medicinally important plant. Some tree species are found to cause root diseases by soil fungi, Gmelina arborea causes to disease by Fusarium oxysporum.

Result of the present investigation is out of 6859 trees only 72 plants are found infected by pathogens, remaining plants are disease free. In this connection, the Dept. of Botany and the experts of Uttarbanga Krishi Viswavidyalaya (U.B.K.V.) help us time to time.



Dept of Antropology, Bairatisal, West Bengal 734013, India

Bairatisal
West Bengal
India

2020-01-13(Mon) 12:02(pm)

23°C
73°F



Vice Chancellor Residence, Bairatisal, West Bengal 734013, India

Bairatisal
West Bengal
India

2020-01-11(Sat) 12:05(pm)

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72°F



UNIVERSITY GUEST HOUSE



NBU PG Girls Hostel, Bairatal, West Bengal 734013, India

Bairatal
West Bengal

India



23°C

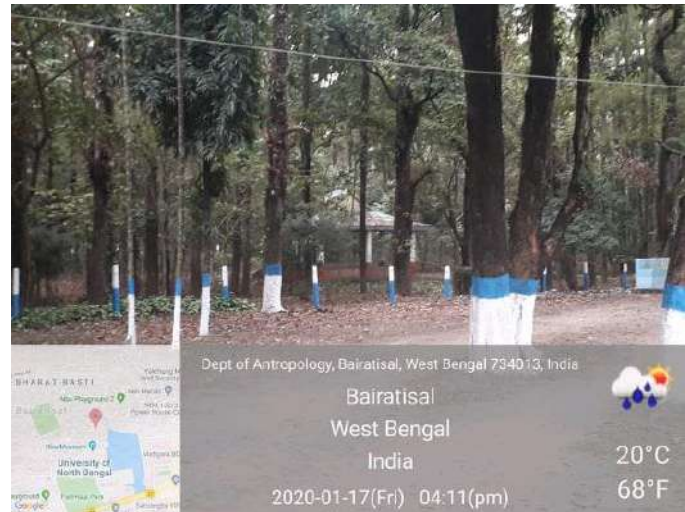
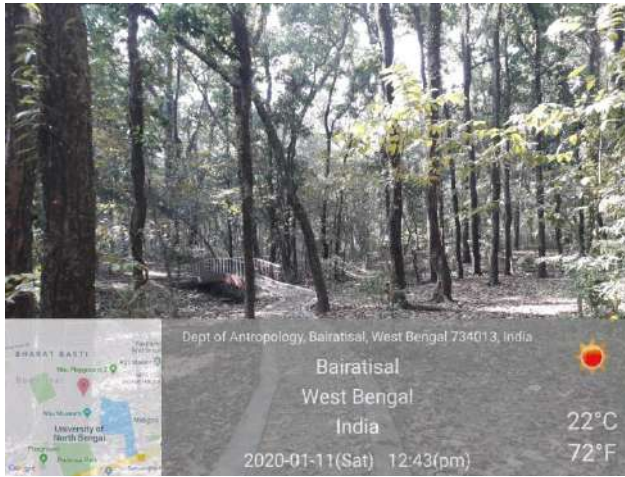
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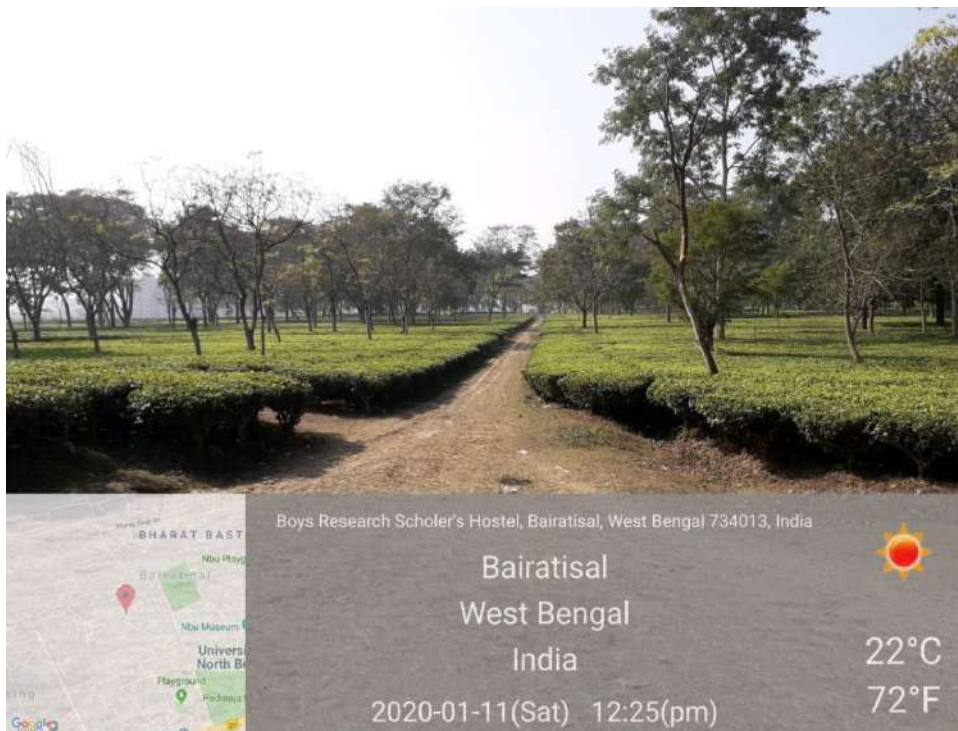


SAL KUNJA IN THE UNIVERSITY CAMPUS





TEA GARDEN IN THE UNIVERSITY CAMPUS





RUBBER PLANTS IN THE UNIVERSITY CAMPUS



RECOMMENDATIONS

1. The ratio of covered space to open space seems to be satisfactory. However, university for any future expansion of covered space should plan for vertical rise after soil testing so that open space is not compromised.
2. Green spots should be planned, preferably on the basis of 3D modelling based on contour map. For maintenance of campus there is a scope of further mechanization.
3. Waste management policy is non-existent. A planned waste segregation, disposal and removal by ULB is necessary.
4. Medicinal Plants garden is needed to be renovated. More wild and locally important plant species are to be planted in campus. Gymnosperm and palm plants should be planted in the campus.
5. Irrigation facilities are needed to be modernized.
6. Water supply system needs through planning. The surface water drawn from wells is becoming insufficient and boring work by PHE is yet to become successful. Hence University should plan for wetland preservation and rainwater harvesting.

SUPPORT AND CONTRIBUTION

University of North Bengal Authority

Departmental Colleagues

Dept. of Botany

N.B.U. P.G. Students Association

N.B.U. Law Students Association

N.S.S. Team

Divisional Forest Officer , (D.F.O.)

Kurseong Division

Divisional Forest Officer , (D.F.O.)

Social Forestry

Forest Range Officer, Bagdogra

Range

Golden Jubilee Celebration

Committee

Uttar Banga Krishi Viswavidyalaya

January, 2020