ENVIRONMENTAUDITREPORT (2020-2021) Rayat Bahra University, Mohali, India



INTERNAL QUALITY ASSURANCE CEL (IQAC)

Catalyzed By: Nova Tech Scientifics & Informatics, Delhi Global Management Association, Delhi Shambhavi Techno Consultancy, Delhi



1

Green Audit Assessment Team (Internal)

- Dr. Simerjit Kaur, University School of Sciences
- Dr. Preeti Sharma Rawat, Life Sciences (Zoology), University School of Sciences
- Dr. Harsimran Dhillon, Life Sciences (Botany), University School of Sciences
- Dr. Sana Khan, Life Sciences (Botany), University School of Sciences
- Dr. Ranjna Sharma. Environmental Sciences, University School of Sciences
- Mr. Harpreet Singh, University School of Engineering & Technology
- Ms. Anshu Gaba, University School of Management Studies
- Ms. Ramica Sharma, University School of Pharmaceutical Sciences

Green Audit Assessment Team (External)

- Dr. R.K. Gupta, Vice- Chancellor, Maharaja Agarsen Univesity, Baddi, HP
- Dr. H.S. Kang, Principal, Guru Nanak Khalsa College, Yamunanagar, HRY
- Dr. Sanjeev Seth, Director-Business Development, Rayat Bahra University

Sr. No.	Content	Page No.
1.	Quality Insurance Certificates	4-7
2.	About Environmental Audit	8-10
3.	Land Use	11-13
4.	Green Initiatives at Rayat Bahra University	13-18
5.	Biodiversity Audit of Rayat Bahra University	19-59
	(Flora and Fauna)	
6.	Energy Audit of Rayat Bahra University	59-61
7.	Waste Management of Rayat Bahra University	61-64
8.	Water Audit of Rayat Bahra University	64-66
9.	Weather Forecast	67-69
10.	Air Quality Index	70
11.	Female Washrooms, Cleanliness and	71-75
	Disabled-Friendly Environment	

Table of Contents



This is to Certify That The Quality Management System of

RAYAT - BAHRA UNIVERSITY

CHANDIGARH-ROPAR HIGHWAY, VPO SAHAURAN, SAS NAGAR, PUNJAB-140104, INDIA

has been audited and conformed to be in accordance with the requirements of

ISO 9001:2015

The Quality Management System is Applicable to :

PROVIDING DEGREE COURSES IN FIELDS ENGINEERING, PHARMACEUTICAL, DENTISTRY, MANAGEMENT, HOSPITALITY, AGRICULTURE, NURSING AND LAW SCHOOLS, EDUCATION, SOCIAL SCIENCES, SCIENCES, PHYSICAL SCIENCES AND LIFE SCIENCES IN LINE WITH THEIR MISSION & VISION STATEMENT.

Certificate No Initial Registration Date Date of Expiry 1st Surve, Due 29/01/2022 28/01/2025 29/12/2025

Issuance Date : 29/01/2022 2nd Surve, Due : 29/12/2023





ACCREDITED Management Systems Certification Body MSCB-174



Aambitious Assessment Pvt. Ltd.

D-9, Sector 03, Noida, Gautam Buddha Nagar, Utar Pradesh - 201301, India. e-mail: info@aspecrtification.in, website: www.aapeertification.in

Certificate Verification: Certificate Validity can be re-checked at www.aapcertification.in This certificate is a property of Aambitious Assessment Pvt. Ltd. and shall be returned immediately when demanded *Validity of the certificate is subject to successful completion of surveillance audit on or before due date तारीख / Date-12/08/2021 ज्ञापनरांखमा/ Memo no:SAP/P8/263/21



भारतसरकार / Government of India महात्मा गांधी राष्ट्रीय ग्रामीण शिक्षा परिषद / Mabatma Gandhi National Council of Rural Education उत्त्वशिक्षाविभाग/Department of Higher Education शिक्षामंत्रालय / Ministry of Education

District Green Champion Certificate

This is to certify that **Rayat Bahra University**, SAS Nagar (Mohali), Punjab is hereby recognized as **District Green Champion** for SAS Nagar (Mohali) District for the Academic Year 2020-21. The Institution has successfully set up the Swachhta Action Plan Committee, adopted and implemented best practices in the areas of Sanitation, Hygiene, Waste Management, Water Management, Energy Management and Greenery Management.

This certificate is given in the presence of Shri Girish Dayalan, Deputy Commissioner, SAS Nagar (Mohali), Punjab.

AUGUST 2021

सल्यमेव जयसे

Dr W G Prasanna Kumar Chairman MGNCRE, Ministry of Education Government of India

District Green Champion Award





Certificate



This is to certify that Rayat Bahra University is now a Recognized Social Entrepreneurship, Swachhta & Rural Engagement Cell (SES REC) Institution. The Institution has successfully framed the SES REC Action Plan and constituted ten working groups for improving facilities in the Campus and the Community/Adopted Villages in the areas of Sanitation & Hygiene, Waste Management, Water Management, Energy Conservation and Greenery post COVID-19, along with the observation of three environment, entrepreneurship and community engagement related days to inculcate in faculty, students and community, the practices of Mentoring, Social Responsibility, Swachhta and Care for Environment and Resources.

Date of Issue:29-10-2020

Dr. W G Prasanna Kumar Chairman

Mahatma Gandhi National Council of Rural Education, Department of Higher Education, Ministry of Education, Government of India

2. ENVIRONMENTAL AUDIT

An environmental audit of the Campus plays a significant role in assessing the quality of the environment in and around the campus and to understand the consciousness of the stakeholders working towards sustainability in complying with applicable environmental laws and regulations. This audit report contains observations and recommendations for the improvement of environmental consciousness so that corrective measures could be taken accordingly for achieving environmental sustainability.

Need for Green Audit

Green auditing is the method of characteristic and determinant establishments of eco-friendly practices in an area. Historically, we have a tendency to be smart and economical users of natural resources. However, with the passage of time, excessive use of resources like energy, water, and Soil, become habitual for everybody particularly, in common areas. Now, it's necessary to see whether or not our processes are eco-friendly and environment audit regulates all such practices and offers an economical manner of natural resources utilization.

Considering the significance of Environment Audit and Development of ownership, personal and social responsibility for the College campus and its environment, Rayat Bahra University has a stringent Green Campus Policy to promote the 'Green and Clean Environment' in and around the Campus.

Green Campus Policy

Rayat Bahra University strictly follow the 'Green Campus Policy' with the following objectives:

- 1. To spread awareness among students for environment protection and conservation.
- 2. To promote sustainable development by adopting judicious use of the non-renewable resources.

- 3. To motivate stakeholders for social development and outreach activities.
- 4. To integrate environmental related issues in to policy and execution of the same in campus and neighbourhood communities for sustainable development.

Following practices are being adopted in the campus to follow Green Policy:

Energy Management:

- 1. Regular audit of the energy efficient heating, cooling, lighting and water systems in college campus.
- 2. Cycles on the campus for Reducing carbon footprints
- 3. Reducing carbon footprints via intelligent purchase standard operating procedures

Water Management:

- 1. Regular Audit of the water sources in the campus
- 2. Constructing/increasing No. of rainwater harvesting pits in the campus.
- 3. Fixing leaky taps
- 4. To collect and harvest the rainwater and reuse it for irritating the lawns.
- 5. Sewage Treatment Plant for wastewater recycling and recycled water is further used in agricultural field.
- 6. Activities for recharging dry borewells
- 7. Converting villages into water plus areas

Waste Management:

- 1. To monitor the anthropogenic activities and promote adoption of green practices.
- 2. To strictly follow the 3R-Reduce, Reuse and Recycle.
- 3. Waste segregation and different color bins for waste collection.
- 4. Recycling of waste (Mess/horticulture etc.)
- 5. Compost pits for organic manure preparation

6. To make the campus plastic free and Awareness Camps For Clean And Green Village Including Single Use Plastic Ban.

Air Quality Management:

To improve air quality, Restricted Entry of automobiles in campus and promote carpooling and public transport.

Sanitation and Hygiene:

- 1. Post COVID-19 Sanitation Measures and Drill
- 2. Clean and functional toilets
- 3. Safe Drinking Water
- 4. Clean and Green Surroundings
- 5. Clean Buildings/Rooms/Labs
- 6. Campus Landscaping
- 7. Zero Littering approach
- 8. The University has organised various awareness programmes and sanitation drives for better sanitation practices like hand washing, health and hygiene awareness, Proper toilet use and garbage disposal etc.

Greenery:

- 1. To have lush green campus, Regular plantation drives in and around the campus.
- 2. Setting up of Herbal Garden
- 3. Setting up a Green house and nursery
- 4. Setting up of Mushroom house
- 5. Compost pits for waste management
- 6. Landscaping in the campus
- 7. Use of organic manure for the plants
- 8. Any new building on the campus will follow green building norms.

3. Land Use at Rayat Bahra Univer	sity
-----------------------------------	------

Area O	Area Occupied by various buildings at Rayat Bahra University, Mohali				
Sr. No.	Name of Building	Number of Floor	Area in Sq. Mts		
1	BLOCK-1	3	3215		
2	BLOCK-2	3	3956		
3	BLOCK-3	3	1487		
4	BLOCK-4 & 5	3	7436		
5	BLOCK-6	3	3133		
6	BLOCK-7	3	631		
7	BLOCK-9	3	3988		
8	BLOCK-10	4	16830		
9	BLOCK-11	3	7494		
10	BOYS HOSTEL-A	4	1113		
11	BOYS HOSTEL-B	4	1900		
12	BOYS HOSTEL-C	4	3397		
13	BOYS HOSTEL-D	4	3397		
14	GIRLS HOSTEL-A	4	1900		
15	GIRLS HOSTEL-B	4	1900		
16	GIRLS HOSTEL-C	4	3130		

17GIRLS HOSTEL-D43926	17	GIRLS HOSTEL-D	4	3926
-----------------------	----	----------------	---	------

LAND USE-RAYAT BAHAR UNIVERSITY

18	CHECK POST-A	1	9
19	CHECK POST-2	1	9
20	ADMISSION CELL/BANK/ATM	1	525
21	WORKSHOP	1	876
22	BOYS HOSTEL FOR INTERNATIONAL STUDENTS	6	5020
23	GIRLS HOSTEL FOR INTERNATIONAL STUDENTS	6	5282
24	AUDITORIUM	2	1629
25	FOOD COURT	1	523
26	ANIMAL HOUSE	1	106
27	CANTEEN SHED	1	213
28	STORE SHED	1	32
29	GEN. SET SHED	1	134

SUMMARY

Total plot area= 44.20 acres = 1,78,871 sqmts

Total covered area = 1,06,213 sqmts

Total ground coverage = 33, 197 sqmts

Total open area including play area, roads, parking etc. = 1,45,67 sqmts



Location of Rayat Bahra University

4. Green Initiatives of Rayat Bahra University

- Restricted Entry of automobiles is in the campus. University encourages the students
 & staff for using public transport system/carpooling/battery operated vehicles.
- (ii) For short distance, we motivate them to use bicycles.
- (iii) Ban on plastic use: Awareness among students/staff to minimize or no use of plastic.
- (iv) Institute is eco-friendly, Clean and Green with pedestrian friendly pathways. Institute is with Proper landscaping with trees and plants



Landscaping with trees



Landscaping with trees

Pedestrian friendly Pathways

Use of Bicycles at Rayat Bahra University

Mushroom Cultivation Unit at Rayat Bahra University

As a Green Campus initiative, Rayat Bahra University has started a startup of a Mushroom culture cultivation unit within the campus. As we know unlike plants, mushroom farming is basically an indoor activity so it is likely to cultivate mushrooms in a specific season under natural surroundings whereas it is possible to cultivate mushrooms all through the year under organized conditions. An added benefit is that very less land is essential for growing mushrooms.

Mushroom Cultivation Unit at Rayat Bahra University

Animal House at Rayat Bahra University

Designed according to the Committee for the Control and Supervision of Experiments on Animals (CPCSEA), New Delhi, with registration number 1380/a/10/CPCSEA. There are separate facilities for different species and the animal house is fully ventilated and air-conditioned. Various behavioral, biochemical, and histopathological evaluations are carried out in separate rooms. An animal house houses rats, mice, rabbits, and guinea pigs. There are

also quarantine rooms for animals. In addition to veterinary care, an animal house attendant keeps the animal rooms, corridors, storage spaces, and other areas clean and disinfected regularly. CPCSEA has established an IAEC committee, which meets biannually to inspect cages, water bottles, and bedding.

Animal House at Rayat Bahra University

Green House facility

Rayat Bahra University has setup a Green House facility within with university campus which will provide facilities for production of vegetables, fruits or flowers. Different kind of techniques will be used to evaluate optimum temperature range, air quality, relative humidity in order to curb down any kind of production risk prior to cultivation of different crops.

Green House Facility at Rayat Bahra University

Adoption of Green Practices

- (a) Rayat Bahra University celebrated Cracker Free Green Diwali on 14 November 2020, by organizing various Inter-University/College Competitions i.e., Green Rangoli competition, Diyas competition & Home-Made Sweets competition where participation across Punjab, Haryana & Tri-city observed.
- (b) Rayat Bahra University Joins hands with ECO PARYAVARAN ENGINEERS & CONSULTANTS PVT. LTD., Mohali (Certified by leading institutes like NABL, Department of Science & Technology, Government of India, MoEF, PPCB, NPC, ISO, EMS etc.) for formally creating a mutually beneficial working relationship between Rayat Bahra University and Ecoparyavaran Engineers company and to start up new Skill Enhancement PG Diploma Courses under SAP (Swachhta Action Plan, MHRD, Govt. of India) on Waste Management.

5. Biodiversity Audit of Rayat Bahra University

A. Flora of the University

S. No.	Botanical Name	Family	Common Name	Total
1.	Bougainvillea sp.	Nyctaginaceae	Bougainvillea	215
2.	Combretum indicum	Combretaceae	Quisqualis	123
3.	Tecoma stans	Bignoniaceae	Trumphet bush	1581

Table 1: List of Climbers of Rayat Bahra University, Mohali, Punjab

4.	Tarmounia elliptica	Asteraceae	Parda bel	302
5.	Capparis spinosa	Capparaceae	Flinders Rose	1
6.	Tecoma capensis	Bignoniaceae	Tecoma	71
7.	Passiflora sp.	Passifloraceae	Passion flower	10
8.	Epipremnum aureum	Araceae	Money plant	8
9.	Jasminum glandiflorum	Oleaceae	White jasmine	10
10.	Jasminum sambac	Oleaceae	Mogra	29
Total number				

Climbers at Rayat Bahra University, Mohali, Punjab

Photo 1: Bougannelles sp., Nyctaginaceae Photography by: Department of Life Sciences, USS

Photo 2: Combretum indicium (Quisqualis), Combretaceau Photography by: Department of Life Sciences, USS

Photo 3 Tecoma stans (Trumphet bush), Bignoniaceae Photography by: Department of Life Sciences, USS

Photo 4:Tarmounta elliptica (Parda Bel), Asteraceae Photography by: Department of Life Sciences, USS

Photo 5: Capparis spinosa, Leguninosae Photography by, Department of Life Sciences, USS

Photo 6:Tecoma capensis, Bignoniaceae Photography by: Department of Life Sciences, USS

Photo 7. Passiflora sp. (Passion flower), Passifloraceae Photography by: Department of Life Sciences, USS

Photo 8: Epipromnum cureum (Money plant), Araceae Photography by Department of Life Sciences, USS

Photo 9 Jasminum glandiflorion (white jasmine), oleaceae Photography by: Department of Life Sciences, USS

Photo 10: Jasminum sambac (Mogra), oleaceae Photography by: Department of Life Sciences, USS

S. No.	Botanical Name	Family	Common Name	Total
1.	Tagetus minuta	Asteraceae	Jangali gaindha	85
2.	Portulaca grandiflora	Portulacaceae	Purslane	167
3.	Vinca rosea	Apocynaceae	Sada bahar	139
4.	Ophiopogon japonicas	Asparagaceae	Mondo grass	5
5.	Tradescantia sp.	Commelinaceae	Tradescantia	852
6.	Syngonium podophyllum	Araceae	Arrowhead plant	29
7.	Schefflera variegate	Araliaceae	Dwarf umbrella tree	5
8.	Crassula ovate	Crassulaceae	Stonecrops	4
9.	Pandanus amaryllifolius	Pandanaceae	Rampe	55
10.	Asparagus densiflorus	Asparagaceae	Asparagus fern	120
11.	Kalanchoe pinnata	Crassulaceae	Patthar chatt	45
12.	Cymbopogon citratus	Poaceae	Lemon grass	10
13.	Solanum nigrum	Solanaceae	Black nightshade	2
14.	Bassia scoparia	Amaranthaceae	Kochia	4
15.	Tabernaemontana sp.	Apocyanaceae	Chandni	48
16.	Sphagneticola trilobata	Compositae	Wedelia	3000
17.	Petunia hybrida	Solanaceae	Petunia	10
18.	Tithonia rotundifolia	Asteraceae	Tithonia	12
19.	Impatiens balsamina	Balsaminaceae	Balsam	87
20.	Zephyranthes rosea	Amaryllidaceae	Rosy rain lily	74
21.	Plectranthus scutellarioides	lamiaceae	Coleus	35

 Table 2: List of Herbs of Rayat Bahra University, Mohali, Punjab

22.	Palaris arundinaceae	Poaceae	Spider plant	108
	Total number			

List of Herbs at Rayat Bahra University, Mohali, Punjab

Photo 3: Vinca rosea (Sada bahar), Apocynaceae Photography by: Department of Life Sciences, USS

Photo 2: Portulace grandiflore (Pursiane), Portulacaceae Photography by: Department of Life Sciences, USS

Photo 4: Ophiopogon japonicas (Mondo grass), Asparagaceae Photography by: Department of Life Sciences, USS

Photo 5: Tradeschantia sp. Commelinaceae Photography by: Department of Life Sciences, USS

Photo 6: Syngonium padophyllum (Arrowhead plants), Araceae Photography by: Department of Life Sciences, USS

Photo 7: Schefflera variegate (Dwarf unbrella tree), Arakaceae Photography by: Department of Life Sciences, USS

Photo 8: Crassula ovate (Stonecrops), Crassulaceae Photography by: Department of Life Sciences, USS

Photo 9: Pandamis amarylitfolius (Rampe),Pandanaceae Photography by: Department of Life Sciences, USS

Photo 10: Asparagus densifiorns, Asparagaceae Photography by: Department of Life Sciences, USS

Photo 11: Palaris arunclinacene (Spider plant), Poaceae Photography by: Department of Life Sciences, USS

Photo 12: Kalanchov pinnata (Pathar chatt), Crassulaceae Photography by: Department of Life Sciences, USS.

Photo 13: Cymbopogon citratus (Lemon grass), Poaceae Photography by Department of Life Sciences, USS

Photo 15: Bassia scoparia (Kochia), Amaranthaceae Photography by: Department of Life Sciences, USS

Photo 14: Solanum nigrum (Black rightshade), Solanaceae Photography by: Department of Life Sciences, USS

Photo 16 Tabernaemontana sp. (Chandni), Apocyanaceae Photography by Department of Life Sciences, USS

Photo 17: Sphogneticola trilobata (Wedelia), Compositae Photography by: Department of Life Sciences, USS

Photo 18: Patunio hybrido, Solanaceae Photography by: Department of Life Sciences, USS

Photo 19: Tithonia rotundifolia, Asteraceae Photography by: Department of Life Sciences, USS

Photo 20. Impedients belsemina (Balsam). Balsaminaceae Photography by: Department of Life Sciences, USS

Photo 21: Zephycnnhes rosea (Rosy rain lily), Amaryllidaceae Photography by: Department of Life Sciences, USS

Photo 22: Plectranthus scittellarioides (Coleus), Lamiaceae Photography by: Department of Life Sciences, USS

S. No.	Botanical Name	Family	Common Name	Total
1.	Hamelia patens	Rubiaceae	Hummingbird bush	134
2.	Juniperus communis	Cupressaceae	Common juniper	4
3.	Cycas rivoluta, Female	Cycaceae	Sago palm	12
4.	Cycas rivoluta, Male	Cycaceae	Sago palm	11
5.	Duranta erecta	Verbenaceae	Nilkanta	1000
6.	Monstera deliciosa	Araceae	Monstera	44
7.	Schefflera arboricola	Araliaceae	Dwarf umbrella tree	41
8.	Bismarkia nobilis	Arecaceae	Silver palm	12
9.	Amaryllis belladonna	Amaryllidaceae	Lily	62
10.	Beaucarnea recurvate	Asparagaceae	Ponytail plant	9
11.	Livistona chinensis	Arecaceae	Chinese fan palm	12
12.	Phoenix canariensis	Arecaceae	Date palm	54
13.	Hibiscus sp.	Malvaceae	Gurhal	201
14.	Datura innoxia	Solanacea	Datura	2
15.	Ravenia spectabilis	Rutaceae	Pink ravenia	66
16.	Ficus microcarpa	Moraceae	Chinese banyan	32
17.	Phoenix reclinata	Arecaceae	Date palm	19
18.	Casuarina equisetifolia	Casuarinaceae	Junglisaru	21
19.	Juniperus virginiana	Cupressaceae	Juniper	52
20.	Hibiscus rosa-chinensis	Malvaceae	Gurhal	118
21.	Capsicum annuum	Solanaceae	Green Chilli	24
22.	Juniperus sp.	Cuprassaceae	Juniper	12
23.	Cosmos caudatus	Asteraceae	Ulam raja	8
24.	Furcraea foetida	Asparagaceae	Green-aloe	6
25.	Aloe vera	Asphodelaceae	Aloe	10
26.	Tagetus eructus	Asteraceae	Genda	14

Table 3: List of Shrubs at Rayat Bahra University, Mohali, Punjab

27.	Melaleuca bracteata	Myrtaceae	Golden bottle brush	54
28.	Rosa chinensis	Rosaceae	Gulab	616
29.	Palm sp.	Arecaceae	palm	113
Total number				2763

Shrubs at Rayat Bahra University, Mohali, Punjab

Photo 1: Homelia paters (Hummingbird bush), Rubiaceae Photography by: Department of Life Sciences, USS

Photo 2: Juniperus communis (Common Juniper), Cupressaceae Photography by: Department of Life Sciences, USS

Photo 3: Cycas rivoluta (Female) Sago Palm, Cycaceae Photography by: Department of Life Sciences, USS

Photo 4: Cycas rivoluta (Male) Sago Palm, Cycaceae Photography by: Department of Life Sciences, USS

Photo 5: Duranta ripent (Nilkanta), Verbenaceae Photography by: Department of Life Sciences, USS

Photo 6: Monstern deliciosa, Araceae Photography by: Department of Life Sciences, USS

Photo 7. Schofflora arboricola, Araliaceae Photography by: Department of Life Sciences, USS

Photo S. Bismarkia nobilis (Silver palm), Asecaceae Photography by: Department of Life Sciences, USS


Photo 9: Amaryllis belladonna (Lily), Amaryllidaceae Photography by: Department of Life Sciences, USS



Photo 11: Livostono chinerois (Chinese fan Pahn), Arecaceae Photography by: Department of Life Sciences, USS



Photo 10: Beaucarnea recurvate (Ponytailplant), Asparagaceae Photography by: Department of Life Sciences, USS



Photo 12. Phoenix concriencis (Date Palm), Arecaceae Photography by: Department of Life Sciences, USS



Photo 13: Hibiscus sp. (Gurhal) , Malvaceae Photography by: Department of Life Sciences, USS



Photo 14: Datura umaxia (Datura), Solanacea Photography by: Department of Life Sciences, USS



Photo 15: Roventa spectabilis (Pink ravenia), Rutaceae Photography by: Department of Life Sciences, USS



Photo 16: Ficus microcarpa (Chinese banyan), Moraceae Photography by: Department of Life Sciences, USS



Photo 17: Phoenix reclinics (Date Palm), Arecaceae Photography by: Department of Life Sciences, USS



Photo 19. Jumparus virginiana (Juniper), Cupressaceae Photography by: Department of Life Sciences, USS



Photo 18: Casuarina equitaetifelia (Janglisani), Casuarinaceae Photography by: Department of Life Sciences, USS



Photo 20: Hibiscus rosa-chinensis (Guthal), Malvaceae Photography by: Department of Life Sciences, USS





Photo21: Capstenin annual (Green Chilli), Solanaceae Photography by: Department of Life Sciences, USS

Photo 22: Juniperaus sp. Cuprassaceae Photography by: Department of Life Sciences, USS



Photo 23: Cosmos candions (Ulam raja), Asteraceae Photography by: Department of Life Sciences, USS



Photo 24. Furcinian fostich (Green aloe), Asparagaceae Photography by: Department of Life Sciences, USS



Photo 25: Alog vora (Aloe), Asphodelaceae Photography by: Department of Life Sciences, USS



Photo 26: Tagetus eructus (Genda), Asteraceae Photography by: Department of Life Sciences, USS



Photo 27: Melalenca bracteata (Golden bottle brush), Myrtaceae Photography by: Department of Life Sciences, USS



Photo 28. Rosa chinansis (Gulab), Rosaceae Photography by: Department of Life Sciences, USS



Photo 29: Ficus sp., Moraceae Photography by: Department of Life Sciences, USS

S. No.	Botanical Name	Family	Common Name	Total
1.	Alstonia sp.	Apocynaceae	Devil tree	9
2.	Mangifera indica	Anacardiaceae	Mango	35
3.	Ficus infectoria	Moraceae	Pilkhan	3
4.	Terminalia chebula	Combretaceae	Harad	4
5.	Caryota urens	Arecaceae	Jaggery palm	39
6.	Callistemon lanceolatus	Myrtaceae	Bottle brush	80
7.	Araucaria auricana	Araucariaceae	Monkey puzzle	1
8.	Lagerstroemia indica	Lythraceae	Saona	13
9.	Lagerstroemia speciosa	Lythraceae	Jarul	22
10.	Eucalyptus sp.	Myrtacae	Safeda	2
11.	Carica papaya	Caricaceae	Papita	4
12.	Ficus religiosa	Moraceae	Peeple	48
13.	Ficus benjamina	Moraceae	Weeping fig	120
14.	Ficus benghalensis	Moraceae	Indian banyan	3
15.	Morus alba	Moraceae	White Mulberry	21
16.	Phyllanthus emblica	Phyllanthaceae	Amla	4
17.	Acacia nilotica	Caesalpinioideae	Kikar/ Gum arabic	12
18.	Melia azedarach	Meliaceae	Derk	2
19.	Caryota mitis	Arecaceae	Fishtailpalm	74
20.	Livistona chinensis	Arecaceae	Chinese fan palm	22
21.	Jatropha integerrima	Euphorbiaceae	Spicy jatropha	220
22.	Bombax ceiba	Malvaceae	Silk plant	3
23.	Ficus elastica	Moraceae	Indian rubber	14
24.	Terminalia bellerica	Combretatceae	Baheda	28
25.	Terminalia chebula	Combretatceae	Harad	18
26.	Pterygota alata	Sterculiaceae	Buddha tree	16
27.	Dalbergia sisso	Fabaceae	Shisham	6
28.	Grevillia robusta	Proteaceae	Silver oak	98
29.	Monoon longifolium	Annonaceae	False ashoka tree	65
30.	Psidium gujava	Myrtaceae	Amrud	5
31.	Cassia sp.	Fabaceae	Cassia	12
32.	Plumeria obtuse	Apocynaceae	Champa	65
33.	Roystonea regia	Arecaceae	Royal palm	54

 Table 4: List of Trees at Rayat Bahra University, Mohali, Punjab

34.	Encephalartos tegulaneus	Zamiaceae	Encephalartos	2
35.	Putranjiva sp.	Putranjivaceae	Putijia	4
36.	Baringtonia sp.,	Lecythidaceae	Baringtonia	5
37.	Artocarpus herpphyllum	Moraceae	Jack fruit	5
38.	Ailanthus altissima	Simaroubaceae	Copal tree	67
39.	Erythrina caffra	Leguminoceae	Purple coraltree	13
Total number				

Trees at Rayat Bahra University, Mohali, Panjab



Photo 1: Alstonia sp.(Devil tree), Apocynaceae Photography by: Department of Life Sciences, USS



Photo 2: Mangifera indica (Mango), Anacardiaceae Photography by: Department of Life Sciences, USS



Photo 3: Ficus infectoria (Pilkhan), Moraceae Photography by: Department of Life Sciences, USS



Photo 4: Terminalia chebula (Harad). Combretaceae Photography by: Department of Life Sciences, USS



Photo 5: Carpota uneut (Jaggery palm), Arecaceae Photography by Department of Life Sciences, USS



Photo 6: Callisteman lanceolarus (Bottle brush), Myrtaceae Photography by: Department of Life Sciences, USS



Photo 7: Araucaria auricana (Monkey puzzle), Araucariaceae Photography by Department of Life Sciences, USS



Photo 8: Lagerstroomia indica (Saona), Lythraceae Photography by: Department of Life Sciences, USS



Photo 9. Baringtonia sp., Lecythidaceae Photography by: Department of Life Sciences, USS



Photo 11: Eucohptus sp., (Safeda), Myrtacae Photography by: Department of Life Sciences, USS



Photo 10: Artocarpus herpply-lion (jack fruit). Moraceae Photography by: Department of Life Sciences, USS



Photo 12: Carica papener (Papita), Caricaceae Photography by: Department of Life Sciences, USS.



Photo 13: Ficus religiosa (Peeple), Meraceae Photography by: Department of Life Sciences, USS



Photo 14: Ficus benjamina (Weeping fig), Moraceae Photography by: Department of Life Sciences, USS



Photo 15. Ficus benghalensis (Indian banyan), Moraceae Photography by: Department of Life Sciences, USS



Photo 16: Morus alba (White Mulberry), Moraceae Photography by: Department of Life Sciences, USS



Photo 17: Phyllonobus emblica (Amla), Phyllanthaceae Photography by: Department of Life Sciences, USS



Photo 19. Atlanthus altissima (Copal tree), Simaroubaceae Photography by: Department of Life Sciences, USS



Photo 18: Acacia milotica (Kikar' Gum arabic), Caesalpinicideae Photography by: Department of Life Sciences, USS



Photo 20: Lagerstroomia speciosa, Ly thraceae Photography by Department of Life Sciences, USS



Photo 21: Melta azedarach (Derk), Meliaceae Photography by: Department of Life Sciences, USS



Photo 22: Carpota mitts (Fishtailpalm), Arecaceae Photography by Department of Life Sciences, USS



Photo 23: Livistonia chinensis (Chinese fan palm), Arecaceae Photography by: Department of Life Sciences, USS



Photo 24: Jatropha integerima (Spicy Jatropha), Euphorbiaceae Photography by: Department of Life Sciences, USS



Photo 25: Bombax cetba (Silk plant), Malvaceae Photography by: Department of Life Sciences, USS



Photo 26: Ficus elastica (Indian rubber), Moraceae Photography by: Department of Life Sciences, USS



Photo 27: Terminalia bellerica (Baheda), Combretatceae Photography by: Department of Life Sciences, USS



Photo 28: Ptery goto brasiliensis (Buddha tree). Malvaceae Photography by: Department of Life Sciences, USS



Photo 29: Dalbergia sisso (Shisham), Fabaceae Photography by: Department of Life Sciences, USS



Photo 30: Gravillia robusta (Silver oak), Proteaceae Photography by: Department of Life Sciences, USS



Photo 31: Monoou longifolium (False ashoka tree), Annonaceae Photography by: Department of Life Sciences, USS



Photo 32: Psidium gujava (Amrud), Myrtaceae Photography by: Department of Life Sciences, USS



Photo 33: Cassia sp. Fabaceae Photography by: Department of Life Sciences, USS



Photo 34: Plumeria obtuse (Champa), Apocynaceae Photography by: Department of Life Sciences, USS



Photo 35. Roystonea regta (Royalpalm), Arecaceae Photography by: Department of Life Sciences, USS



Photo 36: Encephalarios tegulaneus, Zamaceae Photography by: Department of Life Sciences, USS



Photo 37 Putranjiva sp. Putranjivaceae Photography by: Department of Life Sciences, USS



Photo 38. Erthrino caffio, Leguminoceae

Photography by: Department of Life Sciences, USS



Photo 39: Dypsis Intescens (Palm), Asecaceae Photography by: Department of Life Sciences, USS

Total number of Climbers	2350
Total number of Herbs	4896
Total number of Shrubs	2763
Total number of Trees	1218
Total	11227

Assessment of Flora at Rayat Bahra University, Mohali, Punjab

B. Fauna of the University

S. No.	Common name	Zoological name
1	Common Myna	Acridotheres tristis
2	House Crow	Corvus splendens
3	Ceranus Blue Butterfly	Hemiargus ceranus
4	Common Tiger Butterfly	Danaus genutia
5	Indian Cicada	Platypleura capitata
6	Bath White Butterfly	Pontia daplidice
7	Dark Grass Blue Butterfly	Zizeeria Knysna
8	Srtiped Lynx Spider	Oxyopes salticus
9	Squirrel	Funambulus palmarum
10	Indian Grey Hornbill	Ocyceros birostris
11	Western Cattle Egret	Bubulcus ibis
12	Pale Grass Blue Butterfly	Pseudozizeeria maha
13	Tussock Moth (Larva)	Orgiya postica
14	Black Witch Moth	Ascalapha odorata
15	Assassian Bug	Platymeris biguttatus
16	Garden Slug	Deroceras reticulatum
17	Indian Pond Heron	Ardeola grayii
18	Purple Sun Bird	Cinnyris asiaticus
19	Green Lacewings	Chrysoperla carnea
20	Mother Shipton Moth	Callistege mi
21	Summer Chafer Beetle	Amphimallon solstitiale
22	White Grub	Diloboderus abderus
23	Jungle Babbler	Turdoides stritata
24	Cassius Blue Butterfly	Leptotes
25	Brown Dove	Spilopelia senegalensis
26	Red-Wattled Lapwing	Vanellus indicus
27	Rhesus monkey	Macaca mulatta
28	Rose Ringed Parrot	Psittacula krameri
29	Gutta Bug	Physopelta gutta
30	Brindled Flat Body Moth	Agonopterix arenella



Pic. 1 Common Mynah: Acridotheres tristis







Jakar Ma





Pic. 9 Squirrel : Funambulus palmarum























Photographs of Flora & Fauna Clicked by Department of Life Sciences, USS, Rayat Bahra University, Mohali

6. Energy Audit of Rayat Bahra University

Solar Energy

- Keeping in view the concept of sustainable development, the university aims at adopting methods of energy conservation
- The design of the buildings allows natural ventilation and light which helps conserve the demand for energy.
- Solar powered heating system is installed for supply of hot water.
- The street lights too are powered by solar energy



Solar Panel at Rayat Bahra University

Sensor-based energy conservation:

• For prevention of wastage of energy, the water supply systems are sensor based. The water pumps go on auto off mode as soon as the tanks are full. This helps to save electricity and water as well.

Use of LED bulbs/ power efficient equipment

- Around 500 tube lights are installed in the buildings, out of which 250 have already been replaced by LED tube lights and others are in process of being replaced.
- The laboratory equipment is serviced regularly for maintaining their work efficiency, which would leads to reduced power consumption.
- Everybody on campus is instructed and expected to switch off the lights, fans And ACs whenever they leave the room. Instructions to this reference are put in the form of placards in the class rooms, laboratories, office block and corridors.

Buildings	Energy Consumption (KV)	
Block-A	10	
Block -B	20	
Block-C	25	
Block-E	20	
Block-F	10	
Block-G	10	
Block-H	10	
Block-I	15	
Administrative Block	31	
Central Library	10	
Boys Hostels	20	
Girls Hostels	20	
Career Centre &	20	
Admission Cell		
Food Court/Canteen	10	
Auditorium	05	
Street Lights	10	
Total (KV)	246	

Total Energy Consumption at Rayat Bahra University:

7. Waste Management at Rayat Bahra University

Rayat Bahra key operations have very less impact on the environment as the University is very conscious of generating less waste and recycling it by passing it through a system that

enables the used material to be reused ensuring that less natural resources are consumed. The university has segregated waste into three parts:

- 1. Solid Waste
- 2. Liquid Waste
- 3. Hazardous Lab Waste

(i) Waste Segregation

Installation of Bins, Degradable and non-degradable waste. Vermicomposting Units have been installed for biodegradable waste management and vermicompost prepared could be used within the Institute/Campus. Proper Disposal and management of Biomedical waste, E-waste and any other hazardous/Chemical waste *etc* to minimize environment degradation.

(ii) Solid waste management

Solid waste is collected in different-colored bins (as per the Solid Waste Management Rules 2016).

(iii) Strategies for treating the waste generated on campus:

Degradable waste from the kitchens of the Hostel and Canteen, like vegetable peels and non-oily food residue is converted into manure using vermicompost techniques. Litter waste from the lawns is collected and composted using compost pit. Manure obtained is utilized as fertilizer. Paper waste generated from office and Examination department is given to a firm for recycling. Strategies adopted to minimize the generation of paper waste are:

- Circulation of Notices, Duties etc. through e-mail Submission of e-assignments by students and uploading of study material by teachers on the e-portal.
- Dissertation and PhD theses printed on both sides of the paper.
- Research being carried out at PG and PhD level on scientific methods for paper waste-utilization.

(iv) Bio-medical waste management

Bio-medical waste is properly segregated and is and is transported to Rainbow Environment Pvt. Ltd., SAS Nagar, Sector 74, Mohali.

(v) E-waste management

E-waste is also being transported to the local vendor for proper disposal.

(vi) Hazardous chemicals and radioactive waste management

Yes, it is being segregated and transported to vendors for proper disposal.

(vii) Biogas Plant

The quantity of degradable waste generated in the campus is not very substantial for the establishment of a biogas plant so it is sent for composting. Biogas produced is directly being supplied to the hostel mess.



Biogas Plant at Rayat Bahra University

(viii) Vermicomposting

Vermicompositing is a method of preparing enriched compost with the use of earthworms. It is one of the easiest methods to recycle agricultural wastes and to produce quality compost. Vermicomposting Unit is in the University where Biodegradable waste of the campus is being composed and used in the Campus Lawns and Garden as a bio fertilizer.



Vermicomposting Pit at Rayat Bahra University

(ix) Wastewater Recycling System

Sewage treatment plant is installed within the campus for the objective of treating wastewater of the University. The recycled water is being used for the irrigation in the agricultural field.



Sewage Treatment Plant at Rayat Bahra University

8. Water Audit of Rayat Bahra University Total Water Consumption per day=5,84100 Kilo litre Total Water Recycled in STP= 4,50000 Lakh litre

(i) Rainwater Harvesting

Rain Water Harvesting is the most economical and smart way to tap water resource. It keeps the campus free from water scarcity. During Rainy season water is channelized in one direction by using small channels and used to irrigate the university Campus, Lawns and garden.



Recharge pits & Tanks at Rayat Bahra University
(ii) Borewell Recharge



Borewell Recharge at Rayat Bahra University

- (iii) The maintenance of water bodies and distribution system in the campus is regularly monitored. Leakage in pipes is properly checked and repaired to avoid any wastage of water.
- (iv) Wastewater recycling is functional in the Campus.

9. Weather Forecast of Kharar, Punjab (Source: www.weatheravenue.com)









10. Air Quality Index of Kharar, Punjab (Source: www.iqair.com)

IQAir	Q	R 🗶
DRECAST		
narar air quaiity in _{Day}	Pollution level	ist
Today	Unhealthy	167 US AQI
Monday, Jun 13	Unhealthy for Sensitive Groups	127 US AQI
Tuesday, Jun 14	Unhealthy for Sensitive Groups	113 US AQI
Wednesday, Jun 15	Unhealthy for Sensitive Groups	110 US AQI
Thursday, Jun 16	Unhealthy for Sensitive Groups	111 US AQI
Friday, Jun 17	Unhealthy for Sensitive Groups	115 US AQI
Saturday, Jun 18	Unhealthy for Sensitive Groups	144 US AQI

11. FEMALE WASHROOMS, CLEANLINESS AND DISABLED-FRIENDLY ENVIRONMENT

Proper sanitation is the sine qua none of all campus facilities from the standpoint of overall health and hygiene. Being a higher educational institution, it is all the more important to have on the campus fool-proof and fail-safe systems that can serve as models for robust public health in the wider community.

Disabled-Friendly Toilets are now integral part of the University to indicate inclusiveness to the differently-abled community. Therefore, to promote benchmarks as well as systems in maintenance of **sanitation for Women washrooms** and for Disabled-FriendlyToilets, the following criteria are identified and implemented:

Table1: WASHROOMS STATUS (WOMEN & MEN), SANITATION & HYGIENE,DISABLED FRIENDLY ENVIRONMENT AT RAYAT BAHRA UNIVERSITY CAMPUS

S. No.		Criteria	Status
1.	Physical Appearance of the Washrooms		
	i. ii. iii. iv. v.	Appealing façade Full boundary wall Security set-up to screen visitors Separate entrances for men and women Supervision by lady staff for the toilets meant for women and girls Posted on duty for the building	Yes Yes Yes Yes
2.	i.	Overall Ambience of Wash Room Facilities Hygiene maintenance	Yes

(Photographs are attached herewith)

	ii.	Dustbins available	Yes
	111.	Do the toilets at hostels, classrooms, admin block, `labs and kitchen	
		have exhausts and vents?	Yes
	1V.	Are there controls and protocol to switch off toilet fans and exhausts	
	• •	Is there a comparison to approximate users to switch off fore and exhausts	Vos
	v.	when not in use?	105
		when not in use?	
			V
2			Yes
5.	Adequ	uacy of Toilets (Student/Toilet Ratio)	
	Gende	er Balance of Toilets (Male: Women)	
	i.	1 Male Urinal per 10-15 Men students	**
	ii.	1 toilet seats per 10 Women students	Yes
	iii.	1 Wash Basins per 10 Men students	Yes
	iv.	1 Wash Basins per 10 Women students	Ves
			105
			Yes
	No. of f	functional toilet seats/wash facilities for faculty	
	i.	1 Male Urinals per 5 Male faculty	
	ii.	1 toilet seat per 5 Women faculty	Yes
	iii.	1 Wash Basin per 10 Male faculty	Yes
	iv.	1 Wash Basin per 10 Female faculty	100
			Yes
			Yes
4.	Availab	ility of adequate staff - men and women for	
	mainter	nance	
	i.	Is sufficient number of cleaning staff available?	Yes
	ii.	Is there job rotation for maintenance staff?	Yes
	iii.	Is the staff motivated to maintaining a clean campus?	
	iv.	Is the maintenance staff insured for health?	
			Yes
	Dolog o	nd vesnonsibilities of hygione maintenance staff	Yes
	i i	General area cleaning, outdoors roads parking	
	1. 11	Common areas cleaning- halls and corridors	
	 iii.	Special area cleaning- toilets	
	-	1 U	

		Yes
		Yes
		Yes
5.	Disabled-Friendly Toilets- Appropriate design of toilets to suit differently abled people created for easy access:	Yes
	Separate toilets for differently abled students i. 1 per building with easy access for Males	
	ii. 1 per building with easy access for females	Yes
ļ	Availability of Ramps- Appropriate design of Ramps to suit differently abled people created for easy access:	Yes
	i. 1 per building with easy access	Yes
	Installation of Sign boards and information on the availability of such toilets	
		Yes





Disabled Friendly Ramps in Various Buildings of Rayat Bahra University



Rayat-Bahra University Participated in Webinar on 'Covid-19: Recent Challenges & its Impact on persons with disabilities' on 25.06.2021organized by National Institute for the Empowerment of persons with intellectual disabilities (DIVYANGJAN), MSJ, Govt. of India. (Online)



Direction Boards at Rayat Bahra University



Disabled Friendly Washrooms in Various Buildings of Rayat Bahra University

Go Green Live Blue

TRANSF 1 ÷ and Bahra College of Education いいであんなないないで Rayat and Bahra Group of Institutes C Rayat Bahra University CHANDIG Bisabled Friendly Washrooms in Various Buildings of Rayat Bahra University NOVATECH SCIENTIFICS & INFORMATICS SHAMHAVI TECHNO, CONSULTANCY Authorised Signatory 2 Authorised Signator · GLOBAL MANAGEMENT ASSOCIATION (Verifying & Testing Ageney)

1