



Janki Devi Bajaj Government Girls College, Kota



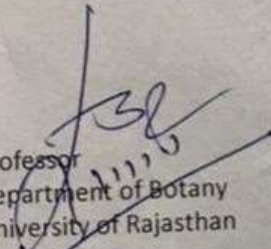
Self-Study Report Criterion 7

7.1.3 Green audit/environmental audit report from recognized bodies

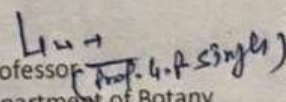
Green Audit Certificate

This is to certify that **Janki Devi Bajaj Government Girls College, Kota, Rajasthan** has conducted "Green Audit" on 4 November 2022 to assess the Green initiative planning, efforts and activities implemented in the college campus like plantation, rain water harvesting, waste management, conservation of energy and various environment awareness programs. This green audit was aimed to assess the impact of green initiatives for maintenance of the campus in eco-friendly manner. The activities and measures carried out by college have been physically verified based on the report submitted and was found to be competent. The efforts taken by the faculty and students towards environment protection and sustainability were commendable and highly appreciated.

Place- Kota Date- 04-11-2022


Professor
Department of Botany
University of Rajasthan

Professor
Department of Botany
University of Rajasthan
JAIPUR


Professor
Department of Botany
University of Rajasthan

Professor
Department of Botany
University of Rajasthan
JAIPUR

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Green Audit Details

(2022-23)

The Faculty and college administration were entrusted with the data collection of Green Audit

Date of Visit	04.11.2022
Green Audit Team	Dr. Gajendra Pal Singh, Professor Department of Botany, University of Rajasthan
	Dr. Ramavatar Sharma, Professor Department of Botany, University of Rajasthan

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1. Green Vision of the institute

- a) The curriculum includes environmental studies and is compulsory for all UG Programs.
- b) Activities like plantation and plantation drive are organized in college.
- c) Promote environmental ethics and education among students, faculty, and employees.
- d) College utilize energy-efficient electrical and electronic devices including solar power and LED bulbs.
- e) The college has implemented green and clean campus efforts, such as maintaining the greenhouse, growing gardens, and adding vegetation to the sides of the road.
- f) The college has developed an efficient rainwater harvesting system.
- g) Generate awareness among students to reduce the use of single-use plastic.

2. Scope and Goals of Green Auditing

Janki Devi Bajaj is one of the best colleges in Hadoti Region of Rajasthan. Its mission is to provide quality education to all by means of hard work, dedication and devotion. The Green audit, apart from providing an evaluation of the compliance of the campus with the environment also moulds promising citizens who acknowledge responsibility towards the planet and the ecosystem. An atmosphere that is clean and healthy promotes learning and is favorable to learning. Various initiatives are being made worldwide to address the problems with environmental education. The most effective and sustainable method of handling environmental issues is through a green audit. It is a kind of professional care that is the responsibility of each individual who is part of social and

environmental processes. Conducting a green audit on a college campus is essential because it enables students to learn about the practice, benefit from it, and develop into responsible adults. As a result, green auditing is required in higher education.

3. Benefits of Green Auditing

- Improved resource management.
- To lay the groundwork for increased sustainability.
- To turn the campus green.
- To make waste management possible by lowering waste creation, reusing solid waste, and using recycled water.
- To eliminate plastic from campus and raise stakeholders' awareness of health issues.
- Be aware of ways to save costs by controlling and minimizing trash.
- Identify the current and upcoming difficulties.
- Verify compliance with the applicable legislation.
- Give organizations the tools they need to create improved environmental performance.
- Increase awareness of environmental regulations and obligations
- Promote environmental education by using a methodical approach to environmental management and raising environmental standards.
- Setting benchmarks for environmental protection programs.
- Financial savings from a decrease in resource use.
- Growing a sense of responsibility for the College and its surroundings on a personal, social, and institutional level.
- Increasing one's college profile.
- Developing environmental ethics and value systems in youngsters.

- Green auditing should grow into a useful instrument for the college's administration and oversight of its environmental and sustainable development programs.

4. Target areas of Green auditing

Green audit forms part of a resource management process. The actual usefulness of green audits lies in the fact that they are conducted at predetermined intervals and that the findings might show progress or change over time, despite the fact that they are individual occurrences. The notion of the eco-campus primarily emphasizes the effective use of water and energy, reducing waste output or pollution, as well as economic efficiency. During the "Green Auditing of Educational Institute" procedure, each of these indications is evaluated. Eco-campus promotes individual action, reduces the institute's energy and water consumption, reduces waste to landfills, and incorporates environmental considerations into all contracts and services. It focuses on the reduction of contribution to emissions, obtaining a cost-effective and secure supply of energy, and encouraging and enhancing energy conservation.

Target areas included in this green auditing are -

- Water
- Energy
- Waste
- Biodiversity
- Carbon Sequestration

5. Auditing for Water

The purpose of a water audit report is to provide an assessment of current water usage practices and provide a roadmap toward decreasing water usage in the future. Calculating water consumption and identifying easy measures to conserve water at the institution are both parts of doing a water audit. Around the world, people are becoming more and more aware of how important water is to their daily lives. Auditing of water is a method of water conservation that will become more important as water demand rises. The link between water auditing and related processes including environmental audits, environmental management systems, resource conservation, flow monitoring, water quality, and regulatory frameworks is also heavily stressed. Water pollution and aquifer depletion are occurring at previously unheard-of rates. Any institution that cares about the environment must therefore carefully consider its water usage methods. You may save money by reducing your water consumption, wastewater management costs, electricity costs, and on-site treatment expenses. Water audits offer a technique to record every water consumption in a building and find opportunities to improve water use efficiency. The outcomes can be used to prioritize actions to put cost-effective water conservation measures into place. Without making significant lifestyle changes, it is feasible to reduce water use by as much as 30% by putting basic conservation techniques into practice. Water auditing is done to assess raw water intake facilities and identify facilities for water treatment and reuse. Rainwater collection is one of the main benefits of water auditing.

The college has Bore well and maintains the various water points in the campus. The College is having rainwater harvesting system.

(Photo Water points)



Borewell in campus



Rain Water Harvesting



6. Auditing for Energy

An energy audit establishes the baseline for any improvements in an organization's energy use. It provides a comprehensive and systematic method for targeting cost effective efficiency gains.

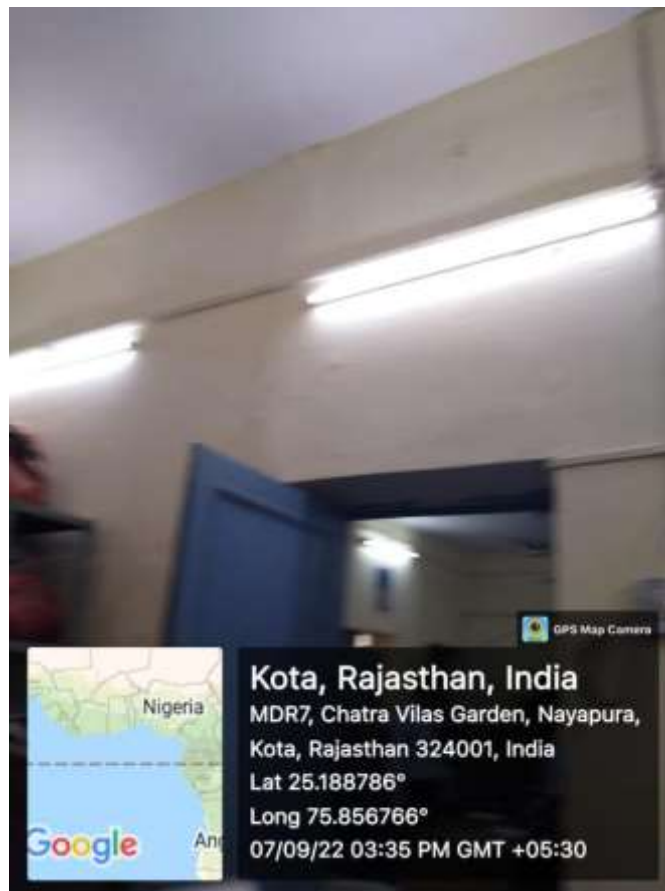
The campus uses 50 KW Solar Power on grid system. The Grid system was established in the year 2016 under RRECL (Rajasthan Renewable Energy Corporation Limited). The system was purchased by Green Ripples Pvt. Ltd.

- From the time of establishment to the present the system is working very efficiently.
- From June 2018 to April 2023 the system has produced 177320 Units of electricity as per the record.
- Campus is becoming self-sufficient in energy generation through sustainable methods like renewable energy.
- Saving environment through efficient energy usage as well as saving energy costs for the institution.
- Maintenance of electrical/electronic equipment is done regularly in the campus to optimize the power uses.
- For energy saving incandescent bulbs, CFL lamps and tube lights are being replaced by LED light.
- Students and staff members are motivated to switch off lights, fans etc when they leave the room to save the energy.
- Awareness programs are conducted for students to save the energy.
- Institute is promoting the use of Star rated Electric/Electronic Appliances like air conditioner, refrigerator etc.

Solar panels



LED Lights



7. Auditing for Waste

A waste audit is a physical investigation of waste composition to offer a thorough awareness of issues, uncover possible possibilities, and provide a full study of waste composition. A waste audit will assist in identifying waste creation in detail to:

- Define and measure waste streams.
- Check waste flow routes.
- Look for waste-diversion possibilities.
- Find options for source reduction.
- Evaluate the efficacy of the present waste management systems and identify strategies to make them more effective.
- Gather details for the local government.
- Obtain comprehensive waste generation data.

The waste management is being performed in three steps

A. Solid waste management

1. Waste bins are positioned across the campus in locations such as lecture halls, faculty offices, administrative offices, computer labs, libraries, corridors, lavatories, communal areas, etc.
2. Old documents, files, homework, etc. are donated to other organizations for recycling.
3. The college's NSS unit consistently pursues cleanliness. It organizes a cleaning initiative on campus every week to collect trash and solid waste.

4. Collected solid waste is handed over to the municipal council for further processing

B. Liquid Waste Management:

Washrooms and toilet waste is disposed of in septic tanks at various locations across the campus.

C. E-Waste Management:

1. The college makes use of a variety of technological devices, including computers, printers, LCD projectors, and others. Due to technological improvement, these goods become obsolete within a few years. The institution takes the initiative to dispose of electronic trash properly after becoming aware of its risks.

2. After refilling, inkjet cartridge is also utilized. The amount of e-waste generated is also decreased with this technique.

Use of coal/ wood/ kerosene etc is strictly prohibited. In the Department of Chemistry, LPG gas burners are used instead of gas plants based on coal/wood/diesel/petrol etc, thus reducing carbon emissions.

Dustbin



Compost Making in College Campus





LPG gas burners



8. AUDITING FOR GREEN CAMPUS - BIODIVERSITY, FLORA

The value of biodiversity is supported by the culture of Rajasthan. Normal human beings are aware of the existence of other living things, but as development advances in other areas, so does concern for the preservation of plants and animals. The institute recognizes the significance and works to provide its students with a practical education. Since the beginning of time, trees have given us two necessities of life: food and oxygen. They gave us extra basics like food, clothing, and equipment as we developed. By reducing the impacts of the sun, rain, and wind, trees regulate climate. The radiant energy of the sun is absorbed and filtered by leaves, keeping things cool in the summer.

Therefore, all the trees on campus are working to make the air cleaner for us while we are busy studying and striving to earn those good academic grades. Our mental health is impacted by the trees on our campus as well. Research has shown that trees significantly lower stress, which a huge deal is considering that many students are under some kind of stress. Our campus has implemented green campus efforts by continually adding trees. Students are charged for conserving and caring for the plants in the botanical gardens.

Outside view of college



Tree Plantation by students outside the campus



Tree Plantation in the college campus



Botanical Garden



Green Campus



Well maintained Garden



Flora of College

S.No.	Botanical name of Plant	Common Name	Family Name
1	<i>Acacia nilotica</i> (L.) Willd. Ex Delile	बबूल	Fabaceae
2	<i>Aegle marmelos</i> (L.) Corrêa	बेल	Rutaceae
3	<i>Albizia lebbek</i> L. Benth.	सिरिस	Fabaceae
4	<i>Alstonia scholaris</i> (L.) R. Br.	सप्तपर्णी	Apocynaceae
5	<i>Azadirachta indica</i> A.Juss.	नीम	Meliaceae
6	<i>Bauhinia variegata</i> L.	कचनार	Fabaceae
7	<i>Biota orientalis</i> (L.) Endl.	मोरपंखी	Cupressaceae
8	<i>Bougainvillea glabra</i> Choisy	बोगन बेल	Nyctaginaceae
9	<i>Callistemon citrinus</i> (Curtis) Skeels [es]	बोटल ब्रश	Myrtaceae
10	<i>Caryota urens</i> L.	पाम	Arecaceae
11	<i>Cassia fistula</i> L.	अमलतास	Fabaceae
12	<i>Cassia siamea</i> Lam.	सेना	Fabaceae
13	<i>Citrus limon</i> (L.) Burm.f.	नींबू	Rutaceae
14	<i>Dalbergia sissoo</i> Roxb.	शीशम	Fabaceae
15	<i>Delonix regia</i> (Boj. ex Hook.) Raf.	गुलमोहर	Fabaceae
16	<i>Eucalyptus oblique</i> L'Hér.	सफेदा	Myrtaceae
17	<i>Ficus religiosa</i> L.	पीपल	Moraceae
18	<i>Guazuma ulmifolia</i> Lam.	रुद्राक्षी	Malvaceae
19	<i>Hibiscus rosa-sinensis</i>	चाइना रोज	Malvaceae
20	<i>Lagerstromia indica</i> L.	सावनी	Lythraceae
21	<i>Mangifera indica</i> L.	आम	Anacardiaceae
22	<i>Mitragyna parviflora</i> (Roxb.) Korth.	कलम	Rubiaceae
23	<i>Neolamarkia cadamba</i> (Roxb.) Bosser	कदम	Rubiaceae

24	<i>Peltophorum pterocarpum</i> (DC.) K.Heyne	पीला गुलमोहर	Fabaceae
25	<i>Phoenix sylvestris</i> (L.) Roxb.	खजूर	Arecaceae
26	<i>Phyllanthus embillica</i> L.	आंवला	Euphorbiaceae
27	<i>Plumeria pudica</i> Jacq.	चंपा	Apocynaceae
28	<i>Polyalthia longifolia</i> (Sonn.) Wall.	अशोक	Annonaceae
29	<i>Pongamia pinnata</i> (L.) Pierre	करंज	Fabaceae
29	<i>Psidium guajava</i> L.	अमरुद	Myrtaceae
30	<i>Sterculia foetida</i> L.	जंगली बादाम	Malvaceae
32	<i>Syzygium cumini</i> (L.) Skeels.	जामुन	Myrtaceae
34	<i>Tabernaemontana divaricate</i> R.Br. ex Roem. & Schult.	चांदनी	Apocynaceae
35	<i>Tamarindus indica</i> L.	इमली	Fabaceae
36	<i>Tectona grandis</i> L.f.	सागवान	Lamiaceae
37	<i>Ziziphus numularia</i> (Burm.f.) Wight & Arn.	बेर	Rhamnaceae
38	<i>Bombax ceiba</i> L.	सेमल	Malvaceae
39	<i>Manilkara hexandra</i> (Roxb.) Dubard	खिरनी	Sapotaceae
40	<i>Holoptelea integrifolia</i> (Roxb.) Planch.	चिलबिल	Ulmaceae
41	<i>Nerium indicum</i> L.	कनेर	Apocynaceae
42	<i>Cordia dichotoma</i> G.Forst.	लसोड़ा	Boraginaceae
43	<i>Calotropis procera</i> (Aiton) W.T.Aiton	आक	Asclepiadacea
44	<i>Catharanthus roseus</i> (L.) G.Don	सदाबहार	Apocynaceae
45	<i>Cayratia trifolia</i> (L.) Domin	जंगली अंगूर	Vitaceae
46	<i>Coccinia grandis</i> (L.) Voigt	कंदूरी	Cucurbitaceae
47	<i>Crateva religiosa</i> G.Forst.	वरुण	Capparaceae
48	<i>Datura stramonium</i> L.	धतुरा	Solanaceae
49	<i>Rhynchosia minima</i> (L.) DC.	तीन पत्ती	Fabaceae

50	<i>Ricinus communis</i> L.	अरण्डी	Euphorbiaceae
51	<i>Thevetia peruviana</i> (Pers.) K. Schum.	पीला कनेर	Apocynaceae
52	<i>Nerium indicum</i> L.	कनेर	Apocynaceae
53	<i>Ocimum sanctum</i> Linn.	तुलसी	Lamiaceae
54	<i>Tinospora cordifolia</i> (Willd.) Hook. f.	गिलोय	Menispermaceae
55	<i>Corchorus aestuans</i> L.	पटसन	Malvaceae
56	<i>Corchorus capsularis</i> L.	सफ़ेद जूट	Malvaceae
57	<i>Corchorus olitorius</i> L.	पटसन	Malvaceae
58	<i>Jatropha curcus</i> L.	रतनजोत	Euphorbiaceae
59	<i>Jatropha gossypifolia</i> L.	बेलीचे बुश	Euphorbiaceae
60	<i>Launaea procumbens</i> (Roxb.)	वन गोभी	Asteraceae
61	<i>Commelina benghalensis</i> L.	कनकुआ	Commelinaceae

9. Carbon sequestration potential of the College

Carbon sequestration potential of Janki Devi Bajaj Government Girls College, Kota was conducted by Ms. Pragya Dadhich, research scholar in Department of Botany. The study helps to estimate the role of vegetation of the college in offsetting carbon emissions at a local level. The campus of Janki Devi Bajaj Government Girls College comprises 3 colleges covering a total area of 57.47 acres. Such a large campus provides large areas for urban tree plantations that can be a potential solution for climate change mitigation.

The study focuses on the contribution of vegetation within Janki Devi Bajaj Government Girls College, Kota toward carbon sequestration potential and climate regulation. Non-destructive method of biomass estimation was used to measure the GBH of individual trees of the campus. The study enumerated total 849 trees belonging to 43 tree species in the campus. The most dominant species was *Syzygium cumini* (L.) Skeels with total 163 trees followed by *Phoenix*

sylvestris (L.) Roxb (121 trees) and *Eucalyptus obliqua* L'Her (97 trees). The total carbon content of the campus trees is equal to 206733 kg. The total carbon sequestered by all the trees in a year is 713.14 tons. In other words, on an average carbon sequestered by an individual tree in the campus is 840.92 kg or 0.84 tons.

S. no.	Tree	Family	No	Carbon content	Total Carbon equivalent (Tons)
1	<i>Syzygium cumini</i> (L.) Skeels.	Myrtaceae	163	50881.56	186.56
2	<i>Phoenix sylvestris</i> (L.) Roxb	Arecaceae	121	25327.86	48.88
3	<i>Eucalyptus obliqua</i> L'Her.	Myrtaceae	97	37987.81	139.28
4	<i>Acacia nilotica</i> (L.) Willd. Ex Delile	Fabaceae	85	4970.662	18.21
5	<i>Ricinus communis</i> L.	Euphorbiaceae	44	310.5	1.14
6	<i>Mitragyna parvifolia</i> (Roxb.) Korth	Rubiaceae	32	3430.41	12.58
7	<i>Dalbergia sissoo</i> Roxb.	Fabaceae	25	2619.05	9.6
8	<i>Peltophorum pterocarpum</i> (DC.) K.Heyne	Fabaceae	29	8537.543	31.34
9	<i>Azadirachta indica</i> A. Juss.	Meliaceae	20	9277.522	34.01
10	<i>Polyalthia longifolia</i> (Sonn.) Wall.	Annonaceae	16	107.2375	0.4
11	<i>Ficus religiosa</i> L.	Moraceae	13	9107.868	33.39
12	<i>Bauhinia variegata</i> (L.) Benth.	Fabaceae	14	1578.507	5.77
13	<i>Cassia siamea</i> Lam.	Fabaceae	13	1427.541	5.24
14	<i>Holoptelea integrifolia</i> (Roxb.) Planch.	Ulmaceae	12	832.2838	3.04
15	<i>Ficus benghalensis</i> L.	Moraceae	11	28686.83	105.19
16	<i>Pongamia pinnata</i> (L.) Pierre	Fabaceae	11	910.041	3.34
17	<i>Collistemon citrinus</i> (Curtis) Skeels [es]	Myrtaceae	9	2474.846	9.06
18	<i>Guazuma ulmifolia</i> Lam.	Malvaceae	8	312.3975	1.14

19	<i>Ziziphus mauritiana</i>	Rhamnaceae	8	919.8965	3.37
20	<i>Cordia dichotoma</i> G.Forst.	Boraginaceae	8	329.1358	1.21
21	<i>Alstonia scholaris</i> (L.) R. Br.	Apocynaceae	7	387.4753	1.42
22	<i>Mangifera indica</i> L.	Anacardiaceae	7	5025.443	18.42
23	<i>Plumeria pudica</i> Jacq.	Apocynaceae	7	56.21775	0.2
24	<i>Bombax ceiba</i> L.	Malvaceae	6	75.9345	0.28
25	<i>Caryota urens</i> L.	Arecaceae	7	403.19	1.48
26	<i>Delonix regia</i> (Boj. Ex Hook.) Raf.	Fabaceae	6	664.8208	2.43
27	<i>Lagerstroemia indica</i> L.	Lythraceae	6	540.1435	1.98
28	<i>Streculia foetida</i> L.	Malvaceae	7	638.1925	2.34
29	<i>Neolamarckia cadamba</i> (Roxb.) Bosser	Rubiaceae	5	708.7163	2.59
30	<i>Tabernaemontana divaricata</i> R.Br. Ec Roem. & Schult.	Apocynaceae	5	43.6425	0.16
31	<i>Tectona grandis</i> L.f.	Lamiaceae	5	1018.227	3.74
32	<i>Jatropha curcus</i> L.	Euphorbiaceae	5	31.17075	0.11
33	<i>Albizia lebbeck</i> L. Benth.	Fabaceae	5	806.1155	2.95
34	<i>Cassia fistula</i> L.	Fabaceae	4	260.1703	0.94
35	<i>Phyllanthus emblica</i> L.	Phyllanthaceae	4	447.4363	1.64
36	<i>Pithecellobium dulce</i> (Roxb) Benth.	Fabaceae	4	31.28575	0.11
37	<i>Aegle marmelos</i> (L.) Correa	Rutaceae	4	555.8525	2.03
38	<i>Citrus limon</i> (L.) Burm. f.	Rutaceae	3	27.232	0.1
39	<i>Tamarindus indica</i> L.	Fabaceae	3	4739.328	17.38
40	<i>Manikara hexandra</i> (Roxb.) Dubard	Sapotaceae	3	30.79125	0.11
41	<i>Crateva religiosa</i> G.Forst.	Capparaceae	3	183.8045	0.67
42	<i>Phyllanthus reticulatus</i> Poir.	Phyllanthaceae	2	15.19725	0.06
43	<i>Morus alba</i> L.	Moraceae	2	13.133	0.05
	Total		849	206733	713.94

Methodology of Green Auditing

The audit's goal was to confirm that campus practises adhered to the institution's established Green Policy. The identified risks served as the foundation for the audit's criteria, procedures, and recommendations. The process entails a visual assessment of the campus, document review and observation, interviews with those who will be held accountable, data analysis, measurements, and suggestions. The following steps were used for this audit :

Data Collection – Extensive data gathering was carried out during the preliminary data collecting phase utilising a variety of approaches, including observation, survey, communication with relevant parties, and measurements.

The following actions were conducted to acquire data:

The team went to all of the departments, the administrative building, the library, etc.

- Interviews and observation were used to gather data on general information.
- In certain instances, an average number was used to report the power usage of appliances.

Data Analysis-Calculating energy usage, examining the campus' most recent power bill, and comprehending the price plan offered by the Rajasthan State power Board are just a few of the detailed analyses of the data gathered. Water use data were also examined using the right methods.

10. Recommendations

Based on the findings of the data analysis and other observations, some actions for cutting down on power and water consumption are suggested. Proper treatment methods for waste are also suggested.