

GREEN AUDIT REPORT (2020–21)

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(AUTONOMOUS)

(Affiliated To JNTUA, Ananthapuramu, Approved by AICTE, New Delhi,
Accredited by NBA and NAAC 'A')

Sree Sainath Nagar, A. Rangampet, Tirupati, Andhra Pradesh – 517102

Audit Committee

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| 2. Dr. Hemadri Prasad Raju
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PREFACE

Deforestation and degradation of environment has been the major concern for the past many decades. All living beings depend directly or indirectly on the natural resources and particularly green produce and the products made using timber. The oxygen which is the main component for survival of all humans and animals is produced by green plants through photosynthesis process. The forest cover has been reduced substantially in the past especially during the period of 19th century and ongoing 20th century. It has now come to even life threatening stage if the greenery was not improved.

So the institute, SVEC shouldering its responsibility towards improvement of greenery has made a self-inquiry on green policy of the campus with the following objectives: (i) To establish a baseline of existing greenery conditions with focus on natural and physical environment; (ii) To understand the current practices of sustainability with regard to the growing and maintenance of trees, shrubs, lawns and gardens with picturesque landscaping. (iii) To promote greenery awareness through participatory auditing process; and (iv) To create a report that document baseline data of good practices and provide future strategies and action plans towards improving much more greenery.

This report is compiled by a committee constituted by IQAC. As there was no standard model for such green audit of campuses in the state, the committee brainstormed and evolved green policy and entrusted with the Department of Civil Engineering to help in improvement of greenery and preparation of Green Audit Report.

The committee has made short term and long term suggestions to improve greenery to higher levels and it is hoped that this will receive due attention of SVEC authorities and also all stake-holders.

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GREEN AUDIT

Objective: To conduct 'Green Audit' for greenery, Water usage, Wastewater treatment and reuse, including greenery, wastes management.

The 'Green Audit' provides insights into the existing status of handling of tree plantation, shrubs, lawns and gardens maintenance and management. It also includes the different types of wastes produced in greenery maintenance in the campus and suggestions to improve, if any, and recommendations as per the 'Green Policy' of the institute to increase the green practices in the campus.

- 1. Greenery Audit:** This indicator addresses the Plantation in the open spaces and around the buildings within the campus, green landscape, gardening, lawns and parks management.
- 2. Water and Wastewater Usage Audit:** This indicator addresses water sources and usage, wastewater treatment and reuse, storm water management and rainwater harvesting, etc.
- 3. Solid Waste Management Audit:** This indicator addresses the solid waste generation and disposal method for various types of wastes: Fallen leaves, Grass cuttings, Plant cuttings, etc.
- 4. Greenery Development, Maintenance and Management Plan:** It provides suggestions and recommendations on the greenery growing and management of Sree Vidyanikethan Engineering College campus. It also suggests about which area is to be given priority and how to implement.

Green audit is being conducted on regular basis annually to maintain clean and green campus.

The audit committee visited various facilities and recorded the available data in the campus on 28-07-2021 from 9 A.M. to 5 P.M. and interacted with the respective in-charges for managing water and wastewater, solid waste, energy and greenery area available. The committee has looked into different aspects of greening solutions and came out with the following findings and suggestions for further improvement.

Findings and Recommendations:

1. Greenery:

Campus is greenery rich with good landscape and abundant plants which include fruit plants, ornamental plants, flowering plants, creepers, climbers, bulbs, flowering shrubs, ornamental shrubs, perennials, annuals, biennials ferns, crotons, coconuts, palms, mango trees, red sandal trees, cactus-succulents and ornamental grasses.

The campus has about 40% greenery area which includes landscapes with grass, bushes, and ornamental trees. The following list of plants and trees are available in the campus.

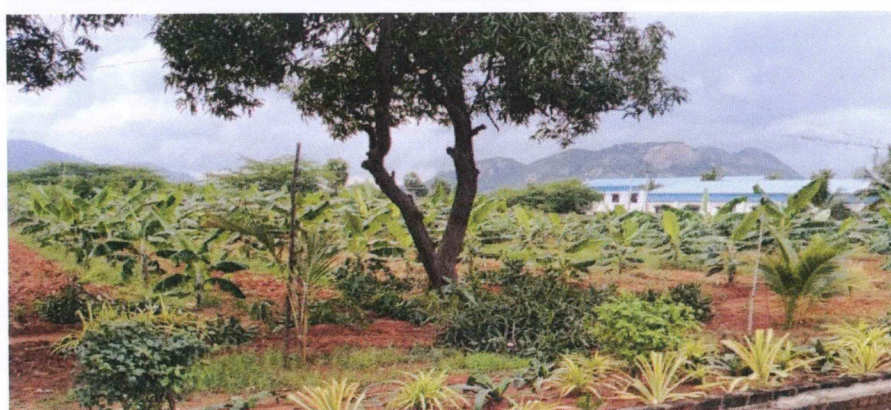
Sl. No.	Botanical Name	Local Name	Type of Plant	Number
1.	<i>Mangifera indica</i>	Mamidi Tree	Tree	54
2.	<i>Pterocarpus santalinus</i>	RakthaChandanam, ErraChandanam.	Tree	315
3.	<i>Azadirachta indica</i>	Vepa Tree	Tree	25
4.	<i>Spathodea campanulata</i>	Fountain Tree`or Nandi Flame	Tree	05
5.	<i>Ceiba pentandra,</i>	Tella Buraga Tree	Tree	50
6.	<i>Thespesia populnea</i>	Gangaravi Tree (Indian Tulip Tree)	Woody Tree	18
7.	<i>Tamarindus indica</i>	Chinta Chettu	Tree	05
8.	<i>Cocos nucifera</i>	Kobbari Chettu	Palm Tree	610
9.	<i>Bauhinia purpurea</i>	Deva kanchanamu	Tree	30
10.	<i>Bauhinia racemosa</i> Lam	Tella Arecettu, Bidi Leaf Tree	Tree	08
11.	<i>Saraca asoca</i>	Asokamu Tree (Sita Asoka Tree)	tree	07
12.	<i>Melia dubai</i>	Malabaru Vepa	Woody Tree	01
13.	<i>Mimusops elengi</i> (Avenue Plant)	Pagada Tree, Vakulamu	Tree	35
14.	<i>Roystonea Regia</i>	Royal Palm	Palm Plant	07
15.	<i>Wodyetia bifurcata</i>	Foxtail Palm	Palm Plant	28
16.	<i>Rhapis excelsa</i>	Lady Palm	Palm Plant	50
17.	<i>Ficus benghalensis</i>	Marri Chettu	Tree	02

18.	<i>Dypsis lutescens</i>	Golden Cane Palm , Butterfly Palm (Golden Fruit Palm)	Palm Plant	12
19.	<i>Alstonia scholaris</i>	Blackboard Tree, White Cheesewood	Tree	09
20.	<i>Bismarckia nobilis</i> (Out Door Plant)	Bismarck Palm	Palm Plant	25
21.	<i>Ficus religiosa</i>	Peepal Tree (Ravi Tree)	Tree	10
22.	<i>Polyalthia longifolia</i>	Ashoka Tree (Nara Mamidi)	Tree	05
23.	<i>Muntingia calabura</i>	Nakkaraegu	Plant	50
24.	<i>Terminalia catappa</i>	Badam Tree	Tree	08
25.	<i>Hibiscus species</i>	Mandaram Plant	Flowering Plant (Shrub)	03
26.	<i>Dendrocalamus giganteus</i>	Bamboo Tree (Veduru Tree)	Grassn Plant	20
27.	<i>Tectona grandis</i>	Teak Plant	Plant	55
28.	<i>Polyalthia longifolia</i>	Ashoka Tree	Plant	10
29.	<i>Artocarpus brasiliensis</i>	Panasa Tree	Tree	03
30.	<i>Spathodea campanulata</i>	Nandi Plant	Tree	25
31.	<i>Bauhinia variegata</i>	Bodanta, (Daevakanchanamu)	Tree	10
32.	<i>Delonix regia</i>	Peddaturai (May Flower Tree)	Tree	15
33.	<i>Delonix tomentosa</i>	Endamic Plant of Madagascar	Tree	04
34.	<i>Plumeria frangipani</i>	Temple tree	Shrub, Small Tree	15
35.	<i>Plumeria rubra</i>	Temple Tree , Champa	Shrub, Small Tree	10
36.	<i>Emblica officinalis</i>	Usirika	Tree	05
37.	<i>Ixora coccinea</i>	Indian Jasmine (Rugmini in Hindi)	Annual, Evergreen Flowering Shrub	50
38.	<i>Tabernaemontana coronaria</i>	Nandivardhanam	Annual Flowering Shrub	15
39.	<i>Cycas beddomei</i> (Rare Endemic Plant, IUCN Red Listed Plant)	Perita	Shrub	20

40.	<i>Euphorbia milli</i>	Flowering Shrub (Ornamental Herb) (Succulent)	Potted Plant	100
41.	<i>Epipremnum aureum</i>	Money Plant	Creepers	20
42.	<i>Raphis palm</i> (Lady Palm)	Lady Palm	Potted Plants	132
43.	<i>Santalum album</i> (Indian Sandal Wood)	Sri Gandham	Plant	50
New Additions to the Existing Plant Varieties during the Academic Year 2019-2020				
44	<i>Musa acuminata</i>	Banana	Plant	1000
45	<i>Moringa oleifera</i>	Munaga	Deciduous Tree	20
46	<i>Lilium candidum</i>	Lilies	Plant	515
47	<i>Kalanchoe tomentosa</i>	Pandas	Succulent Plant	540
48	<i>Lantana camara</i>	Pulikampa	Plant	28
49	<i>Crossandra infundibuliformis</i>	Kanakambaram	Shrub	50
50	<i>Sterculia foetida</i>	Adavi Badam	Woody Tree	30
51	<i>Conocarpus erectus</i>	Mangrove shrub	Shrub	300
52	<i>Nerium oleander</i>	Small tree	Shrub	15
53	<i>Dracaena mahatma</i>	House plant	Shrub	18
54	<i>Adenium obesum</i>	Desert Rose	Succulent Shrub	25
55	<i>Plumeria pudica</i>	Devaganneru	Deciduous shrub	50
56	<i>Terminalia chebula</i>	Karakkaya	Tree	5
57	<i>Bougainvillea glabra</i>	Flowering plant (Ornamental vines)	Tree	100
58	<i>Mimosa pudica</i>	Athipathi	Creeping plant	490
59	<i>Tagetes patula</i>	Bantichettu	Herbacious plant	100
60	<i>Tagetes erecta</i>	Bantichettu	Herbacious plant	100
61	<i>Plumeria rubra</i>	Erra Devaganneru	Deciduous shrub	16
62	<i>Canna lily (cannas)</i>	Metta tamara	Herbaceous Perenniel plant	32
63	<i>Nerium orelandar</i>	Ganneru	Herb	10

Plants species appended during this Academic Year 2020-2021				
64	<i>Bauhinia purpurea</i>	Deva kanchanamu	Tree	30
65	<i>Mimusops elengi</i> (Avenue Plant)	Pagada Tree, Vakulamu	Tree	35

The plants of different varieties may further be planted in addition to the existing plant varieties in order to increase greenery of the campus. The following pictures show that few types of plants of many varieties that were planted in the campus. During the past two years more than twenty different varieties of plants were planted in different locations of the campus. New landscape was developed near the V Block, Civil Engineering and Mechanical Engineering Blocks. Few new plants were planted near Civil and Mechanical workshop to craft a new landscape and greenery in this otherwise unadorned land. Near the Indoor stadium (under construction) more than 20 drumstick plants that were planted last year grew very well and added greenery to this place.



New Landscape near V Block



Landscape near Civil Engineering and Mechanical Engineering Blocks



Maintenance of Lawn



Grass Cutting with Machine

Green Rich Campus with Plant Biodiversity:

Campus is enriched with rich plant and fauna diversity. The plant population includes plants of aesthetic, medical, economical and environmental value. Some of the plants planted and grown during the past one year are shown below.



**Flowering Plant at
Civil Engineering Block**



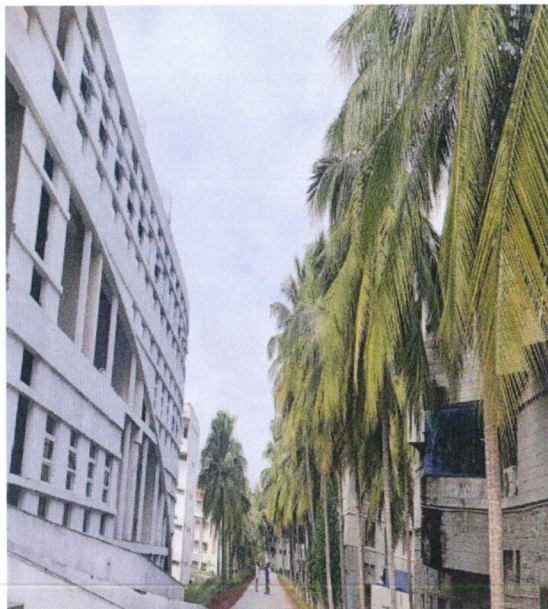
Perita at M Block



Banana Plantation at V Block



Bakula Tree near MNS Block



**Coconut Plants near
Academic Block**



**Red Sander Plants near
Canteen**



**Drumstick Plants near
Indoor Stadium**



**New Landscape near
Civil Engineering Wrokshops**



Royal Garden Palm Tree



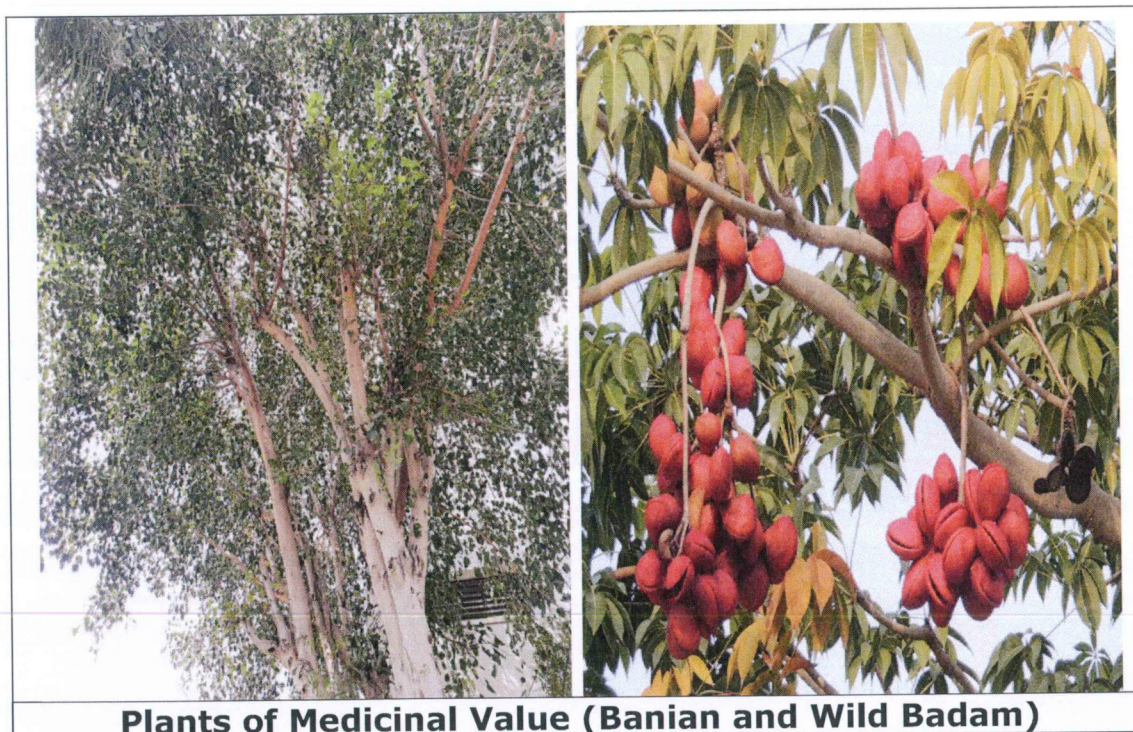
Flowering Plant

Medicinal Plants:

Variety of medicinal plants used for different ailments are also scattered at different places in the campus. There are innumerable medicinal plants with known medicinal properties growing along with weed plants are spread across in the campus. To name few, *Pillanthus niruri* (Nela usiri (local name), Jaundice curing plant), *Achyranthes aspera* (Uttareni (local name)), *Tridax procumbens* (Gaddi chamanthi) etc. Some of the plant pictures are shown below.



Plants of Medicinal Importance (Vaska and Neem)



Plants of Medicinal Value (Banian and Wild Badam)

2. Water and Wastewater Usage:

About 2,70,000 liters of water per day is used for domestic purpose such as drinking, cooking, washing, bathing, cleaning, flushing of urinals and toilets.

The ground water available in the campus contains hardness more than the drinking water standards (IS10500:2012). The institute has five RO systems at SVEC campus (0.5kL/hr, 1kL/hr, 2kL/hr – 2 No. and 3kL/hr – 1 No.) and they are usually operated during morning (4 am to 9 am) and evening (6 pm to 10 pm). RO treated water is used about 20,000 litres per day, supplied to all blocks through integrated pipeline system to water coolers in the SVEC campus. The RO reject water about 10,000 litres are being used for gardens along with the fresh water.

Manual alert system is provided to check overflow of water tanks. The water works man always keep track on the water tanks.

The wastewater (sewage) generated from different sources such as wash rooms, toilets of all buildings and canteens are collected in the respective septic tanks provided at the each block. Septic tank has two chambers so that sludge is settled in the 1st chamber and the clarified water goes to 2nd chamber. Also, three sewage treatment plants (150 KLD at Girls Hostel, 200 KLD at Boys Hostel and a new Sewage Treatment Plant (STP – 250 KLD) installed at V Block are being used for the sewage treatment. The clarified wastewater

which has partial treatment in the septic tank and the wastewater treated through STP is pumped into tractor tankers and reused for trees, gardens and lawns.

Campus is sufficiently equipped with sustainable rain water harvesting systems such as rainwater harvesting pits, and pond system to store rainwater and recharge groundwater through a well connected drainage network designed for collecting rainwater runoff from roof tops and open areas to harvesting pits and pond in the campus premises. The stored rainwater is mainly used for gardening. Further, most of the internal pavements and open spaces are laid with porous/permeable concrete paver tiles separated by joints and rainwater is allowed to infiltrate into the ground. Landscape is maintained such that each and every drop of rainwater is collected and drained into rainwater harvesting systems. Drains are always kept clean.

Further, rain water harvesting can be improved by diverting surface runoff to one particular low lying area or multiple low lying areas by dividing the total campus area into number of zones after thorough contour survey. The number of Rain Water Harvesting pits may be increased for ground water recharge after topographical assessment.

	
<p>Treated Wastewater for Gardening</p>	<p>Rain Water Harvesting Pit at MNS Block</p>

3. Solid Waste Management:

Fallen leaves, grass and plant cuttings, tree branches are produced on an average of 400 kg per month ranging from 10 kg to 15 kg per day. It will be sent to empty place near V block for drying and composting. The composted material is used for gardens as bio-fertilizers (organic manure).



Garden Waste Collection



Garden Waste Collection



Removal of Weed plants



Storage of Garden Waste



Composting of Garden and Waste along with Cow Dung and Kitchen Waste



Manual Cutting and Collection of Garden Waste

4. Greenery Development, Maintenance and Management Plan:

Based on the findings from the campus visit by the committee members, the following holistic suggestions on the greenery development, maintenance and management of Sree Vidyanikethan Engineering College campus are recommended.

- Solid waste component generated through grass and plant cuttings, bush trimmings and fallen leaves shall be shredded and composted effectively in the open air to reduce time period of composting. The composted material can be used as bio-fertilizer for plants and trees in the campus.
- Few new landscapes which were already developed may need to be planted with new plant species to enhance the aesthetic value of these places. Further landscaping at appropriate locations may be developed to increase the greenery.

- Medicinal plants need to be identified and planted all over the campus to create awareness among students and all the staff members about the Medicinal plants. Flowering plant species may be identified and grown throughout the campus wherever possible.
- Since lot of biological waste is generated in the kitchen and other places of the campus, biogas plant may be installed at an appropriate place in the campus to make use of this for the kitchen requirements.
- Number of sensor based water conservation systems can be increased.
- Number of sensor based energy conservation systems can be increased.



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