Pave the Green Way

Environmental Audit Report – 2022

PES/2022-23/ENA-KJC/03/R3

Submitted to

Kristu Jayanti College, Autonomous Bengaluru

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Cover page photographs:

Mobius strip – is a surface with only one side and only one edge. It has the mathematical property of being non-orientable. It can be embedded in three-dimensional Euclidean space.

The Mobius strip stands for Constancy of Change, Unconventional, Continuity and Sustainability. It represents something simple, yet profound -- something anyone could have discussed centuries prior to its discovery, but didn't – **a Paradigm shift**

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Abbreviation

EMS	Environment management systems
UGC	University grants commission
UG	Undergraduate
PG	Postgraduate
BBMP	Bruhat Bengaluru Mahanagara Palike
PSF	Pressure sand filter
DMF	Dual media filter
LULC	Land use and land cover
AC	Air condition
LPCD	Liters per capita per day
KL	Kilo liter
NBC	National broadcasting company
STP	Sewage treatment plant
BESCOM	Bangalore electricity supply company limited
KVA	Kilo volt ampere
NPK	Nitrogen phosphorus and potassium
GHG	Greenhouse gases
LPG	Liquid petroleum gas
CNG	Compressed natural gas
DG	Diesel generator
NSS	National service scheme

Context

Kristu Jayanti Management has decided to conduct an independent Environmental Audit of the campus by a third-party agency. Kristu Jayanti College has entrusted the work to Ecoparadigm. Accordingly, a team of professionals carried out the audit between the periods of January 2022 to December 2022.

Environmental Audit focuses on the Green Campus, Waste Management, Water Management, Energy Management, Air Pollution etc. being implemented by the College Management. The concept, structure, objectives, methodology, tools of analysis, objectives of the audit are mentioned below.

Our team were actively supported by Dr. Priya Josson, Asst. Prof., Dept. of Life Sciences, Kristu Jayanti College, and her team.

EXECUTIVE SUMMARY

Ecoparadigm was involved with Kristu Jayanti Autonomous College in their endeavorsearlier in making the campus eco-friendly. An initial basic audit as per the guidelines was undertaken between 2021- 2022. The college was successfully rated as a Green Campus and awarded the 'GOLD RATING' as per the certification criteria, on the occasion of the 150th Gandhi Jayanti. The institution received first prize at the National Level for 'Clean and Smart Campus Award' from Shri. Dharmendra Pradhan, Minister of Education, Govt. of India. The College is affiliated to Bengaluru North University and is reaccredited with grade 'A++' in 2021 by NAAC in the third cycle of Accreditation.

An Environmental audit is a snapshot in time, in which one assesses campus performance in complying with applicable Environmental laws and regulations. Though a helpful benchmark, the audit almost immediately becomes outdated unless there is some mechanism in place to continue the effort of monitoring environmental compliance.

Audit criterion is environmental cognizance, waste minimization and management, biodiversity conservation, water conservation, energy conservation and environmental legislative compliance by the campus. A questionnaire is used during audit. This audit report contains observations and recommendations for improvement of environmental consciousness.

The college consumes water at an average rate of 65 KLD. Similarly, +the per capita solid waste generation is 2 gpcd.

The college has a potential of rainwater harvest nearly 15.2 ML of water and recycle 90KLD of water annually which can technically improve the water footprint within the campus.

Solar photovoltaic panels of 50KW and 10KW grid connected power plant is installed in the campus.

1. INTRODUCTION

Educational institutions are becoming increasingly aware of the adverse environmental impacts that they cause in the pursuit of its activities. Therefore, they are also proactively engaging in implementing new concepts that make them eco-friendly. Institutions aim to achieve this by promoting energy saving initiatives, recycling of waste, water reduction schemes, rainwater harvesting etc.

Environment Audit Process:

Environmental audit can be a useful tool for a college to determine how and where they are using the most energy or water or resources; the college can then consider how to implement changes and make savings. It is used to determine the type and volume of waste, which can be used for a recycling project or to improve waste minimization plan. It can also create health consciousness and promote environmental awareness, values, and ethics. It provides staff and students better understanding of green impact on campus.

This report focuses on four major environmental criteria — water, waste, wastewater and biodiversity, covering the range of significant impacts.

The performance of the college on each of these criteria was examined, and recommendations were offered about how the college can reduce its environmental impact within each indicator. This environment audit report is a document to be revisited periodically by the college for implementation of measures as suggested.

Environmental auditing promotes financial savings through reduction of resource conservation. It gives an opportunity for the development of ownership, personal and social responsibility for the students and teachers. Thus, it is imperative that the college evaluate its own contributions toward a sustainable future. Kristu Jayanti College has embarked voluntarily to benchmark itself in its green compliance and use it continuously improve its green status. It has entrusted the audit to M/s Paradigm Environmental Strategies (P) Ltd, Bengaluru.

This report summarizes the Environmental audit carried out by Ecoparadigm during the period January 2022 to December 2022.

Exclusions and Limitations:

As a separate detailed Energy Audit was carried out, this aspect is reported only as cursory input in this Audit report. Similarly, the climate change component is also not covered in this report as the data for such an analysis is very scanty. The college is currently setting up structured system for capturing detailed environmental data and hence, this report does not include detailed analysis and trends.

2. OVERVIEW OF INSTITUTE

Kristu Jayanti College, founded in 1999, is managed by "BODHI NIKETAN TRUST", formed by the members of St. Joseph Province of the Carmelites of Mary Immaculate (CMI). The College is affiliated to Bengaluru North University and is reaccredited with grade 'A++' in 2021 by NAAC in the Third Cycle of Accreditation. The college is recognized by UGC under the category 2(f) & 12(B). The College has been accorded Autonomous Status since 2013 by the University Grants Commission, the Government of Karnataka & Bangalore University. In the NIRF 2022 rankings, the college was placed among the top 150 colleges in the country and ranks as one of the five colleges from Karnataka. The programmes of School of Management are internationally accredited by the Accreditation Council for Business Schools and Programs [ACBSP, USA]. The college was accorded 'DBT Star College status under the strengthening component' by the Department of Biotechnology, the Ministry of Science & Technology and the Government of India. The institution received first prize at the National Level for 'Clean and Smart Campus Award' from Shri. Dharmendra Pradhan, Minister of Education, Govt. of India.

In the India Today - MDRA survey 2022, Kristu Jayanti College, Bengaluru is consecutively ranked as the Best Emerging College of the Century at National Level for Commerce, Science and Arts. The survey also ranked the college as 5th Best in BCA, 14th Best in MSW, 21st Best in BBA & Commerce, 23rd Best in Arts, 29th Best in Science and 33rd Best in Mass Communication among the Colleges in India. The College also ranked 2nd best in MSW, 3rd best in Commerce, Arts & BCA, 4th best in science, 5th best in Mass Communication and 7th best in BBA among the colleges in Bengaluru. The institution strives to fulfil its mission to provide educational opportunities for all aspiring young people to excel in life by developing academic excellence, fostering values, creating civic responsibility, inculcating environmental concern and building global competencies in a dynamic environment. Figure 1 shows the Kristu Jayanti College Campus and Figure 2 shows the top view of the same.

Figure 1: Kristu Jayanti College Campus

Figure 2: Kristu Jayanti College Top view

The institute offers 36 UG, 16 PG, 3 LL. B & 1 Post graduate diploma programs in various departments such as Commerce and Management, Science, Law and Humanities.

Table 1: Students Strength during the Academic year 2022

Sl.no	Program	No. of students	%
1	UG	8017	84.3
2	PG	1493	15.69
	Total	9510	100

3. OBJECTIVES AND SCOPE

The main objective of Environmental Audit is to assess the environment management and sustainability concepts practiced in the college campus.

The Specific objectives of Environmental audit are:

- To systematically identify the environmental aspects and components within the campus
- To quantify, record and analyses the identified aspects and components of environmental diversity of the campus.
- To deduce the impact of the environmental practices caused within and outside of the concerned campus.
- To establish baseline data or compare the past trends and predict future impacts
- To recommend possible measures for improvement and highlight best practices

The Scope of work shall be as listed below:

- Waste conservation aspects of the campus.
- Waste management and other resource conservation of the campus.
- Wastewater/ Sewage Treatment and Recycling within the campus
- Biodiversity enhancement within the campus

The Audit Framework also examined other 'Soft' aspects of the Greenness of the Institution, which are as follows:

- Top management commitment towards Environment Management of the campus.
- Student Involvement in Environmental programs in the college
- Community engagement of the college with topics related to environment.

4. METHODOLOGY ADOPTED

The methodology adopted to conduct the Environmental Audit of Kristu Jayanti College will have the following components:

- Onsite field visits by the Environmental Audit Team as and when necessary.
- Enquiries were conducted amongst faculty members and non-teaching staff to know about the various components in connection with water use, energy consumption and waste disposal, etc.
- Onsite waste segregation and waste disposal method has been inspected and analyzed with the data collected for each day.
- Light levels have been measured at various location of the campus
- Listing the flora and fauna
- Assessment of data and reporting

5. AUDIT STAGE

Kristu Jayanti College green audit focused on obtaining data on environmental parameters like green cover, land use and land cover (LULC), water availability and usage, waste generation and their management practices, recording of energy consumption and conservation strategies, etc. The members of the audit team recorded the different facilities at the Kristu Jayanti College campus, determined different types of appliances and utilities (Water cooler, taps, toilets, lights, fan, ACs etc.) as well as measured the usage per item (Watts indicated on the appliance) and identified the relevant consumption patterns (such as how often an appliance is being used) and their impacts. The staffs, students and other stakeholders were interviewed through structured questionnaires to get details of usage,frequency, or general characteristics of different appliances. Data collection was done by onsite visit and also through questionnaires in different sectors such as water, energy, waste, biodiversity status. The data obtained were collated and analyzed to prepare this audit report of Kristu Jayanti College.

6. AUDIT FINDINGS

6.1 Land use and land cover

The topography of Kristu Jayanti College campus is undulating and interspersed with scattered trees at few places thus, making it a picturesque landscape suitable for a wide spectrum of flora and fauna.

The present study revealed that the Kristu Jayanti campus has a total of 9.7 acres of land of which 4.79 acres has green cover. It is found that a total of about 615883.88 square feet are are under the built-up category, of which academic departments administrative units and canteen form a significant part. The map view of Kristu Jayanti College is depicted in Figure 3.

Figure 3: Map view of Kristu Jayanti College

6.1.1 Observations

- The greenery was found all over the campus and they have also adopted gardening in the balcony wherever possible.
- No trees were cut during the audit period.
- De-weeding is being carried out periodically to prevent the proliferation of weeds within the campus following the rains.
- College has initiated Rooftop gardening also.
- 53 numbers of trees and plants were added in the campus.

6.2 Water audit

Water audit is conducted to establish the water consumption pattern in individual sections, so as to realize the consumption levels with respect to exploring presence of potential leaks various pollution prevention and minimizing Unaccounted for Water (UFW) and identifying water reuse and recycle opportunities. Water is utilized by students, faculty, and other persons for meeting the domestic water requirements including drinking water. The water is supplied by the ground water supply (bore wells) and tanker. Figure 4 gives the details of the water consumption in the College. The bore well details in the College are shown in Table 2. One of the bore well is located outside the college campus and the water from the same is recorded as the tanker.

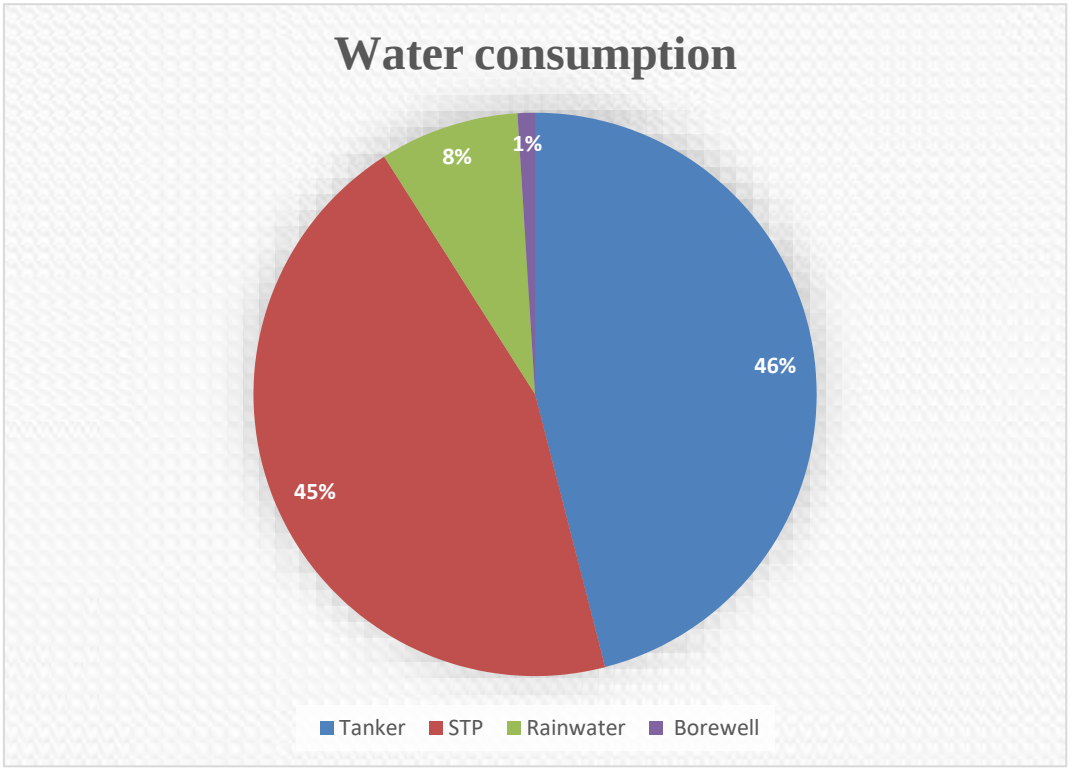

Figure 4: Water consumption of Kristu Jayanti College

Table 2: Bore well Details

Location	Bore wellpipe length in feet	Motor capacity HP	Remarks
Bore well 1	40	10	**working condition**
Bore well 2	**20**	**5**	**working condition**

Kristu Jayanti College with a student and staff population of 9510 persons is estimated to consume 528 KLD or 190 million liters annually (as per NBC guidelines- 45lpcd).

The Maximum water consumption of 106 KLD was observed in the month April. The hot weather conditions during April resulted in an increase in water consumption. As the rainy season started, water consumption decreased. As per the data provided by the Kristu Jayanti College, average water consumption in the college campus is approximately 65 KLD.

They have provided 10 water meters to record the water consumption data. It is recommended to provide water meter to record the actual consumption of water for irrigation and basic needs separately. Kristu Jayanti College has an STP of 90 KLD and the recycled water from the same is used for irrigation purpose.

The apparent water use frugality is questionable unless it is backed by actual water meter data. Hence it is recommended to install water meters at the inlet or outlet of overhead tanks in addition to existing water meters for monitoring the actual water consumption details.

Table 3: Reported water usage and related data

Source of Water		
Sl No	**Parameters**	**Information**
1	No. of bore wells	**2**
2	No of motors used	**12**

		4 Nos of 7.5HP, **5 Nos of 5 HP** **3 Nos of 10 HP**
3	No of Wash basins	**173**
4	No of Urinals	**18**
5	No of Water closet	**235**
6	Drinking water filters	**4**
7	No of Water meters	**10 (IoT based water meter)**
8	Any water wastage/why?	**No. In case of leakage it was taken care of immediately.**
9	Wastewater sources	**Canteen, Toilets, laboratories.**
10	Any wastewater treatment for lab water	**Yes, 90 KLD STP**
11	Use of wastewater	**Yes, For irrigation**
12	Rainwater harvesting	**Provided two Rainwater Harvesting Tank. Total capacity of 4.95 ML.**
13	Whether any green chemistry method practiced in Labs	**No**

6.2.1 Rainwater Harvesting

Bengaluru experiences an average of 880mm of rainfall annually and spread over 53 days during the monsoon. This water could be harvested and stored for gainful use. The Kristu Jayanti College with its 9.7 acres campus has a potential to harvest almost 15.2 ML of rainwater within the campus annually.

Currently, Kristu Jayanti College has 2 numbers of rainwater harvesting tank each of capacity 2.5 ML and 2 ML respectively. In addition to rainwater harvesting tank, it also has rainwater harvesting pits of 4 numbers to increase the recharging capacity of the ground water table. This ensures in the minimization of the College water footprint.

Figure 5: Rainwater Harvesting Tank of 2.5ML Capacity

Figure 6: Rainwater harvesting tank near main block

Figure 7: Rainwater harvesting tank near admin block

6.2.2 Liquid waste management

Liquid waste is generated from science laboratories, Academic blocks, and canteen. Liquid wastes generated by the College are of two types:

- Sewage waste
- Laboratory and canteen effluent

However, Kristu Jayanti College has already implemented a Sewage treatment plant of Sequential batch reactor (SBR) technology with a capacity to handle 90 KLD waste water. This plant is under operation. The treated wastewater is being used for the irrigation purpose. Figure 8 shows the sewage treatment plant setup in the College.

Figure 8: Sewage Treatment Plant (STP)

From the observation during the period of 2022, STP has contributed about 29 KL/day. Sludge from the STP being disposed to authorized BBMP contractors.

6.2.3 Observations

- Water consumption is monitored and recorded 24X7 within the campus by using IoT based water meter at every inlet of water source.
- Rainwater collected in the Rainwater harvesting tank from all the rooftops.
- Wastewater has been connected to the STP.
- Reverse Osmosis is used for the drinking purpose and the reject of the same is recycled and let into drain.
- An increase in water consumption was seen during the month of April. It is due to the hot weather conditions of the summer season.

6.2.4 Suggestions and Recommendations

- Water meters can be provided at the Inlet or outlet of the Overhead Tank to quantify the flow.

6.3 Waste disposal audit

Waste disposal audit is done to evaluate the efficiency & effectiveness of waste management practices within the organization. The audit may also assess compliance with relevant regulations, such as waste disposal laws and environmental standards. The goal of the audit is to promote sustainable waste management practices and minimize the negative impact of waste on the environment.

Solid waste can be categorized into three types: biodegradable, non-biodegradable, and hazardous waste. Bio-degradable wastes include food wastes, canteen waste, wastes from toilets etc. Non-biodegradable wastes include plastic, tins and glass bottles etc. Hazardous waste is waste that is likely to be a threat to health or the environment like laboratory.

Chemicals, waste oils and rags from workshop, cleaning chemicals, acids, and petroleum products. Unscientific management of these wastes such as dumping in pits or burning them may cause the harmful discharge of contaminants into soil and water supplies and produce greenhouse gases contributing to global climate change respectively. Special attention should be given to the handling and management of hazardous waste generated in the campus. Bio-degradable waste can be effectively utilized for energy generation purposes through anaerobic digestion or can be converted to fertilizer by composting technology. Non- biodegradable waste can be utilized through recycling and reuse. Thus, the minimization of solid waste is essential to a sustainable College.

6.3.1 Status of Solid Waste Generation in the campus

Every department of Kristu Jayanti College as well as administrative offices create waste in some form which is deposited locally in small waste bin provided by the administration. This is collected daily by the housekeeping that transfers it to larger bins that are carried to the designated waste holding area.

Figure 9: Segregation of waste at source

Figure 10: Composting of Garden waste

Biodegradable wastes such as leaves, and food waste are segregated and treated separately. Food wastes are decomposed in the anaerobic digester with the capacity of 4.5 m^3 with gas production of 2.5 Kg. Waste from garden such as leaves are decomposed by composting method. The compost was used within the campus and also distributed to the farmers during the environmental activities carried out by the students.

Figure 11: Biogas plant for Food waste

Table 4: Waste data and composition

Location	Total waste	Percentage (%)
Garden	5 kg/d	**31**
Kitchen	2 kg/d	**13**
Food Waste **(Canteen)**	3 kg/d	**19**
Plastic Waste	0.5 kg/d	**4**
Paper waste	5 kg/d	**31**
E-Waste	0.35 kg/d	**2**
Biological Waste	NA	**0**
Total waste	**15.85**	**100**

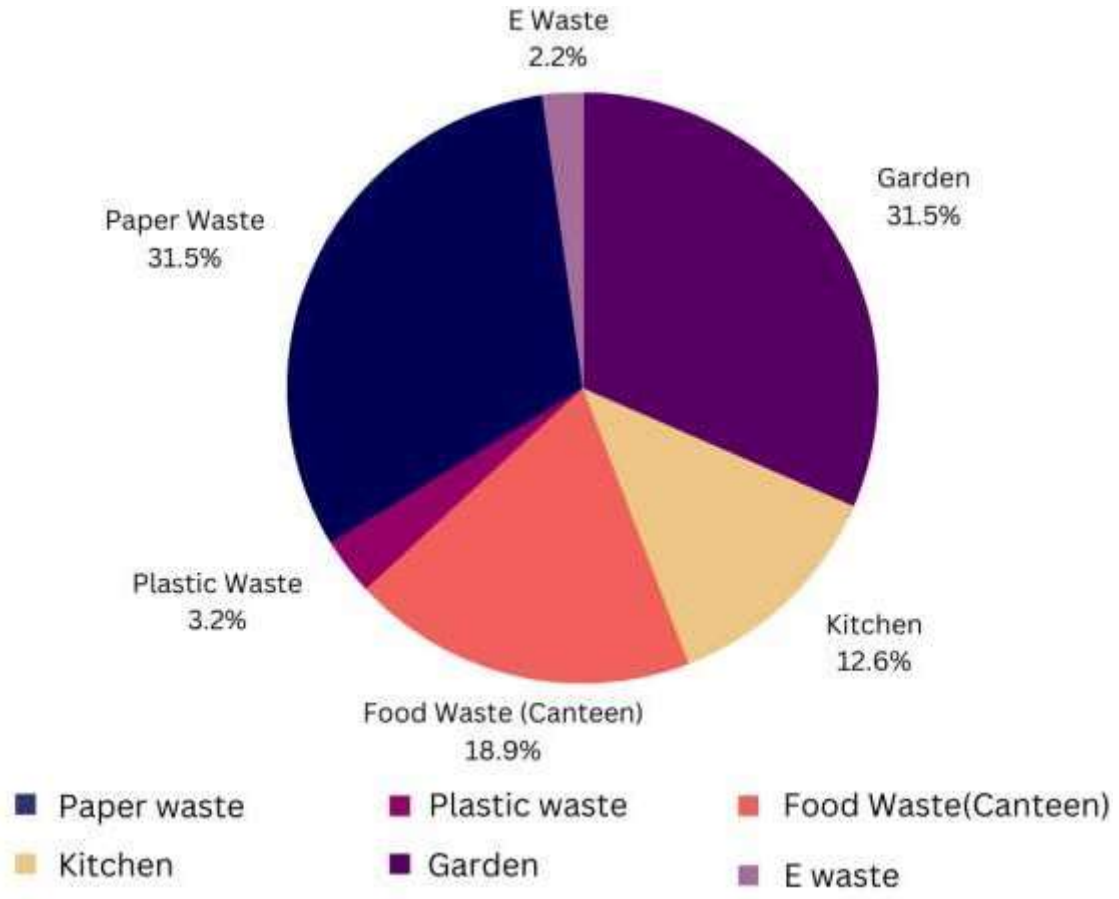

Figure 12: Waste generation at Kristu Jayanti College

6.3.2 Observations and Recommendations

It is observed that the College produces nearly 15.85 kgs of waste every day, of which nearly 15.5kg is received in a segregated fashion. (65% is wet, and 35% is dry). And the remaining is still segregated manually before the final disposal. The waste data indicates that the college produces waste at the rate of 2g per capita day.

In previous year, even though waste generation was high, number of students in campus were less due to COVID restrictions. At that time, the college produced 20 kg of waste every day. By 2022, restrictions were changed and students started to go the college and slight variation in the waste generation was seen.

The waste is being dumped outside the storage place after segregation for the final disposal. The paper and cardboard waste was stored in the closed storage area preventing to rains, retaining its recyclability potential. The dry recyclables are stored separately and disposed regularly to the recycler.

Figure 13: Segregated waste for final Disposal

6.4 E-waste

Kristu Jayanti College has very efficient mechanism to dispose E wastes generated from various sources. E-wastes are generated the computer laboratories, electronic labs, Physics Labs, Chemistry Lab, Biotech Labs, Academic and Administrative Offices.

E-waste includes out of order equipment's or obsolete items like lab instruments, circuits, desktops, laptops and accessories, printer, charging and network cables, Wi-Fi devices, cartridges, sound systems, display units, UPS, Biometric Machine, scientific instruments etc. All these wastes are put to optimal use. All such equipment's which cannot be reused or recycled is being disposed of through authorized vendors Sonal Meta Corp and Ramky e- waste Recycling facility (MoU). Instead of a new procurement Buy-Back option is preferred for technology upgradation.

6.4.1 Hazardous Waste

Like other entities Kristu Jayanti College, also generates hazardous waste. The following features create hazardous waste management problems unique to the College.

Most departments do not generate large quantities of hazardous waste and can be classified as conditionally exempt small quantity generators (generators of less than 100 grams of hazardous waste per month). Though the hazardous waste generated was small quantity it was connected to the STP and treated before disposal.

6.4.2 Observations

- Disposal of Hazardous waste from the Kristu Jayanti Academic buildings and laboratories are streamlined to STP.
- All type of waste is segregated at the source.
- All the recyclable materials are segregated and disposed safely.
- E-waste was produced 0.35 kg/day in the campus. The quantity of E-waste generated may vary in each year.

6.4.3 Suggestions and Recommendations

- The practice of using biodegradable and recycled materials should be encouraged as alternatives.
- Proper data management system in quantity waste based on disposal techniques should be maintained.
- Avoid single use plastics within the campus.

6.5 Air pollution mitigation

The college encourages the students to use public transport. As the college campus is small, no vehicle movement is allowed within the campus, except for goods and service movement occasionally. The parking of staff vehicles is allowed at a designated space within thecampus. Hence, air pollution due to vehicular movement is negligible. Paved roads and vegetation help in reducing dust pollution to a large extent. Burning of waste within the campus is strictly banned.

6.6 Biodiversity audit

Biodiversity audit of Kristu Jayanti College is a continuous process and efforts of the faculty members, researchers, and the students to assess the living biota and its conservation have been going on for many years. Regularly many conservation practices are taken up by the college so that anthropogenic impact on the biodiversity components and ecosystems are minimized. The scientific information and existing database are based on various studies as well as research work done by Life science department of Kristu Jayanti College. Despite various limitations, data have been compiled to prepare authentic documentation that provides an insight into the status of the Floral biodiversity and natural ecosystem in the campus. Different conservation practices also have been applied for a better and sustainable campus ecosystem.

The main objective of biodiversity audit is to provide documentation of biodiversity components within the institutional area, to observe ecosystem structures and functions along with regular biodiversity monitoring of the different components of biodiversity. KristuJayanti College of area over 9.7 acres has a wide variety of flora and fauna. Faunal diversity has not yet documented so far, and it is recommended to conduct research on the same in the future.

6.6.1 Floral diversity

The floral diversity under different species groups is listed in Annexure 1. The list is based on the studies carried out by Life science department of Kristu Jayanti College.

Table 5. Lawn cover area

Total Lawn cover	48673 sq.ft

Figure 14: Lawn cover at Kristu Jayanti College

Figure 15: Medicinal plants at Kristu Jayanti College

Figure 16: Green cover at Kristu Jayanti campus

6.6.2 Plantation in Kristu Jayanti College Campus

Trees are the prevalent component of a terrestrial ecosystem. They provide benefiting function by accumulating atmospheric carbon. A total of about 14662 number of trees/plants/shrubs are existing in the Kristu Jayanti College campus. 101 different families and about 380 different species of plantation are found in the campus. The study shows that the tree species found in the campus make an important contribution in conserving diversity and helps to maintain the carbon stock in the college campus.

The study concluded that tree species richness of the campus is important as it is playing vital role in carbon management. Trees like Artocarpus heterophyllus, Mangifera indica possess interesting qualities like large size, high sequestration potential and better aesthetical values, making them good candidates for landscape designing. Overall, tree planting has helped to transform the area into a verdant green campus The campus is enriched with various plants of different habitat. The largest collection of trees in the campus may help to reduce the ambient temperature and keep the environment clean. Compost for the plants is generated within the

campus from the degradation of garden waste.

6.6.3 Observations

- Fascinating characteristic of the Kristu Jayanti College Campus is its lush green environment with rich floral and faunal diversity.
- Exotic species were observed
- Planted balcony were observed along the campus
- Campus has green cover of more than 30% of total area.

6.6.4 Suggestions and Recommendations

- The ecosystem of the campus should be managed properly for a better environment.
- Proper landscape and long-term plan of the vegetation distribution/area is required for sustainable management of the trees and other vegetation in Kristu Jayanti campus.
- If the campus is proposed to expand further, it is recommended to Plant 100 to 200 more samplings within the campus or else continue the good work of plant sampling outside the campus boundaries.
- Record the birds, animals, butterflies and other insect diversity within the campus.

6.7 Energy audit

According to Energy Conservation Act, 2001, Energy Audit is the verification, monitoring, and analysis of the use of energy including submission of a technical report containing recommendations for improving energy efficiency with cost-benefit analysis and an action plan to reduce energy consumption. Energy audit of KJC has been conducted by analysis of power consumption patterns over the year, total connected load, and utilization of power.

Table 6: Details of Kristu Jayanti College for Energy Audit

1	**Name of Consumer:**	**M/s. Kristu Jayanti College- Bangalore**
2	Name of the contact person	**Dr. Priya Josson Akkara, Asst. Prof., Dept. of Life Sciences**
3	Address of the consumer	**K Narayanapura , Kothanur(PO), Bangalore**
4	Transformer capacity	**500 kVA, 11kV / 433 V. ONAN,**
5	Capacity of back generators	**200 kVA, 125 kVA and 250kVA**
6	Contract Demand	**500 kVA**
7	Roof top solar power plant	**50kWP and 10 kWP**
8	Power factor correction	**70 kVAR capacitor**
9	Monthly Average Energy consumption	**45,639 Units**
10	Monthly Average Amount paid to BESCOM	**₹ 4,60,496 /-**
11	Type of connection	**HT2C2**
12	Period of Audit	**Jan 2022 – Dec 2022**

The annual energy consumption pattern of the year 2022 has been compared with previous year to understand consumption patterns, yearly load variation patterns. We were provided with the BESCOM data from the College authorities for the year Jan 2022 – Dec 2022.

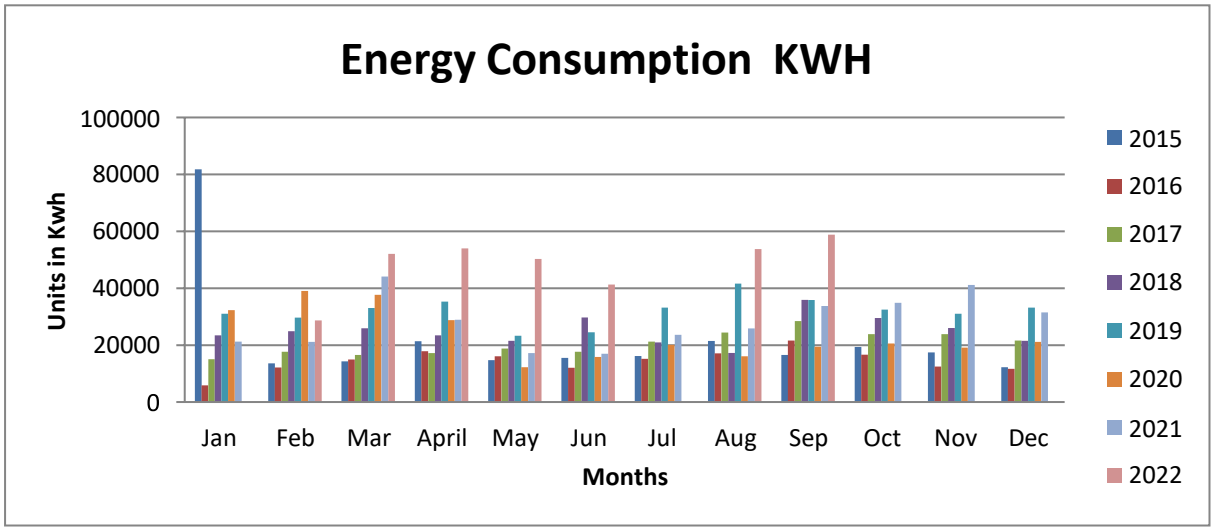

Figure 17: Monthly Energy consumption over the period of 2015-2022

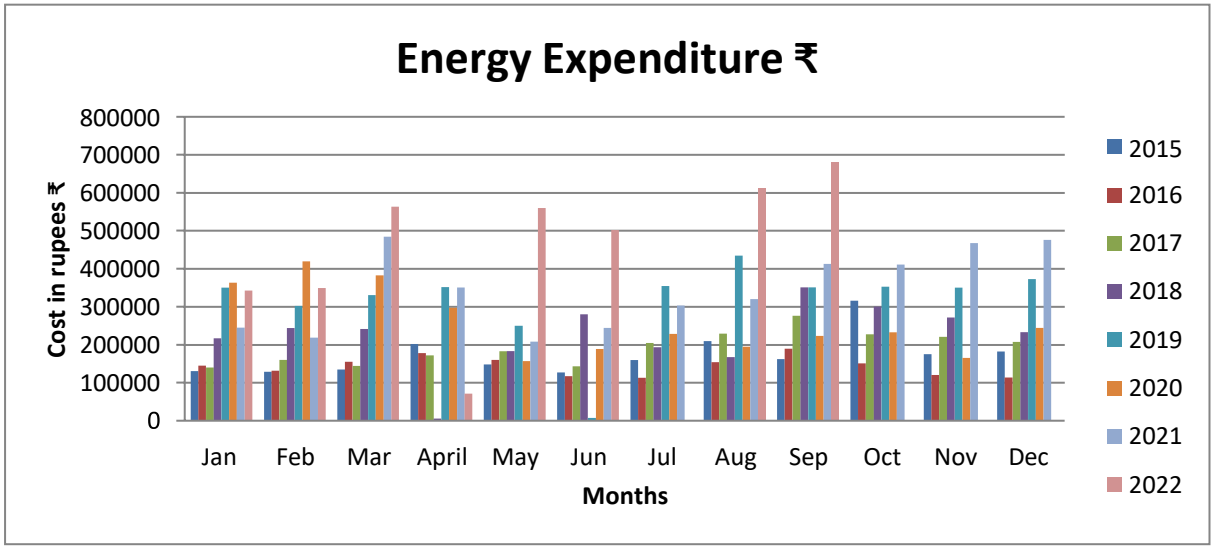

Figure 18: Monthly Energy expenditure over the period of 2015-2022

An analysis of power consumption pattern over the year, total connected load, and utilization of power. The loads were segregated based on the end use as listed below. Total connected load is 697.69 kW and load distribution are given below.

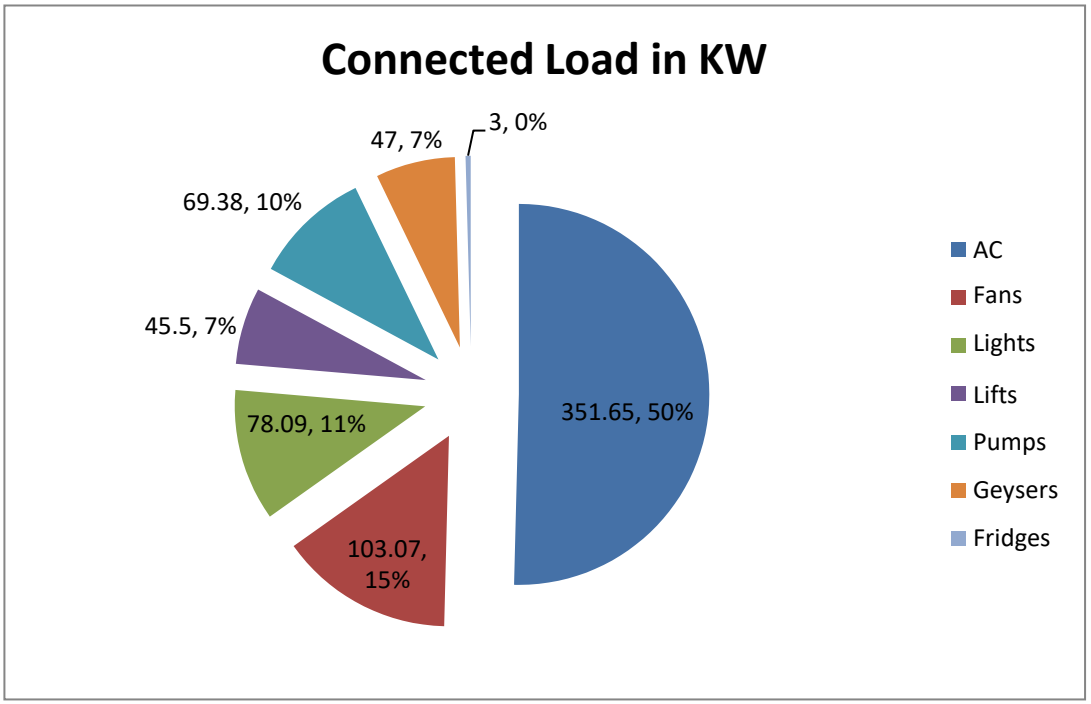

Figure 19: Connected load in KW

Table 7. Details of Electricity Consumption

Sl.No.	Particulars	Load (kW)
1	AC	351.65
2	Fans	103.07
3	Lights	78.09
4	Lifts	45.5
5	Pumps	69.38
6	Geysers	47
7	Refrigerators	3
	Total Load kW	**697.69**

It can be observed that AC account for the maximum energy, followed by fans, lights and pumps.

6.8 Roof top solar photovoltaic

Solar photovoltaic panels of 50KW and 10KW grid connected power plant is installed in thecampus. The SPV has generated of about 80700 kWh during the period of 2022

6.8.1 Observations

- Compared to the previous year, there was a noticeable increase in energy usage. The fact that the college was not open to students the prior year is the primary reason for the excessive energy consumption. By 2022, the college had reopened, and students had returned. Climatic change is also another factor which influenced the increase in energy consumption.
- Highest energy consumption was recorded at the month of September in 2022.

6.8.2 Suggestions and Recommendations

- There should be facility to record energy consumption in every building.
- Regular Campaigns should be done to switch off of lights and other electric appliances after use.
- Automatic sensor/ motion detector-based lighting system can be installed for effective power saving.

Figure 20: Solar panel for renewable energy

6.9 Environmental initiatives

The college has taken many initiatives to improve the environment within and outside the college campus. It involves creating awareness among the people, planting tress outside the campus, conducting seminars, educating students etc. under National Service Scheme, National Cadet Corps (NCC), Centre for Social Activities (CSA), Environment Club, Social Outreach Programme (SOP) and Unnat Bharat Abhiyan (UBA). More than 32 activities are carried out by the students and the management of Kristu Jayanti college under various group activities in the year 2022 for creating Environmental awareness among the students and the society. The details of those activities are attached in the annexure.

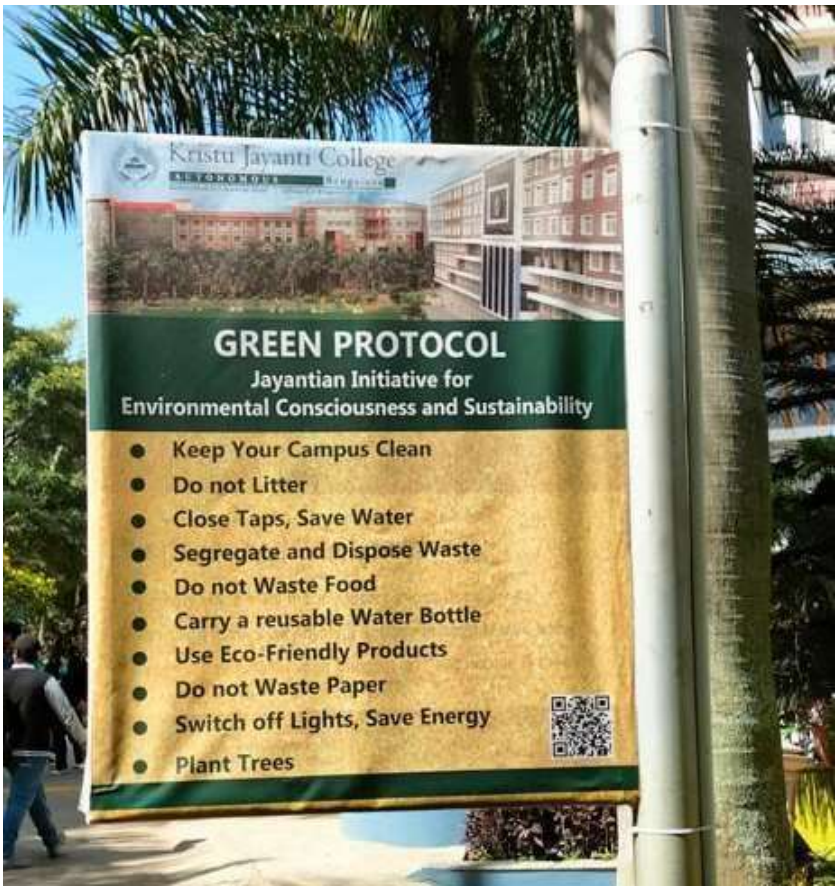

Figure 21: Creating awareness inside the campus

6.9.1 Observations

- During the Academic year 2022, no trees were cut down. 53 numbers of trees and plant were introduced in the year of 2022.
- Created awareness on waste reduction, water and energy conservation.

6.9.2 Suggestions and Recommendations

- Green cover expansion by increasing tree plantation within and outside the campus.
- Record the outcome of awareness program like reduction of waste, water, and energy.
- Encourage using biodegradable, reusable and recyclable material.

7. SUMMARY AND CONCLUSIONS

The environmental audit was carried out during the time that COVID-related restrictions were lifted. This audit report highlights the potential opportunities to better the green index of the college.

The college consumes water at an average rate of 65 KLD. It is recommended to install block wise IoT enabled water meter at the inlet or outlet of overhead tank to gather real time water consumption data and thereby reduce consumption in future years.

The sewage treatment plants water in excess to irrigation need to be made utilized for flushing.Dual plumbing needs to be made operational. Rainwater harvesting tank helps in the reduction of water footprint within the college.

The campus generates less than 16kgs of waste at a per capita of 2g/ person. In previous year, even though waste generation was high, number of students in campus were less due to COVID restrictions. Compared to previous year, waste generation per person in a day has been reduced. Single use plastics should be replaced by reusable material. The practice of using biodegradable and recycled materialsshould be encouraged.

Kristu Jayanti College has been utilizing renewable energy by installing roof top solar panels to offset the electrical energy used in normal operation. It is recommended to provide facility to record energy consumption in every building. Automatic sensor/ motion detector-based lighting system canbe installed for effective power saving.

Biodiversity audit of Kristu Jayanti College is a continuous process and efforts of the faculty members, researchers, and the students to assess the living biota and its conservation have been going on for many years. Spread over approximately 9.7 acres of land, the Kristu Jayanti College campus is home to different varieties of fauna as well as flora. Although best effort was made to record the fauna of the campus, but the list has not been exhaustive. A total of about 14662 number of trees/plants/shrubs are existing in the Kristu Jayanti College campus. 101 different family and about 380 different species of plants are found in the campus. Planting more trees within and outside the campus during the next year further increasing the green cover. Record the birds, animals, butterflies and other insect diversity and also floral varieties within the campus for the further comparison.

ANNEXURE I

FLORAL BIODIVERSITY

HERB

ORNAMENTAL HERB WITH MEDICINAL VALUE

Table 8: Ornamental Herb with medicinal value at Kristu Jayanti College

Sl. No.	Botanical name	Common name	Local Name	Family
1	*Bacopa monnieri*	Brahmi	Jala Brahmi	Scrophulariaceae
2	*Caralluma umbellata*	Umbelled Caramulla	Hucchu Bangte	Apocynaceae
3	*Cheilocostus speciosus*	Crepe ginger	Kebuka	Costaceae
4	*Chlorophytum comosum*	Spider plant	Jeda gida	Asparagaceae
5	*Cyperus alternifolius*	Umbrella Sedge	Kodegida	Cyperaceae
6	*Equisetum hyemale*	Rough horsetail		Equisetaceae
7	*Hedychium coronarium*	Ginger lilly	Suruli Sugandhi	Zingiberaceae
8	*Muehlenbeckia platyclados*	Tapeworm plant		Polygonaceae
9	*Orthosiphon aristatus*	Cat's Whiskers		Lamiaceae
10	*Pandanus amaryllifolius*	Screwpine	-	Pandanaceae
11	*Plectranthus barbatus*	Indian coleus	Maagali	Lamiaceae
12	*Ruellia simplex*	Desert Petunia	-	Acanthaceae
13	*Saccharum spontaneum*	Wild sugarcane	Kaadukabbu	Poaceae
14	*Tuneria ulmifolia(Yellow)*	Yelloe buttercup	-	Passifloraceae
15	*Allium nigrum*	Black Garlic		Amaryllidaceae
16	*Pteridopsida*	Ferns		Polypodiaceae
17	*Zephyranthes grandiflora*	Rain Lily		Amaryllidaceae
18	*Erigeron belliloides*	Daisy feabane	Jarayupriya (Sanskrit)	Asteraceae
19	*Kalanchoe bhidei*	Bhide's Kalanchoe		Crassulaceae
20	*Kleinia*	Large-Flower Kleinia		Asteraceae
21	*Santolina chamaecyparissus*	Lavender Cotton		Asteraceae

MEDICINAL HERB

Table 9: Medicinal Herb at Kristu Jayanti College

Sl. No.	Botanical name	Common name	Local Name	Family
1	*Acalypha indica*	Indian Copper leaf	Kuppigida	Euphorbiaceae
2	*Achyranthes aspera*	Prickly Chaff flower	Uttaraani	Amaranthaceae
3	*Acorus calamus*	Sweet flag	Baje	Acoraceae
4	*Aerva lanata*	Mountain Knot Grass	Bilee sooli gida	Amaranthaceae
5	*Aloe arborescens*	Krantz aloe	Lolesara	Asphodelaceae
6	*Aloe vera*	Aloe vera	Lolesara	Asphodelaceae
7	*Alpinia calcarata*	Snap Ginger	Chikkadumparrasme	Zingiberaceae
8	*Alpinia galanga*	Siamese ginger	Dhuramrasmi	Zingiberaceae
9	*Alpinia purpurea*	Red Ginger	Kanchuvaala	Zingiberaceae
10	*Andrographis panicutala*	Kariyat	Nelaberu	Acanthaceae
11	*Aplinia purpurea*	Red Ginger, Ostrich Plume	Kanchuvaala	Zingiberaceae
12	*Artemisia absinthium*	Worm wood	Urigattige	Asteraceae
13	*Asclepias curassavica*	Blood flower	Kakatundi	Aclepiadaceae
14	*Baliospermum montanum*	Red Physic Nut	Kadu haralu	Euphorbiaceae
15	*Basella alba*	Malabar Speech	Basale soppu	Basellaceae
16	*Boerhavvia diffusia*	Spreading hogweed	Punarnava	Nyctaginaceae
17	*Bryophyllum pinnatum*	Cathedral Bells	Lonnahadanakanagida	Crassulaceae
18	*Budleja asiatica*	White butterfly bush	Karakaane	Scrophulariaceae
19	*Cardiospermum halicacabum*	Balloon Vine	Agniballi	Sapindaceae
20	*Catharanthus roseus*	Vica rosea	Nithya pushpa	Apocynaceae
21	*Centella asiatica*	Indian pennywort	Brahmi soppu	Apiaceae
22	*Chamaecostus cuspidatus*	Fiery costus	Kempu honne	Costaceae
23	*Cissampelos pareira var. hirsuta*	Velvet leaf	Paraera peru	Menispermaceae
24	*Cissus quadranglaris*	Veldt Grape, Devil's Backbone	Mangaravalli	Vitaceae
25	*Clerodendrum serratum*	Blue fountain brush	Gantubhaarangi	Lamiaceae
26	*Clinacanthus nutans*	Sabah snake grass	Aanesondilu gida	Acanthaceae
27	*Cnidoscolus aconitifolius*	Tree spinach	Marabasale	Euphorbiaceae
28	*Codariocalyx motorius*	Telegraph plant	Nagar gare	Fabaceae

29	*Colacasia esculenta*	Taro	Kesavu	Araceae
30	*Coleus zeylanicus*	Coleus	Maagali	Lamiaceae
31	*Costus pictus*	Insulin Plant	Kempu honne	Costaceae
32	*Curculigo orchioides*	Golden Eye Grass	Nelataale	Hypoxidaceae
33	*Curcuma aromatica*	wild turmeric	Kasthuri Arishina	Zingiberaceae
34	*Curcuma longa*	Turmeric	Arishina	Zingiberaceae
35	*Curcuma zeodaria*	Zedoary	Kachora	Zingiberaceae
36	*Cymbopogon citratus*	Lemon grass	Majjigehullu	Poaceae
37	*Cynodon dactylon*	Bermuda grass	Garike	Poaceae
38	*Desmodium latifolium*	Velvet-Leaf	Murival	Papilionoideae
39	*Desmodium pulchellum*	Showy Desmodium	Jenukaddi	Fabaceae
40	*Dregea volubilis*	Sneeze wort	Hegala sappu	Apocyanaceae
41	*Elephantopus scaber*	Elephant's foot	Hakkarike	Asteraceae
42	*Embelia ribes*	False black pepper	Vidanga	Primulaceae
43	*Emilia Sonchifolia*	Purple sow thistle	Elikivi gida	Asteraceae
44	*Erigeron karvinskianus*	Latin American fleabane		Asteraceae
45	*Eryngium foetidium*	Culantro	Kaadu kotthambari	Apiaceae
46	*Evoluvulus mummularius*	Dwarf morning glory	Sake	Convolvulaceae
47	*Fragaria ananassa*	Strawberry	Strawberry	Rosaceae
48	*Glycyrrhiza glabra*	Licorice	Yashtimadhu	Fabaceae
49	*Hedychium flavescens*	Yellow Ginger Lily	Suruli Sugandhi	Zingiberaceae
50	*Hedychium spicatum*	Spiked Ginger Lily	Seenakachora	Zingiberaceae
51	*Hemigraphis colorata*	Red Ivy	Vranaropani (Sanskrit)	Acanthaceae
52	*Hemionitis arifolia*	Heart leaf fern		Pteridaceae
53	*Houttuynia cordata*	Chameleon Plant	-	Saururaceae
54	*Hydrocotyle leucopholea*	Water penny wart	-	Apiaceae
55	*Hygrophila schulli*	Marsh Barbel	Kalavankabija	Acanthaceae
56	*Imperata cylindrica*	Cotton grass	Sannadabbai hullu	Poaceae
57	*Indigofera longiracemosa*	Indigofera	Anjoora neeli	Fabaceae
58	*Indigofera racemosa*	Clay Indigo	Paushkara	Fabaceae
59	*Ipomea Pes-capre*	Rail road wine, Goat's foot wine	Dasari	Convolvulaceae
60	*Ipomoea mauritiana*	Morning glory	Nelagumbala	Convolvulaceae
61	*Justicia betonica*	Squirrel tail	Kaadu kanakambara	Acanthaceae

62	*Kaempferia galanga*	Aromatic Ginger, Resurrection lily	Kachchura, Kachhoora	Zingiberaceae
63	*Kaempferia rotunda*	Peacock Ginger	Neela suruli	Zingiberaceae
64	*Leucas aspera*	Whitewort	Tumbe guda	Lamiaceae
65	*Lobelia nicotianifolia*	Wild tobacco	Kadahogesoppu	Campanulaceae
66	*Malvastrum coromandelianum*	False Mallow	Sannabindige gida	Malvaceae
67	*Maranta arundinacea*	Arrowroot	Kuvehittu	Marantaceae
68	*Maranta arundinaceae*	Arrow root	Tavaksiri	Marantaceae
69	*Nothapodytes nimmoniana*	Ghanera	Durvasane mara	Icacinaceae
70	*Ocimum basilicum*	Sweet basil	Kammagaggare	Lamiaceae
71	*Ocimum tenuiflorum*	Holy basil	Tulasi	Lamiaceae
72	*Osbeckia zeylanic*	Wall Osbeckia	-	Melastomataceae
73	*Oxalis corniculata*	Clover		Oxalidaceae
74	*Parietaria officinalis*	Lichwort		Urticaceae
75	*Phyla nodiflora*	Turkey tangle frogfruit	Nīru hippali	Verbenaceae
76	*Phyllanthus niruri*	Gale of Wind		Phyllanthaceae
77	*Plantago major*	Broad leaved plantain		Plantaginaceae
78	*Plantago ovata*	blond psyllium	-	Plantaginaceae
79	*Plectranthus vetiveroides*	Spur-flower.	-	Lamiaceae
80	*Polygonum capitatum*	Pink Knotweed	Kempu nela akki	Polygonaceae
81	*Portulaca grandiflora*	Moss rose	-	Portulacaceae
82	*Potentilla indica*	Indian strawberry		Rosaceae
83	*Pouzolzia wightii*	Pouzolzia	-	Urticaceae
84	*Pyrrosia heterophylla*			Polypodiaceae
85	*Rauwolfia serpentina*	Indian Snakeroot	Shivanaabhi	Apocyanaceae
86	*Rotheca myricoides*	Butterfly Bush	Kiritiggi	Lamiaceae
87	*Rumex hastatus*	Arrow leaf dock	Chukka	Polygonaceae
88	*Ruta graveolans*	Rue	Nagadaale	Rutaceae
89	*Sansevieria trifasciata*	Snake plant	Heggurutike	Asparagaceae
90	*Scoparia dulcis*	Sweet broom weed	Mrigandi	Plantaginaceae
91	*Sida acuta*	Common wireweed	Bheemana kaddi	Malvaceae

92	*Solanum nigrum*	Deadly Nightshade	Kakarundi	Solanaceae
93	*sphagneticola trilobata*	Creeping daisy	-	Asteraceae
94	*Stenosiphonium russellianum*		Kal kurinji	Acanthaceae
95	*Stevia rebaudiana*	Candy leaf		Asteraceae
96	*Tradescantia zebrina*	Inch plant	-	Commelinaceae
97	*Vernonia amygdalina*	Bitter leaf	Kahi jeerige	Asteraceae
98	*Vernonia cineria*	Ash coloured fleabane	Sahadevi	Asteraceae
99	*Vetiveria Zizanioides*	Sandalwood fan	Mudivala	Poaceae
100	*Xanthosoma sagittifolium*	Arrowleaf elephant ear	Govekesu	Araceae
101	*Zingiber zerumbet*	Shampoo ginger	Kallu shunti	Zingiberaceae
102	*Artemisia distimilar*	Mugwort	Dhavana	Asteraceae
103	*Artemisia nilagirica*	Indian Wormwood	Manchipatre	Asteraceae
104	*Asystasia dalzelliana*	Violet Asystasia		Acanthaceae
105	*Withania somnifera*	Ashwagandha	Ashwagandha	Solanaceae
106	*Turnera subulata*	White Butter cup	Bili Myana Mallige	Passifloraceae
107	*Taraxacum officinale*	Dandelion	Kaadu shaavanthi	Asteraceae
108	*Cymbopogon nardus*	Citronella grass		Poaceae
109	*Cyperus rotundus*	Common Nut Sedge	Kodanaari	Cyperaceae
110	*Evoluvulus alsinoides*	dwarf morning-glory	Vishnu Kranti	Convolvulaceae
111	*Ipomea batatas*	Sweet Potato	Sihi Genasu	Convolvulaceae
112	*Ipomea tuba/ violoacea*	Beach moonflower		Convolvulaceae
113	*Marjorana hortensis*	Sweet Marjoram		Lamiaceae
114	*Melissa officinalis*	Lemon balm	Merugu	Lamiaceae
115	*Mentha piperata*	Pepper mint		Lamiaceae
116	*Mentha spicata*	Mint	Bettada pudina	Lamiaceae
117	*Ocimum gratissimum*	African Basil	Ajaka (Sanksrit)	Lamiaceae
118	*Ocimum kilimandscharicum*	Common Basil	Karpura Tulsi	Lamiaceae
119	*Ocimum tenuiflorum*	Holy basil	Tulasi	Lamiaceae
120	*Pouzolzia zeylanica*	Graceful Pouzolzbush		Urticaceae
121	*Pyrrosia heterophylla*			Polypodiaceae
122	*Rauwolfia serpentina*	Indian Snakeroot	Shivanaabhi	Apocyanaceae
123	*Rosmarinus officinalis*	Rose mary	Rose mary	Lamiaceae

ORNAMENTAL HERB

Table 10: Ornamental Herb at Kristu Jayanti College

Sl. No.	Botanical name	Common name	Local Name	Family
1	*Arundo donax*	Giant Reed	Baalada Kaddi	Poaceae
2	*Asplenium nidus*	Birds nest fern	Hakkigoodu gida	Aspleniaceae
3	*Begonia heracleifolia var. nigricans*	Star Begonia	Sonehuli gida	Begoniaceae
4	*Begonia rex*	King Begonia	Sonehuli	Begoniaceae
5	*Canna indica*	African Arrowroot	Samudra bale	Cannaceae
6	*Chlorophytum borivilianum*	White Musale	Dravanti	Liliaceae
7	*Clitorea ternatea*	Butterfly pea	Sattaga	Fabaceae
8	*Costus flavenscens*	Crêpe ginger	Changlakoshta	Zingberaceae
9	*Crotalaria retusa*	Rettle weed	Gejjegida	Legumes
10	*Dieffenbachia seguine*	Dumb Cane	-	Araceae
11	*Homalocladium platycladum*	Tapeworm plant	-	Polygonaceae
12	*Impatiens repens*	Yellow Canary Balsam,	-	Balsaminaceae
13	*Ipomea quamoclit*	Cypress Vine	Kamana balli	Convolvulaceae
14	*Nephrolepis exaltata*	Boston fern	-	Nephrolepidaceae
15	*Peperomia obustifolia*	Baby Rubber Plant	-	Piperaceae
16	*Polianthes tuberosum*	Mexican tuberose	Sugandharaja	Agavaceae
17	*Spathiphyllum wallisii*	Peace lily	-	Araceae

SHRUB

ORNAMENTAL SHRUB WITH MEDICINAL VALUE

Table 11: Ornamental Shrub with medicinal value at Kristu Jayanti College

Sl. No.	Botanical name	Common name	Local Name	Family
1	*Barleria lupulina*	Hop Headed Barleria	Mullu Goranti	Acanthaceae
2	*Hibiscus sabdariffa*	Roselle	Pulichakire	Malvaceae
3	*Jasminum cuspidatum*	Pointedleaf Jasmine	Adavia malle	Oleaceae
4	*Jasminum malabaricum*	Malabar jasmine	Kadu mallige	Oleaceae
5	*Jatropha multifida*	Coral bush	Dodda haralu	Euphorbiaceae
6	*Odontone cuspidatum*	Cardinals Guard	Nasagunnikaya	Acanthaceae
7	*Salvia rosmarinus*	Rosemary		Lamiaceae
8	*Strobilanthes barbatus*	Bearded Coneflower	Koorige	Acanthaceae
9	*Thunbergia mysorensis*	Mysore Clock Vine	Kamanabillu balli	Acanthaceae
10	*Carmona retusa*	Scorpion bush	Ele-adike soppu	Boraginaceae
11	*Clerodendrum aculeatum*	West Indian Privet		Verbenaceae
12	*Clerodendrum indicum*	Tubeflower	Brahmani	Verbenaceae
13	*Clerodendrum paniculatum*	Pagoda Flower	Krishnana kireeta	Lamiaceae
14	*Spermadictyon suaveolens*	Forest Champa		Rubiaceae
15	*Stachytarpheta jamaicensis*	Blue snakeweed	Kariuttarani	Verbenaceae
16	*Stachytarpheta mutabilis*	Pink Snakeweed	Kaadu dodda	Verbenaceae

MEDICINAL SHRUB

Table 12: Medicinal Shrub at Kristu Jayanti College

Sl. No.	Botanical name	Common name	Local Name	Family
1	*Adhatoda zeyanica*	Adusa	Aadu Muttada soppu	Acanthaceae
2	*Amorphophallus paeoniifolius*	Elephant Foot Yam	Gandira, suvarna-gadd	Araceae
3	*Asparagus racemosus*	Satawari, buttermilk root,	Halavu makkala taayi ber	Asparagaceae
4	*Barleria prionitis*	Kantajati	haladi gorate	Acanthaceae
5	*Begonia malabarica*	East Himalayan Begonia	Sangu narayana sanjivi (Tamil)	Begoniaceae
6	*Calotropis gigantea*	Crown Flower	Yekke Gida	Apocynaceae
7	*Centratherum punctatum*	Peppermint	Kadu jirage	Asteraceae
8	*Cestrum diurnum*	Day Jasmine	Mysore maligae	Solanaceae
9	*Cestrum nocturnum*	Night blooming Jasmine	Raatri raani	Solanaceae
10	*Cleodendrum infortunatum*	Hill Glory Bower	Ibbane	Verbanaceae
11	*Cryptostegia grandiflora*	Rubber vine	Hambu rubber gida	Apocynaceae
12	*Decalepis hamiltonii*	Swallow-Root	Maakalibaeru	Apocynaceae.
13	*Elaeagnus conferta*	Bastard oleaster	Halage balli	Elaeagnaceae
14	*Embelia tjeriam-cottam*	Malabar Embelia	Amti	Primulaceae
15	*Ensete superbum*	Rock banana	Bettabale	Musaceae
16	*Eupatorium triplinerve*	Ayapana	Ayapan	Asterceae
17	*Euphorbia pulcherrima*	Poinsettia	Elegalli	Euphorbiaceae
18	*Gendarussa vulgaris/ Justicia gendarussa*	Willow leaf Justicia	Aduthodagida	Acanthaceae
19	*Gymnema sylvestre*	Gurmar	Kadhasige	Apocynaceae
20	*Hemidesmus indicus*	Indian Sarsaparilla	Haaluballi	Asclepiadaceae
21	*Hibiscus rosa-sinensis*	Shoe Flower	Dasavala	Malvaceae
22	*Ixora arborea*	Torch Tree	Koravi	Rubiaceae
23	*Jasminum auriculatum*	Juhi	Sanna mallige	Oleaceae
24	*Jatropha curcas*	Physic Nut	Kananeranda	Euphorbiaceae.
25	*Jatropha maheshwarii*	Physic nut	-	Euphorbiaceae.
26	*Justicia adhatoda*	Malabar nut	Adusoge	Acanthaceae

27	*Leea indica*	Bandicoot berry	Gadhapatri	Vitaceae
28	*Passiflora edulis*	Purple Passionfruit		Passifloraceae
29	*Phyllanthus riticulatus*	Potato plant	Karihuli	Phyllanthaceae
30	*Piper betle*	Betel vine	Veeleyada ele	Piperaceae
31	*Piper longum*	Long pepper	Hippali	Piperaceae
32	*Piper nigrum*	Black pepper	Kari Manesu	Piperaceae
33	*Polygonum chinensis*	Chinese Knotweed	Nir kanigalu	Polygonaceae
34	*Polyscias fruticosa*	Aralia	-	Araliaceae
35	*Premna scrratifolia*	Buas-Buas	Agnimanddha	Lamiaceae
36	*Rhinacanthus nasutus*	Snake jasmine	Nagamallike	Acanthaceae
37	*Ricinus communis*	Castor bean	Oudla	Euphorbiaceae
38	*Sarcostemma acidum*	Moon plant	Hambu balli	Apocyanaceae
39	*Sauropus androgynus*	Sweet leaf	Chakraani	Phyllanthaceae
40	*Stachytarpheta jamaicensis*	Blue snakeweed	Kariuttarani	Verbenaceae
41	*Stachytarpheta mutabilis*	Pink Snakeweed	Kaadu dodda	Verbenaceae
42	*Stictocordia campanulata*	Crimson morning glory	Kuginiballi	Convolvulaceae
43	*Strobilanthes foliosa*	Leaf enclosed Coneflower	Kurinchi	Acanthaceae
44	*Strobilanthus ciliatus*	Shining Leaf	Karigentige	Acanthaceae
45	*Tinospora cordifollia*	Guduchi	Amruthaballi	Menispermaceae
46	*Ziziphus oenoplia*	Jackal jujube	Pargi	Rhamnaceae
47	*Cosmostigma racemosum*	Green Milkweed Creeper	Ghara hoovu gida	Apocynaceae
48	*Datura metal*	Devils weed	Datura	Solanaceae
49	*Flemingia bracteata*	Wild Hops	kumalu	Fabaceae
50	*Gendarussa vulgaris/ Justicia gendarussa*	Willow leaf Justicia	Aduthodagida	Acanthaceae
51	*Premna integrifolia*	Headache Tree	Agnimandha	Lamiaceae
52	*Premna serratifolia*	Buas-Buas	Agnimanddha	Lamiaceae
53	*Rhinacanthus nasutus*	Snake jasmine	Nagamallike	Acanthaceae

ORNAMENTAL SHRUB

Table 13: Ornamental Shrub at Kristu Jayanti College

Sl. No.	Botanical name	Common name	Local Name	Family
1	*Acalypha wilkesiana*	Copper leaf	Kuppigida	Euphorbiaceae
2	*Aristolochia grandiflora*	Pelican flower	Isvaberusa	Aristolochiaceae
3	*Bauhinia phoenicea*	Crimson Mountain	Kempu yathaballi	Fabaceae
4	*Bougainvillea spectabilis*	Bougainvillea	Kaagadada hoo	Nyctaginaceae
5	*Codium variegatum*	Croton	Croton	Euphorbiaceae
6	*Dracaena reflexa*	Song of India	Kempu beru	Asparagaceae
7	*Duranta erecta*	Golden drops	Hucchelasi	Verbenaceae
8	*Euphorbia Milii*	Crown of thorns	-	Euphorbia
9	*Grevillea victoriae*	Royal grevillea	-	Proteaceae
10	*Hamelia patens*	Hummingbird bush	-	Rubiaceae
11	*Jasminium rigidium*	Crowded-Flower Jasmine	Vanamallige	Oleaceae
12	*Kalanchoe pinnata*	Air plant	-	Crassulaceae
13	*Strobilanthes foliosa*	Large leaved strobilanthes	-	Acanthaceae
14	*Symphorema involucratum*	Bhingri	Betta thakkaali	Verbenaceae
15	*Thunbergia alata*	Blackeyed Susan vine	Indrapushpa	Acanthaceae
16	*Thunbergia erecta*	Kings Mantle	Nilkantha	Acanthaceae
17	*Zamia furfuracea*	Cardboard palm	-	Zamiaceae
18	*Ecbolium viride*	Green Shrip Plant	kappubobbuli	Acanthaceae
19	*Ensete superbum*	Rock banana	Bettabale	Musaceae

TREE

ORNAMENTAL TREE WITH MEDICINAL VALUE

Table 5: Ornamental tree with medicinal value at Kristu Jayanti College

Sl. No.	Botanical name	Common name	Local Name	Family
1	*Adenanthera pavonina*	Red Lucky Seed	Golaganji	Fabaceae
2	*Butea monosperma*	Flame of the Forest	Mutthuga	Fabaceae
3	*Caesalpinia sappan*	Sappan Wood	Patang	Fabaceae
4	*Calophyllum inophyllum*	Indian-laurel	Honne/ Huhonne	Clusiaceae
5	*Cassia fistula*	Golden shower	Kakke	Fabaceae
6	*Holarrhena pubescens*	Invulnerable kite	Kodasige	Apocynaceae
7	*Magnolia champaca*	Champaka	Sampige	Magnoliaceae
8	*Malpighia glabra*	Barbados Cherry		Malpighiaceae
9	*Neolamarckia cadamba*	Burflower tree	Kadamba	Rubiaceae
10	*Nyctyanthus arbortristis*	Night Flowering Jasmine	Paraijatha	Oleaeceae
11	*Polyalthia longifolia*	Ashoka tree	Ubbina	Annonaceae
12	*Santalum album*	Sandalwood	Gandha	Santalaceae
13	*Terminalia catappa*	Indian almond	Kaadu Badami	Combretaceae
14	*Thespesia populnea*	Indian tulip tree	Adavi bende mara	Malvaceae
15	*Sterospermum colais*	Yellow Snake Tree	Kalaadri	Bignoniaceae

MEDICINAL TREE

Table 6: Medicinal Tree at Kristu Jayanti College

Sl. No.	Botanical name	Common name	Local Name	Family
1	*Abrus precatorius*	Gunj	Gulaganji	Fabaceae
2	*Aegle marmelos*	Stone apple, Wood apple	Bilvapatre	Rutaceae
3	*Alstonia schlorasis*	Devil tree	Aelele Haale	Apocynaceae
4	*Alstonia Venenata*	Poison devil tree	Adda sarpa	Apocynaceae
5	*Annona cherimola*	Cherimoya	Mullu Ram Phala	Annonaceae
6	*Annona muricata*	Soursop	Mullu Ram Phala	Annonaceae
7	*Annona reticulata*	Custard apple	Ramphal	Annonaceae
8	*Areca catechu*	Areca palm	Adike	Arecaceae
9	*Artocarpus altilis*	Bread fruit	Jeegujje	Moraceae
10	*Artocarpus heterophyllus*	Jackfruit	Halasu	Moraceae
11	*Bauhinia purpurea*	Purple orchid tree	Basavana pada	Fabaceae
12	*Bauhinia variegate*	Yellow bell	Kempumandara	Fabaceae
13	*Bursera delpechiana*	Mexican Linaloe Tree	Lavander Gida	Burseraceae
14	*Caesalpinia pulcherrima*	Peakcock flower	Kenjige	Caesalpinaceae
15	*Calophyllum calaba*	Santa-maría	Huhonne	Calophyllaceae
16	*Cananga odorata*	Perfume tree	Apurva champaka	Magnoliaceae
17	*Casuacrina equisetialia*	Whistling pine	Surigi mara	Casuarinaceae
18	*Celastrus paniculatus*	Black oil plant	Bhavamga	Celastraceae
19	*Cinnamomum vernum*	Cinnamon	Kan kutlu	Lauraceae
20	*Citrus X sinensis*	Orange	Kittale hannu	Rutaceae
21	*Clusia rosea*	Autograph Tree	Autograph mara	Clusiaceae
22	*Cocos nucifera*	Coconut	Thengina mara	Arecaceae
23	*Commiphora caudata*	Hill mango	Konda movu	Burseraceae
24	*Coprosma repens*	Sunrise bush/ Mirror bush	Kannadi podhe	Rubiaceae
25	*Cryptolepis buchanania*	Shyama	Metaguli	Papilionaceae
26	*Curcuma aeruginosa*	Pink and blue ginger	Kasthuri Arishina	Zingiberaceae
27	*Diospyros ebenum*	Ceylon ebony	Abanasa	Ebenaceae
28	*Elaeagnus kologa*	South Indian Wild Olive	Melekollija	Elaeagnaceae
29	*Elaeocarpus ganitrus*	Rudraksha	Rudrakshi	Elaeocarpaceae

30	*Eugenia uniflora*	Surinam cherry	Shabdkosh	Myrtaceae
31	*Ficus hispida*	Hairy Fig	Kaadatthi	Moraceae
32	*Ficus racemosa*	Cluster fig	Atti	Moraceae
33	*Garcinia cowa*	Cowa mangosteen	Kuji thekera	Clusiaceae
34	*Garcinia xanthochymus*	Mysore Gamboge	Devajarige	Clusiaceae
35	*Glycosmis mauritiana*	Orange Berry	Goruda gida	Rutaceae
36	*Helicteres isora*	East Indian Screw tree	Bhutakarulu	Malvaceae
37	*Humboldtia brunonis*	Brown's Humboldtia	Haasige mara	Fabaceae
38	*Lawsonia inermis*	Henna	Goranti	Lythraceae
39	*Maesa indica*	Wild berry	Gudde haragi	Primulaceae
40	*Mangifera indica*	Mango	Mavu	Anacardiaceae
41	*Millettia laurentii*	African rose wood	-	Fabaceae
42	*Millettia pinnata*	Pongame	Hogemara	Fabaceae
43	*Mimusops elengi*	Spanish cherry (Elengi)	Bakula	Sapotaceae
44	*Morinda citrifolia*	Noni	Noni	Rubiaceae
45	*Moringa oleifera*	Drumstick	Nugge mara	Moringaceae
46	*Murraya koenigii*	Curry leaves	Kari-bevinagida	Rutaceae
47	*Murraya paniculata*	Orange jessamine	Kamini	Rutaceae
48	*Myrstica fragrance*	Nutmeg	Jakayi	Myrticacaeae
49	*Persea americana*	Butter fruit	Benne hannu	Lauraceae
50	*Persea macrantha*	Indian Persea	Gulimaavu	Lauraceae
51	*Phyllantas emblica*	Amla / Indian Gooseberry	Betta Nellikai	Phyllanthaceae
52	*Phyllanthus acidus*	Star gooseberry	Kiru Nellikayi	Euphorbiaceae
53	*Pimenta dioica*	Jamaican Pepper	Gandamenasu	Myrtaceae
54	*Pongamia pinnata*	Pongam Tree,	Honge mara	Fabaceae
55	*Pterocarpus marsupium*	Indian Kino Tree	Bendage mara	Fabaceae
56	*Punica granatum*	Pomagranate	Daalimbe	Lytraceae
57	*Samadera indica*	Niepa Bark Tree	Samdera	Simaroubaceae
58	*Scaevola Taccada*	Bhadraksha or Half flower	Bhadraka	Goodeniaceae
59	*Schefflera venulosa*	Umbrella plant	Billi	Araliaceae
60	*Sesbania grandiflora*	Agati	Agase	Fabaceae
61	*Simarouba glaaca*	Bitter wood	Lakshmi tara	Simaroubaceae
62	*Streblus asper*	Sand Paper Tree		Moraceae

63	*Strychnos nux-vomica*	Nux vomica	Hemmushti	Loganiceae
64	*Swietenia macrophylla*	Mahogany	Hebbevu	Meliaceae
65	*Syzygium cumini*	Jamun Fruit	Nerale	Myrtaceae
66	*vitex negundo*	Nocchi (Black)	Nocchi	Lamiaceae
67	*Vitex trifolia*	Three leaved chaste tree	Nirulakki	Lamiaceae
68	*Ziziphus jujuba*	Jujube red date	Bore Hannu	Rhamnaceae
69	*Vitex leucoxylon*	White wood Chaste Tree	Hole lakki	Lamiaceae
70	*Commiphora agallocha*		Guggal	Burseraceae
71	*Laurus nobilis*	Bay Laurel		Lauraceae
72	*Syzygium aromaticum*	Clove	Lavanga	Myrtaceae

ORNAMENTAL TREE

Table 7: Ornamental Tree at Kristu Jayanti College

Sl.No.	Botanical name	Common name	Local Name	Family
1	*Araucaria araucana*	Monkey's puzzle tree	Kōtigaḷu ogaṭu mara	Araucariaceae
2	*Arthrostylidium*	Climber bamboo	Hathuva bidaru	Poaceae
3	*Arucaria*	Christmas tree	Christmas mara	Araucariaceae
4	*Azadiracta indica*	Neem	Bevu mara	Meliaceae
5	*Bambusa vulgaris*	Bush bamboo	Bidaru	Poaceae
6	*Bambusoideae bamboo*	Bamboo	Bidaru	Poaceae
7	*Bauhinia tomentosa*	Yellow Bauhinia	Mani Mandara	Fabaceae
8	*Butia capitata*	Pindo plam/ Jelly Palm	-	Arecaceae
9	*Callistemon rigidus*	Bottle brush	Kempu torai	Myrtaceae
10	*Cestrum elegans*	Purple cestrum	Chitte hoovu	Solanaceae
11	*Chinese palm*	Palm	Palm	Arecaceae
12	*Chrysalidocarpus lutescens*	Areca palm	Adike palm	Arecaceae
13	*Cordyline australis*	Cabbage tree	Kosu mara	Asparagaceae
14	*Cupressus macrocarpa*	Lemon cyprus	Saru (Hindi)	Cuppresaceae
15	*Cupressus Sempervirens*	Pencil palm	-	Cuppresaceae
16	*Cupressus torulosa*	Bhutan Cypress	-	Cuppresaceae
17	*Cycas revoluta*	Cycas	Sago mara	Cycadaceae
18	*Dracaena marginata*	Madagascar dragon tree	-	Asparagaceae
19	*Dypsis lutescens*	Ornamental plam	Adike palm	Arecaceae
20	*Ficus benjamina*	Ficus	Bettadarali mara	Moraceae
21	*Ficus lyrata*	Fiddle leaf fig	-	Moraceae
22	*Filicium Decipiens*	Fern Tree	Kaadu hoovarasi	Sapindaceae
23	*Hiptage benghalensis*	Madhavi lata	Madhavi	Malpighiaceae
24	*Lagerstroemia speciosa*	Rose of india	Hole dasavala	Lythraceae
25	*Litichi chinensis*	Litchi	Lichi hannu	Sapindaceae
26	*Manilkara zapota*	Sapota	Chikku	Sapotaceae
27	*Markhamia lutea*	Nile Tulip	Kumkuma	Bignoniaceae
28	*Muntingia calabura*	Singapore cherry	Gasagase hannina mara	Muntingiaceae
29	*Mussanda frondosa (small)*	Hairless Mussaenda	Belloti	Rubiaceae
30	*Peltophorum pterocarpum*	Yellow fame	Booruga	Fabaceae

31	*Plumeria rubra*	Temple tree	Devaganigalu	Apocyanceae
32	*Roystonea regia*	Royal palm	-	Arecaceae
33	*Saraca asoca*	Ashoka tree	Ashokada mara	Fabaceae
34	*Spathodea campanulata*	AfricanTulip tree	Neeru kaayi	Bignoniaceae
35	*Syzygium samarangense*	Rose water apple	-	Myrtaceae
36	*Tabebuia Argentea*	Silver Trumpet	-	Bignoniaceae
37	*Tabebuia rosea*	Pink tree	-	Bignoniaceae
38	*Tacoma stans*	Yellow Trumpet	Koranchelar	Bignoniaceae
39	*Tectona grandis*	Teak	Theyga	Verbenaceae
40	*Terminalia mantaly*	Umbrella tree	-	Combretaceae
41	*Washingtonia robusta*	Mexcian fan palm	-	Arecaceae
42	*Cocos capitata*	Pindo palm		Arecaceae
43	*Colocartus erectus*	Green button Wood		Combretaceace
44	*Hibiscus tiliaceus small*	Sea hibiscus	Bilipatta	Malvaceae