KNM Government Degree College Miryalaguda, Nalgonda.
Present: Smt. Ruxana Mohammod, M.Com, M.A, N.E.T, (Ph.D)

From
Principal (F.A.C.),
KNM Government Degree College,
Miryalaguda, Nalgonda (Dist.)

To
The Commissioner of Collegiate Education,
Nampally, Hyderabad,
Telangana State.

Lr.Rc.No.141 /KNMGDC /2021,Dt: 01.11.2021.

Respected Sir,

Sub: Submission of Green Audit Report-regarding

Ref: File No. CCE-AC/QLTY/NAAC//1/2021-Academic Cell Dt: 23-04-2021

&&& &&& &&&

As per the reference above cited the Green Audit report in respect of KNMGDC Miryalaguda is here with submitted.

The above information is submitted for favour of arranging further necessary action.

Yours Faithfully,

Principal(FAC)
KNM GDC, Miryalaguda

Principal
K.N.M. Govt. Degree College
MIRYALGUDA

KNM GOVT. DEGREE COLLEGE MIRYALAGUDA

(Accredited by NAAC)

(Affiliated to Mahatma Gandhi University)

GREEN AUDIT REPORT

2020-21

Prepared by

Green Audit Committee

GREEN AUDIT COMMITTEE

Smt Ruxana Mohammod
Principal
K.M.M. Govt. Degree College
NIRYALGUDA
Chairman, Green Audit Committee

Smt K Shiva Rani
Department of Botany
K.M.M. Degree College
NIRYALGUDA
Convener, Green Audit Committee

Members

- Smt K Haritha — Assistant Professor of Economics (IQAC CO-ORDINATOR)
- Dr B Venkateswarlu — Assistant Professor of Chemistry
- Sri J Narender Reddy — Lecturer in Zoology
- Sri T Venkata Ramana — Lecturer in Physics
- Sri P Srinivas — Lecturer in Mathematics
- Smt S Sunanda — Lecturer in Political Science
- Sri N Shekhar Reddy — Record Assistant
- D Sai Ramachary — Student representative
- A Saraswathi — Student representative

I/C College Principal — 1/11/2019

Principal
Nagarjuna Govt. College
(Autonomous) NALGONDA
Sri K. Chandrashekar

CERTIFICATE OF GREEN AUDIT

*This is certify that Green Audit Committee has conducted the "Green Audit" of **KNM GDC, Miryalaguda** campus for the academic session 2020-21. The audit is conducted sincerely by applying requisite parameter and the report is prepared scientifically. This report consists of pages 1 to 76.*

Harika. K.
IQAC CO-ORDINATOR.
Vice-chairman.

PRINCIPAL (EAC)
K.N.M. Govt. Degree College
MIRYALGUDA
(Chairman)

Forwarded Through

ID college Principal. - 1/11/2021.

Principal
Nagarjuna Govt. College
(Autonomous) NALGONDA
Sri. K. Chandra Shekar

Green Audit Co-ordinator - K. Shiva Rani.
Department of Botany
K.N.M. Degree College
MIRYALGUDA - 508 207.

GREEN AUDIT REPORT

INDEX

Introduction

Green audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of various establishments. Green auditing is a means of assessing environmental performance (Welford, 2002). It is a systematic, documented, periodic and objective review by regulated entities of facility operations and practices related to meeting environmental requirements (EPA, 2003). This includes all water, Solid waste, energy status of examination.

It aims to analyze environmental practices within and outside of concerned sites, which will have an impact on the eco-friendly ambience. Green audit can be useful tool for a college to determine how and where they are using the most energy or water resources; the college can then consider how to implement changes and make savings. It can also be used to determine the type and volume of waste, which can be used for recycling project or to improve minimization plan. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of Green impact on campus. It is imperative that the college evaluates its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent. The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background, it becomes essential to adopt the system of the Green Campus for the institutes which will lead for sustainable development and at the same time to reduce a sizable amount of atmospheric carbon dioxide from the environment. In recent time, the Green Audit of an institution has been becoming a paramount important for self assessment of the institution which reflects the role of the institution in mitigating the present environmental problems. Therefore, the purpose of the present green audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards.

Objectives

The green audit committee focused on Material issues pertaining to college which have the highest influence on the Green Attributes of the College.

1. To conduct the baseline survey to know the reality status of green practices.
2. To document the ambient environment condition of weather, air , water and noise of the college.
3. To document the waste disposal system.
4. To analyze the Floral and Faunal diversity in college campus.
5. To Estimate the energy requirement of the college.
6. To analyze and suggest solution for problems identified in audit.
7. To increase environmental consciousness throughout the campus among all the stakeholders.

About the College

KNMGDC was established in 1981 by Local stake holders with a view to provide Higher Education to the Community of Erstwhile Miryalaguda Constituency by forming Miryalaguda Education Society. Initially it was started with only two branches of Humanities, B.A and B.Com with intake of capacity of 82 , in Govt. Junior College , Miryalaguda with a view to provide permanent Accommodation Miryalaguda Educational Society approached local philanthropists and collected required amount of money and land.

The college was shifted to its permanent premises, constructed in four acres of land near Eedulaguda adjacent to Guntur Highway. Science Branches BSc, MPC and BZC were also started in 1989. It continued up to 1991 as a private college successfully providing quality education to the rural students of Miryalaguda constituency and its surrounding students. The institution was given Aid by the then AP Government in 1991only to the Arts Stream BA and B.Com where as science sections BSC MPC and BZC continued as private . The institution continued as partially aided college up to 2011 with the request of the Stake holders and Miryalaguda society to hand over the college to the Government Taken Over G.O. was issued in 2008 and it was physically taken over by the Government in 2011. Aided staff was absorbed into the Government services in 2011 and the Un-Aided staff was absorbed in 2018.

Since its inception in 1981, the institution has been providing quality services to the rural and under privileged students of Miryalaguda Vicinity and produced thousands of graduates who settled as public servants in different categories nearly for three decades. Recently the institution has been accredited by NAAC 'C' grade.

At present the institution is offering 7 programmes with CBCS system with 400 students there are 13 Teaching staff and 12 Non Teaching staff working against sanctioned posts.

Photograph of the College

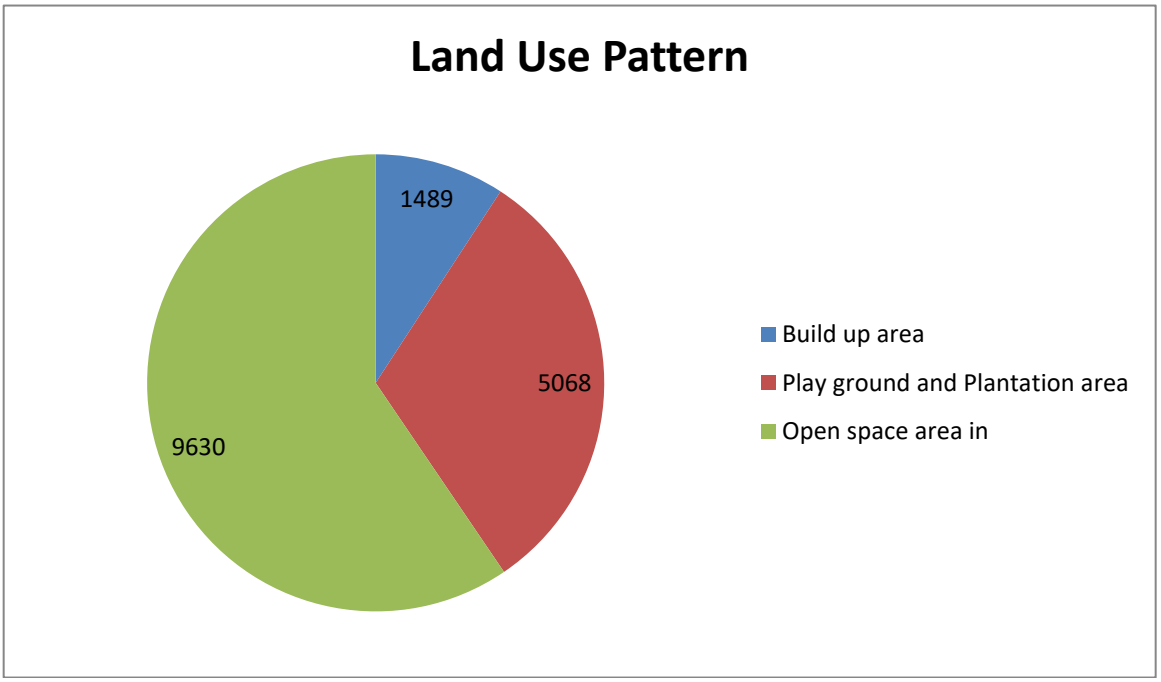
Main building

Land Use Data

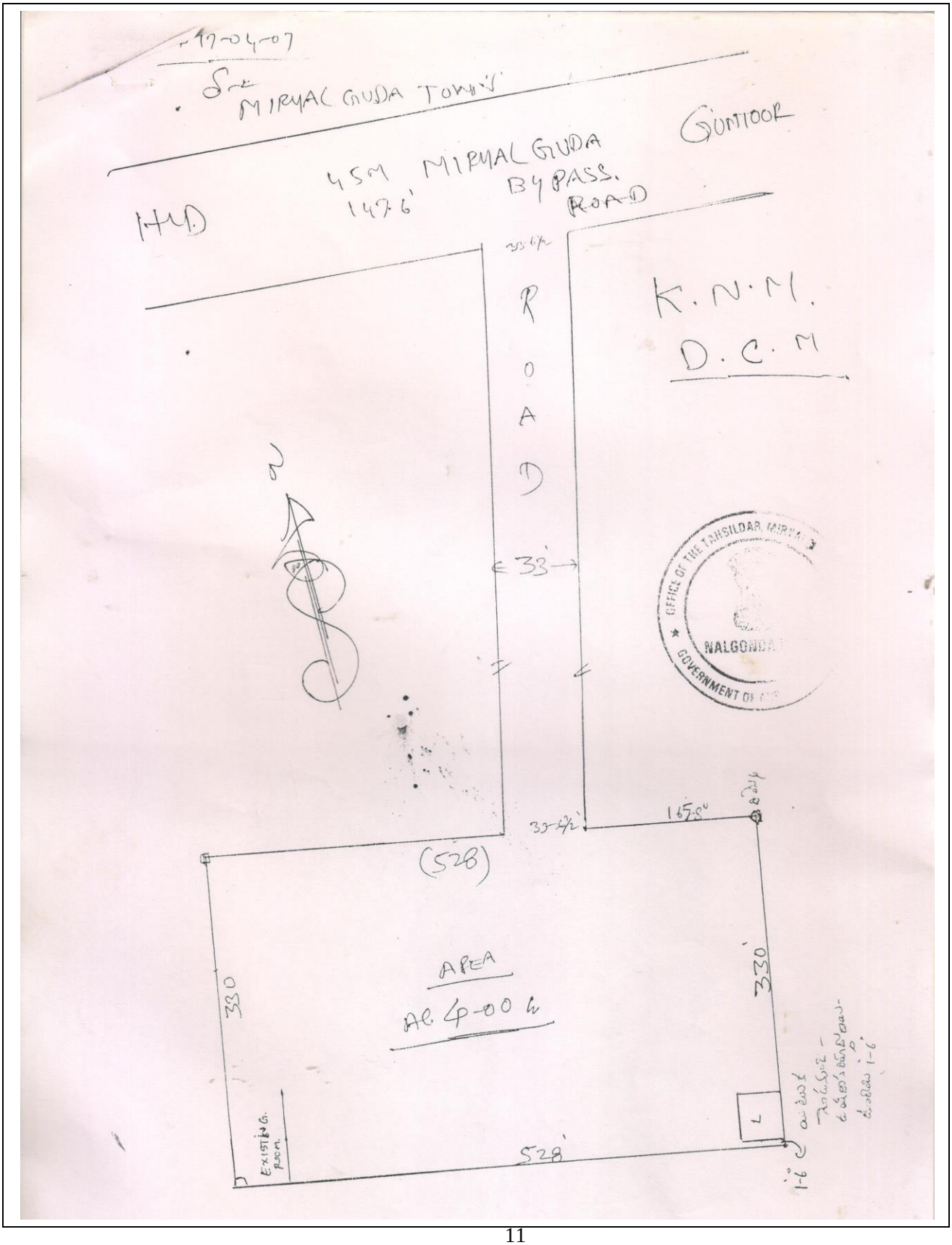
KNM Government Degree College is located at Miryalaguda town of Nalgonda District close to state highway from Narketpally to Addanki, within the geo-position Latitude 16.855974 longitude 79.585143.It encompasses area about 4 acres. The college has following land use pattern.

Categories Land Use	Area in Sq.m
Build up area	1489
Play ground and Plantation area	5068
Open space area in	9630
Total area	16187

The total area of KNM Government Degree College is 16187 sqm out of which the buildup area is 1489 sqm and open space area is 9630 sqm.



College Layout Plan



METHODOLOGY:

Following methodology was adapted for conducting the audit of the college for the academic session 2021-22.

Steps:

1. Systematic and comprehensive data collection required for green audit.
2. Collection and reading of documents with physical evidences.
3. **Pre-audit activities –**
    - The site and area that are to be audited need to be determined and selected.
    - The green audit scope and objectives were identified.
    - The audit team collects the entire document which is essential for performing green audit.
    - Audit team and assignment for responsibility were established.
    - The background information on the facility including the facility organization, layout and processes, and the relevant regulations and standards were collected.
4. **Onsite audit activities-**
    - Collect information about land use pattern and use analysis of the college campus.
    - Gathering audit evidence
    - Evaluation of audit evidence against the objectives of the audit.
    - Monitor the water parameter is performed.
    - Collection of site inspection of data regarding the solid waste, liquid waste, e-waste.
    - An exit meeting to explain the audit findings

Observations and Recommendations

Floral Diversity of the College

KNM Government Degree College was established in the year 1981, has eco-friendly environment. It has long legacy of healthy environmental practices periodic plantation, their preservation and maintenance. Its land use is about 30 % of total area is occupied by open land and plantation that generate better campus environment. Every year various department like Botany, NSS, NCC and Environmental Awareness committee organize the plantation programme with the help of faculty and students. College has well maintained botanical garden enriched with Medicinal Plants. The campus maintains the biodiversity of plants.

In total, based on data collected by Botany department there are 186 plants in the college campus including tree, shrubs and herbs during the academic session 2021-22. There are 90 plants present in the college Botanical Garden representing different family.

Vegetative propagation :

To learn how to propagate the garden vegetation , garden visit and garden work is organized for botany students and students learn various propagation techniques like cutting and grafting.

Use of medicinal plants:

There are many Medicinal Plants planted in college Botanical garden. Students don’t have knowledge how to use and identify the particular plants therefore faculty members of the botany department help them to identify and use these plants. Every year botany department organizes Medicinal Plant Exhibition for local people, students and faculty members.

List of species planted by student in the college campus

Sr. No	Botanical Name	Common name	Family	Number
1	Bhauhinia Variegata	Kanchnar (Deva kanchan)	Caesalpiniaceae	2
2	Tabebuia rosea	Pink poui (Rosy trumpet)	Bignoniaceae	2
3	Dalbergia Sisso	North Indian rose wood	Fabaceae	3
4	Delonix Regia	Royal Poinciana (Thuraye)	Caesalpinaceae	2
5	Senna Siamea	Seema Thangedu	Caesalpinaceae	2
6	Tectonagrandis	Teak	Verbenaceae	12
7	Azadirachta Indica	Neem	Meliaceae	12
8	Pongamia pinnata	Pongam Oil Tree (kanuga)	Fabaceae	20
9	Terminalia Catapp	Badham	Combretaceae	10
10	Cono Carpus erectus	Button mangrove	Combretaceae	36
11	Leucaena Leucocephala	Subhabul	Mimosaceae	5
12	Albezzia lebbek	Dirisena	Mimosaceae	5
13	Schefflera arboricola	Umbrella Plant	Araliaceae	2
14	Ficus benghalensis	Marri Plant	Moraceae	1
15	Ficus religiosa	Raavi Plant	Moraceae	1
16	Moringa Olefera	Drum Stics	Moringaceae	4
17	Bougainvillea Glabra	Paper Flower	Nyctaginaceae	2
18	Musa acuminate	Arati (Banana)	Musaceae	1
19	Barleria Cristata	December plant	Acanthaceae	1
20	Mirabilis Jalapa	4 ‘o’ clock plant	Nyctaginaceae	1
21	Tithonia Diversifolia	Mixican Sunflower	Asteraceae	1
22	Tamarindus Indica	Tamarind	Caesalpinaceae	1
23	Butea monosperma	Moduga	Fabaceae	1
24	Murrayapaniculata	Orange jasmine	Rutaceae	1
25	Pseuderanthemum bicolor	Chukka malli	Acanthaceae	1
26	Caladium bicolor	Artist’s pallet	Araceae	2
27	Nymphaea nouchali	Water lilies	Nymphaeaceae	1
28	Portulaca grandiflora	Table rose	Portulacaceae	6
		Total		

List of plant in Botanical Garden

Sr. No	Botanical Name	Family	Common Name	Habit
1	*Hibiscus rosa-sinensis*L.	Malvaceae	Mandara	Shrub
2	*Tabernae Montana Divaricata*	Crape Jasmine	Apocyanaceae	Shrub
3	*Murraya Paniculata*	Rutaceae	Orange Jasmine	Tree
4	*Thuja occidentalis*	Cupressaceae	Thuja	Shrub
5	*Aloe Vera*	Liliaceae	Kalabanda	Shrub
6	*Tithonia Diversifolia*	Asteraceae	Mexican Sunflower	Shrub
7	*Nyctanthus arbortristis*	Oleaceae	Parijatham	Tree
8	*Ixora Coccinea*	Rubiaceae	Nooru Varahalu(Ixora) (Jungle Geranium)	Shrub
9	*Mangifera Indica*	Anacardiaceae	Mango	Tree
10	*Coleus Scutellaroides*	Lamiaceae	Painted Nettle	Shrub
11	*Codium Variegatum*	Euphorbiaceae	Garden Croton	Shrub
12	*Acalypha Wilkesiana*	Euphorbiaceae	Copper Leaf Plant	Shrub
13	*Dracaena Marginata*	Agavaceae	Dracaena	Shrub
14	*Plumeria Pudica*	Apocyanaceae	Bridal Bouquet	Tree
15	*Rosa Hybrid*	Malvaceae	Hibiscus	Shrub
16	Tagetus Patula	Asteraceae	Marigold	Shrub
17	Crossandrainfundibuliformis	Acanthaceae	Kanakambaram	Herbs
18	Dypsis Lutescens	Arecaceae	Butterfly Palm	Shrub
19	Chrysanthemum Indicum	Asteraceae	Chrysanthemum	Herbs
20	Canna Indica	Cannaceae	Satyanarayana Swamy Plant	Shrub
21	Ficus Carica	Mulberry Family	Anjeer plant	Tree
22	Spathodea Campanulata	Bignoniaceae	Nandi flame	Tree

Medicinal Plants list in the college campus

Sr. No	Botanical Name	Common Name	Family	Habit
1	Phyllanthus emblica	Amla	Phyllanthaceae	Tree
2	*Hibiscus rosa sinensis*	Hibiscus	Malvaceae	Shrub
3	*Lawsoniainermis*	Henna Tree	Lythraceae	Shrub
4	*Curcuma Longa*	Turmeric	Zingiberaceae	Herbs
5	*Vinca rosea*	Madagascar Periwinkle	Apocyanaceae	Herbs
6	*Murraya koenigii*	Curry Leaf	Rutaceae	Shrub
7	*Ocimum Sanctum*	Tulasi (Holy Basil)	Lamiaceae	Herbs
8	*Aloe Vera barbadensis*	Kalabanda	Liliaceae	Herbs
9	*Azadiracta Indica*	Neem	Meliaceae	Tree
10	*Piper Betle*	Thamalapaku	Piperaceae	Climber
11	*Bryophyllum pinnatum*	Ranapala	Crassulaceae	Herbs
12	*Acalypha Indica*	Pippanti	Euphorbiaceae	Herbs

Fruit Yielding Plants in the Campus

Sr. No	Botanical Name	Common Name	Family	Habit
1	Mangifera Indica	Mango	Anacardiaceae	Tree
2	*Syzygium Cumini*	Black plum	Myrtaceae	Tree
3	*Musa acuminate*	Banana	Musaceae	Tree
4	*Psidium guajav*	Guava	Myrtaceae	Tree
5	*Annona Squamosa*	Custard apple (Seethaphal)	Annonaceae	Tree
6	*Annoeiculata*	Sugar apple (Ramaphal)	Annonaceae	Tree
7	*Annona muricta*	Laxmanphal	Annonaceae	Tree
8	*Manilkara zapota*	Sapota	Sapotaceae	Tree
9	*Carica papaya*	Papaya	Caricaceae	Tree
10	*Citrus limetta*	Sweet lime	Rutaceae	Tree
11	*Punica granatum*	Pomegranate	Lythraceae	Shrub
12	*Citrus lemon*	Lemon	Rutaceae	Tree

Vegetable garden

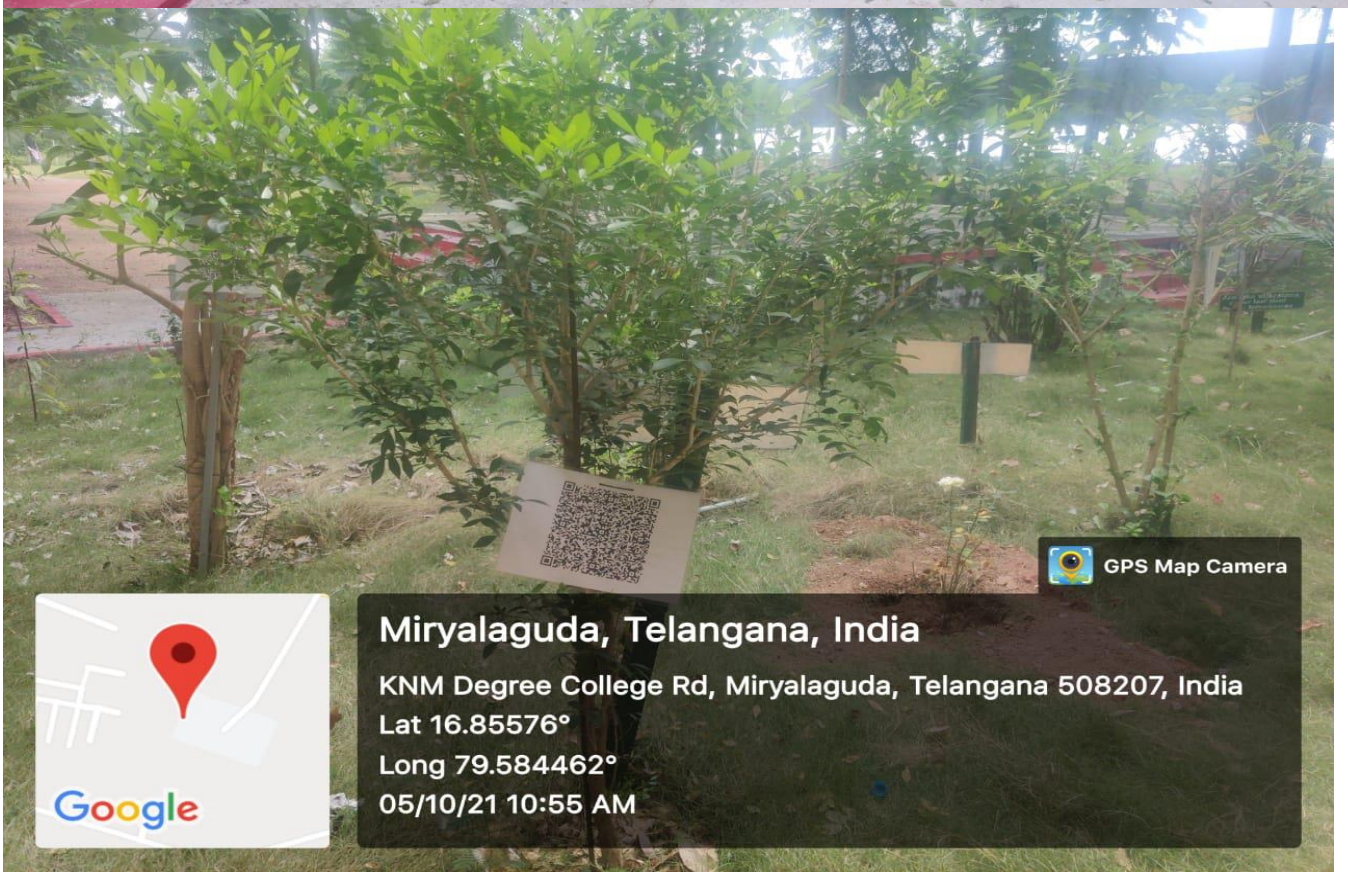
Sr. No	Botanical Name	Common Name	Family	Habit
1	Hibiscus Sabdariffa	Gongura	Malvaceae	Shrub
2	*Basella alba*	Bengalore Bachali	Basellaceae	Herbs
3	*Abelmoschus esculentus*	Ladies fingers	Malvaceae	Shrub
4	*Cyamposis tetragonoloba*	Cluster bean	Fabaceae	Shrub
5	*Solanum melongena*	Brinjal	Solanaceae	Shrub
6	*Mentha Spicata*	Pudhina	Lamiaceae	Herbs

Recommendations:

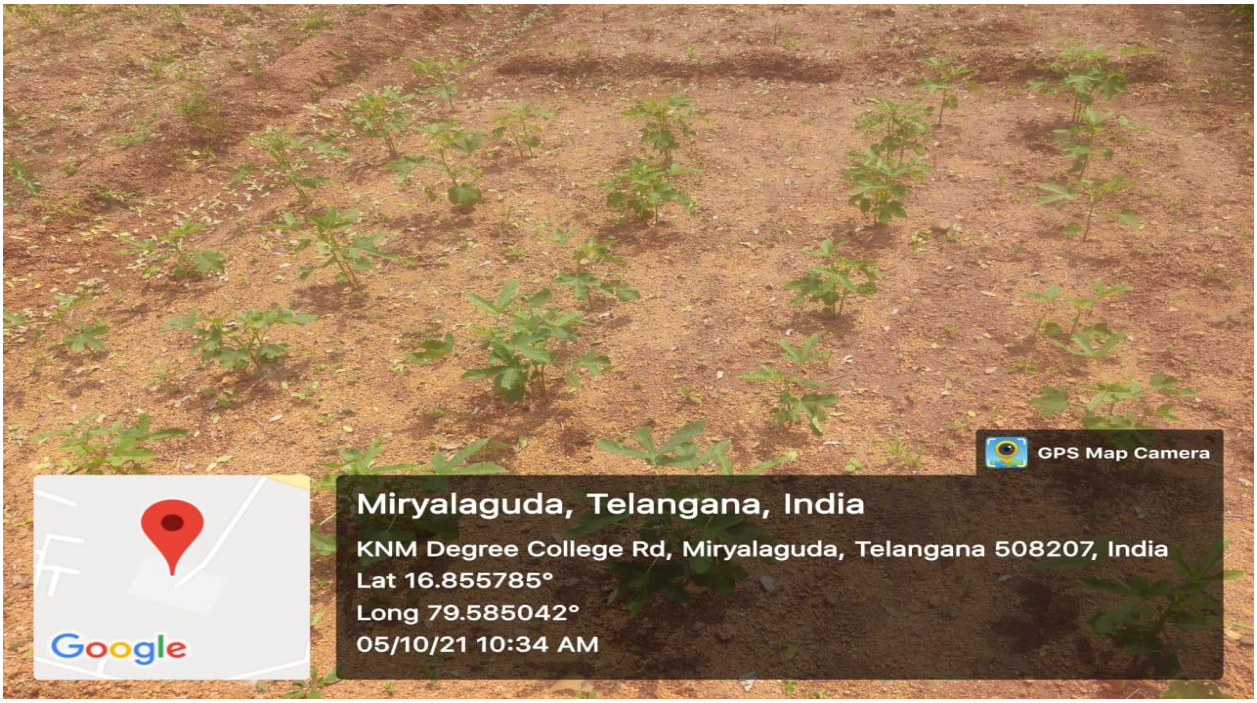
To maintain green and eco-friendly college campus, more trees need to be planted. A thick green belt development along the fence is strongly recommended. The plant diversity shall be maintained. The plant species that are found suitable are suggested for plantation and greenbelt development. In addition to above, some flowering plants, shrubs, herbs and climber plant species suggested for beautification in the college campus.

Garden of the college


NOT ME BUT YOU
Botanical Garden
GPS Map Camera
Miryalaguda, Telangana, India
KNM Degree College Rd, Miryalaguda, Telangana 508207, India
Lat 16.85573°
Long 79.584583°
05/10/21 10:54 AM
Google


GPS Map Camera
Miryalaguda, Telangana, India
KNM Degree College Rd, Miryalaguda, Telangana 508207, India
Lat 16.85576°
Long 79.584462°
05/10/21 10:55 AM
Google

Vegetable Garden



Vegetable Garden

Medicinal Plants in Botanical Garden

Green Activities

Our students observe soil testing methods, types of different crops, agro forestry block and shade nets


AI QUAD CAMERA


PROFESSOR JAYASHANKAR TELANGANA STATE AGRICULTURAL UNIVERSITY
KRISHI VIGYAN KENDRA
KAMPASAGAR, NALGONDA (DIST), TELANGANA
AGROFORESTRY BLOCK
(AGRI-SILVI SYSTEM)
Tree: Melia dubia
Crop: Millet / Pulse
Saplings Planted: 01.8.2019
Area: 2000 m²
AI QUAD CAMERA

OUR GREEN CLUB STUDENTS INVOLVED IN SEED GERMINATION PROCESS IN EMPTY COCONUTS

Plantation Programme

Awareness rally on Plantation Programme

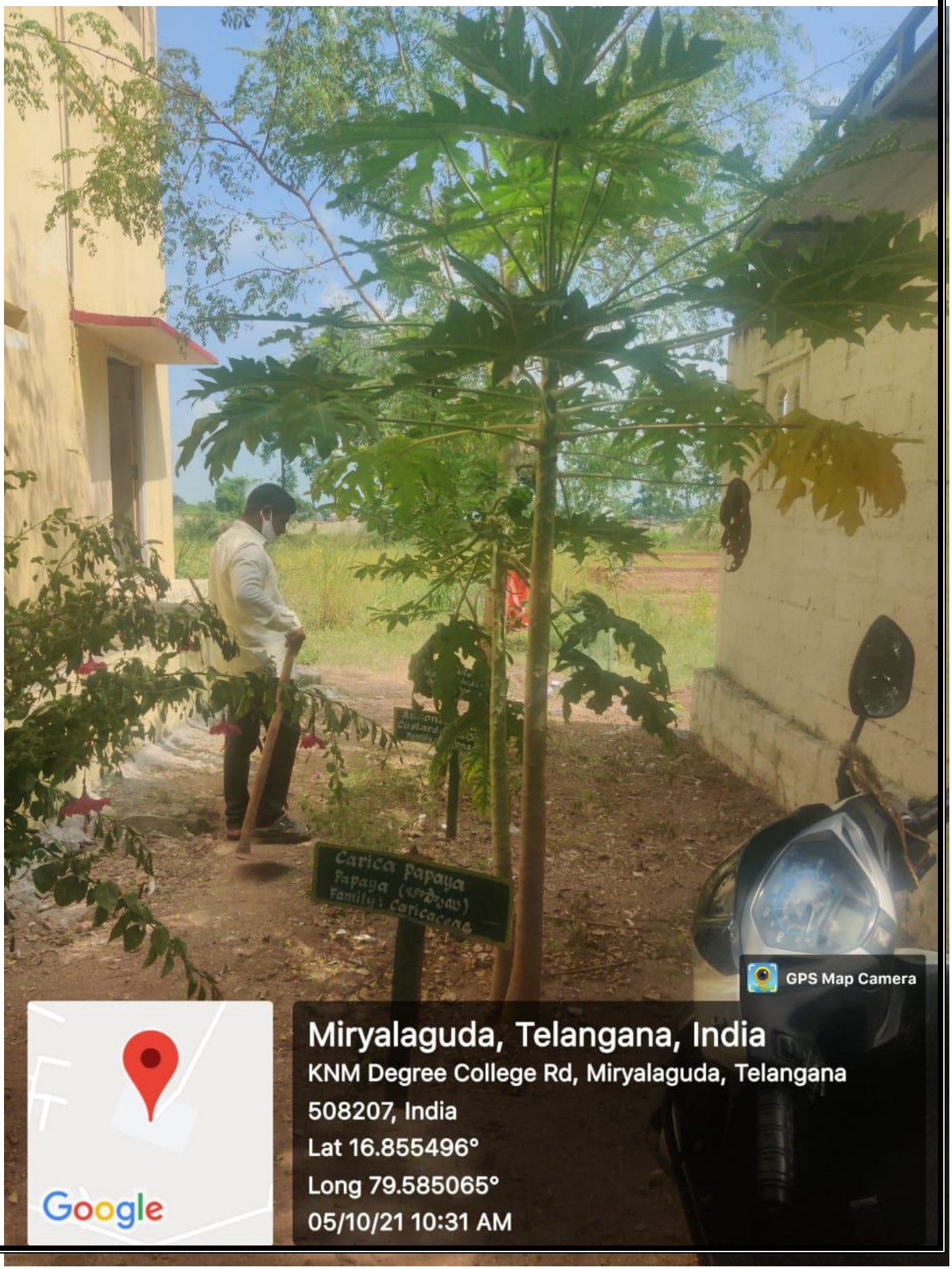

NATIONAL SERVICE SCHEME
KNM GOVT DEGREE COLLEGE
MIRYALAGUDA
MAHATMA GANDHI UNIVERSITY
NALGONDA


KNM GOVT DEGREE COLLEGE
KCR


ఇంటింటా మొక్కలు
నాటుదాం
ఊరంతా పచ్చదనం
నింపుదాం
హరిత హారం
హరితహారం
KNM GOVT. DEGREE COLLEGE


చెట్లు నాటితే క్షేమం
చెట్లు నరికితే క్షామం
హరిత హారం
KNM GOVT. DEGREE COLLEGE


KNM GOVT. DEGREE COLLEGE


Carica papaya
Papaya
GPS Map Camera
Miryalaguda, Telangana, India
KNM Degree College Rd, Miryalaguda, Telangana
508207, India
Lat 16.855496°
Long 79.585065°
05/10/21 10:31 AM
Google

Plantation Programme

Haritha Savaal (Green Challenge)

సాక్షి
నల్లగొండ

3/6

కేఎన్ఎం కళాశాలలో హరితహారం

మొక్కలు నాటుతున్న పూర్వ విద్యార్థులు

మిర్యాలగూడ : స్థానిక కేఎన్ఎం ప్రభుత్వ డిగ్రీ కళాశాలలో ఆదివారం కళాశాల పూర్వ విద్యార్థులు హరితహారం కార్యక్రమం నిర్వహించారు. కళాశాల ఆవరణలో మొక్కలు నాటారు. సాధినేని శ్రీనివాస్, కోటయ్య, శ్రీనివాస్, ఉపాధ్యాయుడు ఫ్రాన్సిస్, కళాశాల ప్రిన్సిపాల్ ప్రభాకర్‌రావు, హరిత హారం కన్వీనర్ శివరాణి పాల్గొన్నారు.

Students participation in plantation programme

ANNUAL REPORT OF GREEN CLUB FOR 2020-21

The first Green club meeting for the year 2020-21 was held on September 2nd 2020 at 3 pm. The agenda of the meeting was to discuss about various activities to be conducted from Green club for the academic year 2020-21. The discussion was mainly focused on preparations to be made for Green club and conduct events in smooth way.

The 2nd meeting of this club was held on 19-01-2021 at 3 pm to discuss the events conducted in the previous semester and the events to be conducted in the forth coming semester.

The following events were conducted during the year 2020-21

S.No.	Date	Activity	Description
1	07-09-2020	Pond Eco system preparation	Our college green club students were participated and prepared pond eco system
2	06-10-2020	Helmet Awareness programme	Our college green club students conducted helmet awareness programme in Miryalaguda Town
3	16-12-2020	Campaign on save fuel and switch off your engine for better environment	The campaign install the importance of saving of fuel for better environment in students as well as the public
4	22-01-2021	Swachh Bharath programme	Our NSS, NCC and Green club students were participated in Swachh Bharath Programme in Miryalaguda Town

OUR COLLEGE GREEN CLUB

OUR COLLEGE GREEN CLUB STUDENTS PREPARED POND ECO SYSTEM


Pond Ecosystem
(కొలను ఆవరణ వ్యవస్థ)
Department of Botany


రత్నప్రభా కళామేదిక
KNM

Faunal Diversity

KNM Government Degree College with 4 acres of land is located in the Miryalaguda, Dist.Nalgonda, Telangana, India (Latitude 16.855974 longitude 79.585143). The college established in 1981, comprises three major areas i.e. Main building, Commerce & Science building and Botanical garden. The college campus supports an immense diversity of plants and animals including native species as well as some rare species. A total 17 animal species were observed in the college campus including invertebrates and vertebrates (different groups like Beetle, Moth, Bug, Bird, Ant, Spider, Wasp, Millipede, Louse, Earthworm, Snail, Butterfly, Dragonfly, Grasshopper etc.). The floral diversity in the campus serves as a roosting place for the different species of the bird, it also acts as a habitat for a variety of insects, variety of flowering plants in the botanical garden supports a wide variety of butterflies and birds. The college environment has rich and abundant faunal diversity enlisted as below.

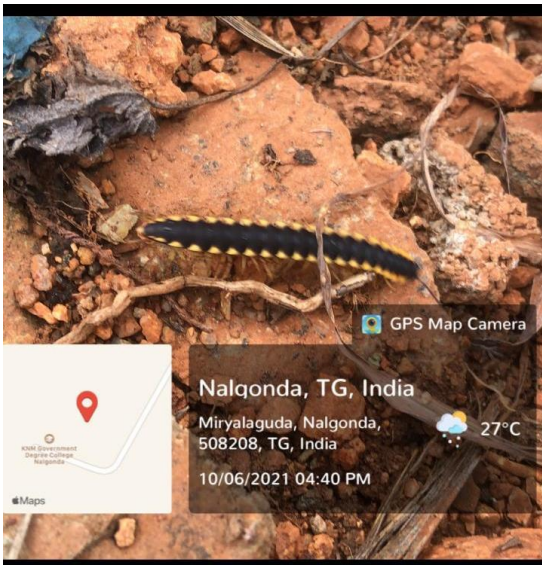
SN	Scientific Name	Common Name	Family
1	*Eratigena atrica*	*Giant house spider*	*Agelenidae*
2	Camponotus	Carpentar Ant	Formicidae
3	Ropalidia Marginata	yellow wasp	Vespidae
4	Orthetrum Sabina	Slender skimmer	Libellulidae
5	Orthetrum caledonicum	Blue skimmer	Libellulidae
6	Mantis religiosa	praying mantis	Mantidae
7	Calotes Versicolor	common Garden Lizard	Agamidae
8	Acridotheres	Common Myna	Sturnidae
9	Anoplodesmus tanjoricus	Yellow spotted millipede	Polydesmidae
10	Pantala flavescens	Globe skimmer	Libellulidae
11	Hemidactylus frenatus	House Gecko	Gekkonidae
12	Danaus genutia	Butterfly	Nymphalidae
13	Naja naja	snake	Elapidae
14	Passer Domesticus	House sparrow	Passeridae
15	Corvous splendens	House crow	Corvidae
16	Rattus rattus	Rat	Muridae

PHOTOPLATE

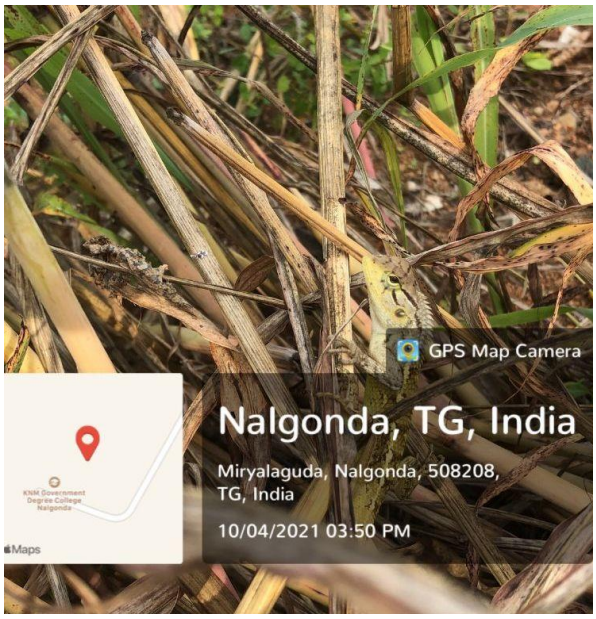
Passer Domesticus

Acridotheres

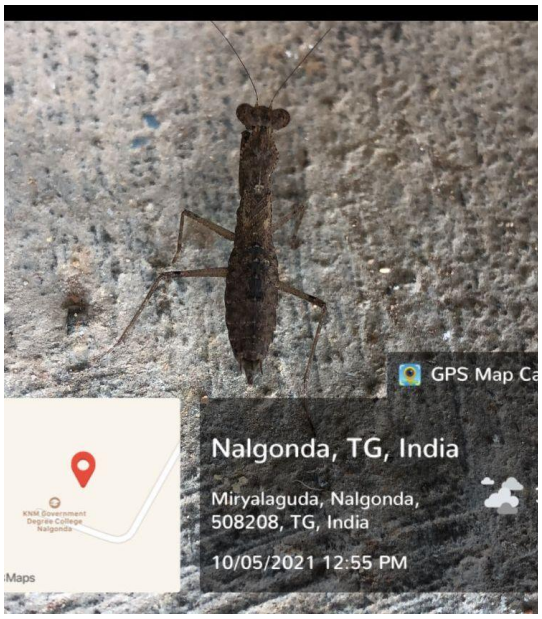
Corvous splendens



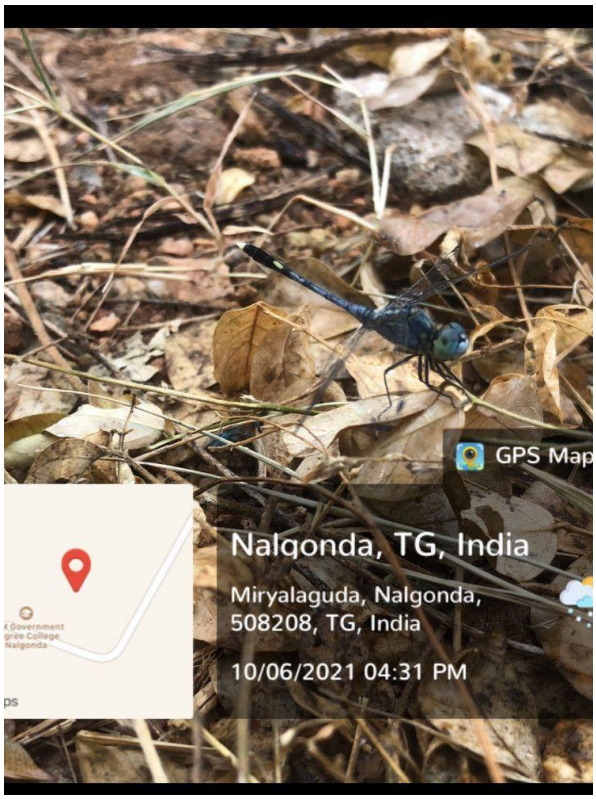
Anoplodesmus tanjoricus



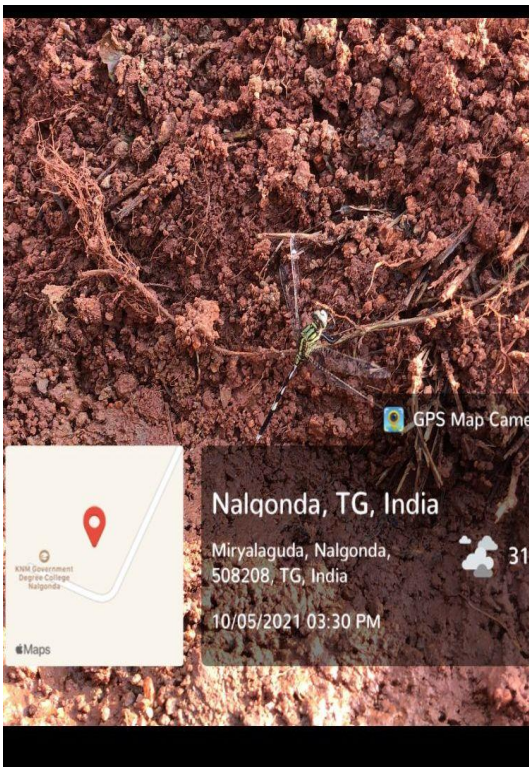
Calotes Versicolor



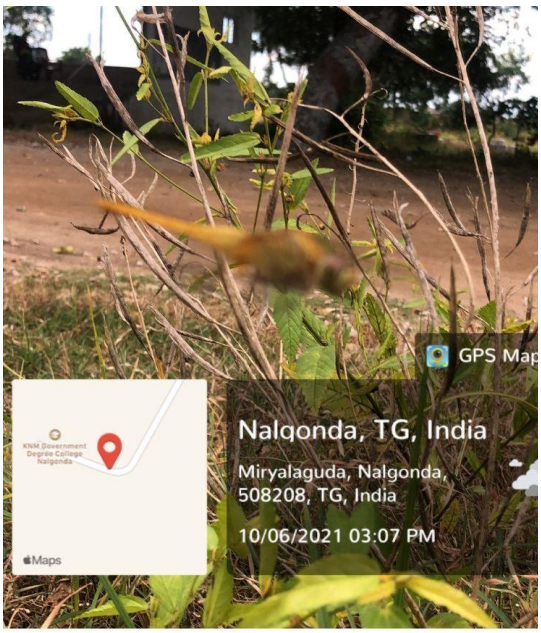
Mantis religiosa



Orthetrum caledonicum

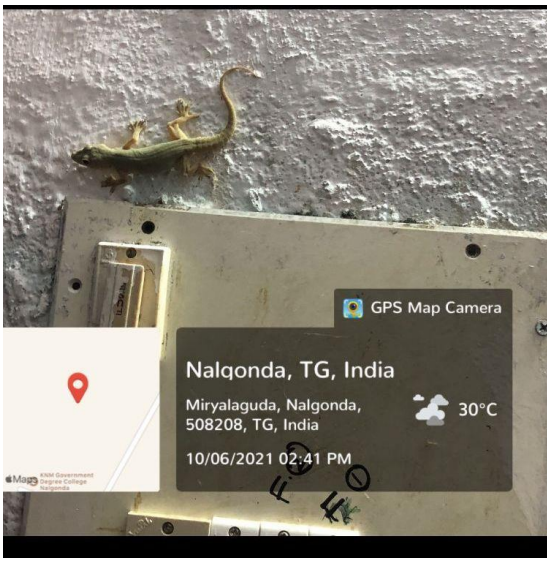


Orthetrum Sabina

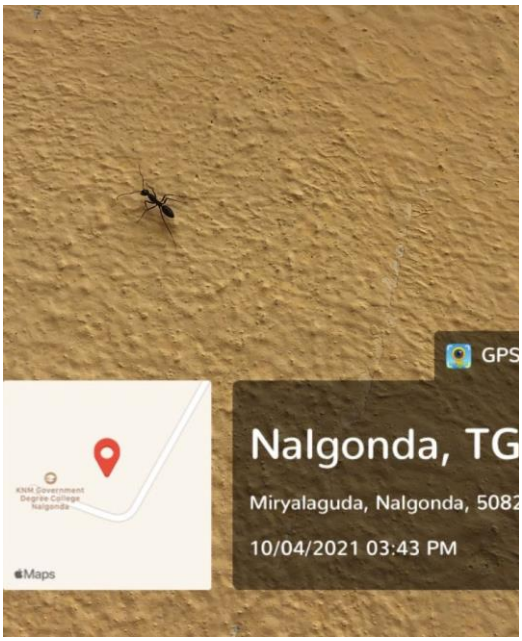


Pantala flavescens

Danaus genutia



Hemidactylus frenatus



Camponotus

Data and photographs collected from Zoology department

Awareness Programme

Several significant and fruitful awareness programmes both students and staff of the campus are arranges every year. The reflection from the students are evident how effective such awareness programmes conducted in the campus.

Major programmes conducted in the campus during the last 3 years

1. Field visits to different types of eco system
2. Haritha Haram and Haritha Mithra
3. Observances of Environment Day, Ozone Day etc.,

Conservation Activities

1. Collection and distribution of saplings
2. Birds and Butterfly watching
3. Sapling plantation etc.

Energy Audit

Introduction:

An energy audit is an inspection, survey and analysis of energy consumed in a system in order to identify opportunities for reducing energy expense and carbon footprints.

Energy Audit Objectives:

- To study the present pattern of energy consumption
- To identify energy saving measures for energy optimization
- To implement the acceptable and feasible measures for energy conservation.

Methodology:

- **Historical data Analysis:**

  This step involves collection and study of electricity bills of college in order to established base line data on energy consumption and its variation with change in production volume. Energy audit team collected energy bills of college for session 2019- 2020 and analysis them.

- **Actual measurement and data analysis:**

  This step involves actual site measurement. Energy audit team visited to all units of college campus and collected the data for analysis like number of electrical appliances, their wattage and operating time.

- **Identification of energy conservation opportunities:**

  This step involves the identification of acceptable and feasible opportunities for minimizing energy consumption and their evaluation for implementation. After the complete data analysis, energy audit team finds out the opportunities towards energy conservation and made some recommendations.

Summary of Energy Audit

1) Electrical energy system:

Source of electricity : TSSPDCL				
Details of Electricity Meters				
Installation area	Installation Date	Meter Number	Connection Type	Sanctioned Load
Single Building	23/05/2018	4320108794	LT III	1.00 KW
Total Sanctioned Load : 1.00 KW				

2) Electricity Bill Analysis:

Period	Total consumption of Units	Avg. Consumption of units per month
Jun-20 to May-21	**10868**	**906**

3) Remarks:

- 100% use of incandescent bulb and CFL bulb
- Good initiative towards use of renewable energy source through solar street lamp
- Maximum use of natural light.

Thus, very good initiatives are taken by college for energy conservations.

4) Energy conservation opportunities:

- It has been observed that majority of electrical power consumption is through Ceiling fans having wattage 70 Watt. Therefore it is recommended to replace these ceiling Fans with 40 Watt Energy Efficient Fans.

Historical Data analysis

1) Source of electrical energy:

KNM GDC, Miryalaguda electrical energy from MSEDCL (BU/1627/ANJANGAON SUB-DN). The details of meters are tabulated below.

Source of electricity : TSSPDCL				
Details of Electricity Meters				
Installation area	Installation Date	Meter Number	Connection Type	Sanctioned Load
Single Building	23/05/2018	4320108794	LT III	1.00 KW
Total Sanctioned Load : 1.00 KW				

2) Major Consumers of electricity:

Major consumers of electricity in the college campus are

- Fan / Exhaust fan
- Water purifier
- Pumping motors
- Router system
- Computer
- Printer and Scanner
- Xerox Machines
- LCD projectors
- Laboratory equipments
- UPS
- CCTV

3) Study of month wise unit consumption:

Month	Total Consumption (Monthly) **Unit (kWh)**
Jun -20	721
Jul-20	735
Aug-20	750
Sep-20	749
Oct-20	748
Nov-20	799
Dec-20	820
Jan-21	921
Feb-21	892
Mar-21	1112
Apr-21	1300
May-21	1321
Total Consumption (Yearly)	**10868**
Average Monthly Consumption	**906**
% Energy consumption	**100%**

Observations:

- Total annual consumption of college campus is **10868 kWh.**
- Average monthly consumption of college campus is **906 kWh**

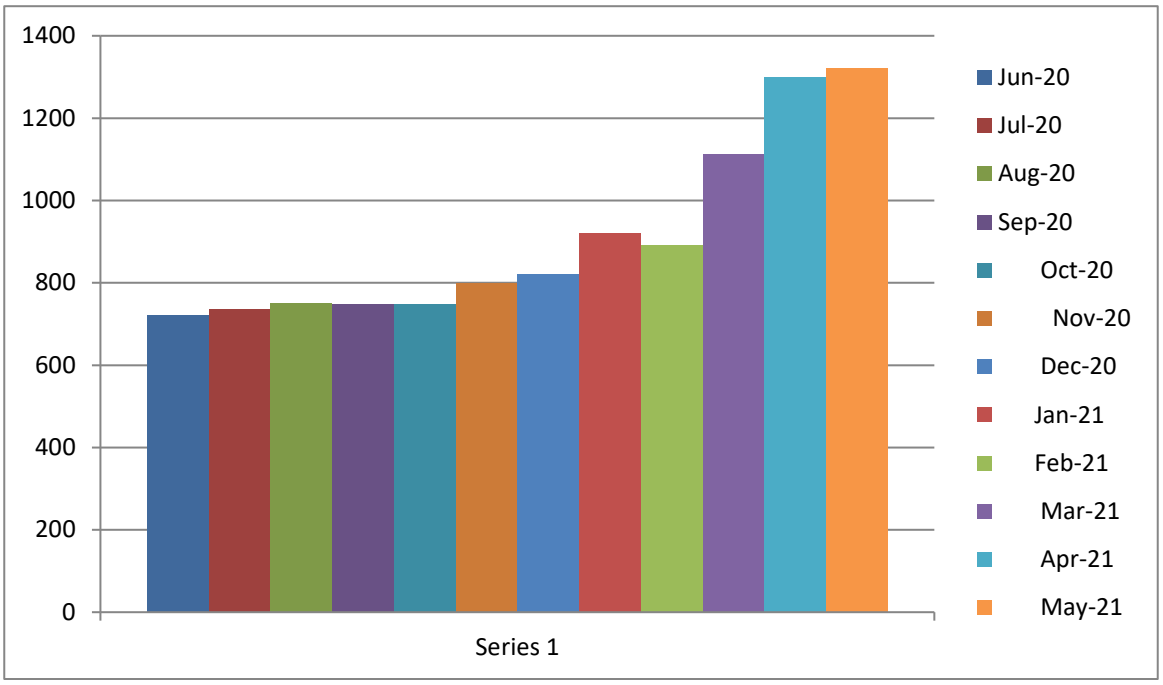
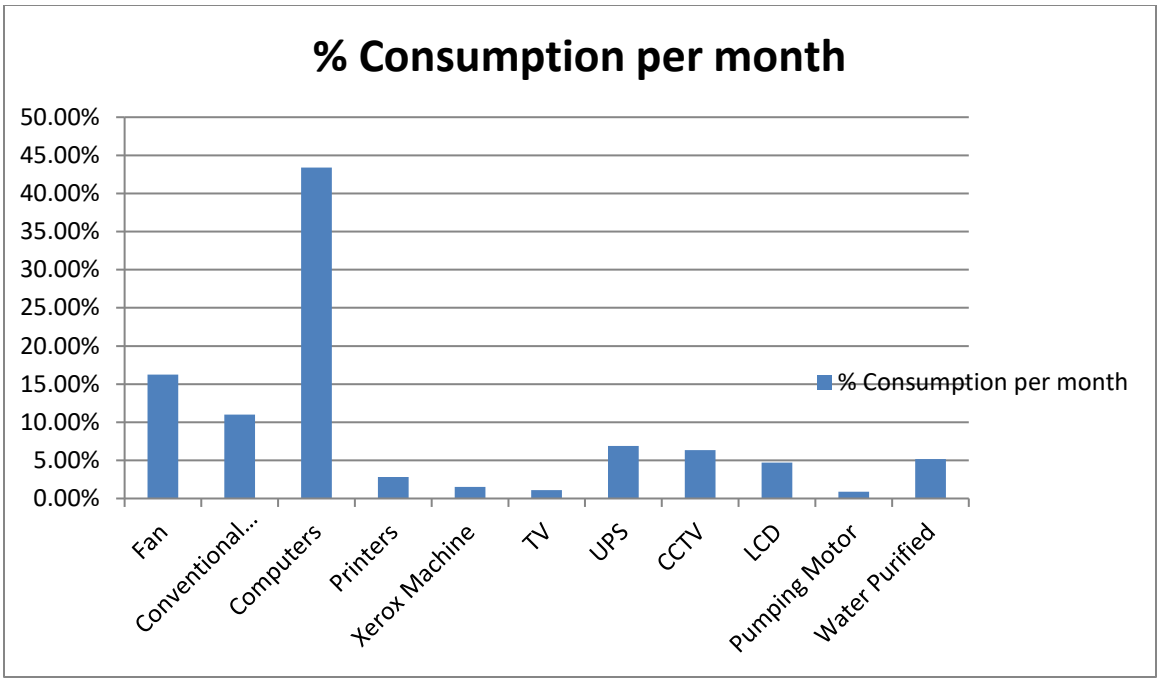


Figure 1 Month wise total units consumption in college

Actual measurement and data analysis

1) Total Load consumption in college:

Electrical Appliance	Power Rating (Watt)	Quantity	Power consumption in 1 Hr (kWh)	Operating Hours (Hours)	Operating days per month	Power consumption per month (kW)	% consumption per month
Fan	70	40	2.8	5	21	0.294	16.23%
Conventional Tubes	20	95	1.9	5	21	0.199	10.99%
Computers	100	75	7.5	5	21	0.7875	43.4%
Printers	300	4	1.2	2	21	0.050	2.8%
Xerox Machine	650	1	0.65	2	21	0.027	1.5%
TV	85	2	0.170	5	21	0.018	1.1%
UPS	1500	2	3	2	21	0.126	6.9%
CCTV	10	16	0.16	24	30	0.115	6.35%
LCD	270	5	1.35	3	21	0.085	4.69%
Pumping Motor	750	1	0.75	1	21	0.016	0.88%
Water Purified	750	1	0.75	6	21	0.094	5.16%
Total			**20.17**			**1.811**	100%



This is the total load consumption in college calculated approximately. Actual load consumption might be different according to actual use of power for a particular time period.

Observations:

- Maximum power requirement per month is **1.811 KW**
- Fan, Computers, UPS and CCTVs are the major consumers of electricity in college.

2) Performance assessment of lighting system:

Unit	Area	Light Type	Wattage e	Quantity	Operating Hours	Power consumption per day (kWh)	Power consumption per month (kWh)
Administrative and Arts Building	Examination Branch(G-1)	Tube light	20	2	5	0.2	4.2
	Digital Library(G-2)	Tube light	20	11	5	1.1	23.1
	P.D Room (G-3)	Tube light	20	2	5	0.2	4.2
	Class Room (G-4)	Tube light	20	2	5	0.2	4.2
	Virtual Class Room(G-5)	Tube light	20	2	5	0.2	4.2
	NSS Room(G-6)	Tube light	20	2	3	0.12	2.52
	Ladies waiting room (G-6/1)	tube light	20	1	5	0.1	2.1

	Library Room (G-7)	Tube light	20	9	5	0.9	18.9
	Seminar Hall (G-8)	Tube light	20	6	5	0.6	12.6
	Principal Cabin (G-9)	Tube light	20	3	6	0.36	7.56
	Office Room (G-10)	Tube light	20	5	6	0.6	12.6
	NCC Room(G-10/A)	Tube light	20	1	5	0.1	2.1
	IQAC Room (G-11)	Tube light	20	3	5	0.3	6.3
Comerce Building	R.O Water Plant Room (G-12)	Tube light	20	2	2	0.08	1.68
	BRAOU Office Room (G-12/A)	Tube light	20	3	5	0.3	6.3
	Porch	Tube light	20	11	12	2.64	55.4
	Staff Room (F-12)	Tube light	20	3	5	0.3	6.3
2.4 Science Building	Class Room (F-11)	Tube light	20	2	5	0.2	4.2
	Class Room (F-10)	Tube light	20	2	5	0.2	4.2
	Class Room (F-9)	Tube light	20	2	5	0.2	4.2
	Class Room (F-8)	Tube light	20	2	5	0.2	4.2
	Class Room (F-7)	Tube light	20	2	5	0.2	4.2
	Computer Lab (F-6)	Tube light	20	4	5	0.4	8.4
	Chemistry Lab-II (F-5)	Tube light	20	3	5	0.3	6.3
	Chemistry Lab-I (F-4)	Tube light	20	3	5	0.3	6.3
	Physic Lab (F-3)	Tube light	20	2	5	0.2	4.2
	Zoology Lab(F-2)	Tube light	20	2	5	0.2	4.2
	Botany Lab(F-1)	Tube light	20	2	5	0.2	4.2
	Porch (Upstairs)	Tube light	20	1	5	0.1	2.1
Total				**95**		**11**	**230.96**

Observations:

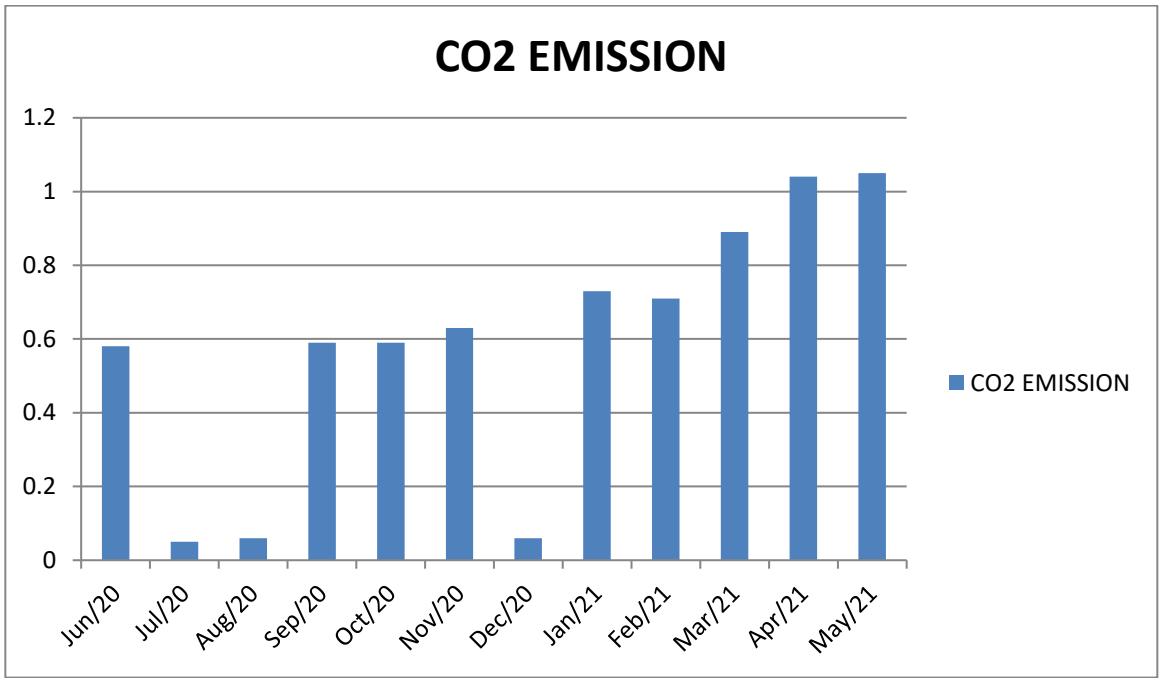
- Maximum lightning power requirement per month is 230.96 KW
- Complete lightning power requirement is met through CONVENTIONAL.

Carbon dioxide emission

Here we computed the CO_2 emission due to electricity consumption. In India, 0.8 Kg of CO_2 is emitted for consumption of 1 unit of electricity.

S. No.	Month	Unit consumption (KWh)	CO_2 Emitted in MT
1	Jun-20	721	0.58
2	Jul-20	735	0.05
3	Aug-20	750	0.06
4	Sep-20	749	0.59
5	Oct-20	748	0.59
6	Nov-20	799	0.63
7	Dec-20	820	0.06
8	Jan-21	921	0.73
9	Feb-21	892	0.71
10	Mar-21	1112	0.89
11	Apr-21	1300	1.04
12	May-21	1321	1.05
Total		10868	6.98
Average emission=0.581 MT			

Figure Month wise CO_2 emission



Identification of energy conservation opportunities

After complete data analysis, energy audit team finds scope for energy conservation in some area. Accordingly following recommendations are suggested.

Executive Recommendations:

- It has been observed that majority of electrical power consumption is through Ceiling fans having wattage 70 Watt. Therefore it is recommended to replace these ceiling Fans with 40 Watt Energy Efficient Fans.
- PV solar system is suggested to install in a campus to minimize electricity bill.

General Recommendations:

- Use renewable energy sources like solar , wind , biogas energy
- Connect computer and printers in LAN
- Avoid the unnecessary use of electrical appliances
- Provide cross ventilation to laboratory and class rooms in order to reduce number of fans
- Established college level student community to monitor college campus for energy consumption parameters.

Energy Audit done Sri T. Venkat Ramana, Head Department of Physics, KNMGDC Miryalaguda

CERTIFICATE OF ENERGY AUDIT

This is to certify that KNM Government Degree College, Miryalaguda has conducted Energy Audit for year 2021-22 for knowing the present electrical energy consumption profile of the institution. This audit is also aimed to identify opportunities for reducing energy expense and carbon footprints.

Department of Physics
K.N.M. Govt. Degree College
Miryalaguda.

Noise level in the surroundings of KNMGDC

Noise test pro app was used to measure the noise level. Noise test pro app detects any noise, music or sound in your surroundings. It will tell you maximum, minimum and average decibels.

The noise level was recorded at different important locations of KNMGDC. At each spot the measures were taken for 60 sec during day time (6 am to 6 pm) and noted down the measurements. The screen shots of the measurements of the noise were taken immediately on the app at the time of 60^{th} sec of each measurement.

Place	Measurements (Duration in sec)	Minimum(DBA)	Maximum(DBA)	Average(DBA)
Principal Chamber	60	35	77	68
Library	60	51	85	65
Staff Room	60	49	71	65
College front gate	60	50	78	71

Water Audit

Water audit is a part of green or environmental audit which are identified with the inspection of work directed inside the organizations whose movement can make risk to the health of inhabitants and environment. Water is basic forever. From the time that primeval species ventured from the oceans to live ashore. Chemically, it is transparent, colorless, tasteless compound of hydrogen and oxygen (H_2O). A typical clarification is that despite the fact that there is a considerable measure of water on earth, just around 2.5% is fresh water, and in light of the fact that the majority of water is put away as icy masses or profound ground water just a little measure of water is effortlessly available.

In KNMGDC water is used for laboratory, bathroom, urinals, temporary canteen, etc. This should need to measure balance of input water to output water. This water proportion is low at the end of the water distribution networks because of the leakages, overflow, and losses through valve. So it is need to water audit of this entire water distribution system. This should save the money to unaccounted water flow and this conserve water used in to lesser extent period. An educational institutes need to care about water distribution from start to end. And need to attention at minimum water losses through distribution network. The water audit includes incorporates examination of water assets, its supply, utilization, status and purity of drinking water, disposal and conservation of water and so forth.

Survey

The survey site includes laboratories of botany, zoology, and chemistry, botanical and other gardens, bathrooms, water coolers (RO system), play ground etc. Survey includes on site observation and discussion with charge staff and officers.

Observations:

Water Resource and Supply

KNM GDC has own resource of water to supply the entire establishment aside from staff settlement. The water necessity of staff settlement is satisfied by Bore well. The organization asset incorporates one bore well .

Institutional water supply includes laboratories, gardens, library, girls common room, bathrooms, so on. The bore well functions from morning 08 am to 04 pm (08hr) to fulfill the institutional requirement.

KNM GDC is facilitated with Reserve osmosis (RO) and ultra violet (UV) treatment for drinking water. The drinking water facility is accessible in the accompanying areas in college campus.

Table: Source of water supply

Source of water supply:	
Bore well	1 Number
Hand pump	1 Number

Table: Water Storage Profile

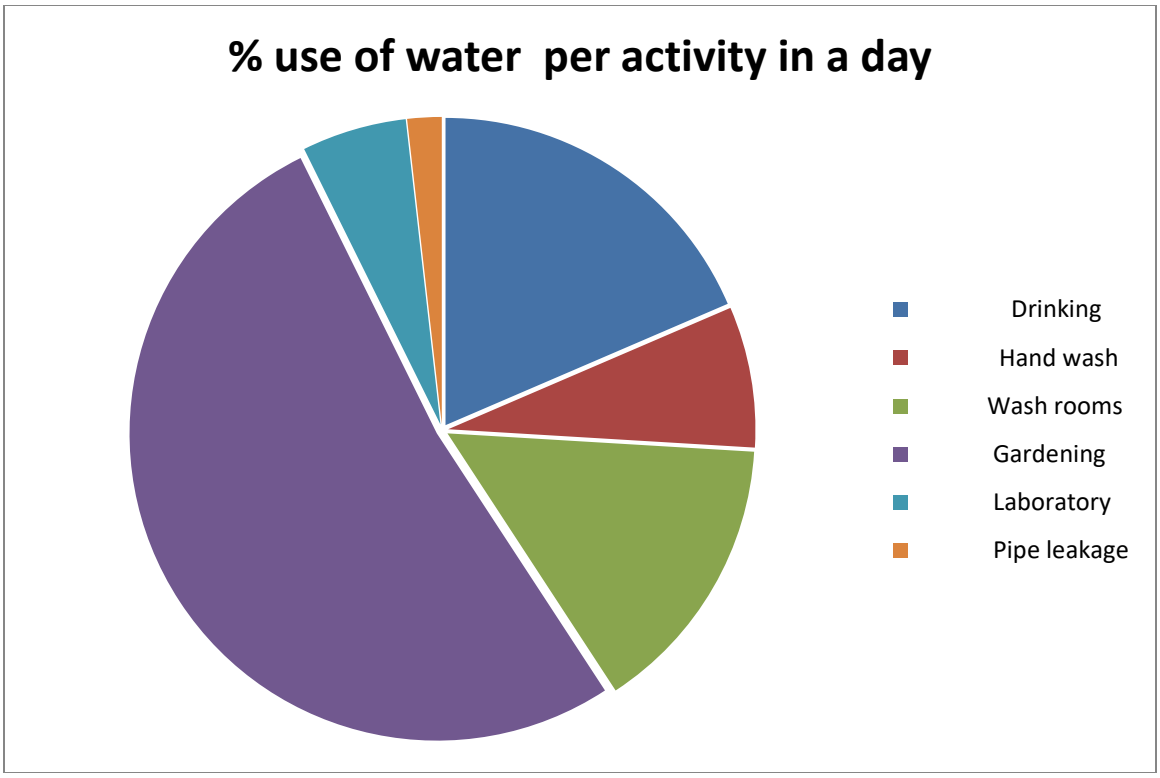
Location	**No. and capacity of tanks**	**Total capacity (Lit.)**
Main building	2x1000	2000L
Main building	1x500	500L
Laboratory	1x300	300L
Toilet Building	3x1000	3000L
	Total	5800L

Activity wise water consumption analysis

Activity	**Average use of water per activity in a day**	**% use of water per activity in a day**
Drinking	500 ltrs	18.5%
Hand wash	200 ltrs	7.4%
Wash rooms	400 ltrs	14.8%
Gardening	1400 ltrs	51.8%
Laboratory	150 ltrs	5.5%
Pipe leakage	50 ltrs	1.8%

Water Consumption

For the most part institutional water is devoured by the botanical garden consume 51.8% of total, followed by Drinking(18.5%),Wash room(14.8%), hand wash(7.4%), Laboratories(5.5%) and least consumption on Pipe leakage(1.8%) .



Drinking Water Analysis

The purpose of this study is to assess the drinking water characteristics at different location of college campus. For analysis of drinking water sample collected. Necessary drinking water parameters are periodically analyzed for detection of possible hazardous and microbial contents with the help of expert faculty of our college from department of Chemistry by following the standard procedure. The analyzed parameter included Temperature, pH, Turbidity, Smell, Total hardness, Fluoride, Chloride, Nitrate, Iron and Total Coli forms**.**

Water Analysis Physico-Chemical Parameters

PHYSICO-CHEMICAL ANALYSIS OF WATER

Parameters	Unit	Sample ID/ BW 01	NDWQS	Test method
Temparature	"C	22	--	Thermo meter
PH	--	8.4	6.5-8.5	PH metryElectro meric method
Turbidity	NTU	10	5(10)	Nephlo metri method
Taste	--	Non-Objectional	Non-Objectional (Alkalinity)	Organoleptic method
Smell	--	Non-Objectional	Non-Objectional	Organoleptic method
Total hardness as CaCO3	mg/L	24(40)	500	EDTA Titremetric method
Chloride	mg/L	ND(<1)	250	Organoleptic method
Fluride	mg/L	ND(<0.5)	0.5-1.5	SPADNS method
Ammonia	mg/L	0.1	1.5	Phenate method
Nitrate	mg/L	7.0	50	UV Spectrophotometric screenir method
Phosphate	mg/L	ND(<0.05)	--	Ascorbic Acid Reducing metho
Iron(Fe)	mg/L	1.2	0.3(3)	Direct AAS(AIR-ACETELENE FLAME)
Manganese(Mn)	mg/L	ND(<0.05)	0.2	Direct AAS(AIR-ACETELENE FLAME)

7/10/21

Signature of Autherised person

//ATTESTED//

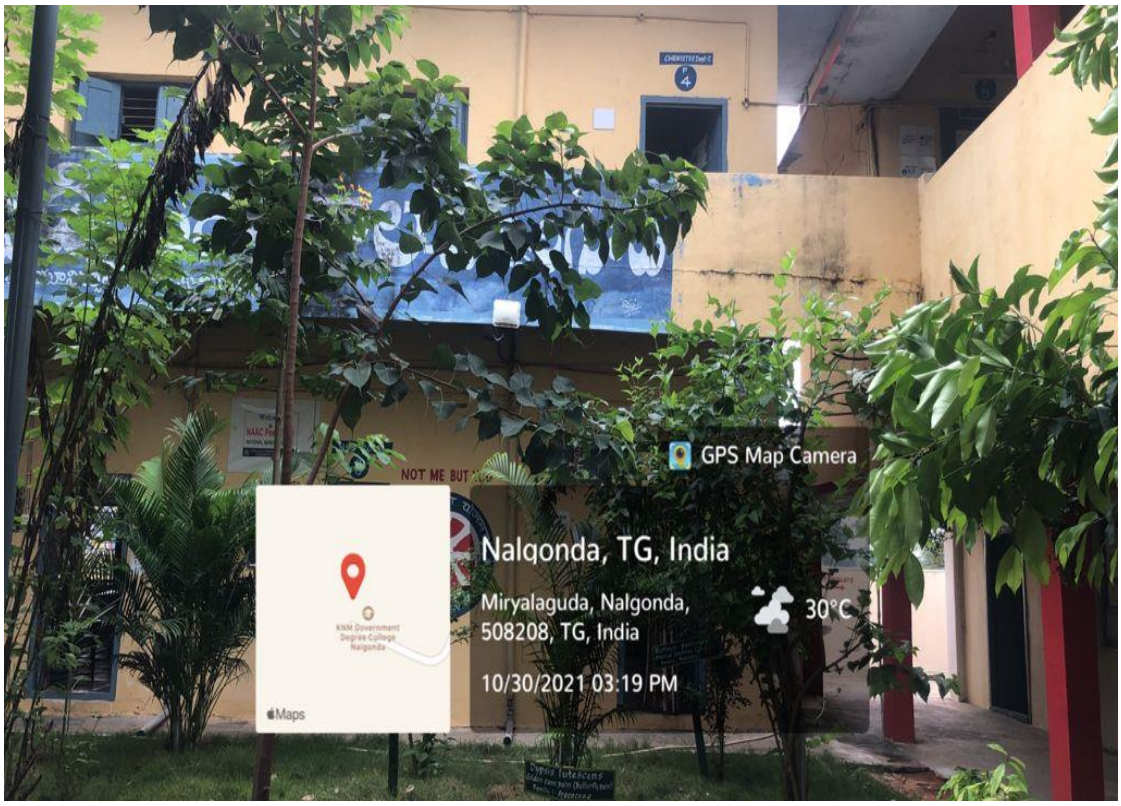
Dr. B. Venkateshwarlu
Asst. Professor of Chemistry
KVM Govt. Degree College
Miryalaguda

Waste Water Disposal and Conservation
Rain Water Harvesting

Due to rapid increase in day-to-day demand for water among fast growing human population, there lies a great opportunity of harvesting rainwater to meet the scarcity of water and avoid destruction of the normal groundwater level. The boon of rainwater harvesting is that the unused or extra water can be sent down the aquifer to charge the groundwater level.

Due to scarcity of water in summer it is needed to save and conserve water in monsoon season. So some intervals of time update the quantity and quality of water use. And take the major action to save water. The best option to measure use and loss of water is to take an audit of water. Water audit for distribution networks in college campus. A water audit determines the amount of water lost from a water supply system and the cost of this loss to the utility.

College has installed rain water harvesting system to increase the ground water level in college campus. The run-down rain water from Science, Arts & commerce building roof-tops is gathered through a network of pipes and which is then directed into well.



Rain water harvesting structure on main building

Water collected on terrace is carried through pipes and sunk into well thus increasing ground water level.

Rain water harvesting pit

Water Purifier Plant

Findings

1. The main source of the water in the college is well maintained.
2. The college has initiated rain water harvesting mechanism recently which is to be appreciated, this will help generate awareness about the importance of water conservation and shall act as a model system to be followed by other colleges as well.
3. The college organizes awareness programme on Water conservation frequently to spread the message of significance of conserving water.
4. 5800 ltrs of water is using per day by the college for its different uses.
5. The water consumption in the summer season is significantly high compare to other months.

Awareness Programmes

1. Conducted awareness programme on water conservation among staff and student community.
2. Observing world water day on March 22nd with different programmes.
3. “Save water” posters are affixed in the class rooms and hand wash areas.

Solid Waste Management

Solid waste generation is a continually growing problem at global, regional and local level. Solid waste is that organic and inorganic waste material produced by various activities which has lost its value to the first user. Improper disposal of solid wastes pollutes the components of living environment.

Observations:

The average solid waste generated in the college campus is about 5 kg/day. The major solid waste generated from college includes waste from Botanical garden, Tree droppings, Paper waste and laboratory waste. Single sided used papers are reused for writing or printing in all departments. Old Newspapers are sold to the scrap dealer for recycling. There are separate dustbins placed at proper place for collection of bio-degradable and non-degradable waste. Vermi composting pit work in progress in our college campus to recycle the bio-degradable waste from garden and food waste. Non-degradable waste like metal waste, glass, wooden waste, e-waste is stored and given to the authorized scrap dealer for recycling for further processing. To minimize the waste generation in college campus students as well as staff members are educated for proper waste management practice through NSS programs, displaying slogans, advertisement on notice board etc and our institution encourages less paperwork by using online mode of correspondence.

Vermi Composting Pit work in progress in our college campus

Department of Home-Economics emphasizes on practical training of students by providing them first hand training in food processing, preserving, packaging and various steps of food processing.

Cleanliness drive

Recommendations:

- Sufficient big dustbins need to be placed where essential and monitor periodically.
- Segregate solid waste in to wet, dry, glass and constructional at source and biodegradable should be sent for composting while other solid waste must be sent to recycle or proper disposal.

- Plastic carry bags should be banned and awareness regarding plastic free campus should be created by displaying proper slogans, posters etc.

.

E-Waste Management

The disposal of E-Waste is a rapidly growing problem because electronic equipment frequently contains hazardous substances which affect the environment and human health. E-waste such as, discarded computers, office electronic equipment, monitors, Hard Disks are disposed off as per their conditions. These wastes are sold to local scrap. Efforts are made to reduce e-waste by making optimum use of electronic devices.

Observations

The college conscientiously works towards generating minimal e-waste, for which the following strategies are adopted: Regular maintenance of electronic equipment and computers by the in-house technician and AMC, ensures longer life. Weeded out computers from the computer science laboratories due to up gradation are transferred to departments, the administration within the college campus. Outdated Computers, servers, monitors, compact discs (CDs), DVD's, printers, scanners, copiers, motherboard, battery cells and other electronic equipment, weeded out from the computer laboratory are used for demonstration of internal parts of the equipment.

Some electronic equipment is replaced with newer models due to the rapid technology advancements and production of newer electronic equipment.

Recommendations:

Electronic equipment may contain heavy metals and other materials. Computers and electronic equipment typically contain:

- **Lead** - Computer monitors contain a picture tube known as a cathode ray tube (CRT). CRT's contain leaded glass, and are the largest source of lead in municipal waste. Solder used in printed circuit boards may also contain lead.
- **Cadmium** - The largest source of cadmium in municipal waste is rechargeable nickel-cadmium (NiCd) batteries. These batteries are found in most desktop and laptop computers.
- **Mercury** - Some electronic equipment also contains recoverable quantities of mercury, which is a toxic metal.

Unwanted electronic equipment must therefore either be donated for reuse or sent for recycling.

E-Waste separated

Data and report collected from Computer Science department expert.

Carbon Foot Print

A carbon foot print is defined as the total green house gases emissions due to various activities. Emission inventories identified to analyze the carbon foot print of the campus were human factors, transportation, electricity, solid waste, production and consumption of food. The emission factors for each of these inventories are given below

Carbon footprint Analysis

Number of persons using cycles-10

Number of persons using cars-02

Number of persons using two wheelers-40

Number of persons using Other Transportation-160

Number of visitors per day-10

Average distance travelled by Stakeholders-20

Any suggestions to reduce the use of fuel: Efficient and eco friendly methods like usage of LED bulbs and solar energy should be encouraged. Students and staff should be motivated to use of bicycles.

Conclusions

Green audit of KNM GDC Miryalaguda, is conducted by Green Audit committee of the college for the academic session 2020-21. Through the academic session all data, information, monitoring reading etc are collected, analyzed and following conclusions given by expert team.

1. Rain water harvesting unit is installed on all the buildings in the college campus.
2. All the parameters of drinking water were within standard desirable limits of drinking water quality..
3. Sensor based solar light installed in the college campus.
4. LPG is handled in science building section for Chemistry department for practical purpose.
5. All the rooms in Arts, Commerce and Science buildings of the college are airy and sunny and don't need electricity during the day time for lightening.
6. Small vermin composting unit is installed in college campus for the management of the biodegradable waste.
7. College arranged the events such as Cleanliness drive, Environmental awareness programme, plantation, Medicinal plant exhibitions to literate the students to minimize the waste production and maximize what is recycled or reused.
8. Waste bins are placed at solid waste collection spots in different sections.
.
9. Green practices are seen in the college campus and are also confirmed from the reports of the programme organized.