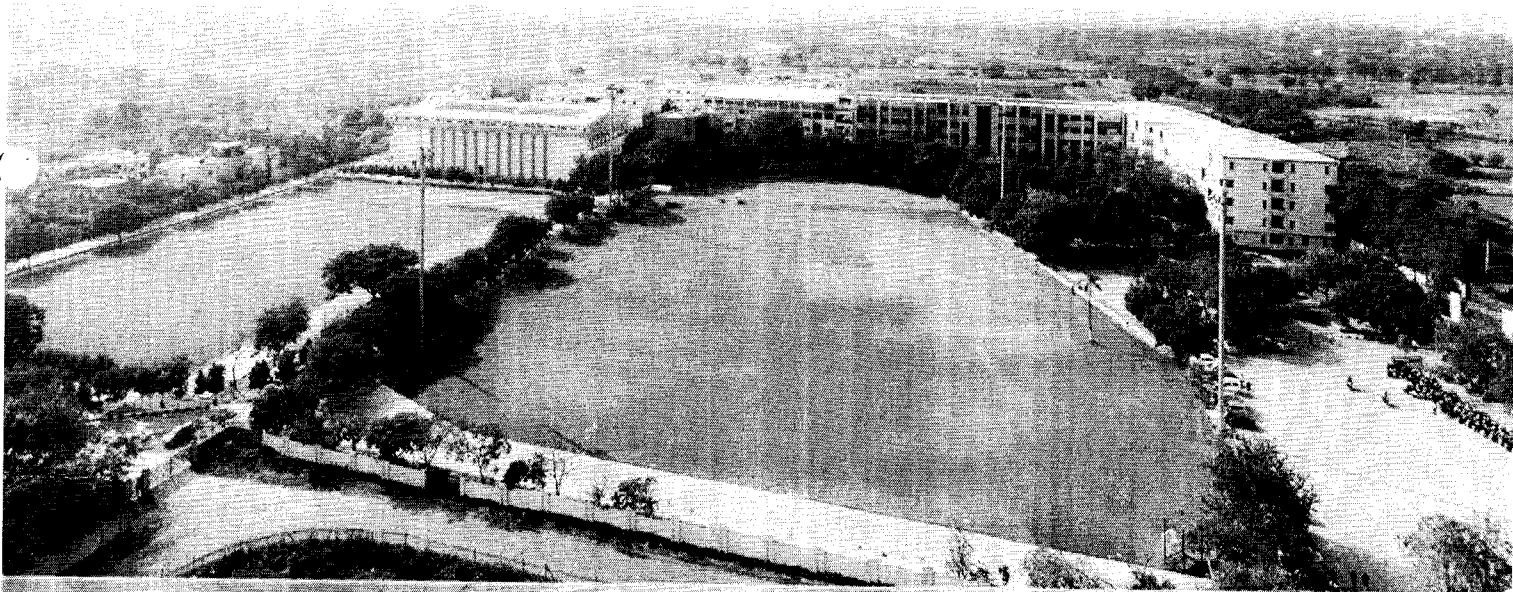




GREEN AUDIT

**MLR Institute of Technology
Hyderabad, Telangana**



Prepared by

Lee Shreyus Foundation

Hyderabad

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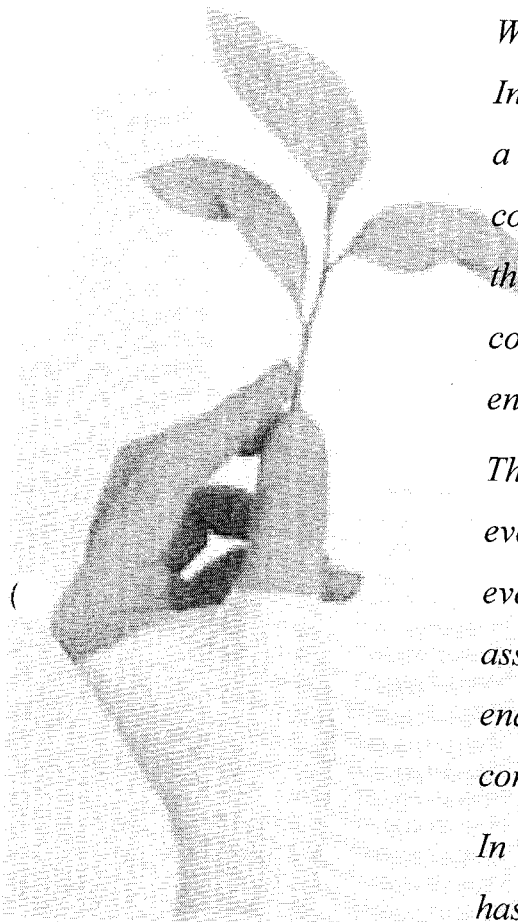
Preface

Nature is the only source that balance every organism and various other components. Any imbalance created by us would result in environmental crisis. One such bioresource are plants. They are the only resource which does carbon sequestration. India is one of the mega biodiverse countries in the world. There are National and State level policies and Acts for the protection of biodiversity. Governments are trying to implement them.

We all have the responsibility for biodiversity protection. Institutions has huge land area in their premises. And so, there is a scope for doing plantation local and indigenous species and conserve biodiversity. This also creates a scope learning within the campus. It inculcates responsibility amongst student community and leads to behaviour change for better environment.

These green areas are to be planted, maintained, and improved every year. For this to happen there is a need for assessment every year. The scope for improvement suggested during the assessment becomes action plan for the following year. This also enables students to understand the gradual and sustainable conservation required for the greenery.

In view of the above, MLR Institute of Technology management has intended to conduct Green Audit and understand the outcomes of the existing greenery and sustainable practices that are to be taken up for the improvement of biodiversity in the campus.



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INTRODUCTION

The green space in a campus is very important for any institution. Plantation is concerned chiefly with environmental improvement, removal of atmospheric pollutants, controlling noise pollution, and microclimatic modification. The trees in the plantation areas provide various services, including biodiversity conservation, carbon sequestration, oxygen generation, mitigation of the effect of heat, microclimate regulation, soil stabilization, prevention of soil erosion, and groundwater recharge.

The right symbiosis of flora and fauna would support in conservation of environment in the area. Here another important aspect is planting local variety species would improve the soil fertility. Distribution of species principally depends on the climate conditions and presence of ecological parameters along with typical landform and land type.

Reaching the public requires both long-term education and a focus on near-term policies. An integrated strategy includes building a base of literacy, strengthening people's participation in decision-making processes, and engaging them in decisions that shape biodiversity, both at the personal level and in the societal policy.

Institutions plays very important role in carbon sequestration and keeping temperature low compared to the other spaces of the same area with greater environmental impact. Here audit of such greenery with help the management to improve biodiversity.

The scope includes (from genetics to species to ecosystems), the threats (from habitat loss to pollution to urbanization), and the responses of institution (in conservation of biodiversity). The assessment includes understanding present vegetation composition which includes trees, shrubs, climbers and herbaceous elements in and around campus. The inventory of faunal components including insects and birds has been done by random sampling method and visual observations in the campus. The standard for the work is followed through the identification of plants (by regional floras) and faunal components during the visit period in the campus. The focus is also given on pollution control methodology, best practice for environment conservation, etc.

Primary survey of college campus was undertaken for assessment of floral and faunal diversity. The list of plants which includes trees, shrubs, climbers, herbs have been prepared and documented for its further ecological importance. The assessment period for documentary

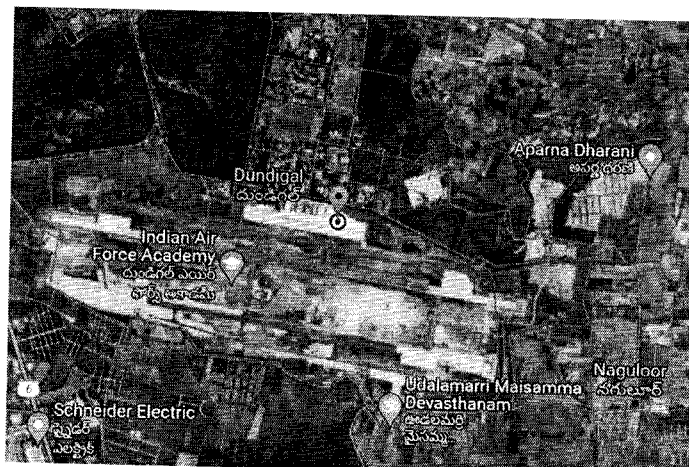
evidence of environmental issues, various activities by the institution is 2018-19. The reconnaissance survey has been undertaken to understand the boundaries of the campus, vegetation pattern, existing floral and faunal components, various activities carried within the campus, etc. By visual primary observations on insects and birds' diversity, a checklist has been prepared.

During the assessment of biodiversity, we tried to understand the previous contribution of the institution in Biodiversity conservation through the involvement of students and staff members. Efforts were made to understand changes in vegetation pattern, avifaunal (birds) migration (if any) and other faunal components. The flowering pattern of trees, shrubs and climbers were observed to understand the pollinators and dispersal agents. The observation on faunal components including insects and birds has also been done by random sampling method and visual observations in the campus.

Audit objectives

- To analyze current status of flora and fauna of the campus
- To identify the area within the campus which is suitable for conservation of biodiversity.
- To mitigate other environmental issues existing in the surroundings of the campus
- To recommend possible protection, rejuvenation and conservation of local variety vegetation and other life
- To suggest the activities for the involvement of the students

Greenery of the campus seems to be visibly high, and biodiversity needs to be quantified for better conservation of local species. This also serves the Goal 5 of Sustainable Development Goals (SDGs).



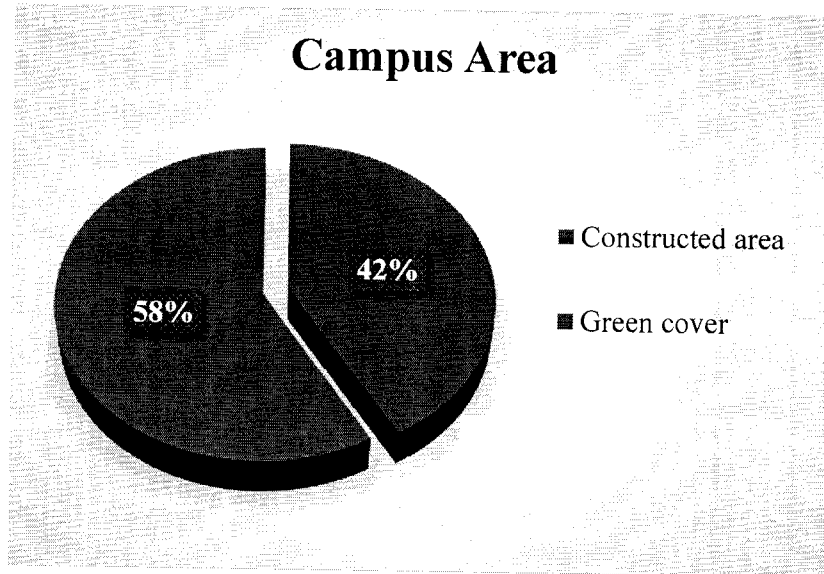

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Campus Area

The total area:

Total constructed area	21946.81 sqm
Total Green cover	30,804.29 sqm

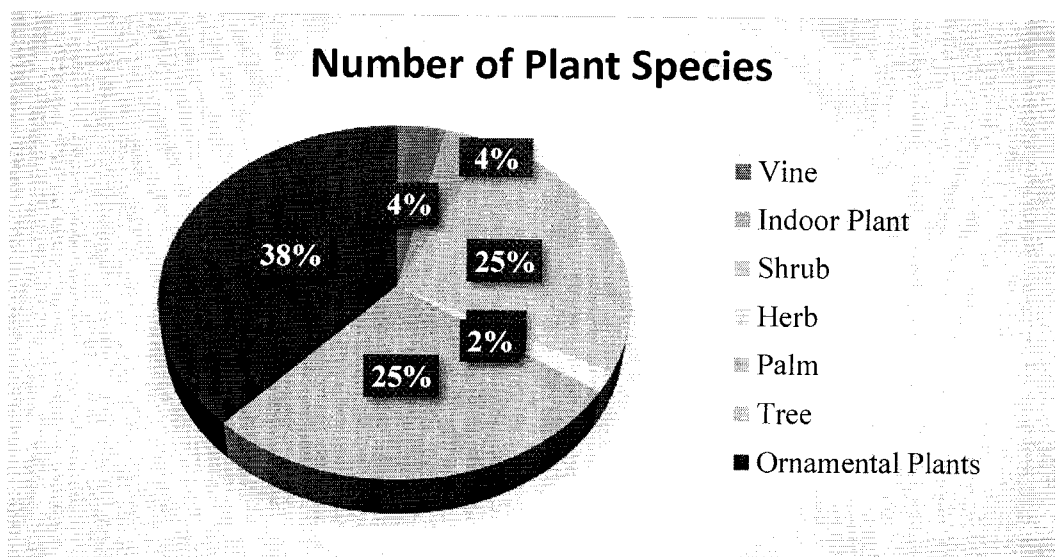


- Institute is very particular about maintaining the rich flora of the campus by planting a variety of saplings on the college premises.
- NSS team initiated “Harithaharam” plantation around the campus, in coordination with faculty, students and Management.
- Green Peace Eco Club conducted various activities to grow plants in the campus as well as nearby villages.
- All the lawns of the College are equipped with a sprinkler system and drip method is used for watering the plants to reduce the usage of potable water.

Principal
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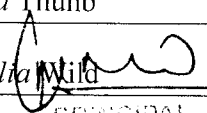
FLORAL BIODIVERSITY

The campus has high number of i.e., 38% Ornamental plants, 25% of tree and 25% shrubs.



LIST OF PLANT SPECIES

S.No	Categories	Common Name	Scientific Name
1	Vine	Philodendron	<i>Philodendron tripartitum</i>
2	Vine	Money plant	<i>Scindapsus aureus</i>
3	Indoor Plant	Cordyline firebrand	<i>Cordyline fruticosa</i>
4	Indoor Plant	Snake plant	<i>Sansevieria roxburghiana</i>
5	Shrub	Star light weeping fig	<i>Ficus benjamina</i> Linn
6	Shrub	Copper leaf	<i>Acalypha wilkesiana</i> -Linn
7	Shrub	Florida thatch palm	<i>Thrinax radiata</i> L.f.ex-Sw
8	Shrub	Hardy bamboo palm	<i>Chamaedorea microspadix</i> Willd.
9	Shrub	Bottle palm	<i>Hyophorbe lagenicaulis</i>
10	Shrub	King sago	<i>Cycas revoluta</i> Thunb
11	Shrub	Korean grass	<i>Zoysia tenuifolia</i> Willd


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12	Shrub	Amla	<i>Phyllanthus emblica</i>
13	Shrub	Red Bottle Brush	<i>Callistemon lanceolatus</i>
14	Shrub	Caribbean copper plant	<i>Euphorbia cotinifolia</i>
15	Shrub	Tricolor caricature	<i>Graptophyllum pictum</i> L.
16	Shrub	Water willow	<i>Justicia Gendarussa</i> L.
17	Shrub	Ti plant	<i>Cordyline fruticosa</i> L.
18	Shrub	Arabian jasmine	<i>Jasminum sambac</i> L.
19	Herb	Holy basil	<i>Ocimum tenuiflorum</i> L.
20	Ornamental plant	Buddha belly plant	<i>Jatropha podagrica</i>
21	Ornamental plant	Giant taro	<i>Alocasia macrorrhizos</i> -(Linn.) G.Don f.
22	Ornamental plant	Chamanthi	<i>Chrysanthemum indicum</i> L.
23	Ornamental plant	Banathi	<i>Calendula officinalis</i> L.
24	Ornamental plant	Malli	<i>Jasminum officinale</i> L.
25	Ornamental plant	Nuruvarahalu	<i>Ixora coccinea</i> L.
26	Ornamental plant	Sampenga	<i>Magnolia champaca</i> L.
27	Ornamental plant	Gulabi	<i>Rosa damascena</i> L.
28	Ornamental plant	Mandhara	<i>Hibiscus rosa-sinensis</i> L.
29	Ornamental plant	Sanna Jaaji	<i>Jasminum sambac</i> L.
30	Ornamental plant	Gorintaaku	<i>Lawsonia inermis</i> L.
31	Ornamental plant	Ganneru	<i>Nerium odorata</i> L.
32	Ornamental plant	Mulla gorinta	<i>Barleria cristata</i> L.
33	Ornamental Plant	False agave	<i>Furcraea foetida</i> -(Linn.) Haw.
34	Ornamental Plant	Silver queen	<i>Aglaonema nitidum</i> <i>Curtisii</i> (N.E.Br.)
35	Ornamental Plant	Elephant ear plant	<i>Alocasia odora</i> (Roxb.) C.L.Koch,

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36	Ornamental Plant	Asparagus fern	<i>Asparagus aethiopicus</i> Linn
37	Ornamental Plant	Dumb cane	<i>Dieffenbachia seguine</i> (Jacq.) Schott
38	Ornamental Plant	Spider plant	<i>Dracaena reflexa</i> Lam
39	Ornamental Plant	Spanish dagger	<i>Yucca aloifolia</i> Linn
40	Ornamental Plant	Madagascar Periwinkle	<i>Catharanthus Roseus</i> L.
41	Flowering tree	Pride of burma	<i>Amherstia nobilis</i>
42	Flowering tree	Orchid tree	<i>Bauhinia purpurea</i> L.
43	Flowering tree	Golden shower	<i>Cassia fistula</i> L.
44	Flowering tree	Indian coral tree	<i>Erythrina indica</i> L.
45	Flowering tree	Gulmohar	<i>Delonix regia</i> L.
46	Tree	Banyan	<i>Ficus benghalensis</i> L.
47	Tree	Banana	<i>Musa x paradisiaca</i>
48	Tree	Neem	<i>Azadirachta indica</i> L.
49	Tree	Papaya	<i>Carica papaya</i> L.
50	Tree	Indian almond	<i>Terminalia catappa</i> L.
51	Tree	Red frangi pani	<i>Plumeria rubra</i> L.
52	Tree	Mango	<i>Mangifera indica</i> L.
53	Tree	Silver oak	<i>Grevillea robusta</i> A Cunn. Ex R. Br.
54	Tree	Tri colour dragon tree	<i>Dracaena marginata</i>
55	Palm	Coconut	<i>Cocos nucifera</i> L.

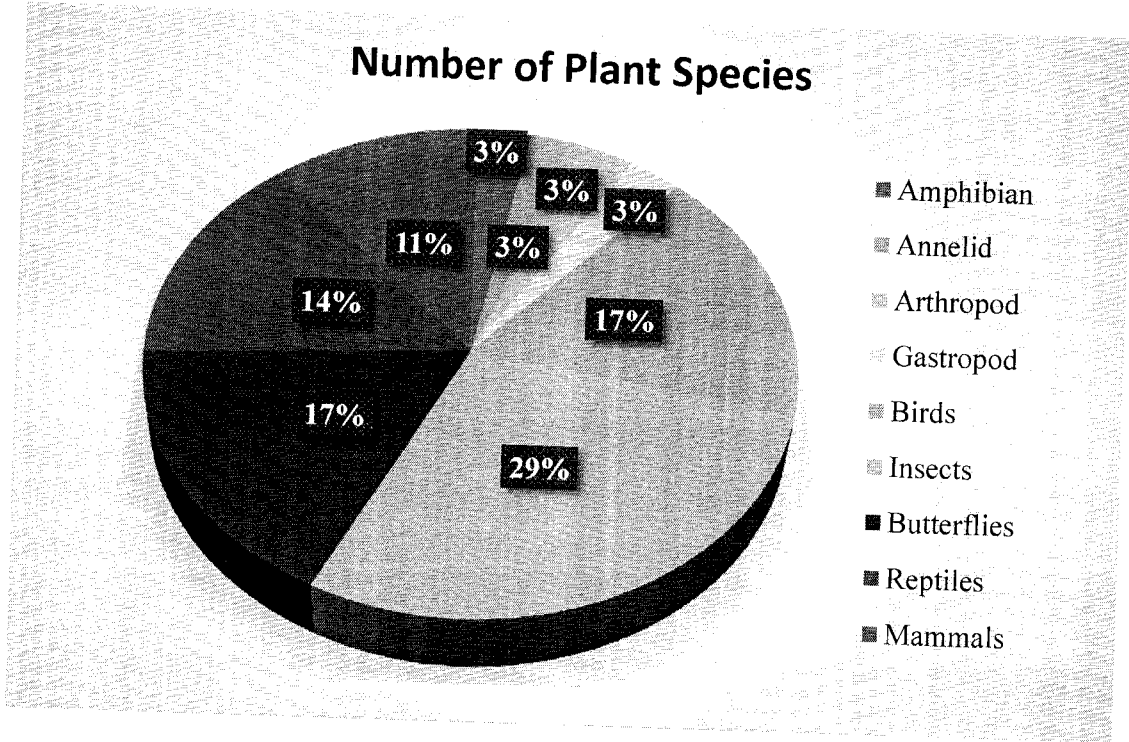


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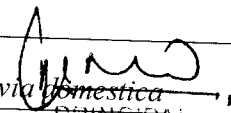
FAUNAL BIODIVERSITY

Campus has high number of i.e., 29% of insects, then 17% of butterflies and birds. 14% of reptiles and 11% of mammals.



LIST OF FANUAL SPECIES

SNo	Species type	Common name	Scientific Name
1	Amphibian	Frog	<i>Anura</i>
2	Annelid	Earthworm	<i>Eudrilus spp</i>
3	Arthropoda	Spider	<i>Agelenopsis spp</i>
4	Gastropod	Snail	<i>Archantina spp</i>
5	Bird	Parrot	<i>psittaciformes</i>
6	Bird	Cuckoo	<i>cuculidae</i>
7	Bird	Sparrow	<i>passeridae</i>
8	Bird	Crow	<i>crovus</i>
9	Bird	Pigeon	<i>Columba livia domestica</i>


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10	Bird	Hawk	<i>Accipiter spp</i>
11	Insect	Caterpillar	<i>Passular spp</i>
12	Insect	Soldier-ants	<i>Solenopsis varigatus</i>
13	Insect	Butterfly	<i>Pappilo spp</i>
14	Insect	Honey-bee	<i>Apis</i>
15	Insect	Golden-beetle	<i>Chardatella sexpunitata</i>
16	Insect	Fire Ant	<i>Solenopsis invicta</i>
17	Insect	Ant	Formicidae
18	Insect	Miduthalu	<i>Caelifera</i> (Grass hopper)
19	Insect	Thene teega	<i>Apis mellifera</i> (honey bee)
20	Insect	Antlion	<i>Distoleon tetragrammicus</i>
21	Butterfly	Crimson Rose	<i>Pachliopta hector Linnaeus</i>
22	Butterfly	Common Mormon	<i>Papilio polytes Linnaeus</i>
23	Butterfly	Common Emigrant	<i>Catopsilia pomona Fabricius</i>
24	Butterfly	Grass Yellow Butterfly	<i>Eurema hecabe Linnaeus</i>
25	Butterfly	Common Wanderer	<i>Pareronia valeria</i>
26	Butterfly	Common Fivering	<i>Ypthima baldus</i>
27	Reptiles	Common house gecko	<i>Hemidactylus frenatus</i>
28	Reptiles	Garden Lizard	<i>Calotes versicolor</i>
29	Reptiles	Fan-throated Lizard	<i>Sitana ponticeriana</i>
30	Reptiles	Common smooth-scaled water Snake	<i>Enhydryis enhydryis</i>
31	Reptiles	Buff striped keel back	<i>Amphiesma stolata</i>
32	Mammalian	Rats	<i>Rattus</i>

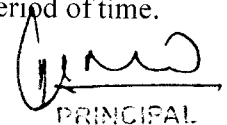
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33	Domestic Animal	Pilli	<i>Felis catus</i>
34	Domestic Animal	Dog	<i>Canis lupus</i>
35	Domestic Animal	Cat	<i>Felis catus</i>

RECOMMENDATIONS

- 1) Signboards could be put displaying "Conservation area".
- 2) The microhabitats of insects need to be identified and protected. These include trees, grass- stands, small ponds, anthills, etc.
- 3) Plantation of seed bearing and flowering plants.
- 4) Plantation of exotic species has to be avoided
- 5) Patches of wild-flower habitats have to be fenced and protected from reclamation.
- 6) All the insect species need to be catalogued, seasonally and preserved to create a museum display for environmental education.
- 7) Economically useful insect species need to be given special protection.e.g. honeybees.
- 8) Literature on insect fauna of the campus needs to be published.
- 9) Development of college nursery.
- 10) Development of Butterfly Park, Bee Park, etc. as college is located in biodiversity rich Western Ghats.
- 11) Garden needs to plant indigenous flowering plants which flower for whole year and readily available for insects and birds.
- 12) Avoid the burning of leaf litter in the campus.
- 13) Prevent the use of chemical fertilizers and pesticides.
- 14) Restriction or marked use of vehicles in campus area.
- 15) Invasive weeds need to be eliminated /controlled.
- 16) Signboards could be displayed on plants in the campus area.
- 17) Plantation of exotic species has to be avoided in the future plantation program.
- 18) No chemical pesticides should be used within the campus.
- 19) WorkshopS on 'Biodiversity' could be conducted in coming period of time.


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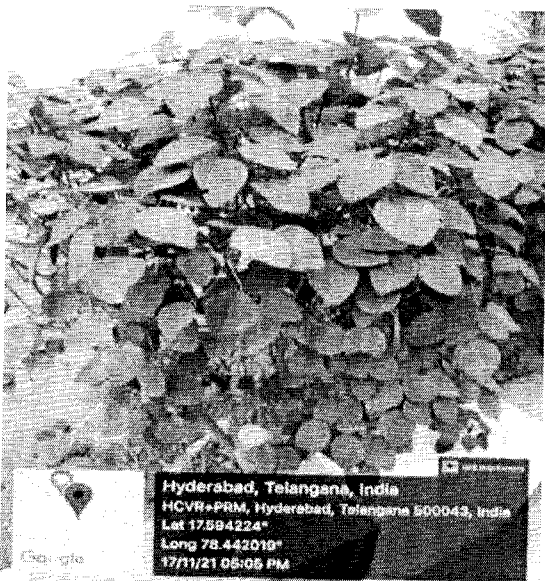
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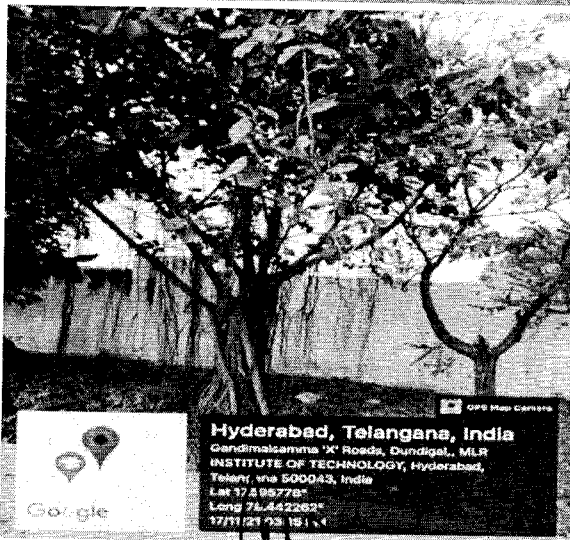
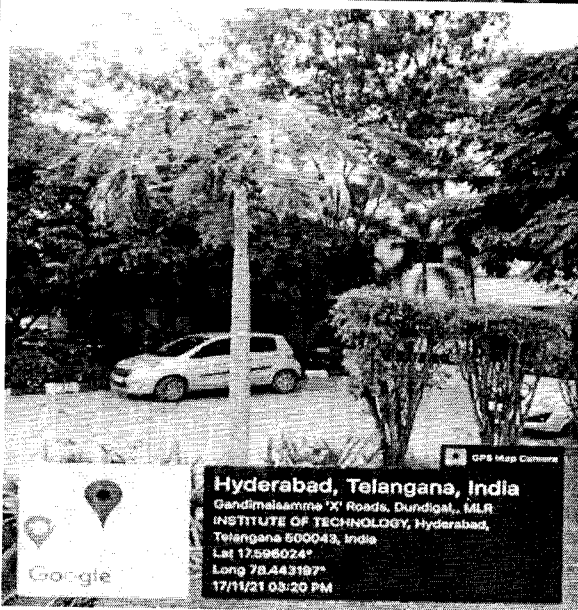
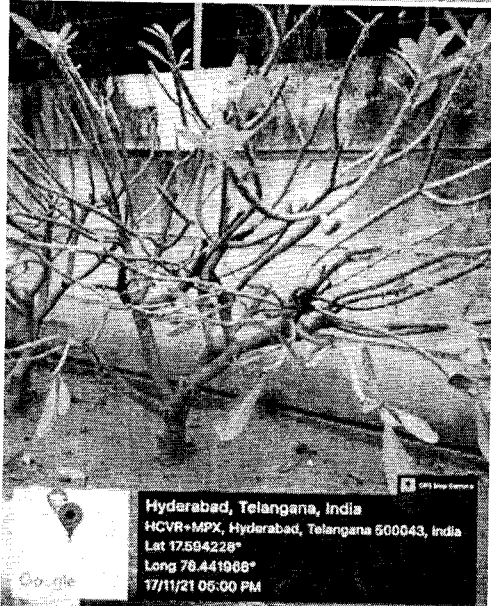
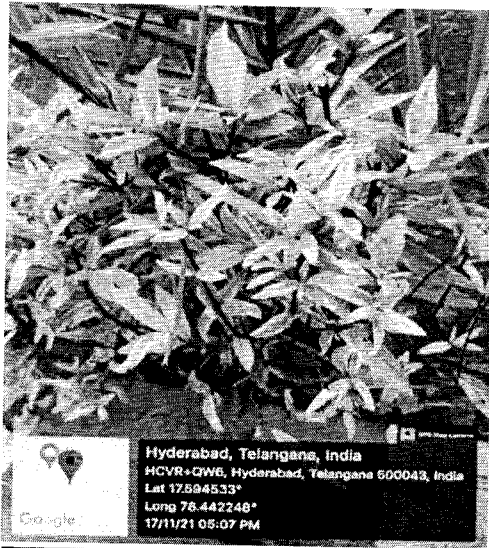
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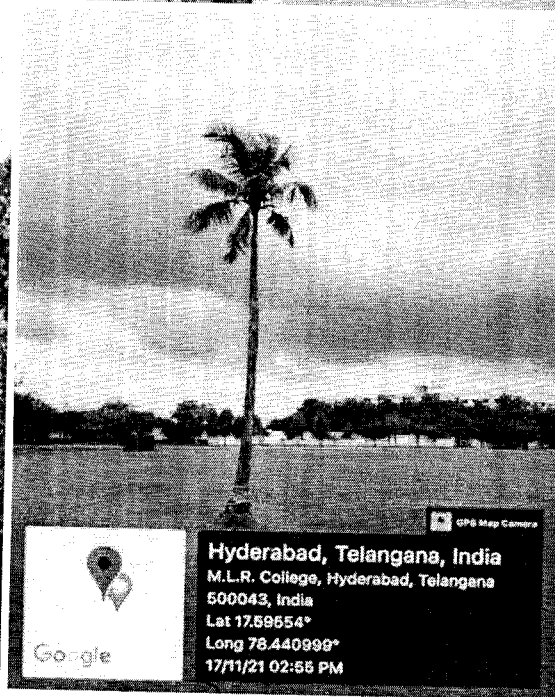
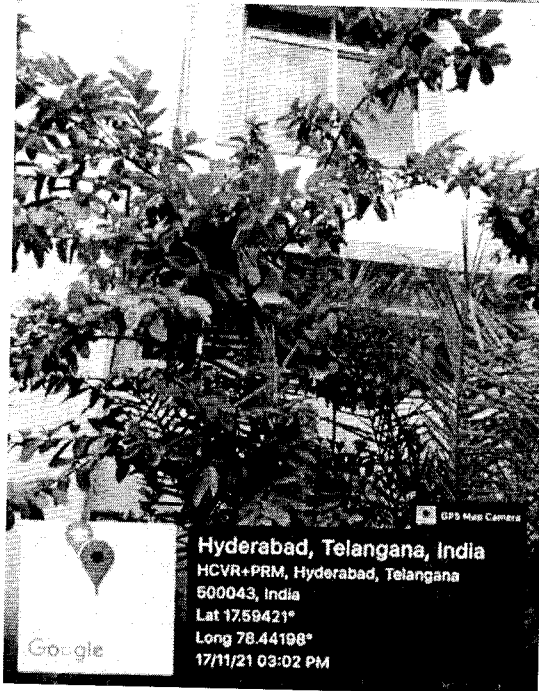
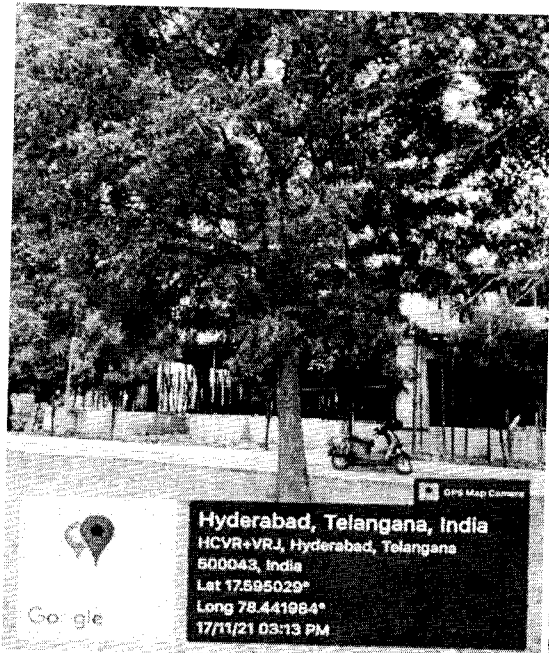
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