

Study of Plant Biodiversity in the campus of GDCW, Nalgonda



PROJECT REPORT

DONE BY

B.Sc. B.Z.C. Second year students- 2021-22

Submitted to

DEPARTMENT OF BOTANY

Government Degree College for Women

Nalgonda

DECLARATION

We the students of B.Sc. Life sciences, second year declare that this work has been originally carried out by us under the supervision of **Dr. K. Srinivasa Reddy**, Lecturer in Botany, Govt. Degree College for women, Nalgonda and this has not been submitted to any other institution/ university.

| S. No. | Name of the student | Roll Number | Signature |
|---------------|-----------------------------|-----------------------|------------------|
| 1 | A. Mounika | 19044012445014 | |
| 2 | J. Nikitha | 20044012445091 | |
| 3 | K. Sushma | 20044012445119 | |
| 4 | Amatun Noor Sofiya | 20044012445009 | |
| 5 | Amatul Muneem Ayesha | 20044012445007 | |
| 6 | Sana | 20044012603023 | |



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Introduction (Statement of the problem)

The phytodiversity is responsible for protecting watersheds, moderating on climate, providing shelter to animals, for mitigation of soil erosion, and plants are also our leading food and medicine source. Biological Science has attempted to classify living organisms and categorized the variability in nature for over a century. This has led to an understanding of its organization into communication about the plants and animals. This information has helped in utilizing the earth's biological wealth for the benefit of humanity and has been integral to the process of development (Rao P. S et. all 2017). However, this has also produced the modern consumerist society, which adversely affects the diversity of biological resources upon earth on which it is based. The diversity of life on earth is so great that if we use it sustainably we can go on developing new products from biodiversity for many generations. This can only happen if we manage biodiversity as a precious resource and prevent the extinction of species (Rao P. S et. all 2017).

Among the bio rich nations, India is listed in the top ten countries for its great variety of plants and animals. But recent studies showed about 25% of the species will undergo extinction rapidly due to human population growth (Rao P. S et. all 2017). Most religious and secular creeds believe that all forms of life have the right to exist on earth. Man is only a small part of the earth's great family of species. Plants and animals have an equal right to live and exist on our planet therefore man has no right to destroy plants and animals. Unfortunately, man is only the contributor to the rapid global destruction of biodiversity.

Biodiversity provides a variety of environmental services from its species that are essential at the global, regional and local level (WHO). The production of oxygen, reduction of carbon dioxide, maintaining the water cycle and controlling soil, water and air pollution are some important services of plants. Therefore, preservation of biological resources is essential for the wellbeing and the long term survival of mankind. Therefore, there is a lot of demand for database of plants and animals all over the world especially from biodiversity rich countries as there are a number of economically and medicinally important plants available, which are untapped till now. In view of this, we selected our college campus as an experimental area for studying the flora of campus.

Objectives of Study project:

1. To study the phytodiversity of college campus.
2. To identify the wild/weed plant species in the college campus.
3. To collect the data of medicinal plants, fruit yielding plants, ornamental plants and avenue plants in the college campus.

Methodology:

The flora in the campus is critically surveyed in different localities of the campus during November. Identification of flora was done with the help of literature available in college library. Digital photographs were taken for some of the flora.

Results and discussion:

The college campus is associated with considerable flora of trees, shrubs, herbs and climbers. The biotic survey of the campus was carried out in different localities of the campus. There are many socio-economical valuable plants grown in the campus. Some of the trees are naturally grown and some of the trees, shrubs and palms are planted obviously to control pollution and for the beautification of the campus. Recently a row of *Conocarpus* was planted on either sides of the building, which gives nice look, so added one more feather to the cap of our college. Incidentally some part of the campus is covered with wild herbal flora which includes medicinal plants. Obviously this green flora is associated with some local fauna mostly beautiful and colourful butterflies, beetles, bees, ants and caterpillars. On the other hand, varieties of birds like sparrows, pigeons, squirrels etc. are regularly visiting for searching food. In view of recent demand on biodiversity conservation, the entire campus was scanned to collect information of flora in the form of data. Interestingly more than 80 plant species of trees, shrubs, wild herbs (P. S. Rao, 2013) were identified using relevant scientific literature and subsequently the data of some specific plants were evaluated in the present project.

College management is regularly taking traditional care for the conservation of campus flora. On the other hand, advanced equipment is using for trimming of trees and grass lawns, which gives extra beautification and healthy atmosphere to the campus. Campus flora consists of 89 species of which 7 trees, 28 shrubs, 04 climbers, 1 runner and 18 herbs belongs to various families of angiosperms and one species belongs to gymnosperms. Most of the trees are old and tall with thick, green canopy which is suitable for the growth of the lower group plants like different types of mushrooms on the bark of the trees in late rainy season. The scanning of the flora revealed that, it includes different varieties of species such as

medicinal plants (more than 19 species) Avenue & timber yielding Trees (07 species), fruit yielding plants (10 species) and ornamental plants (10) (**Table-II, III, IV & V**). There are 3 tree species, 17 shrub species, 3 climber species, and 12 herbal species of wild or weed are growing in the campus (Table-I, Figure-I & II). Common man thinks that these weeds are useless, but these weeds have a great medicinal value. Presently vigorous research work on medicinal value of weeds is going on globally.

The collected flora data was enumerated in alphabetical sequence, with scientific and local name. The works of Madhava chetty (2008), Auti *et al.* (2004), Bondya & Sharma (2005), Neerja Shrivastava and Shuchita Jain (2006), Phukan (2006), Zingare (2012) and Rao P.S. (2013) were referred for taxonomic identification.

Table-I: Wild species growing in the college campus.

| S.No | Scientific name | Common name | Habit |
|------|--------------------------------|------------------|---------|
| 1. | <i>Amaranthus species</i> | Chanchala kura | shrub |
| 2. | <i>Abutilan indicum</i> | Tutturubenda | Shrub |
| 3. | <i>Acalipha indica</i> | Murapinda | Herb |
| 4. | <i>Aerva lanata</i> | Pindi pulu | Herb |
| 5. | <i>Andrographis paniculata</i> | Nela vemu | Herb |
| 6. | <i>Antigonon leptopus</i> | Batani pulu | Climber |
| 7. | <i>Boerhaavia diffusa</i> | Atikamamidi | Creeper |
| 8. | <i>Blumea mollis</i> | Kukkapogaku | Herb |
| 9. | <i>Calotropis procera</i> | Jilledu | Shrub |
| 10. | <i>Cassia tora</i> | Tagirisa | shrub |
| 11. | <i>Cassia occidentalis</i> | Kasinha | Shrub |
| 12. | <i>Celosia argentea</i> | Gunugu | Shrub |
| 13. | <i>Cleome viscosa</i> | Kukka Vaminta | Shrub |
| 14. | <i>Cleome gynandra</i> | Vaminta | Shrub |
| 15. | <i>Commelina bengalensis</i> | vennamudda | Herb |
| 16. | <i>Cyda accuta</i> | Parashka mandalu | shrub |
| 17. | <i>Cynodon dactylon</i> | Garika | Runner |
| 18. | <i>Cyperous rotendus</i> | Tunga | Herb |
| 19. | <i>Datura metel</i> | Ummetta | Shrub |
| 20. | <i>Dregia volubilis</i> | Dudipala | Climber |

| | | | |
|----|---------------------------------|--------------------|-------------|
| 21 | <i>Evolvulus alsinoides</i> | Vishnukantha | Herb |
| 22 | <i>Euphorbia heterophylla</i> | shrub | Shrub |
| 23 | <i>Euphorbia hirta</i> | Palakada, nanabalu | Herb |
| 24 | <i>Ficus religiosa</i> | Ravi | Tree |
| 25 | <i>Gomphrena globosa</i> | | Herb |
| 26 | <i>Hyptis suaveolens</i> | maabheera | Shrub |
| 27 | <i>Leucas aspera</i> | Tummi | Herb |
| 28 | <i>Physalis minima</i> | Budda budasa | shrub |
| 29 | <i>Parthenium hysterophorus</i> | vayyaribhama | Small shrub |
| 30 | <i>Phyllanthus niruri</i> | Nela usiri | Herb |
| 31 | <i>Prosopis spicigera</i> | Jammi | Tree |
| 32 | <i>Ruellia simplex</i> | Neelambaram | Small shrub |
| 33 | <i>Tectona grandis</i> | Teak | Tree |
| 34 | <i>Tinospora cordifolia</i> | Tippa teega | Climber |
| 35 | <i>Teprosia purpuria</i> | vempali | shrub |
| 36 | <i>Tridax procumbens</i> | Gaddi chamanthi | Herb |
| 37 | <i>Venonia cinerea</i> | Gariti kamma | Herb |
| | <i>Zizyphus jujuba</i> | Regu chettu | Shrub |

Table-II: Medicinal plants growing in the college campus.

| MEDICINAL PLANTS | | | | |
|------------------|-----------------------------------|----------------|-------------|---------------|
| S.no | Scientific name | Common name | Habit | No. of plants |
| 1 | <i>Adathoda vasica</i> | Addasaram | Large shrub | 01 |
| 2 | <i>Aloe barbadensis</i> | Kalabanda | Shrub | 02 |
| 3 | <i>Anthocephalus kadambha</i> | Kadamba | Tree | 02 |
| 4 | <i>Azadicta indica</i> | Vepa | Tree | 17 |
| 5 | <i>Clitoria ternatea</i> | Shankupushpi | Climber | 01 |
| 6 | <i>Chamaecostus cuspidatus</i> | Insulin plant | Herb | 01 |
| 7 | <i>Cymbopogon citratus</i> | Nimmagaddi | Herb | 01 |
| 8 | <i>Ficus glomerata</i> | Medi | Tree | 01 |
| 9 | <i>Kalanchoe pinnata</i> | Ranapala | Herb | 01 |
| 10 | <i>Lasonia inermis</i> | Gorintaaku | Shrub | 02 |
| 11 | <i>Madhuka indica</i> | Vippa | Tree | 01 |
| 12 | <i>Mimusops elengi</i> | Pogada | Tree | 01 |
| 13 | <i>Moringa oelifera</i> | Munaga | Tree | 01 |
| 14 | <i>Nyctanthes arbour-tristris</i> | Paarijaatha | Tree | 01 |
| 15 | <i>Oscimum bacilicum</i> | Sabja | Shrub | 01 |
| 16 | <i>Oscimum santum</i> | Tulsi | Shrub | 03 |
| 17 | <i>Phyllanthus emblica</i> | Usisri | Tree | 03 |
| 18 | <i>Pterocarpus santalinum</i> | Raktachandanam | Tree | 02 |
| 19 | <i>Terminalia bellarica</i> | Thani | Tree | 02 |
| 18 | <i>Rauwolfia serpentina</i> | sarpagandha | shrub | 01 |
| 19 | <i>Withania somnifera</i> | aswagandha | shrub | 01 |

Table-III: Avenue trees in the college campus

| S.No | Scientific name | Common name | Habit | No. of plants |
|------|--------------------------------|---------------|-------|---------------|
| 1 | <i>Albizia lebbbeck</i> | Dirisena | Tree | 06 |
| 2 | <i>Dolbergia sisso</i> | Jitregi | Tree | 01 |
| 3 | <i>Delonix regia</i> | Turai | Tree | 01 |
| 4 | <i>Leucaena leucocephala</i> | subabul | Tree | 10 |
| 5 | <i>Millingtonia Hortensis</i> | Kadamalle | Tree | 06 |
| 6 | <i>Peltophorum pterocarpum</i> | Peltophorum | Tree | 02 |
| 7 | <i>Spathoda companulata</i> | African Tulip | Tree | 03 |
| 8 | <i>Pongamia pinnata</i> | Kanuga | Tree | 82 |

Table-IV: Fruit Yielding plants growing in the college campus.

| FRUIT YIELDING PLANTS | | | | |
|-----------------------|----------------------------|-------------|-------|---------------|
| S.no | Scientific name | Common name | Habit | No. of plants |
| 1 | <i>Annona reticulata</i> | Ramafalam | Tree | 03 |
| 3 | <i>Annona squamosa</i> | Seeta falam | Tree | 02 |
| 4 | <i>Carika papaya</i> | Boppai | Tree | 03 |
| 5 | <i>Emblica officinalis</i> | Usisri | Tree | 03 |
| 6 | <i>Mangifera indica</i> | Mamidi | Tree | 01 |
| 7 | <i>Morus indica</i> | malbari | Tree | 01 |
| 8 | <i>Psidium gujuava</i> | Jama | Tree | 03 |
| 9 | <i>Punica granatum</i> | Daanimma | Tree | 01 |
| 10 | <i>Sterculia foetida</i> | adavibaadam | Tree | 03 |
| 11 | <i>Syzygium jambolanum</i> | Allaneredu | Tree | 02 |

Table-V: Ornamental Plants growing the college campus

| ORNAMENTAL PLANTS | | | | |
|-------------------|-------------------------------|----------------|-------|---------------|
| S.no | Scientific name | Common name | Habit | No. of plants |
| 1. | <i>Conocarpus erectus</i> | Conocarpus | Tree | 40 |
| 2. | <i>Ficus bejamina</i> | Ravi | Tree | 02 |
| 3. | <i>Nerium odorum</i> | Ganneru | Shrub | 03 |
| 4. | <i>Polyalthia longifolia</i> | Naramamidi | Tree | 31 |
| 5. | <i>Tabernaemontana indica</i> | Nandivardanam | Shrub | 04 |
| 6. | <i>Tecoma stans</i> | Yellow bells | Shrub | 23 |
| 7. | <i>Thuja occidentalis</i> | Tuja | Tree | 01 |
| 8. | <i>Plumeria rubra</i> | Devaganneru | Tree | 02 |
| 9. | <i>Plumeria pudica</i> | Deva ganneru | Tree | 01 |
| 10 | <i>Duranta repens</i> | Golden duranta | Shrub | 10 |

Conclusions & Suggestions:

Biodiversity provides a variety of environmental services from its species, which are essential at the global, regional and local levels. On the other hand, the mega diversity nations have developed the technology by exploitation of species leading to destruction of biodiversity; India is capable of doing so. Man has no right to do so. We only share this planet with millions of other species that also have a right to survive on Earth. It is morally wrong to allow man's actions to lead to the extinction of species. The world now acknowledges that the loss of biodiversity contributes to global warming. Every educational institute right from primary school to P.G. colleges maintained and preserve biodata of staff and students of all the years. Likewise, we should include the list of flora found in institute campus and upload in the college website. It has become obvious that the conservation of biological resource is essential for the wellbeing and the long term survival of mankind.



Figure:1 Wild plant species of the campus

A. *Aerva lanata*, B. *Andrographis paniculata*, C. *Blumea mollis*, D. *Sida accuta*
 E. *Acalypha indica*, F. *Zyzympus jujube*, G. *Oscimum sanctum*, H. *Antigonon leptopus*
 I. *Ruellia simplex*, J. *Dregia volubilis*, K. *Polyporus* sps. L. *Achyranthus aspera*

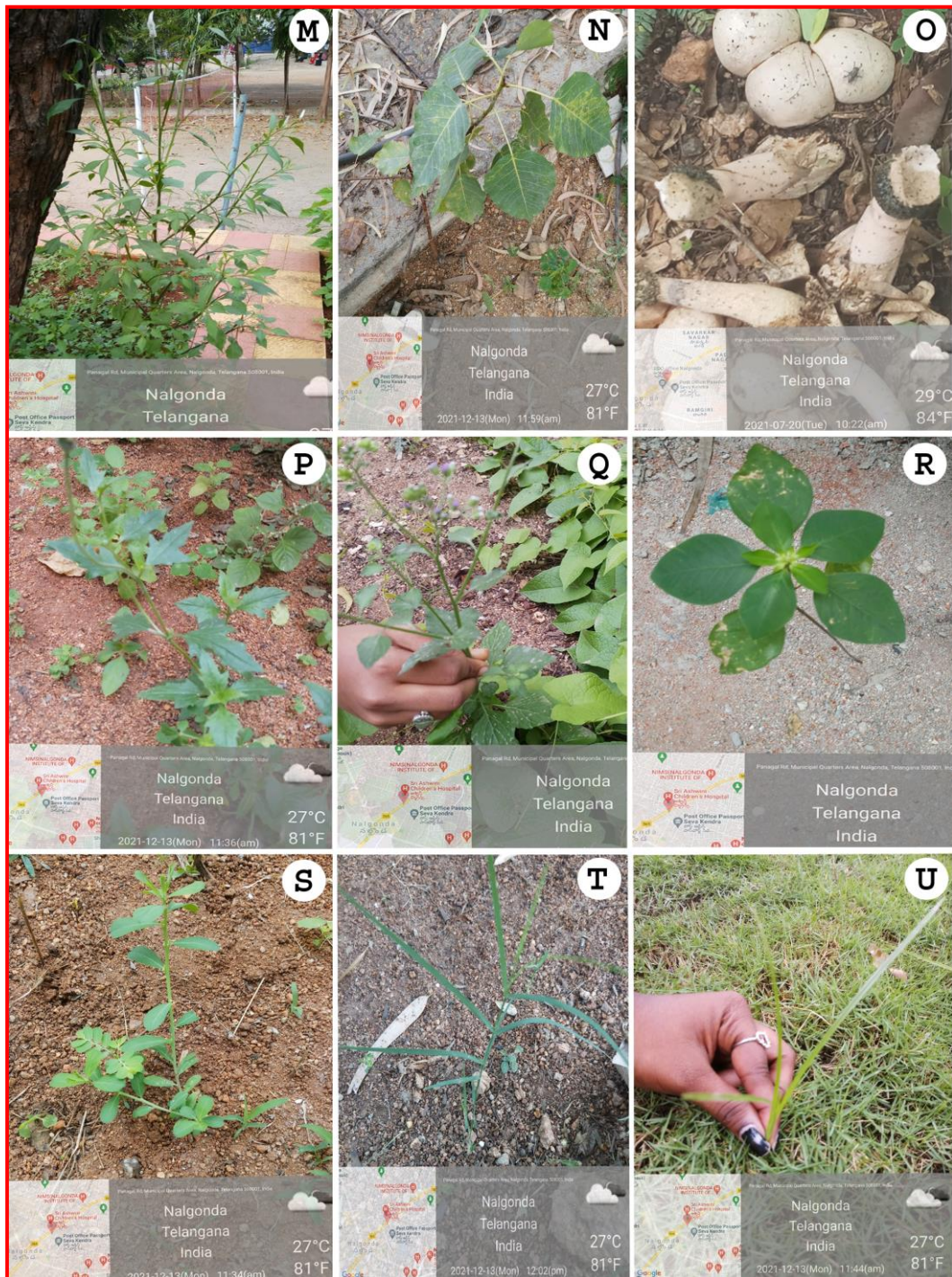


Figure:II Wild species of college campus.

M. *Celosia argentea*, N. *Ficus religiosa*, O. Mushrooms, P. *Teprotia purpurea*
 Q. *Vernonia cinerea*, R. *Euphorbia heterophylla*, S. *Phyllanthus niruri*, T. *Cynodon doctylon*, U. *Cyperous rotendus*.

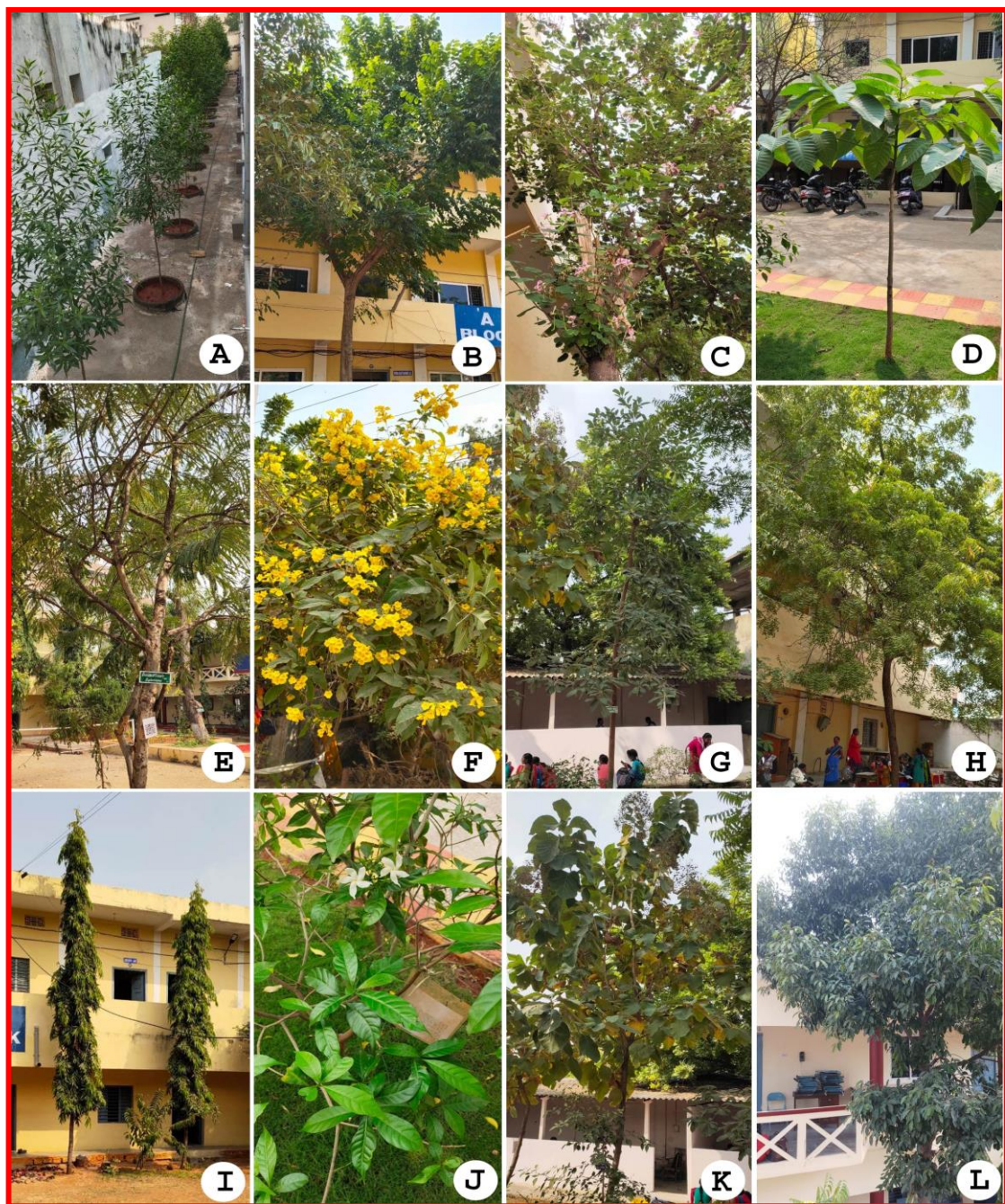


Figure-III: Some tree species and Flowering plants in the campus.

A. *Conocarpus erectus*, B. *Spathodea companionulata*, C. *Bauhenia purpuria*,
D. *Anthocdephalus kadamba*, E. *Phyllanthus Emblica*, F. *Tecoma stans*, G.
Terminalia bellarica, H. *Azadarichta indica*, I. *Polyalthia longifolia*, J.
Tabernamantena indica, K. *Tectona grandis*, L. *Mimusops elengi*.



Collecting the data of plants in the college campus



Collecting the data of plants in the college campus

SUMMARY

The plant biodiversity is responsible for protecting watersheds, moderating on climate, providing shelter to animals, for mitigation of soil erosion, and plants are also our leading food and medicine source. Biological Science has attempted to classify living organisms and categorized the variability in nature for over a century. This has led to an understanding of its organization into communication about the plants and animals. This information has helped in utilizing the earth's biological wealth for the benefit of humanity and has been integral to the process of development (Rao P. S et. all 2017).

The present study deals with the identification and diversity of plants of Govt. Degree College for women, Nalgonda campus. 730 (0.18 acres) square meters area of college campus covered by plants and consists of some old trees along with shrubs, herbs, climbers and few exotic floras. The trees, shrubs and herbs are planted obviously to control pollution and for the beautification of the campus. Medicinal plants are also grown in the college medicinal garden. In view of the importance of biodiversity in recent years, the entire campus was scanned to collect the plant biodiversity data.

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Campus flora consists of 89 species of which 37 trees, 28 shrubs, 04 climbers and 18 herbs belongs to various families of angiosperms and gymnosperms. The scanning of the flora revealed that, it includes different varieties of species such as medicinal plants (more than 18 species) Avenue & timber yielding Trees (07 species), fruit yielding plants (10 species) and ornamental plants (10). Interestingly more than 38 wild plant species were identified using relevant scientific literature. Common man thinks that these weeds are useless, but these weeds have a great medicinal value

Biodiversity provides a variety of environmental services from its species, which are essential at the global, regional and local levels. On the other hand, the mega diversity nations have developed the technology by exploitation of species leading to destruction of biodiversity; India is capable of doing so. Man has no right to do so. We only share this

planet with millions of other species that also have a right to survive on Earth. It is morally wrong to allow man's actions to lead to the extinction of species. The world now acknowledges that the loss of biodiversity contributes to global warming. Every educational institute right from primary school to P.G. colleges maintained and preserve biodata of staff and students of all the years. Likewise, we should include the list of flora found in institute campus and upload in the college website. It has become obvious that the conservation of biological resource is essential for the wellbeing and the long term survival of mankind.

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