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Vegetational Diversity Studies of Jai Prakash Vishwavidyalaya Campus, Rahul Sanskritayan Nagar, Chapra, Saran, Bihar

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ABSTRACT

This study is the first of its kind conducted at Jai Prakash Vishwavidyalaya in Chapra, Saran, Bihar, India. The present research aims to assess the diversity of flora and to properly document the plant species present on the university campus. Documenting vegetation is essential for understanding plant diversity, which holds medicinal and economic significance. It also aids in the conservation of this diversity by providing insights into the existing ecosystem. In this survey, we collected information on every plant available on the university campus to create a database of the existing plant diversity. A total of 611 genera belonging to 23 different families were recorded. These genera include Angiosperms and Gymnosperms from various families such as Meliaceae, Fabaceae, Combretaceae, Annonaceae, Rutaceae, Euphorbiaceae, Malvaceae, Arecaceae, Apocynaceae, Myrtaceae, Lamiaceae, Anacardiaceae, Rosaceae, Asparagaceae, Commelinaceae, Lamiaceae, Asteraceae, Asphodelaceae, and Moraceae. The Meliaceae family exhibited the highest number of species, followed by Fabaceae, Combretaceae, Annonaceae, and Rutaceae. It was found that the Araceae and Fabaceae families were the most dominant among all. All plants have been documented with their vernacular names, scientific names, family classifications, habits, and economic importance.

Key Words - Biodiversity, Vegetational, Deforestation, Exploitation, Enumerated

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INTRODUCTION

Plant diversity is crucial for the complexity of natural ecosystems (Kumar *et al.*, 2016). Plant diversity in a given location is shaped by how species are distributed and abundant (Reddy *et al*., 2014). The green campus concept offers an institution the opportunity to take the lead in reducing its environmental culture and developing new paradigms by creating sustainable solutions to environmental, social and economic needs of the mankind (Keshari *et al.*, 2019). The present investigation seeks to address this critical knowledge gap by undertaking a comprehensive study of flora diversity within the confines campus area of Jai Prakash Vishwavidyalaya, Chapra. Jai Prakash University is a State University located in North region of Chapra Bihar in Saran commissionary. Campus has much vegetation of Plants in 250 acres (1.0 km^2) of land has been acquired. 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. 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. 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, short term economic development, industrialization, urbanization (deforestation) and changes in land use pattern. 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. 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 Jai Prakash university campus as an experimental area for studying the flora of campus.

MATERIAL & METHODOLOGY

The survey was conducted to collect information about the plant species like their identification and documentation in the form of Botanical name and family. The whole campus was visited daily during the study period for identification of plants. Regular field visits were made during the year February 2023 to December 2024 during all seasons to explore the various plant species. All the plant specimens available in the study areas were collected for authenticity by following the method of Rao and Razi , 1981. The flora in the campus is critically surveyed in different localities of the campus during late spring's season. Identification of flora was done with the help of literature available in University library. Digital photographs were taken for some of the flora. All the studied plant species have been arranged alphabetically, along with their family, binomial and vernacular names. The families are arranged according to Bentham and Hooker's system of classification (Bentham & Hooker, 1876). The selected locations in Jai Prakash University campus in around the Administrative buildings, Examination hall, Sports ground, Science Block, Distance Block and main entrance area etc. Plants were identified using the method by Gamble, 1994. The eco-friendly Jai Prakash University campus is associated with rich flora of trees, shrubs, herbs, palms and climbers and some interesting fauna. 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. Most 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 .Incidentally some part of the campus is covered with rich wild herbal flora which includes medicinal plants. Obviously this dense green flora is associated with some local fauna mostly beautiful and colourful. In view of recent demand on biodiversity conservation, the entire bio rich campus was scanned to collect information of some flora and fauna in the form of data. Interestingly more than 150 plant species of trees, shrubs, wild herbs (Rao, 2013) and some birds, small animals and insects were identified using relevant scientific literature and subsequently the data of some specific plants were evaluated in the present project.

Study area:

A regular survey was conducted to identify and gather data on the various plant species found in campus, along with information on their Vernacular name, botanical names, families, habit, uses and

human disturbances of the surrounding natural flora. The plant species that were encountered were categorized into trees, shrubs, herbs, climbers, grasses based on their habit (life form). The collected flora data was enumerated in alphabetical sequence, with scientific, local and family name.

RESULT & DISCUSSION:

The present research has been carried out to explore the floral diversity of plants species and for sustainable utilization of available biodiversity resources.

Identification and documentation of floral species in Jai Prakash Vishwavidyalaya University Campus

The Plant range is the purposeful and structural unit of the biotic additives of surroundings and is subjected to alternate because of the interplay of biotic and abiotic elements of the environment. The visible observations of flora have been recorded that allows you to acquiring a few concepts approximately the relative density of positive species and their predominance. Campus plants

Table 1 - Trees found in the University Campus

Sl. No	Local Name	Scientific Name	Family	No. of Plants
1.	Ashoka	*Saraca asoca*	Fabaceae	5
2.	Akwan (aak)	*Calotropis procera*	Apocynaceae	35
3.	Arjuna	*Terminalia arjuna* (Roxb.)	Combretaceae	25
4.	Banyan tree	*Ficus benghalensis*	Myrtaceae	1
5.	Babool	*Acacia nilotica*	Fabaceae	5
6.	Curry leaf	*Murraya koenigii*	Rutaceae	1
7.	Devil tree	*Alstonia scholaris*	Apocynaceae	10
8.	Date palm tree	*Phoenix dactylifera*	Aracaceae	100
9.	Eucalyptus	*Eucalyptus cineria*	Myrtle	10
10.	False ashoka	*Monoon longgifolium*	Annonaceae	4
11.	Gagar nimboo	*Citrus pseudolion*	Rutaceae	1
12.	Gold mohar	*Delonix regia*	Fabaceae	5
13.	Gullar	*Ficus racemosa*	Moraceae	6
14.	Gamahar	*Gmelina arborea*	Lamiaceae	50
15.	Golden shower	*Cassia fistula Linn.*	Fabaceae	10
16.	Indian beech tree	*Pongamia pinnata*	Fabaceae	5
17.	Icecrem *bean plant*	*Ingo edulis*	Fabaceae	2
18.	Jalebi	*Pithecellobiu dulce* (Roxb.) Benth.	Fabaceae	10
19.	Jamun	*Syzygium cumini*	Myrtle	1
20.	Kanchanar	*Bauhinia veriegata* L.	Fabaceae	5
21.	Mango tree	*Mangifera indica*	Anacardaceae	50
22.	Mahogany	*Swietenia acrophylla* King	Meliaceae	10
23.	Neem	*Azadirachta indica*	Meliaceae	5
24.	Pipal	*Ficus moraceae religiosa*	Moraceae	4
25.	Plum	*Prunus doestica*	Rosaceae	50
26.	Red bottale brush	*Melaleuca viminalis*	Myrtaceae	10
27.	Silk cotton plant	*Ceiba pentandra* (L.) Gaertn.	Malvaceae	10

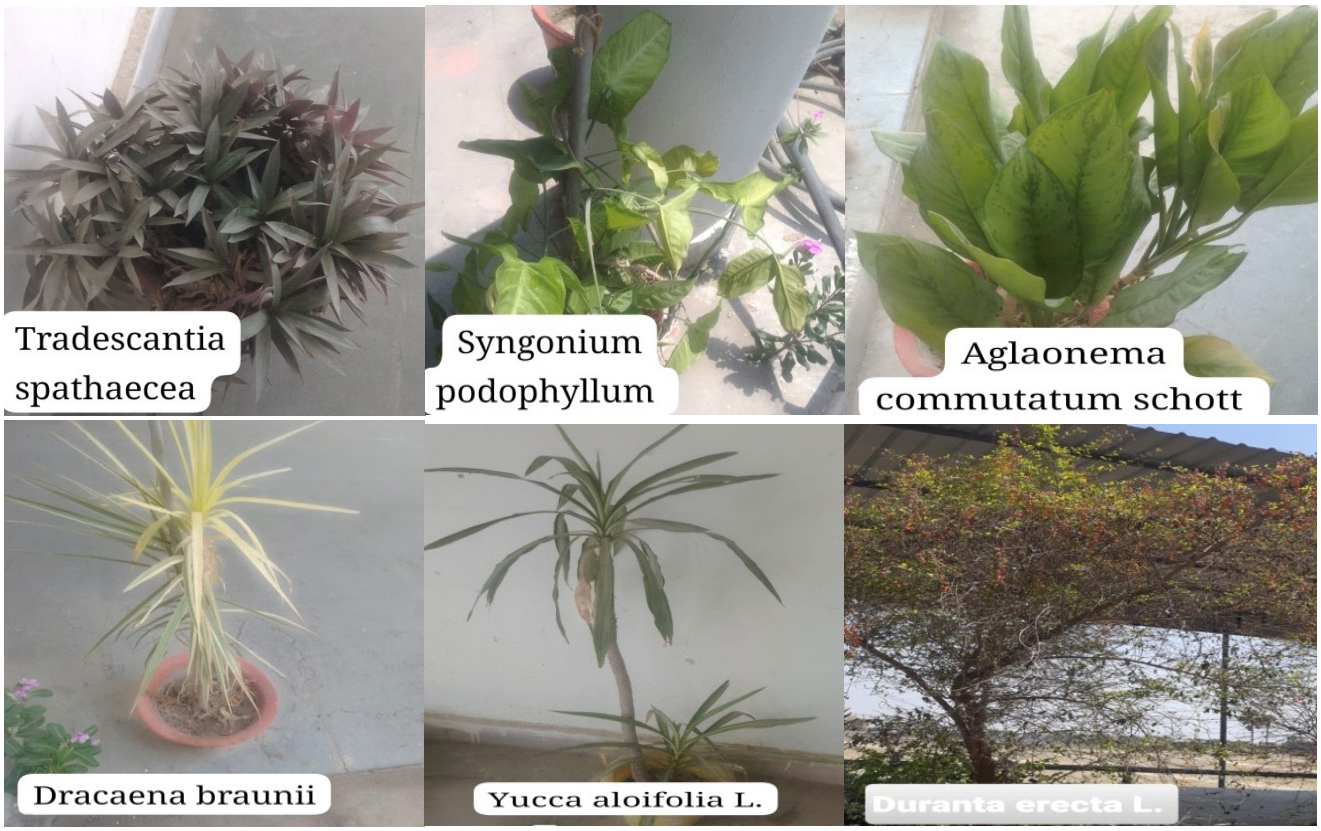
Table 2 - Ornamental plants found in the University Campus

Sl. No	Local Name	Scientific Name	Family	No. of Plants
1.	Bluestem yucca	*Yucca gigantean* Le	Asparagaceae	5
2.	Canna lily	*Canna indica*	Cannaceace	2
3.	Chinese Ixora	*Ixora chinensis*	Rubiaceae	1
4.	Crown of thorn	*Euphorbia milii*	Euphorbiaceae	2
5.	Dhekuaar	*Aloe vera*	Asphodelaceae	5
6.	Doranta	*Duranta erecta* L.	Verbenaceae	15
7.	Dumb cane	*Dieffenbachia seguine*	Aracaceae	2
8.	Erica Pam	*Dypsis lutescens*	Aracaceae	5
9.	Genda phool	*Tegates erecta*	Asteraceae	5
10.	Gurhal	*Hibiscus rosa chinesis*	Malvaceae	2
11.	Green money plant	*Aglaonema commutatum* Schott	Aracaceae	5
12.	Haathi palm	*Beaucarnea recurvate*	Asparagaceae	5
13.	Lucky Bamboo	*Dracaena braunii*	Asparagaceae	6
14.	Moses in the cradle	*Tradescantia spathacea*	Commelinaceae	1
15.	Purple heart plant	*Tradescantia pallida*	Commeliaceae	2
16.	Rang chita	*Euphorbia tithymaloides* L.	Euphorbiaceae	5
17.	Spiral ginger	*Costus arabicus* L.	Costaceae	1
18.	Song of india	*Dracaena reflexa* Lam	Asparagacea	2
19.	Spiderwort	*Tradescantia spathacea*	Commelinaceae	2
20.	Song of india (Green)	*Dracaena reflexa* Lam	Asparagaceae	1
21.	Spanish dragger	*Yucca gloriosa*	Asparagaceae	3
22.	Spider plant	*Chlorophytum*	Asparagaceae	1
23.	Arrowhead vine	*Syngonium podophyllum*	Araceae	1
24.	Tulsi	*Ocimum tenuiflorum*	Labiaceae	1
25.	Yucca	*Yucca aloifolia* L.	Asparagaceae	2
26.	Zebra Plant	*Tradescantia zebrine*	Commeliaceae	20

Plate 1- Photograph of trees in University Campus

Plate 2- Photograph of Ornamentals plants in University Campus


Tegates erecta
Citrus limon Linn.
Dypsis lutescens
Ixora chinensis
Canna indica
Dracaena reflexa lam
Tradescantia pallida
Hibiscus rosa chinesis
Bauhinia varigata L.
Yucca giganten
Tradescantia spathaecea
Euphorbia tithymaloides



include bushes, shrubs, herbs and decorative flora belong to numerous households. The maximum range of flora changed into found withinside the University campus with 611 flora species. A general of 611 species have been recorded in complete campus are belonging to Meliaceae, Fabaceae, Combretaceae, Myrtaceae, Annonaceae, Rutaceae, Euphorbiaceae, Labiaceae, Malvaceae, Aracaceae, Apocynaceae, Rosaceae, Aracaceae, Lamiaceae, Anacardaceae, Meliaceae, Myrtale, Asparageace, Coemmelinaceae, Astaraceae, Asphodelaceae and Moraceae households. Out of 611 species diagnosed withinside the take a look at region, 506 bushes species, one zero five species of decorative flora. The complete campus region has numerous floral species and mentioned with a few distinguished tree species are *Prunus doestica*, and *Murraya koenigii*. The maximum dominant tree is determined in campus *Phoenix dactylifera, Mangifera indica, Gmelina arborea, Borassus flabellifer*, *Terminalia arjuna*, *Calotropis procera*. The distinct dominant bushes species documentation is represented in Table: 1. From sixteen households recorded in take a look at region, the Aracaceae changed into represented through the most important wide variety of species changed into determined in wealthy own circle of relatives in college campus accompanied through Fabaceae, Aracaceae, Lamiaceae, Anacardiaceae, Commelinaceae, Apocynaceae, Asparageaceae, Euphorbiaceae, Asteraceae, Asphodelaceae, Rosaceae, own circle of relatives clever addiction is represented. The critical and distinguished Ornamental species are dominant Shrub range is provided in Table: 2. the maximum critical decorative plant species are *Dransfieldia micrantha, Philodendron erubescens* and *Duranta erecta* found. On the premise of subject survey of campus flora, critical species confirmed their presence withinside the campus which have been collected, identified and photographed in Plate 1 and Plate 2. The family with highest number of individuals was Aracaceae (162) was followed by Fabaceae (64) Lamiaceae (60), Anacardiaceae (50), Rosaceae (50), Apocynaceae (45), Asparageaceae (25), Commelinaceae (25), Malvaceae (12) and

Moraceae (10). The identified shrub and ornamental plant diversity was photographed in plate 1 and plate 2.

CONCLUSION

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 University maintained and preserves bio data of staff and students of all the years. Likewise, we should include the list of flora found in University campus and upload in the University 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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