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Plant Diversity and Distribution in Handia Tehsil Prayagraj District, Uttar Pradesh**Saumya Mishra**

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ABSTRACT

The present study documents the biodiversity of herbaceous weed flora and medicinal plants recorded from Handia Tehsil Prayagraj District, Uttar Pradesh. A total of 37 plant species belonging to 20 families were identified and classified based on their scientific and common names. The family Asteraceae showed maximum representation, followed by Euphorbiaceae, Acanthaceae, and Solanaceae. The recorded flora included herbs, shrubs, grasses, climbers, and parasitic species, indicating considerable ecological diversity. Several species such as *Andrographis paniculata*, *Phyllanthus niruri*, *Boerhaavia diffusa*, and *Eclipta alba* possess important medicinal value and are traditionally used in herbal treatments. The study also recorded invasive weeds like *Parthenium hysterophorus* and *Lantana camara*, which may affect native vegetation and agricultural productivity. The findings reveal significant floral diversity and highlight the ecological and ethnobotanical importance of the plant species present in the area. Proper conservation and sustainable management strategies are therefore essential for maintaining biodiversity and protecting valuable plant resources.

Keywords: Biodiversity, flora, grass, herbs, shrub

INTRODUCTION

Plant diversity plays a vital role in maintaining ecological balance and supporting the livelihood of human populations through food, medicine, fodder, and environmental protection. The diversity and distribution of plant species in any region are influenced by climatic conditions, soil characteristics, topography, water availability, and anthropogenic activities. Floristic studies are therefore important for understanding the composition, structure, and ecological significance of vegetation in a particular area.

All human beings require certain fundamental basic necessities such as food, shelter, clothing, and medications that are absolutely essential for survival and wellbeing. India is recognized as one of the twelve megabiodiversity centers worldwide. As stated in the World Health Organization report, approximately 80% of the global population comes from a rural background, including tribal and ethnic communities (Mishra *et al.*, 2016, Mishra and Tiwari, 2017). These individuals rely on traditional methods of primary health care.

These natural substances are derived either directly or indirectly from the diverse range of life on Earth (Anonymous, 1986). Due to the presence of significant bioactive compounds such as essential oils, glucosides, steroids, alkaloids, tannins, saponins, and mucilaginous resins, numerous pharmaceutical industries are involved in the creation of natural healthcare products like herbal cosmetics and nutritional supplements (Tiwari *et al.*, 2016; Mishra & Tiwari, 2019). It has been reported that approximately 40% of plant-based products are employed for conventional medicinal purposes in India (Kirtikar *et al.*, 1918).

The study of plant diversity in this region is important for understanding local ecosystem dynamics, conservation of native flora, and sustainable utilization of medicinal plant resources. Documentation of floristic composition also provides baseline information for future ecological, taxonomical, and environmental research in the region.

MATERIALS AND METHODS

Handia Tehsil is situated in the eastern part of Prayagraj and is characterized by fertile alluvial plains, agricultural lands, grasslands, and semi-natural habitats. The region experiences a

subtropical climate with distinct summer, monsoon, and winter seasons. Such climatic conditions contribute significantly to seasonal variation in vegetation and the occurrence of diverse weed flora. Many naturally growing species found in Handia Tehsil possess medicinal, ecological, and economic importance. At the same time, several invasive weeds also occur in the area, affecting crop productivity. Due to intensive agricultural practices and seasonal environmental variations, the area exhibits significant plant diversity, including many medicinally and economically important species.

Table 1: Plant Diversity and Distribution in Handia Tehsil Prayagraj District, Uttar Pradesh

S.No.	Family	Scientific name	common name
1	Acanthaceae	<i>Andrographis paniculata</i> (Burm. F) Wall. Ex. Nees	Kalmegh
2	Acanthaceae	<i>Ruellia tuberosa</i> L.	Fever root
3	Acanthaceae	<i>Rungia parviflora</i> L.	kharmor
4	Amaranthaceae	<i>Achyranthus aspera</i> L.	Chirchira, latjira
5	Amaranthaceae	<i>Amaranthus spinosus</i> L.	Chaulai
6	Asclepiaceae	<i>Calotropis procera</i> (Alton)	Madar
7	Asteraceae	<i>Ageratum conyzoides</i> L.	Goat weed
8	Asteraceae	<i>Eclipta alba</i> (L.) Hassk	Bhringraj
9	Asteraceae	<i>Launaea asplenifolia</i> , hook	Ban-gobhi
10	Asteraceae	<i>Parthenium hysterophorus</i> L.	Gajar ghas, carrot grass
11	Asteraceae	<i>Xanthium strumarium</i> L.	Chota dhatura
12	Asteraceae	<i>Vernonia cinerea</i>	Sahadevi
13	Cannabinaceae,	<i>Cannabis sativa</i> L.	Bhang
14	Chenopodiaceae	<i>Chenopodium album</i> L.	Bathua
15	Cleomaceae	<i>Cleome viscosa</i> (Linn.)	Hurhur
16	Cuscutaceae	<i>Cuscuta reflexa</i> L.	Amarbel
17	Cyperaceae	<i>Cyperus iria</i> L.	Gal motha
18	Cyperaceae	<i>Cyperus rotundus</i> L.	Motha
19	Euphorbiaceae	<i>Acalypha indica</i> L.	Kuppi
20	Euphorbiaceae	<i>Croton oblongifolius</i> L.	Bhutankusa
21	Euphorbiaceae	<i>Euphorbia indica</i> (Lamk.)	Chotiduddhi
22	Euphorbiaceae	<i>Euphorbia hirta</i> L.	Duddhi
23	Euphorbiaceae	<i>Phyllanthus niruri</i> L.	Bhui-amla
24	Fabaceae	<i>Melilotus indica</i> L.	Ban-methi, senje
25	Fabaceae	<i>Desmodium triflorum</i> L.	Kudaliya
26	Malvaceae	<i>Abutilon indicum</i> (L.)	Kanghi, Atibala
27	Malvaceae	<i>Sida cordifolia</i> (Linn.)	Khareti/ herb
28	Nyctaginaceae	<i>Boerha aviadiffusa</i> L.	Punarnava
29	Oxilidaceae	<i>Biophytum sensitivum</i>	Little Tree Plant
30	Papaveraceae	<i>Argemone maxicana</i> L.	Peelikateri, satyanashi
31	Papaveraceae	<i>Papaver somniferum</i> L.	Afeem
32	Poaceae	<i>Cynodon dactylon</i> L.	Doob
33	Primulaceae	<i>Anagallis arvensis</i> L.	Dharti- dhak
34	Solanaceae	<i>Datura metal</i> L.	Dhatura
35	Solanaceae	<i>Solanum nigrum</i> L.	Mokoiya
36	Solanaceae	<i>Solanum xanthocarpum</i> (Burm.)	Bhatkataiya
37	Verbenaceae	<i>Lantana camara</i> L.	Ghaneri papardani

Due to its ecological and agricultural significance, Handia Tehsil represents an important area for floristic and biodiversity studies. Documentation of plant diversity in this region helps in understanding species distribution, conservation status, ecological interactions, and the traditional uses of medicinal plants by local communities.

RESULTS

The present study revealed the documentation and analysis of plant diversity and distribution in Handia Tehsil. During the survey, a rich diversity of weed and medicinal plant species belonging to different angiosperm families were recorded. The data on floral biodiversity were documented in table 1.

Among the recorded families, Asteraceae was the dominant family with six species, including *Ageratum conyzoides*, *Parthenium hysterophorus*, and *Eclipta alba*. The dominance of Asteraceae may be due to its high adaptability, effective seed dispersal mechanisms, and tolerance to disturbed habitats. Euphorbiaceae was the second dominant family represented by five species such as *Phyllanthus niruri* and *Euphorbia hirta*. Families like Acanthaceae, Solanaceae, Fabaceae, and Malvaceae were also well represented, indicating balanced floristic composition in the area.

The vegetation includes a mixture of herbs, shrubs, climbers, grasses, and parasitic plants, showing ecological variation within the habitat. Several species possess important medicinal and ethnobotanical value, such as *Andrographis paniculata* (Kalmegh), *Eclipta alba* (Bhringraj), *Phyllanthus niruri* (Bhui-amla), and *Boerhaavia diffusa* (Punarnava). Some invasive and noxious weeds such as *Parthenium hysterophorus* and *Lantana camara* were also observed, reflecting anthropogenic disturbance and ecological pressure in the region (Table 1).

DISCUSSION

The present study revealed considerable plant diversity in Handia Tehsil, Prayagraj, a total of 37 plant species belonging to 20 families were documented. The recorded flora consisted mainly of herbs along with a few shrubs, climbers, grasses, and parasitic plants. The diversity of species reflects the favorable climatic and edaphic conditions of the region, which support the growth of a wide variety of vegetation in agricultural fields, roadsides, wastelands, and grasslands (Dash and Mao, 2018).

Among the families, Asteraceae was the dominant family with the highest number of species (6 species), followed by Euphorbiaceae (5 species), Acanthaceae and Solanaceae (3 species each). Other families such as Amaranthaceae, Cyperaceae, Fabaceae, Malvaceae, and Papaveraceae were represented by two species each, while the remaining families contributed one species each.

The study also recorded several harmful and invasive weeds such as *Parthenium hysterophorus*, *Lantana camara*, and *Xanthium strumarium* (Kuhad *et al.*, 2010 and Chhabra *et al.*, 1999). These species are known to compete with crops and native vegetation, thereby affecting agricultural productivity and biodiversity. Their abundance in disturbed habitats suggests increasing anthropogenic pressure and ecological imbalance in certain areas of the region (Evans, 1977).

The presence of grasses like *Cynodon dactylon* and sedges such as *Cyperus rotundus* further indicates ecological adaptability and soil-binding capacity of the local flora. The occurrence of parasitic species like *Cuscuta reflexa* demonstrates the ecological complexity of the vegetation community (Dash and Mao, 2018).

Overall, the study highlights the rich floristic diversity of Handia Tehsil and emphasizes the ecological, medicinal, and economic significance of the recorded species. Proper conservation measures, awareness programs, and sustainable utilization strategies are essential to preserve the native plant diversity and to control the spread of invasive weeds in the region. The occurrence of economically and medicinally important species alongside harmful weeds highlights the ecological as well as socio-economic significance of the local flora. The data demonstrate moderate to high plant biodiversity and indicate the importance of conservation and sustainable utilization of these plant resources.

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REFERENCES

1. Anonymous. (1986). *Useful plants of India* (pp. 1–5). CSIR.
2. Chhabra BR, Kohli JC, Dhillon RS (1999) Three ambrosanoides from *Parthenium hysterophorus*. *Phytochemistry* 52:1331–1334
3. Dash, S.S. and Mao. A.A. (2018): Flowering Plants of India- An annotated Checklist. 3 Vols. Botanical Survey of India, Kolkata.
4. Evans H. (1997). *Parthenium hysterophorus*: a review of its weed status and the possibilities for biological control. *Biocontrol News Inf.*; 18:389–398
5. Kirtikar, K.R. and Basu, B.D. (1918). Indian Medicinal Plants. Vols. I–IV. Sudhindra Nath Basu, Panini Office, Bahadurganj, Allahabad, India.
6. Kuhad RC, Gupta R, Khasa YP, Singh A. (2010): Bioethanol production from *Lantana camara* (red sage): pretreatment, saccharification and fermentation. *Bioresour Technol.*; 101:8348–8354.
7. Mishra, S., & Tiwari, S. (2017). Role of Indian women in agriculture and health care. In *Public health in India with special reference to women, children and adolescents* (pp. 113–114).
8. Mishra, S., & Tiwari, S. (2019). Mahilayon ke jeevan mein aushadhiya paudhon ki upyogita. In *Stree vimarsh mein nayapan* (pp. 129–139).
9. Mishra, S., Tiwari, S., & Mishra, D.R. (2016). On some pharmaceutical angiosperms having hypoglycemic properties. *Journal of the Andaman Science Association*, 21(1), 86–89.
10. Tiwari, S., Mishra, S., & Mishra, D. R. (2016). Biodiversity and conservation of some medicinal plants of Allahabad district. *Journal of the Andaman Science Association*, 21(1), 45–52.
11. Tiwari, S., Mishra, S., & Mishra, D. R. (2017). On the diversity of some medicinal plants of Allahabad district. *Geophytology*, 47(2), 121–129.