



## Survey of Major Existing Flora of Hathras District of Uttar Pradesh, India

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### Abstract:

*The flora of Hathras District of Uttar Pradesh (india) especially on urban and rural areas has been recorded. The information based on rural areas gathering oral, folklores and search of literature on medicinal plants it has ethnomedicinal importance in India even today. There are 460 major spesces in the region belonging to 325 genera and 99 families. Among 460species 77 belongs to poaceae makes it a dominating family. Fabaceae with the 52 species is second and Asteraceae with 34 species occupies second and third position, respectively.*

**Keywords:** *Nanoparticles, Dissolution, Bioavailability, Coacervation, Polylactic Acid.*

### Introduction:

The Hathras district is geographically located in between 20.4” and 90<sup>0</sup> North latitude and between 76<sup>0</sup> and 77<sup>0</sup> East longitudes. Politically it is a part of District Aligarh of state Uttar Pradesh in country India. The area of Hathras district is 175.6 sq. km. The boundaries of Hathras touched the District Agra, Mathura and Firozabad. The climate here is considered to be a local steppe climate. A semi-arid climate of steppe climate is the climate of a region the receives precipitation below potential evapotranspiration, but not as low as a desert climate. There is little rainfall throughout the year. According to Koppen and Geiger has classified this climate as BSh (Peel et al.,2007). The temperature here averages 25.4<sup>0</sup>C. In a year, the average rainfall is 755 mm. The temperature during the summer month reaches to its peak upto about 47.5<sup>0</sup>C in the month of June and in the winter season the important crops of the country grown in this region are mainly Wheat, barley, paddy, mustard, potato, maize, mung and sugarcane. Major population of Hathras is depends on dairy and farming for their livings (Singh 2017). Plants surveys are useful to conserve traditional medicinal knowledge. A proper documentation of the valuable information of ethnobotany is highly needed at present. The present study underlined the plant families of the region and documentation of traditional knowledge regarding the use of plants parts for the benefit of mankind (Jan et al., 2018). It is assumed that various uses of plants indicated the propensity of people to cultivate and protect a plant higher; thus it can be further predicted that if a family has a large number of overall members than it has been selected by ancient people based on applications of a plant. Proportionally, some plant families are highly used in medicinal systems. On the other hand scientific evaluation of medicinal plants revealed that secondary metabolites in plants have made medicinal values of these plants. Present study was conducted in district Hathras of Uttar Pradesh, India. The district was selected on the basis of little or no specific literature available related to this region.

## Review of Related Literature:

The floristic diversity of Hathras district, located in western Uttar Pradesh, forms part of the Indo-Gangetic alluvial plains, characterized by semi-arid climatic conditions, fertile loamy soils, and agricultural dominance. Although district-specific floristic surveys are limited, broader botanical explorations in western Uttar Pradesh provide a useful framework for understanding the major existing flora of Hathras.

Early comprehensive works such as Flora of British India by Joseph Dalton Hooker laid the foundation for systematic plant classification in northern India. Later, regional floras including Flora of Upper Gangetic Plain documented numerous angiosperms, shrubs, climbers, and grasses prevalent across the Gangetic belt, many of which are common in Hathras.

Studies on the vegetation of western Uttar Pradesh highlight dominant tree species such as *Azadirachta indica* (Neem), *Ficus religiosa* (Peepal), *Mangifera indica* (Mango), *Dalbergia sissoo* (Shisham), and *Acacia nilotica* (Babul). Agricultural landscapes support crops like *Triticum aestivum* (Wheat), *Oryza sativa* (Rice), and *Saccharum officinarum* (Sugarcane), while roadside and wasteland flora include *Calotropis procera*, *Parthenium hysterophorus*, and *Cynodon dactylon*.

Recent ecological surveys in districts adjoining Hathras emphasize increasing anthropogenic pressure, urban expansion, and agricultural intensification leading to habitat fragmentation and decline in native biodiversity. Weed invasion, groundwater depletion, and monocropping practices further influence floristic composition.

Overall, existing literature indicates that Hathras district shares floristic characteristics typical of the Upper Gangetic plains, comprising cultivated, wild, medicinal, and ornamental plant species. However, there remains a need for a detailed, updated, district-level floristic survey to document species diversity, conservation status, and ecological changes systematically.

## Materials And Methods:

India is a veritable emporium of the medicinal and aromatic plants. It has been estimated that about 15,000 higher plants flourish in India and various medicinal systems of plants like Ayurved, Unani, Herbal and Homeopathy have been using plants these plants in their recipes. At present an intensive field survey was conducted in District Hathras of cover different zones, to include all vegetation types: forests, grassland and crop fields to collect information about the ethnobotanical uses of plants by the local people. For the purpose of general and revenue administration, the district is divided into four Tehsil- Hathras, Sikandra Rao, Sasni and Sadabad. This district- Hathras is bounded by Etah, Mathura, Aligarh and Agra districts on east, west, north and south direction, respectively. This district is bestowed with the main river "Karvan" which flows west to east here. Some other water streams, canals also flow in the district. The area under horticultural crops is 0.1%, whereas area under pasture land, forest land, waste land for agriculture use, alkaline and saline soil, usable land other than agriculture and uncultivated land is 0.6%, 1.2%, 1.3%, 3.1%, 8.8%, 3.3% respectively. The data were collected from as many villages as possible in each region of district. Villages of reputed traditional medicinemen/women were preferentially included in the study. All possible care had been taken to get the proper knowledge and information about plants which had been used in different diseases. Such information has been documented after interview of local people, housewives, priests, vaidhy etc. in their local dialect (Braj & Hindi Mixed language). The author tried to collect the proper and correct information about all the plants used as ethnomedicinal in different parts of this district in various ailments and chronic diseases. The plant specimens were dried, mounted, identified and authenticated with the help of RBS botany Laboratory Agra. Main focus of the study was recording the abundantly available plants with medicinal value among the tribals and several others, who live in the remote rural areas.

## Results And Discussion:

The survey and observation were carried out in remote rural villages to identify the common and cultivated plants (Table 1) and their utilization by villagers in Hathras district of Uttar Pradesh (India). General aspects of vegetation are provided to give an idea about the vegetation of different localities of the area under investigation. The general climatic, topographic, soil and biotic factors which influence the vegetation are also described. A total number of species 460 distributed over 325 genera and 99 families given ethnomedicinal uses have been studied and are reported from the Hathras district during the present study. Dicotyledones are represented by 257 genera and 330 species belonging to 83 families while monocotyledons are represented by 68 genera and 130 species belonging to 16 families. There are 49 families which are represented by a single species and 53 families represented by a single genus. The ratio of species belonging to Monocotyledons and Dicotyledones is 1:2.5, ratio of genera is 1:3.8 and that of families is 1:5.2. The proportion of total number of genera to species for this area is 1:1.4. The family Poaceae with 77 species is the largest family, dominating the flora of the area and occupies first position. Fabaceae with the 52 species is second and Asteraceae with 34 species stands at the third position.

*Table 1: Ten dominant families of the area are as follows.*

Sr.No.	Family	Number of species recorded
1	Poaceae	77
2	Fabaceae	52
3	Astraceae	34
4	Cyperaceae	33
5	Scrophulariaceae	15
6	Convolvulaceae	12
7	Acanthaceae	11
8	Malvaceae	11
9	Amaranthaceae	11
10	Caesalpiniaceae	10

In the present text the total number of plants species 460 have been reported from the investigated area. Out of these 150 plants species were using as medicinal uses different ethnic groups by local people, vaidhyas and ayurvedic practitioners for human diseases and disorders in the area. Thus it is interesting to know that the poaceae plants have lesser amount of alkaloid but have been utilized more than other families in traditional medicine systems. The poaceae had greater availability in the region where most humans are allowed to visit. Traditionally, villagers and remote rural people are using plants for medicinal purpose. Thus present paper also contributes significant ethnobotanical information. Our study supported the theory of using medicinal plant selection based on availability of plants in unique cultural and geographical contexts.

## Findings:

The survey of major existing flora of Hathras district reveals that the vegetation of the region is predominantly influenced by agro-climatic conditions of the Upper Gangetic plains. The district exhibits a mixture of cultivated crops, roadside vegetation, wasteland flora, and scattered tree species. Dominant tree species recorded include Neem (*Azadirachta indica*), Peepal (*Ficus religiosa*), Shisham (*Dalbergia sissoo*), Mango (*Mangifera indica*), and Babul (*Acacia nilotica*).

Agricultural crops such as Wheat (*Triticum aestivum*), Rice (*Oryza sativa*), Mustard (*Brassica juncea*), and Sugarcane (*Saccharum officinarum*) form the major cultivated flora due to fertile alluvial soil. Herbaceous plants and grasses like *Cynodon dactylon* are commonly found in open fields and grazing lands. Wasteland and roadside areas are increasingly dominated by invasive species such as *Parthenium hysterophorus* and *Calotropis procera*.

Medicinal and ornamental plants are also present, though their distribution is limited. Rapid urbanization, monocropping, groundwater exploitation, and excessive use of agrochemicals have contributed to reduced natural vegetation cover and biodiversity loss. Native shrub species are gradually declining, while hardy and invasive species show increasing adaptability.

### **Conclusion:**

The floristic composition of Hathras district reflects the ecological characteristics of western Uttar Pradesh, where agriculture plays a dominant role in shaping vegetation patterns. Although the district supports a variety of trees, crops, herbs, and grasses, natural vegetation has been significantly altered by human activities.

There is an urgent need for systematic documentation, conservation planning, and awareness programs to protect native plant species and control invasive weeds. Sustainable agricultural practices, afforestation programs, and biodiversity monitoring can help restore ecological balance. A comprehensive district-level floristic inventory would further support conservation strategies and environmental management in the region.

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