



DESCRIPTION OF SOME IMPORTANT PLANT SPECIES AT PALIWAL PARK, AGRA

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ABSTRACT

Plant life on the earth can be distinguished from each other in a number of ways. The simplest is to divide on the basis of region. Plants that grow specifically in the mountains will be very different from those that grow in the desert. Similarly, the plants that have adapted to living underwater are treated as a unique form of flora. Scientists can also study 'Fossil Flora', which comprises of plant life that was found in pre-historic times. The current flora and fauna of the earth is also divided on the basis of the environment in which it is grown or seen naturally. The present study deals with the description of important plant species found at Paliwal park, Agra which is an important place for species diversity.

INTRODUCTION

Plants have been under keen observations of man from times immemorial for their multiple utility with the growing modern civilization, the ever increasing role of plants to human life has placed before us many fold tasks for understanding intimately the world of the plant and their relationship with human being. This reversionary work was felt necessary as the area covered by the Hooker's work had undergone political transformation with the end of British rule. Man has surveyed remote galaxies and has stood on the surface of moon but has not so far come anywhere near to completing a taxonomic catalogue of the fewer than half a million species of higher plants that grow on our planet. Botanists were exploring the floristic regions of the world for several centuries and their efforts have succeeded only in preparing a more realistic taxonomic account of the plants of Europe. The gravity of the situation is so severe in the tropics due to variety of reasons, the foremost being habitat destruction at an alarming rate leading to loss of biodiversity, essential for the sustenance of life on earth. Thus, conservation of biodiversity has gained prime consideration all over the world since the earth summit at Rio de Janeiro in 1992. The first and foremost process in ascertaining the biodiversity is the taxonomic treatment of living organisms. This can be achieved only through the process involving extensive exploration, identification and documentation. Earlier works in this branch of science in the Indian subcontinent resulted in the preparation of national and provincial floras. Further, studies on local and regional floras paid increased attention at ecological level in addition to taxonomic treatment, which proved to be more beneficial in the management practices. In spite of the accelerated floristic studies in Peninsular India during the last three decades, several parts of the dense forest areas in the Western Ghats are yet to be thoroughly explored. The Western Ghats is one of the mega diversity centres in India and is also a biodiversity hotspot. About 24 per cent of the forests have been brought under protected

areas by establishing 12 Wildlife Sanctuaries and two National Parks. The floras of most of the protected areas have also been studied recently.

Floristic explorations and taxonomic studies can provide efficient and convenient information about the nomenclature, distribution, ecology, utility of various plant species, and thus about an ecosystem. Taxonomy is an integrated and, perhaps, intuitive science of identifying, naming and classifying plants. This may be considered as the oldest of sciences in the world, as the primitive man had to distinguish the plants that he can eat safely, from those which are poisonous and inedible. But, often this branch of botany is considered as old-fashioned and out-dated and the appearance of many subjects making use of modern technologies and sophisticated instruments, only added contempt to the neglect. Botanic Garden serves as a National Facility with three main functions viz. conservation, education and bio-aesthetics. It is designed to conserve the indigenous and exotic flora and fulfils the basic function of making available for study, research and use, at one place, a wide diversity of trees, shrubs, climbers and other plant species. The garden is highly reputed for its well identified and aesthetically displayed plant wealth in a well designed landscape to capture a living nucleus of various plant species for posterity.

Agra is situated on bank of the river Yamuna in the northern state of Uttar Pradesh. This small city of Agra is now of the major tourist destinations of the world due to the presence of Taj Mahal, Fatehpur Sikri and Agra Fort monuments. All three of which are UNESCO World Heritage Sites. Agra is a city of the past filled with graveyards and stones. It is a vibrant centre of culture, art and religious philosophies. Agra is famous for handicrafts products as leather work, footwear, brass wear, carpets, jewelleryzari and embroidery work. K.D. Paliwal Park is located in the heart of Agra, U.P. It is spread over an area of around 70 acres. It also has a small lake and vast variety of trees. Shri Krishna Datta Paliwal was the first finance minister of Uttar Pradesh. Paliwal Park links the residential areas of East Vijay Nagar, West Wazirpur, South Ghatia to the financial Hub of city i.e. – Sanjay Place. It is surrounded by many education institutions viz the Dr. B.R.A. University (Formerly Agra University), St. Peter's College, St. Patrick's Junior College, Mufeed E Aam Junior College and Agra Public School. John's Public Library, also known as the Agra Municipal Library, is also located here and one can find rare books on diverse topics here. The climate of Agra is tropical and is prone to extreme temperature.

The flora of Agra has been studied by Sharma, and Dhakre (1980). The study on the flora of Wildlife Sanctuary like Soor Sarovar, Runakta was taken up with the financial support of the Wildlife Wing of Forest Department of Uttar Pradesh. No detail systematic work on the flora of a very important park i.e. Paliwal park of Agra have been carried out so far hence the present investigation has been taken in the account with following objectives i) to prepare an inventory of the plants in the study area, ii) to analyze the flora with emphasis on dominant plant groups, endemics, rare and threatened plants and iii) to find out areas with respect to species richness.

MATERIALS AND METHODS

Study Area : The present investigation (carried out during 2014-2015) provides the background on Paliwal Park necessary to understand the context in which the study of plants and their use was undertaken.

Geography : Geographically Agra district is situated in the extreme southwest corner of Uttar Pradesh, stretches across 26° 44' N to 27° 25' N and 77° 26' E to 78° 32' E. Its borders touch Rajasthan to its west

and south, the district of Firozabad to its East Mathura and Etah to its North. Situated at the banks of River Yamuna. Agra suffers from extremities of climate with scorching hot summers and chilly winters. Monsoons offer some relief but the lanes within the city become very dirty and slippery during this season. However, the main road that stretches across the tourist area is good enough in any season.

Climate : Agra has a semiarid climate expand to atleast one paragraph with humidity and rainfall.

Methods of study: The methods of the present study have been divided into three parts.

Taxonomic study of Plants: Taxonomical survey was carried out during 2014-2015 in Paliwal Park District Agra

Uses of Plants: Besides taxonomic description plants ant their parts were also taken into consideration. A survey was carried out to collect information on the medicinal uses of plants found in this area. What is the use of these medicinal plants?

1. Which part of these plants is used for medicinal purposes?
2. When do you collect these plants?

The data acquired for each plant comprise the common local name, its uses or effects, the part of the plant used, and its preparation and administration process. The collected plants are identified by comparing from Department of Botany, School of Life Science; Department of Botany, R.B.S. College (Agra) and with the help of the literature "Flora of Agra" (Sharma and Dhakre, 1995), "Flora of Delhi" (Maheshwari, 1963) and "Flora of Rajasthan" (Puri, 1964).

RESULTS AND DISCUSSION

The observations of the present investigation have been described in the floristic study of Paliwal Park, Agra. Seventy six (76) plants species belonging to different families were recorded, these plants clearly depicted plant nature, common name along with their important dominant species and their uses.

Taxonomic description and uses of plants:

Various plants were dicots as well as monocots separately. In observations most plants were dicots (72) whereas monocots plants were lower in numbers (2). These taxa appeared to be promising from the ornamental and environmental purposes. They are enumerated with botanical, local and family name, their uses and number of voucher specimens. The most important family was Composite containing various species as depicted from their study.

1. AAM:

Botanical Name: *Mangifera indica*; **Family:** Anacardiaceae; **Vernacular Name:** Aam

Description: Large, evergreen tree with a dense crown, crowded at the end branches flowers yellowish-green leaves terminal in panicles, polygamous. Flowers are about 3 mm across, yellowish-green, in panicles. Fruits a drupe, 5-15 cm long, ovoid, stone compressed, fibrous. Flowers in February to March and fruits in June to July.

Uses:

- Unripe fruits are picked, used as chutney and in preparation of Amchur.
- Ripe fruits are edible and preserved by canning or used for juice and squash, jam and jellies.

- The wood is used for boards, plywood packing boxes and agricultural implements.
- Bark is used for uterine haemorrhage and seeds are used in asthma.
- The mango is held sacred by the Hindus and is said to be a transformation of Prajapati (Lord of Creatures).
- It provides one of the “panchpallavas”. The flowers (baur) are used to worship God Shiva on Shivaratri.
- The flowers are invoked in Shkuntalam as one of the five arrows Kamadeva.

2. AKASH NEEM

Botanical Name: *Millingtonia hortensis*; **Family:** Bignoniaceae; **Vernacular Name:** Akash neem

Description: A quick- growing, straight tall (20m) tree with a large foliage divided into leaflets. Young leaves and inflorescence slightly pubescent. Leaves 12-24 long, pinnse 3 pair the lowest pair bipinnate at base, pinnules ovate, acuminate, petiolulate, the blade 1-2 long. Flowers numerous fragrant pure white, in large terminal panicles; hractsminute ciliate; corolla 3-4 long. Capsules 12 long. The branches are drooping.

Uses:

- The tree is likely to be toppled by high winds.
- It is a very an attractive avenue tree and its propagation is from root- suckers which come in abundance or from cuttings.

3. AMALTAS

Botanical Name: *Cassia fistula* Linn.; **Family:** Caesalpiaceae; **Vernacular Name:** Amaltas

Description: It is a small or medium-sized tree with compound leaves and large, shining, dark green Leaflets. Flowers were bright yellow, large on hanging bunches. Fruits are 50-60 cm long, black or shining dark brown in colour and almost cylindrical. The tree is a conspicuous sight in flowers as in fruits and can be spotted in a forest even from long distance. The tree sheds its leaves during early summer (March-May), and is in full bloom during this period.

Uses:

- The fruits are used in the Indian Pharmaceutical Industries.
- The pulp from the fruits, called cassia pulp, is a well-known laxative.
- The bark of this tree is known as ‘Sumari’ and is rich in tannins.
- The timber of the tree is strong and tough and is suitable for house and bridge posts and agricultural implements.
- The leaves and fruits of this plant are cathartic and are useful in purgative properties.

4. AMLA

Botanical Name: *Emblica officinalis*; **Family:** Euphorbiaceae; **Vernacular Name:** Amla

Description: A small or middle-size deciduous tree, leaves are small, 10-13 mm long, 2-3 mm broad, very closely set in pinnate fashion, branchlets look rather feathery in general appearance. Male and female flowers are borne on same tree, flowers pale green, usually in small dense clusters below the leaves; Male flowers small, numerous, on short stalks; female flowers are also small, fewer. Fruits are 1.5-2.5 cm diameters, fleshy, roundish, rather indistinctly marked into 6 lobes, pale green or yellowish; seeds 6. Fruits of cultivated forms are larger. Flowering occurs from March to May, fruits were formed November to January.

Uses:

- Emblica fruits are a good liver tonic, raw fruits are cooling and mild laxative.
- Fermented liquor made from the fruits is considered useful in indigestion, anemia, jaundice, certain heart complaints, cold in nose and for promoting urination.
- It is a very rich source of vitamin C, and is valuable in diseases caused by deficiency of vitamin C, like scurvy.
- Dried fruits are useful in diarrhea and dysentery even picked fruits are prescribed in Indian medicine.
- Flowers, roots and bark of the tree also medicinal, seeds are reported to cure asthma and stomach disorders.

In present work the author has studied the Flora of Paliwal park, Agra (U.P.), the area under study, lies in the tropical zone. Agra District is situated in the extreme southwest corner of Uttar Pradesh, Agra stretches across 26° 44' N to 27° 25' N and 77° 26' E to 78° 32' E. Its borders touch Rajasthan to its west and south, the district of Firozabad to its East and the districts of Mathura and Etah to its North. Situated at the banks of River Yamuna, The climate of the Paiwal Park is markedly periodic and of a semi-arid nature which is characterized by a dry and hot summer, a warm monsoon and a cold winter. This is based on collections made during the period 2014-15 in order to cover at least major habitats. In the present study 76 species were identified and documented in the Department of Botany, S.L.S. Khandari Campus, Dr. B.R.A. University, Agra. It includes collection of plants, identification and description of 76 species, 68 genera and 36 families. Out of 76 species, 72 dicotyledons, 2 monocotyledons and 2 gymnosperms belonging to 32, 2 and 2 families respectively.

The purpose of the study is to compare the vegetation pattern on Pliwal Park and to analyze and interpret the impact of plant communities on different exposure, and to gather first hand information about the vegetation this unexplored and floristically rich area. Present study was basically focused on the tree diversity of the region. The percentage of families of dicotyledones, gymnosperms and monocotyledons were respectively 88.90, 5.55 and 5.55 and the species were respectively 94.74, 2.63 and 2.63. Most plants are used as multiple purposes. Common diseases like fever, earache, toothache, asthma, and other skin diseases are treated locally. Snake bite and wound healing are also treated by local plant medicines. Most of the plants are eaten or their extract or decoction is prepared for the treatment of diseases. Some are applied externally especially in case of skin diseases. Usually herbs are used as medicines. Area heavily used by the people for fuel wood collection and 3livestock grazing are dominated by scrub vegetation. Most of the natural forests have been replaced by plantation of commercially important trees and agriculture. The area free human habitations continue to provide

microhabitats for an array of native flora. The vegetation of the area is disturbed by forest fire, deforestation and due shelling and export to other.

PLATE 1



PLATE 1: (A) Aam (*Mangifera indica*); (B) Akash neem (*Millingtonia hortensis*); (C) Amaltas (*Cassia fistula*); (D) Amla (*Emblica officinalis*)

REFERENCES

- Alagesaboopathi, C. (2014): medicinal plants used by Tribal and Non-Tribal People of Dharmapuri district, Tamilnadu. *Int. J. Res Bioi Plant Biol.* 1 (2) : 64-73
- Batalha, M.A. and Martins, F.R. (2004): Floristic frequency and vegetation life form spectra of cerrado site. *Braz. J. Bio.* 64 (2) : 203-209.
- Bor, N.L. and Raizada, M.B. (1954): some Beautiful Indian climbers and shrubs, Bombay Natural History Society, Bombay, 246.
- Costa, R.C. (2007): Flora and life form spectrum in an area of deciduous thorn woodland (caatinga) in northeastern, Brazil. *J. of arid environment*, 68 (2) : 237-247.
- Sharma and Dharkre, J.S. (1995): Flora of Agra District. *Bot. Sur. of India*, Kolkata.
- Sharma, A.K. and Dhakre, J.S. (1980): An Enumeration of the Flora of Agra District. Agra University. *J. of Res. (sci)* xxix 37-60.
- Singh, Ekta and Singh, M.P. (2010): Biodiversity and phytosociological Analysis of plants around the Municipal Drains in Jaunpur. *Int. J. Biol. and Lif. Sci.* 6: 2.