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Trees and Shrubs of Verbenaceae of Haroti Region, Rajasthan

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ABSTRACT: Different Angiosperms occur in diverse habitats of Haroti region of South-east Rajasthan. The family Verbenaceae is considered as evolved and advance family of Angiosperms. Its fruits usually a drupe, containing 4 or less one seeded nutlets, sometimes may be capsule. Arboreous flora of Verbenaceae family of Haroti region have been communicated in present paper.

KEYWORDS: Angiosperms, Deciduous, Haroti region, Verbenaceae, Zygomorphic

I. INTRODUCTION

South-east Rajasthan covers Kota division of Rajasthan and includes Kota, Bundi, Jhalawar and Baran districts respectively. Hilly region, higher elevation, characteristic topography and forest cover makes important reasons for richness of flora of the area. Haroti plateau is situated at the edge of the Malwa plateau at 23°45' to 25°53' N latitude and 75°9' to 77°26' E longitude in the south-eastern corner of Rajasthan.

The Haroti region has been found to support many angiosperms (Herbs, shrubs, under shrubs and climbers). The type of vegetation of area favours the tropical dry deciduous forests. The dominant tree and shrub species of the area are *Anogeissus pendula*, *Butea monosperma*, *Acacia catechu*, *Acacia leucophloea*, *Mitragyna parvifolia*, *Terminalia arjuna*, *Holoptelea integrifolia*, *Sterculia urens*, *Wrightia tinctoria*, *Lannea coromandelica*, *Adhatoda zeylanica*, *Grewia flavescens*, *Capparis sepiaria* and *Zizyphus nummularia*.

The family Verbenaceae have mostly shrubs or trees. Its leaves are simple, or palmately or pinnately compound and opposite or whorled. Inflorescence is variable in Verbenaceae; cymes, racemes or spikes. Flowers are irregular, zygomorphic, bisexual and hypogynous. The calyx 4-5, persistent, corolla 4-5, lobed, united and sometimes 2-lipped.

The reproductive structures of Verbenaceae members are stamens 4, didynamous, free, epipetalous and carpels usually 2, ovary superior, syncarpous and axile placentation. The present paper deals with general account of trees and shrubs of Verbenaceae family of Haroti region.

II. RELATED WORKS

Notable taxonomical work done in various part of India by Biswas and Calder 1936, Mathur 1960, Champion and Seth 1968, Agarwal 1971, Majumdar 1981, Shetty and Pandey 1983, Meena 2012, Barooah and Ahmed 2014, Sharma 2019 and 2022. Climatic and edaphic factors and environmental degradation make negative impacts on growth rate of many angiosperms flora.

III. METHODOLOGY

The studies are based on taxonomical visit to assess the arboreous plants of Verbenaceae family of Haroti region of south-east Rajasthan. Floristic observations and field tours is organised during January 2021 to June 2023. Five species of Verbenaceae family are described in this article.



IV. EXPERIMENTAL RESULTS

Verbenaceae is allied with Acanthaceae and Lamiaceae but from which it can be distinguished by having ovary with 2-4 celled, with 1 or 2 ovules in each loculus, simple, terminal style and usually drupaceous fruits. The member varies herbs, shrubs to trees. Five tree and shrub species of Verbenaceae family are enumerated in present work.

1. *Gmelina arborea* Roxb. ex Sm.
2. *Lantana camara* L.
3. *Lantana veronicifolia* Hayek (Syn. *Lantana wightiana* Wall. ex Gamble)
4. *Tectona grandis* L.f.
5. *Vitex negundo* L.

These plant species with their common names, morphological description, locality and flowering and fruiting times are described below:

1 *Gmelina arborea* Roxb. ex Sm.

Common name: Gamhar

A moderate-sized fast growing deciduous tree, unarmed, bark light grey, leaves simple, opposite, petiolate, exstipulate, entire or lobed, with glands. Flowers brownish yellow, in terminal panicles, zygomorphic, corolla bi-lipped, fruit fleshy, succulent drupe, yellowish, obovoid, ellipsoid with hard pyrene.

Fls. and Frs: February to August.

Common in wastelands and forests. Planted also along canals, roadsides and in gardens.

Gmelina arborea Roxb. ex Sm. is a beautiful fast growing deciduous tree. Its flower is trumpet shaped. This trumpets flower open into a gaping mouth with 5 distinct lobes.

2 *Lantana camara* L.

Common name: Badbina

A large perennial prickly shrub, erect, spreading branches, lower portion woody, quadrangular, solid and hairy, with recurved prickles, leaves petiolate, ovate, crenate, serrate, rough, coriaceous and hairy. Flowers in umbellate cymes, sub-sessile, multi-coloured, fragrant, corolla bi-lipped, 4/1 lipped, one anterior petal is large and pointed, stamens 4, ovary bilocular, style simple, stigma knob like, fruit drupe globose and shining.

Most common weeds, occurs in all localities particularly in wastelands, road sides and along nallahs.

Fls. and Frs: Almost throughout the year.

A very abundant exotic notorious weed of moist wastelands. *Lantana camara* L. possess allelopathic and adverse effect on natural vegetation.

3 *Lantana veronicifolia* Hayek (Syn. *Lantana wightiana* Wall. ex Gamble)

Common name: Safed badbina

A large perennial unarmed shrub, erect, spreading branches, lower portion woody, quadrangular, solid and hairy, prickles absent, leaves petiolate, elliptic, ovate, crenate, serrate, rough, coriaceous and hairy. Flowers sub-sessile, bi-lipped, fragrant, white, ovary bilocular, fruit drupe globose and shining.

Common notorious weeds, occurs in all localities particularly in wastelands, forests, road sides and hills.

Fls. and Frs: Almost throughout the year



Lantana veronicifolia Hayek is invasive weed, it also possesses allelopathic and adverse effect on natural vegetation.

4 *Tectona grandis* L.f.

Common name: Sagwan

A large deciduous tree, grey to greyish-brown rough branches, fibrous, leaves simple, large. ovate-elliptic to ovate, glabrous above and pubescent below, margin entire, wavy, coriaceous, petiole long, stout, tomentose. Flowers small, bisexual, fragrant, white, arranged in in terminal cymose panicles at the end of the branches, fruit drupes globose, densely floccose hairy, spongy, enclosed in the persistent calyx, epicarp spongy, endocarp stony, seeds oblong.

Fls. and Frs: June to December.

Mostly planted in open moist wastelands, fencing of farms, gardens as avenue tree and for its valuable timber. Teak is known for its high-quality wood.

The *Tectona grandis* L.f. (Teak) is very popular timber tree. Near habitation it might be seen on the roadside as medium sized tree with large leaves. Teak is considered a good quality wood for furniture. The wood is used for furniture, exterior construction and other small wood projects.

5 *Vitex negundo* L.

Common name: Nirgundi, Negarh

A large perennial shrub to small tree, branched, evergreen, cylindrical, hairy, leaves pinnately compound, digitately 3-5 foliate, leaflets petiolate, oblanceolate and grey-pubescent. Flowers in long panicles, cincinnal tendency, sepals shortly 5 toothed, persistent, corolla personate, bi-lipped, blue or violet, ovary imperfectly tetra-locular. Fruit small globose drupe, 4 celled, pyrene, seeds ovate-oblong.

Common along the river beds and wet wastelands.

Fls. and Frs: Almost throughout the year.

Seed oil is used for swelling as ointment. Leaves are used in head ache and rheumatism. The branches are used for manufacturing of baskets.

V. CONCLUSION

The forest vegetation of the region is Tropical dry deciduous. Five species of family Verbenaceae of area namely *Gmelina arborea*, *Lantana camara*, *Lantana veronicifolia*, *Tectona grandis*, *Vitex negundo* are enumerated in this enumeration. This study creates the awareness about the vegetation biodiversity and their conservation.

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