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Studies On Trees Growing In The Campus of Dr Shyama Prasad Mukherjee University (DSPMU), Ranchi

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ABSTRACT

Trees are very useful through economic and ecological point of view. They are ornamental as well as used for medicines, food, timber and have many other uses. The present paper deals with the studies on tree species found growing in and around the campus of Dr. Shyama Prasad Mukherjee University, Ranchi. About 34 tree species were recorded. Along with the collection and identification, the common name of tree species and their uses were also documented. But various developmental activities and construction works around the campus are causing serious threats to these remarkable tree species. This research article is an attempt to document and explore the importance of these trees.

INTRODUCTION

The trees are vital.They are one of the important woody plants of our ecosystem. They give us oxygen, store carbon, stabilise the soil and give life to the world's wildlife. They also provide us with materials for tools and shelter. Trees are not only essential for our life, but as the longest living species on earth, they give us a link between the past, present and future. It's critical that woodlands, rainforests and trees in urban settings, such as parks are preserved and sustainably managed across the world.

The natural vegetation is deciduous forest; Chota Nagpur is rich in Sal *(Shorea robusta)*, a valuable hardwood. Other trees include the Asan *(Terminalia tomentosa),* the leaves of which provide food for the silkworms of the sericulture industry, as well as several trees that are important in the production of lac (a resinous substance used to make varnishes). The tree locally known as mahua *(Madhuca longifolia)* yields sweet edible flowers that are used to make liquor. Bamboo and bhabar (an Indian fibre grass; *Ischaemum angustifolium*) from Chota Nagpur supply raw materials for paper manufacture. Among the other common trees, most of which are found in the plain, are the banyan *(Ficus benghalensis)*, Bo tree (or pipal; *Ficus religiosa*), and palmyra palm *(Borassus flabellifer)*.

A chance discovery of Jurrasic Age petrified plant fossils at Sonajori Hills, some 350km from Ranchi, has created quite aflutter in the remote north eastern district of Pakur that borders Murshidabad in Bengal. The three-member team _ comprising assistant professor of botany at Serampore College, Hooghly, Partho Talukdar and assistant professor of APJ Abdul Kalam Government College, Calcutta, Prantik Hazra _ that had unearthed plant fossils and reptilian eggs, believed to be 70-150 million years old and dating back to the Jurassic Period, atop Rajmahal Hills of Sahebganj in November last year

MATERIALS AND METHODS

Plant materials

The plant material were collected from DSPMU campus, Jharkhand.

Equipments required for study

Flowering twigs, scissor, plastic bags, water, dissecting microscope, slides, cover slips, camera, pair of needles and forceps, fine hair brush, sharp razor, pair of sharpened pencils, a note copy to record.

Methods

All plants specimens were collected on the spot, dried and later brought back for the herbarium. Herbarium is a store house of dried and pressed plant specimens

collected from different places, which are mounted on appropriate sheets and arranged according to steel or wooden cupboards specially prepared for the purpose.

A good rule is to collect only a small set of samples from important part of every collection specimen is the flower. The plants were spot, identified and related identification was done by using flora. At the end of study, plant is placed in a known and recognized system of classification is considered to be the most practical use.

RESULTS AND DISCUSSION

A survey was conducted around DSPMU campus to study the tree species growing in and around the campus area. The trees were identified by collecting the sample of parts of trees in their flowering stage. It was found that most of the trees are deciduous and they flower during spring and summer seasons. A total of about 34 tree species were identified and are

Table 1: List of tree species growing in the campus of Ranchi College, Ranchi.

Sl. No.	Botanical Name	Family	Common Name	Habit	Flowering Months
1.	*Aegle marmelos* (L.) Correa	Rutaceae	Bel	Deciduous tree	May-June
2.	*Ailanthus excelsus* Roxb.	Simaroubaceae	Ghorkaranj	Deciduous tree	January-March
3.	*Alstonia scholaris* (L.) R.Br.	Apocynaceae	Satium	Evergreen tree	November-December
4.	*Artocarpus heterophyllus* Lam.	Moraceae	Kathal	Evergreen tree	December-February
5.	*Artocarpus lakoocha* Wall. ex Roxb.	Moraceae	Barhar	Deciduous tree	December-April
6.	*Azadirachta indica* A. Juss.	Meliaceae	Neem	Evergreen tree	March-May
7.	*Bauhinia racemosa* Lam.	Fabaceae	Kachnar	Deciduous tree	July- August
8.	*Bombax ceiba* L.	Bombaceae	Semal	Deciduous tree	January
9.	*Broussonetia papyrifera* (L.) L'Her ex Vent	Moraceae	Jangli Tut	Deciduous tree	March
10.	*Butea monosperma* (Lam.)Taub.	Fabaceae	Palas	Deciduous tree	February-April
11.	*Callisteman citrinus* (Curtis) skeels	Myrtaceae	Bottle brush	Evergreen tree	February

Sl. No.	Botanical Name	Family	Common Name	Habit	Flowering Months
12.	*Cassia fistula* L.	Caesalpiniaceae	Dhanraj/ Amaltas	Small tree	May -August
13.	*Ailanthus excelsus* Roxb.	Simaroubaceae	Ghorkaranj	Deciduous tree	January-March
14.	*Delonix regia* (Bojer. Ex Hook) Raf.	Fabaceae	Gulmohar	Evergreen tree	April-June
15.	*Ficus benghalensis* L.	Moraceae	Bar	Deciduous tree	April - June
16.	*Ficus religiosa* L.	Moraceae	Pipal	Deciduous tree	May – september
17.	*Jacaranda mimosifolia* D. Don.	Bignoniaceae	Jacaranda	Deciduous tree	February
18.	*Leucaena leucocephala* (Lam.) de Ulit	Mimosaceae	Su-babool	Small-Deciduous tree	May – August
19.	*Mangifera indica* L.	Anacardiaceae	Am	Evergreen tree	March
20.	*Melia azedarach* L.	Meliaceae	Bakain	Deciduous tree	March- May
21.	*Moringa olifera* Lam.	moringaceae	Munga	Deciduous tree	April-June
22.	*Peltophorum pterocarpum* (DC.)Backer ex K. Heyne	Caesalpiniaceae	Peelagulmohar	Deciduous tree	August -october
23.	*Pithecellobium dulce* (Roxb.)Benth.	Fabaceae	Jangal jalebi	Evergreen tree	May-August
24.	*Pongamia pinnata* (L.) Pierre	Fabaceae	Karanj	Deciduous tree	May
25.	*Saraca indica* L.	Fabaceae	Sitaashok	Evergreen tree	September-November
26.	*Senna siamea* (Lam.)H.S. Irwin &Barneby	Caesalpiniaceae	Seemia, kassod	Deciduous tree	September

Sl. No.	Botanical Name	Family	Common Name	Habit	Flowering Months
27.	*Spathodea campanulata* P. Beauv	Bignoniceceae	Rugtoora	Deciduous tree	February
28.	*Swietenia mahogany* (L.) Jacq.	Meliaceae	Mahogany		May
29.	*Syzgium cumini* (L.) Skeels	Myrtaceae	Jamun	Evergreen tree	May- June
30.	*Tectona grandis* L.f.	Lamiaceae	sagwan	Deciduous tree	July- August
31.	*Terminalia alata* Roth.	Combretaceae	Asan		
32.	*Terminalia arjuna* (Roxb. Ex.DC)Wight&Arn	Combretaceae	Arjun	Evergreen tree	May-July
33.	*Terminalia belerica* Roxb.	Combretaceae	Bahera	Deciduous tree	March-May
34.	*Terminalia chebula* Retz.	Combretaceae	Hara	Deciduous tree	April-May

Economic Importance

Sl. No.	Botanical Name	Parts use as medicine	Medicinal use	Additional use
1.	*Aegle marmelos* (L.)Correa	Half-ripe fruit; root bark	Digestive, diarrhoea; intermittent fever.	Timber, Food
2.	*Ailanthus excelsus* Roxb.	Bark; fruits	Counteract worms, excessive vaginal discharge, skin disease, earache, malaria, asthma; diarrhea, polyurea, piles & fever.	Timber, Food
3.	*Alstonia scholaris* (L.)R.Br.	Half-ripe fruit; root bark	Fever, cancer, tumour, jaundice, malaria, skin diseases , diarrhoea.	Ornamental
4.	*Artocarpus heterophyllus* Lam.	Leaves; root; juice of plant	Skin diseases, antidote to snake bite; diarrhoea; applied to glandular swelling.	Timber, gum or resin, food

Sl. No.	Botanical Name	Parts use as medicine	Medicinal use	Additional use
5.	*Artocarpus lakoocha* Wall. ex Roxb.	Seed; bark	Purgative; powder form applied to sores.	Tannin, latex or rubber, timber used in heavy construction, food.
6.	*Azadirachta indica* A. Juss.	Bark; leaves; dry flowers; oil	Bitter tonic, astringent; tonic, stomachic; stimulant, antiseptic, skin diseases.	Firewood, food occasionally
7.	*Bauhinia racemosa* Lam.	Leaves; bark	Leaves Decoction –headache & malaria; astringent in diarrhoea & dysentery.	Leaves used to make beedi, ornamental, fodder.
8.	*Bombax ceiba* L.	Flower	Snake bite, stimulant, aphrodisiac, astringent.	Fruits as pickled, food, cotten.
9.	*Broussonetia papyrifera* (L.) L'Her ex Vent.			Tannin or dyestuff, fibre, fodder.
10.	*Butea monosperma* (Lam.)Taub.	Leaves; flowers; bark and seed	Astringent, tonic; astringent, diuretic; in snake bite.	Ornamental
11.	*Callistemon citrinus* (Curtis) skeels			Ornamental
12.	*Cassia fistula* L.	Flower; bark and leaves; buds; fruits	fever; skin diseases; malaria, rheumatism and ulcers; biliousness, constipation, fever, leprosy; abdominal pain, fever, heart disease and leprosy.	Firewood, ornamental
13.	*Dalbergia sissoo* Roxb.ex DC.	Leaves; roots; wood	Stimulant; leaves decoction-in gonorrhoea; astringent; useful in leprosy, allay vomiting.	Timber, improve soil fertility.
14.	*Delonix regia* (Bojer. Ex Hook) Raf.	Milky juice; bark; seed; root fibres		Ornamental, gum or resin, timber.

Sl. No.	Botanical Name	Parts use as medicine	Medicinal use	Additional use
15.	*Ficus benghalensis* L.	Milky juice; bark; seed; root fibres	Applied externally for pain in rheumatism & lumbago; infusion of bark –dysentery, diarrhoea, diabetes; cooling, tonic; in gonorrhoea.	Inferior quality rubber,
16.	*Ficus religiosa* L.	Bark, seed	Astringent, gonorrhoea; cooling, alterative.	
17.	*Jacaranda mimosifolia* D.Don.			Timber, firewood, ornamental.
18.	*Leucaena leucocephala* (Lam.) de Ulit			Timber, fibre, firewood, gum or resin, ornamental .
19.	*Mangifera indica* L.	Leaves; ripe fruit; seed; kernel; bark	In scorpion-sting; useful in haemorrhage from uterus, lungs or intestines; in asthma; in haemorrhage, diarrhoea; in uterine haemorrhage, haemoptysis &melaena, diarrhoea & other discharges.	Food, wood for light construction
20.	*Melia azedarach* L.	Flower & leaves; seed; oil; fruit	To relieve nervous headaches; prescribed in rheumatism;	Timber, red dye from bark, fibre
21.	*Moringa olifera* Lam.	Root; fruits; seeds	Epilepsy, chronic rheumatism, abortifacient; diseases of liver & spleen , articular pains, tetanus & paralysis; venereal affections.	Vegetable
22.	*Peltophorum pterocarpum* (DC.)Backer ex K.Heyne		Antiulcer.	Ornamental, fuelwood, tannin or dyestuff(black soga dye), nitrogenfixing.

Sl. No.	Botanical Name	Parts use as medicine	Medicinal use	Additional use
23.	*Pithecellobium dulce* (Roxb.) Benth.	Bark	Used as febrifuge in Guiana, decoction given as an enema.	Ornamental, helps in nitrogen fixing , seeds as food.
24.	*Pongamia pinnata* (L.) Pierre	Seeds, oil from seed, bark, leaves	Skin diseases; useful in cutaneous affections, herpes and scabies; in form of a poultice applied to ulcers infested with worms.	Fuel, helps in nitrogen fixing, soil improver.
25.	*Saracaindica* L.	Bark	Astringent, used in uterine affections and in menorrhagia, in scorpion-sting.	
26.	*Senna siamea* (Lam.)H.S.Irwin&Barneby	Leaves; leaves & bark	Diabetes, hypertension, asthma, typhoid fever, insomnia; antimalarial.	Ornamental
27.	*Spathodea campanulata* P. Beauv	Stem-bark; leaves	Anti-hyperglycemic, anti-malaria, treating skin diseases; curing kidney diseases, antidote against animal poisons.	Soil improvement, land rehabilitation, fuel, ornamental.
28.	*Swietenia mahogany* (L.) Jacq.	Leaf; seeds	Relieves chest pain; seed-potential in controlling amoebiasis, coughs and intestinal parasitism.	Timber; bark source of tannins.
29.	*Syzgium cumini* (L.) Skeels	Bark; fruit; seed	Used in the preparation of astringent decoctions, gargles and washes; useful astringent in bilious diarrhoea; used in diabetes.	Timber, food for tassar silkworms, ornamental, food.
30.	*Tectona grandis* L.f.	Wood; oil from nuts	Taken in dyspepsia, with burning of stomach, vermifuge; ashes of wood applied to swollen eyelids; promotes growth of hair, useful in scarbies.	Timber

Sl. No.	Botanical Name	Parts use as medicine	Medicinal use	Additional use
31.	*Terminalia alata* Roth.	Decoction of bark	Astringent, taken internally for atonic diarrhoea , applied locally to ulcers.	
32.	*Terminalia arjuna* (Roxb.ex.DC.)Wight &Arn.	Bark; juice of fresh leaves; ash of bark	Tonic, astringent , used in heart diseases as a cardiac tonic, for sores and as an antidote to poisons; used for ear-ache; prescribed in scorpion –sting.	Seed edible, decoction of bark with milk is used as beverage , transparent gum is obtained, wood is used in construction, agricultural implements.
33.	*Terminalia belerica* Roxb.	Fruit	Bitter, tonic, used in piles, dropsy, diarrhoea, leprosy, biliousness, headache.	Tannins, firfuel, dyes.
34.	*Terminalia chebula* Retz.	Fruit	Used externally as a local application to chronic ulcers and wounds and as a gargle in stomatitis , finely powdered used as a dentifrice and useful in carious teeth, bleeding and ulcerations of the gums.	Seed eaten as a snak, an8edible oil is obtained from seed.

The present work was based on the morphological studies of tree species. Along with it, economic importance of these tree species was also recorded with the help of available literatures. Some species are found to have high medicinal values such as *Azadirachata indica* A.Juss, *Melia azedarach* from Meliaceae family .*Ailanthus excelsus* Roxb. called as multipurpose tree. Some have high timber values like *Swietenia mahogany* (L.) Jacq.,*Tectona grandis L. f.* Tree species also provide food, fodder, resins etc. and also helps in restoration of land.

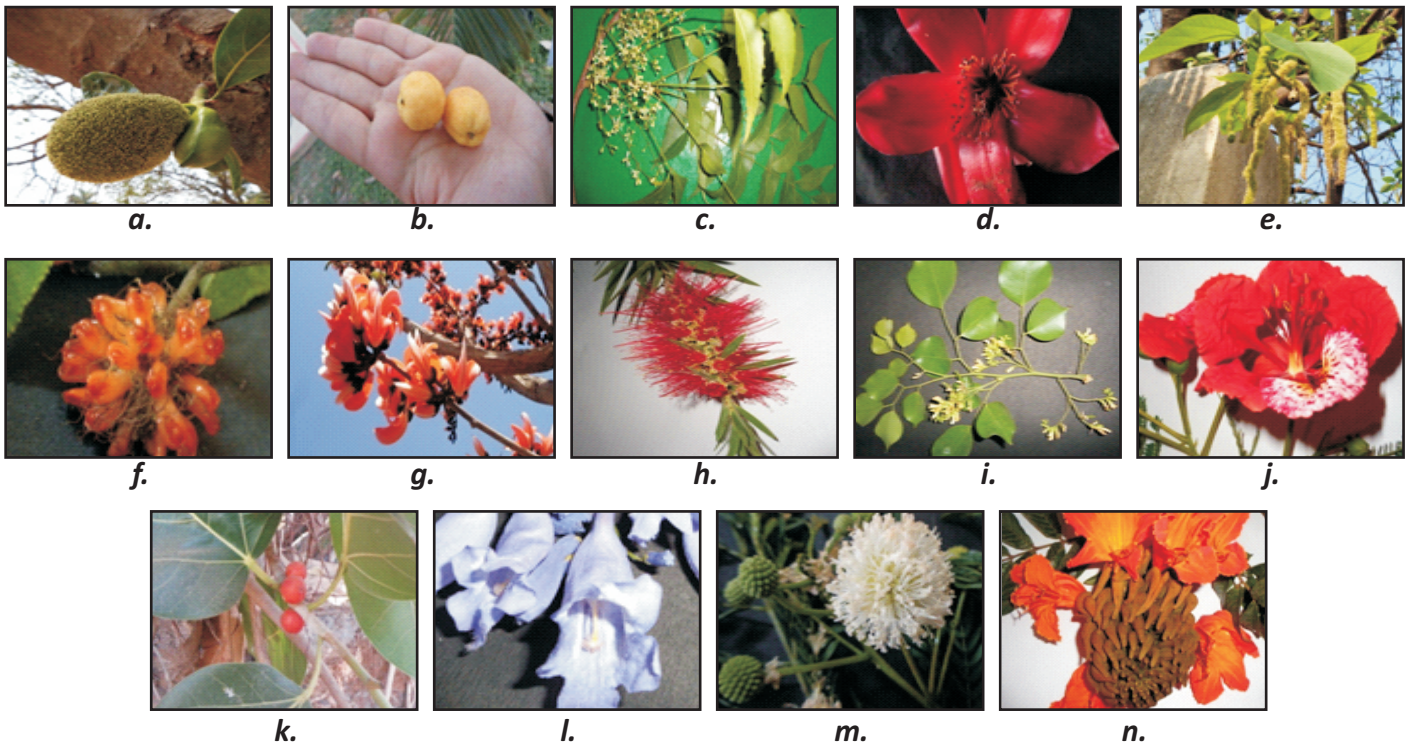
Lengbiye E. Moke *et al.* found anthelminthic properties in *Artocarpus heterophyllus* Lam. Chaudhary *et al.* studied ethnobotanical uses, phytochemistry, pharmacological activities such as anticancer and anti-HIV activity in *Bombax ceiba* L. Silvia Netala et al. studied the pharmacognostic of *Callistemon citrinus* L. Bark.J Ganga Kailas studied the polynodiversity of arborescant plants of caesalpiniaceae family. Mamta Bhattacharya *et al.* worked on *Dalbergia sissoo* reveals the phytochemistry and its applications in treatment of various ailments. G. Sujanchandar and J. B. Atluri studied the pollinators and its behaviour on *Delonix regia* (Boj.Ex Hook) Raf. Nidhi Suhane *et al.* studied the medicinal properties of beautiful ornamental Gulmohar. Hafiz Abdul Khaliq had pharmacognostic studies which have been done to set *Ficus bengalensis* L. quality control parameters and various phytochemicals viz. phytosterols, anthocyanidin

derivatives, fatty acids, amino acids, polysaccharides, flavonoids, flavonols, leucoanthocyanidins and triterpenoids have been identified and isolated.Ahmad Faizal Abdull Razis *et al*. work on the health benefits of *Moringa oleifera.* GM Masud Parvez work on pharmacological activities of Mango *(Mangifera indica)*. V. V. Chopade *et al*. describe *Pongamia pinnata,* phytochemical constituents, traditional uses and pharmacological properties.Paul et al. studied the anticancerous biological properties of A*zadirachta indica* L. Yelaware Puttaswamy Naveen atalshowes *Swietenia mahagoni* pharmacological activities. Charles E. Umenwa *et al.*, studied the phytochemical and antioxidant assessments of three fractions from methanol extract of *Spathodea campanulata* Beauv. Leaves.

CONCLUSION

Trees are deciduous and have developed unique adaptation to flourish in deciduous biomes. They have four different seasons. During autumn and winter all the trees drop off their leaves. Spring brings out the best of deciduous trees due to the elegant green to yellow, red and orange. Flowering mostly occurs from February to April. Flower blooms on some trees when no leaf is attached to its branches. The trees look bright coloured. This makes nature's canvas most beautiful.

In the present study, 34 tree species have been identified in college campus and their inventory was prepared. These trees are economically important. Some are having medicinal properties and some of them they are highly valued for their timber. Some of the tree species were also providing edible plant parts which are used as food. But it is also true that these trees are being cut by human beings without knowing their economic and medicinal importance. So we need to conserve our natural legacy. Tree species which are found in campus are found to have great value.



Figures: a- *Artocarpus heterophyllus* Lam; b- *A. lakoocha* Wall.ex Roxb.;c-*Azadirachta indica* A. Juss.; d-*Bombox ceiba* L.; e.1,e.2-*Broussonetia papyrifera*(L.)L'Her ex Vent. [male & female]; f- *Butea monosperma*(Lam.)Taub.; g- *Callisteman citrinus(Curtis)*skeels; h-*Dalbergia sissoo* Roxb.ex DC.; i- *Delonix regia*(Bojer. Ex Hook)Raf.; j- *Ficus benghalensis* L.; k-*Jacaranda mimosifolia* D.Don.; l- *Leucaena leucocephala*(Lam.) de Ulit; m- S*pathodea campanulata* P.Beauv.

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