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Diversity of Flowering Trees of Agartala, Tripura, India

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ABSTRACT

The survey and documentation of the floristic wealth of a region is pre-requisite of proper utilization of its potential plant resources on one hand and conserve the depleting genetic resources on the other hand. This paper documents 98 tree species of Agartala of which the dominant families are Moraceae with 8 species, Mimosaceae 7 species, Euphorbiaceae 6 species, Caesalpiniaceae 9 species and Myrtaceae 6 species. The trees recorded in the present survey possess high medicinal value, some are ornamental and avenue trees, some are timber-yielding and their woods are used for various purposes having high economic importance. However, the flora of Agartala is now facing a number of anthropogenic factors.

So, there is an urgent need to conserve the vegetation.

INTRODUCTION

Flowering of plants is directly associated with seasonal changes of the environment and this phenomenon is very important for the survival and continuity of plant life. 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. The degradation of tropical forests and destruction of habitat due to anthropogenic activities are the major causes of decline in the global biodiversity (Sukumaran & Jeeva, 2008). The realization of the economic potential of the

biodiversity and the necessity for its preservation for the future welfare of mankind has suddenly boosted the stock of the subject of Taxonomy (Manilal, 1997). But unfortunately the number of systematic botanists is shrinking, with the result that the extent of ignorance of the number of species of organisms on earth is becoming vast (Swaminathan & Jana, 1992).

Tripura is predominantly a hilly state of India, second smallest state among the eight North Eastern states, situated in the extreme northeastern part of the country to the east of Bangladesh. Agartala, the capital town of Tripura extends over about 50 sq km. and is situated between 91°10' and 92°21' East longitudinal. It is bounded on the south and west by Bangladesh. The climate is characterized by moderate temperatures and highly humid atmosphere. The normal annual rainfall is 225.48 cm, mostly confined to the rainy season. The main river is Howrah, which running the east and towards south and finally draining in to Bangladesh. Agartala is very rich in tree species. Some social forestry is observed in College tilla, Kunjaban, Jogendranagar, Aralia, Subhash Nagar area. The common dominant species are *Cassia siamea*, *Eucalyptus maculata* and *Areca catechu*. However, there is no record of such type of investigation in this region and therefore flowering diversity of trees in Agartala has been carried out for the first time.

MATERIALS AND METHODS

The present investigation is the outcome of several field trips carried out in and around Agartala during 2009-2011. The plants were identified using standard literature (Deb, 1981, 1983; Hooker, 1872 -1897; Kanjilal *et al.*, 1934-1940). During the field investigation, several other information were also documented particularly their habit, characteristic occurrence, flowering and fruiting time and their local utilization. The collected specimens were dried and herbarium was prepared following the techniques proposed by Jain and Rao (1977). The taxonomic data have been recorded to prepare a checklist of tree species. The voucher specimens were deposited in the Herbarium, Department of Botany, Tripura University.

RESULTS AND DISCUSSION

A through survey of tree species of Agartala town reveals 98 species belonging to 83 genera under 39 families which are botanically interesting. Among these the dominant families are Moraceae with 8 species, Mimosaceae 7 species, Euphorbiaceae 6 species, Caesalpiniaceae 9 species and Myrtaceae with 6 species. Some important trees of Moraceae are *Artocarpus heterophyllus*, *Artocarpus chaplasi*, *Streblus asper* etc. Important trees of Mimosaceae are *Samanea saman*, *Albizia lebbeck*, *Albizia procera*, *Albizia julibrissin* etc. Important trees of Caesalpiniaceae are *Cassia siamea*, *Cassia nodosa*, *Cassia renigera*, *Tamarindus indicus*, *Delonix regia*,

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Peltophorum inerme etc. Trees of Myrtaceae are *Eucalyptus maculata*, *Psidium guajava* etc. Trees of Euphorbiaceae are *Croton joufra*, *Euphorbia antiqorum* etc. Other dominant families are Apocynaceae, Meliaceae, Verbenaceae, Anacardiaceae. Among the families some possess single species i.e. Simaroubaceae, Burseraceae, Punicaceae and Casuarinaceae. The trees found in the survey, their family, phenology and parts that are used for various purposes are shown in **Table-1**. Among these trees some possess a high medicinal value, some are ornamental, some are avenue trees, some are timber-yielding trees and their woods are used for various purposes and they have high economic value.

Table 1: List of Tree species of Agartala, India

Name	Family	Phenology	Parts used
<i>Aegle marmelos</i> (L.) Correa Saha & Datta-0123	Rutaceae	Flowering: May-June; Fruiting: September-February.	The fruit is edible. The leaves are used in miscellaneous purposes.
<i>Ailanthus integrifolia</i> Lamk. Saha & Datta-0135	Simaroubaceae	Flowering: May-June; Fruiting: September-February	Wood is used for miscellaneous purposes; fruit pulp edible, used medicinally also.
<i>Azadiracht a indica</i> A. Juss. Saha & Datta-0196	Meliaceae	Flowering: March-May; Fruiting: May-July.	Wood hard, used for various purposes; bark a febrifuge; gum a stimulant; leaves and fruits used in medicine.
<i>Aquilaria malaccensis</i> Lamk. Saha & Datta-0202	Thymelaeaceae	Flowering: April-May; Fruiting: June-July	Wood is hard, used for miscellaneous purposes.
<i>Anacardium occidentale</i> L. Saha &	Anacardiaceae	Flowering: February-March; Fruiting: March-May	The nuts are eaten on roasting. Oil is extracted from the kernel.

Datta-0209			
<i>Averrhoa carambola</i> L. Saha & Datta - 0224	Averrhoaceae	Flowering & Fruiting: May-July.	The fruit is edible.
<i>Annona reticulata</i> L. Saha & Datta - 0217	Annonaceae	Flowering: July-August; Fruiting: October-November	Fruit is edible.
<i>Annona squamosa</i> L. Saha & Datta - 0103	Annonaceae	Flowering: May-June; Fruiting: July-August.	Fruit is edible.
<i>Artabotrys uncinatus</i> (Lam.) Baill. Saha & Datta-0172	Annonaceae	Flowering: April-May; Fruiting: June-August.	Cultivated as a garden plant.
<i>Adenanthera pavonina</i> L. Saha & Datta-0114	Mimosaceae	Flowering: March-April; Fruiting: June-September	Wood moderately hard, used for furniture and building.
<i>Albizia chinensis</i> (Osbeck.) Merr. Saha & Datta-0132	Mimosaceae	Flowering: June-July; Fruiting: October-March.	Wood is used for furniture and tea-boxes, yields a gum.
<i>Albizia julibrissin</i> Durazz Saha & Datta-0192	Mimosaceae	Flowering: May-June; Fruiting: August-March	Wood is used for furniture and tea-boxes.
<i>Albizia lebbek</i> (L.) Benth. Saha & Datta-0199	Mimosaceae	Flowering: April-May; Fruiting: November-March.	Wood is used for furniture.
<i>Albizia procera</i> (Roxb.) Benth. Saha & Datta-0173	Mimosaceae	Flowering: May-August; Fruiting: September-March	Wood hard, used for miscellaneous purposes.
<i>Artocarpus chaplasi</i> Roxb. Saha &	Moraceae	Flowering: January-March; Fruiting:	Wood hard, used for miscellaneous purposes.

<i>Datta-0400</i>		April-June	
<i>Artocarpus heterophyllus</i> Lamk. Saha & Datta-0402	Moraceae	Flowering: March-April; Fruiting: May-July.	Wood hard, used as timber, fruit is edible.
<i>Alstonia scholaris</i> (L.) R. Br. Saha & Datta-0404	Apocynaceae	Flowering: October-November; Fruiting: January-June	Wood soft, used for furniture; fruits, leaves and bark medicinal.
<i>Butea monosperma</i> (Lamk.) Taub. Saha & Datta-0405	Papilionaceae	Flowering: March-April; Fruiting: April-May.	Wood suitable for curbs and piles, bark exudes a red gum, flowers yield a yellow dye, seeds medicinal.
<i>Bombax ceiba</i> L. Saha & Datta-0407	Bombacaceae	Flowering: February-March; Fruiting: March-April.	Wood soft used for planking, yields a medicinal gum.
<i>Bauhinia variegata</i> L. Saha & Datta-0411	Caesalpiniaceae	Flowering: September-December; Fruiting: October-April	Wood moderately hard, used for agricultural implements.
<i>Crataeva nurvala</i> F.-Ham. Saha & Datta-0414	Capparidaceae	Flowering: March-April; Fruiting: May-October.	Fruit edible; leaves bitter used as a stomachic.
<i>Cinnamomum camphora</i> (L.) Sieb. Saha & Datta-0416	Lauraceae	Flowering & Fruiting: January-March.	This is the source of camphor.
<i>Careya arborea</i> Roxb. Saha & Datta-0419	Lecythidaceae	Flowering & Fruiting: Not seen	Cultivated as an avenue tree.
<i>Croton joufra</i> Roxb. Saha & Datta-0422	Euphorbiaceae	Flowering & Fruiting: Not seen.	Cultivated as an avenue tree.
<i>Callistemon linearis</i> DC. Saha & Datta-0424	Myrtaceae	Flowering: April-May; Fruiting: June-August.	Cultivated in and around Agartala as an ornamental tree.

<i>Cassia nodosa</i> F.-Ham. ex Roxb. Saha & Datta-0428	Caesalpiniaceae	Flowering: December-January; Fruiting: All the year.	Grown as an ornamental and avenue tree.
<i>Cassia renigera</i> Wall.-ex Benth. Saha & Datta-0426	Caesalpiniaceae	Flowering: June-August; Fruiting: All the year.	Planted as an ornamental plant.
<i>Cassia fistula</i> L. Saha & Datta-0427	Caesalpiniaceae	Flowering: April-August; Fruiting: July-February	Wood very hard, durable, used for house posts; fruits is medicinal, bark is used in tanning.
<i>Cassia siamea</i> Lamk. Saha & Datta-0429	Caesalpiniaceae	Flowering: March-October; Fruiting: July-February	Wood hard, used for miscellaneous purposes.
<i>Casuarina equisetifolia</i> Forst. Saha & Datta-0444	Casuarinaceae	Flowering & Fruiting: September-March.	Planted as an avenue tree and as a soil binder. Wood is used as fuel.
<i>Dillenia pentagyna</i> Roxb. Saha & Datta-0445	Dilleniaceae	Flowering: April-May; Fruiting: August-November.	Wood moderately hard; used for miscellaneous purposes; bark fiber is used for cordage.
<i>Diospyros montana</i> Roxb. Saha & Datta-0446	Ebenaceae	Flowering: February-April; Fruiting: June-August.	The fruit is edible
<i>Diospyros peregrina</i> Gurke Saha & Datta-0448	Ebenaceae	Flowering: April-May; Fruiting: Ripen in the flowering season	Fruit is edible. A dye is obtained from the fruit used for coloring cotton.
<i>Dipterocarpus turbinatus</i> Gaertn. f. Saha & Datta-0449	Dipterocarpaceae	Flowering and Fruiting: Not seen.	Wood moderately hard used for miscellaneous purposes, yields oil.

<i>Delonix regia</i> (Boj.) Raf. Saha & Datta-0450	Caesalpiniaceae	Flowering: March-June; Fruiting: June-August.	Grown as an avenue tree.
<i>Eucalyptus maculata</i> Hook. Saha & Datta-0461	Myrtaceae	Flowering: May-July; Fruiting: August - October	Leaves yield an essential oil.
<i>Erythrina indica</i> Lamk. Saha & Datta-0462	Papilionaceae	Flowering: March-April; Fruiting: June-July.	The bark fibre is used for cordage. The flower yields a red dye.
<i>Euphorbia antiquorum</i> L. Saha & Datta-0463	Euphorbiaceae	Flowering: March-April; Fruiting: Not seen.	Cultivated in gardens as a fence plant. The plant is medicinal.
<i>Elaeocarpus floribundus</i> Bl. Saha & Datta-0464	Elaeocarpaceae	Flowering: May-July; Fruiting: August-October	The fruit is edible, cooked or pickled
<i>Ficus benghalensis</i> L. Saha & Datta-0467	Moraceae	Flowering & Fruiting: May-July and again.	Wood hard, used as timber, for miscellaneous purposes.
<i>Ficus elastica</i> Roxb. ex Hornem Saha & Datta-0468	Moraceae	Flowering: March-April; Fruiting: June-October	Yields the Indian rubber of commerce.
<i>Ficus fistulosa</i> Reinw. ex Bl. Saha &	Moraceae	Flowering & Fruiting: April-June.	The root is medicinal.
<i>Ficus hispida</i> L. f. Saha & Datta-0473	Moraceae	Flowering & Fruiting: Throughout the year.	Leaves used as fodder, immature inflorescence are used as vegetable.
<i>Ficus virens</i> . Ait. Saha & Datta-0474	Moraceae	Flowering & Fruiting: May-July.	This tree has become popular as an avenue tree in and around the cities.

<i>Garcinia cowa</i> Roxb. ex DC. Saha & Datta-0475	Clusiaceae	Flowering: December-February; Fruiting: February-July.	The stem yields a gum which is used in preparing yellow varnish.
<i>Garcinia xanthochymus</i> Hook. f. ex Anders. Saha & Datta-0476	Clusiaceae	Flowering: February-April; Fruiting: April-July.	Fruit is edible.
<i>Garuga pinnata</i> Roxb. Saha & Datta	Burseraceae	Flowering: March-April; Fruiting: May-July.	The fruit is edible. The leaf galls are used for tanning. Wood is used for furniture
<i>Gmelina arborea</i> L. Saha & Datta-0478	Verbenaceae	Flowering: March-April; Fruiting: May-June.	Wood is used for building and furniture. Pulp is used for paper.
<i>Gardenia resinifera</i> Roth Saha & Datta-0479	Rubiaceae	Flowering: August-September; Fruiting: September-	Yields a scented yellow gum resin used in skin diseases.
<i>Grewia viminea</i> Wall. ex Burret Saha &	Tiliaceae	Flowering & Fruiting: Not seen.	Used as fodder.
<i>Holarrhena antidysenterica</i> G. Don. ex DC. Saha & Datta-0482	Apocynaceae	Flowering: April-July; Fruiting: June-December	Wood soft, used for furniture; fruits, leaves and bark medicinal.
<i>Kleinhovia hospita</i> L. Saha & Datta-0483	Sterculiaceae	Flowering: July-September; Fruiting: September-	Planted as an avenue tree.
<i>Lannea coromandelica</i> (Houtt.) Merr. Saha &	Anacardiaceae	Flowering: December-February; Fruiting: March-May.	Tender leaves are eaten as vegetable. A gum is obtained from the stem bark.
<i>Litsea glutinosa</i> (Lour.) C.B. Robinson Saha & Datta-0485	Lauraceae	Flowering: April-July; Fruiting: July-January.	Wood moderately hard used for miscellaneous purposes, oil is obtained from the fruits. Flowers a rich source of collecting honey by bees.
<i>Lagerstroemia parviflora</i>	Lythraceae	Flowering: May-August;	Wood moderately hard used for furniture and

Roxb. <i>Saha & Datta-0486</i>		Fruiting: September- January.	other miscellaneous purposes
<i>Litchi chinensis</i> Sonn. <i>Saha & Datta-0487</i>	Sapindaceae	Flowering: March- April; Fruiting: June-July.	Cultivated in orchard for edible fruits in and around Agartala.
<i>Leucaena leucocephala</i> (Lamk.) de wit. <i>Saha & Datta-0488</i>	Mimosaceae	Flowering: May- August; Fruiting: July- November.	Tender fruits and seeds are edible; leaves are used as fodder.
<i>Mesua ferrea</i> L. <i>Saha & Datta-0489</i>	Clusiaceae	Flowering: March- May; Fruiting: April-June	Oil obtained from the fruit is used in manufacturing of soap.
<i>Magnolia grandiflora</i> L. <i>Saha & Datta-0490</i>	Magnoliaceae	Flowering & Fruiting: Not seen.	Planted as an ornamental tree for its large lovely flowers.
<i>Manilkara achras</i> (Mill.) Fosberg. <i>Saha & Datta-0493</i>	Sapotaceae	Flowering: March- April; Fruiting: May- August.	The fruit and tender leafy buds are edible. The milky juice is known as Chile and is used in manufacturing of chewing gum.
<i>Melia azedarach</i> L. <i>Saha & Datta-0494</i>	Meliaceae	Flowering: March- April; Fruiting: May- September.	Wood soft used for furniture: bark, leaves and fruit medicinal.
<i>Mangifera indica</i> L. <i>Saha & Datta-0495</i>	Anacardiaceae	Flowers: January- February; Fruit: May- June.	The fruit is edible.
<i>Murraya Koenig ex</i> L. <i>Saha & Datta-0496</i>	Rutaceae	Flowering: March- May; Fruiting: June-July.	The fruit is edible. Cultivated as a hedge plant.
<i>Microcos paniculata</i> L. <i>Saha & Datta-0497</i>	Tiliaceae	Flowering: May-July; Fruiting: July- September.	Wood is used as fuel. The leaves are used for wrapping cigars.
<i>Mallotus philippensis</i> (Lamk.) Muell- Arg. <i>Saha & Datta-0498</i>	Euphorbiaceae	Flowering: September- November; Fruiting: March- May.	A red dye is obtained from the fruit; used medicinally also.

<i>Nyctanthes arbortristis</i> L. <i>Saha & Datta-0499</i>	Oleaceae	Flowering: September- October; Fruiting: December- March.	Wood moderately hard used for miscellaneous purposes. Flower is very fragrant.
<i>Psidium guajava</i> L. <i>Saha & Datta-0500</i>	Myrtaceae	Flowering & Fruiting: May- August.	The fruit is edible.
<i>Punica granatum</i> L. <i>Saha & Datta-0501</i>	Punicaceae	Flowering & Fruiting: April-July	Fruit is edible, but of poor quality
<i>Prunus communis</i> Huds. <i>Saha & Datta-0503</i>	Rosaceae	Flowering & Fruiting: September- December.	Cultivated for edible fruits.
<i>Phyllanthus emblica</i> L. <i>Saha & Datta-0502</i>	Euphorbiaceae	Flowering: February- March; Fruiting: April-May.	The fruit is edible. The bark, fruit and leaves are medicinal and used in tanning.
<i>Plumeria acutifolia</i> (Poir.) Baill. <i>Saha & Datta-0504</i>	Apocynaceae	Flowering: March- November.	Cultivated for its beautiful, fragrant flower.
<i>Polyalthia longifolia</i> (Sonn.) Thw. <i>Saha & Datta-0505</i>	Annonaceae	Flowering: March- April; Fruiting: Upto	Cultivated as an avenue tree. Fruits are edible.
<i>Psidium guineense</i> Sw. <i>Saha & Datta-0506</i>	Myrtaceae	Flowering & Fruiting: April-June.	The fruit is edible.
<i>Peltophorum inerme</i> (Roxb.) Llanos. <i>Saha & Datta-0514</i>	Caesalpiniaceae	Flowering: March- June; Fruiting: Throughout the year.	Cultivated as a shade tree.
<i>Pongamia pinnata</i> (L.) Pierre. <i>Saha & Datta-0515</i>	Papilionaceae	Flowering: February- March; Fruiting: Up to the next year.	The fruit is edible; leaves are used as manure; seed oil is medicinal and manufacture of soap.
<i>Spondias pinnata</i> (L.) f. Kurz. <i>Saha & Datta-0399</i>	Anacardiaceae	Flowering: February- April; Fruiting: April- October.	Fruit edible, ripe or pickled; fruits and leaves medicinal.
<i>Shorea robusta</i> Gaertn.f. <i>Saha & Datta-0396</i>	Dipterocarpaceae	Flowering: January- March; Fruiting: April-June.	Wood is used for railway sleepers and other construction work.
<i>Swietenia mahagani</i>	Meliaceae	Flowering: March-	Wood hard, used for furniture.

(L.) Jacq. <i>Saha & Datta-0394</i>		May; Fruiting: August- April.	
<i>Syzygium cumini</i> (L.) Skeels. <i>Saha & Datta-0388</i>	Myrtaceae	Flowering: February- March; Fruiting: March-July.	Bark is used for tanning dyeing and in medicine for dysentery; fruit astringent, edible.
<i>Syzygium fruticosum</i> DC. <i>Saha & Datta-0382</i>	Myrtaceae	Flowering: February- March; Fruiting: March-July.	Fruit astringent, edible.
<i>Sterculia villosa</i> Roxb. ex Masters. <i>Saha & Datta-0372</i>	Sterculiaceae	Flowering: December- January; Fruiting: February- April.	Yields a white gum; fibre is extracted from the bark.
<i>Sapindus mukorossi</i> Gaertn. <i>Saha & Datta-0374</i>	Sapindaceae	Flowering: April-May; Fruiting: June-July.	The fruit is used for miscellaneous purposes.
<i>Samanea saman</i> (Jacq.) Merr. <i>Saha & Datta-0325</i>	Mimosaceae	Flowering: June- October; Fruiting: February- May.	Wood is used in miscellaneous purpose.
<i>Sesbania grandiflora</i> (L.) Poir. <i>Saha & Datta-0321</i>	Papilionaceae	Flowering: February- March; Fruiting: April-May	Flowers and immature pods used as vegetable.
<i>Streblus asper</i> Lour. <i>Saha & Datta-0322</i>	Moraceae	Flowering: March- April; Fruiting: February- May.	The fruit is edible.
<i>Suregada multiflora</i> (A.Juss.) Baill. <i>Saha & Datta-0311</i>	Euphorbiaceae	Flowering: March- April; Fruiting: April-June.	Grown as a hedge plant.
<i>Saraca indica</i> Linn. <i>Saha & Datta-0301</i>	Caesalpiniaceae	Flowering: March- May; Fruiting: June-July.	Grown as an ornamental plant; bark is medicinal.
<i>Thevetia peruviana</i> (Pers.) Merr.	Apocynaceae	Flowering & Fruiting: All the year round	Bark and seed medicinal, milky juice very poisonous.

<i>Saha & Datta-0309</i>			
<i>Trema orientalis</i> (L.) Bl. <i>Saha & Datta-0521</i>	Ulmaceae	Flowering & Fruiting: Throughout the year	Bark yields a fibre; wood used for gun powder.
<i>Tamarindus indica</i> L. <i>Saha & Datta-0522</i>	Caesalpiniaceae	Flowering: May-June; Fruiting: December- January	Fruit is edible and medicinal
<i>Terminalia arjuna</i> (Roxb.) Wight. <i>Saha & Datta-0533</i>	Combretaceae	Flowering: July- August; Fruiting: November- March	Wood used as timber. Bark is used for dyeing and tanning. Grown as an avenue tree.
<i>Toona ciliata</i> M. Roem. <i>Saha & Datta-0544</i>	Meliaceae	Flowering: March- April; Fruiting: June-July.	Wood soft used for furniture. Bark astringent; yields a resinous gum.
<i>Tabernaemontana coronaria</i> R. Br. <i>Saha & Datta-0545</i>	Apocynaceae	Flowering: Throughout the year.	Cultivated for its beautiful flower.
<i>Trewia nudiflora</i> L. <i>Saha & Datta-0546</i>	Euphorbiaceae	Flowering: February- April; Fruiting: Cold season	Wood is used in match and paper industry.
<i>Tectona grandis</i> L.f. <i>Saha & Datta-0547</i>	Verbenaceae	Flowering: July- October; Fruiting: September- February	Wood is used for construction work and furniture; bark is the source of yellow dye.
<i>Vitex peduncularis</i> Wall. ex Schauer. <i>Saha & Datta-0548</i>	Verbenaceae	Flowering: September- November; Fruiting: December- June.	Cultivated for miscellaneous purposes
<i>Zizyphus jujuba</i> Lamk. <i>Saha & Datta-0549</i>	Rhamnaceae	Flowering: September- November; Fruiting: December- June.	The fruit is edible. The bark is used for tanning. The leaves are given as fodder.
<i>Zanthoxylum limonella</i> (Dennst.) Alston. <i>Saha & Datta-0550</i>	Rutaceae	Flowering: March- May; Fruiting: June- August	The fruit is used as spice. An aromatic oil is extracted from seeds.

REFERENCES

1. Deb, D.B.1981, 1983. The Flora of Tripura State, Vols I & II. Today and Tomorrows' printers and Publishers, New Delhi.
2. Hooker, J. D. 1872-1897. The Flora of British India. 1-7. L. Reeve & Co., Ashford, Kent, UK.
3. Jain, S. K. and Rao, R. R. (1977). A Handbook of Field and Herbarium Methods, Today and Tomorrow Printers and Publisher. New Delhi.
4. Kanjilal, V. N., Kanjilal, P. C., Das, A., De, R. N. and Bor, N. L. (1934-1940). *Flora of Assam*, 5 Vols. Government Press, Shillong, India.
5. Manilal, K. S. (1997). Taxonomy teaching in universities and colleges in India. *Rheedea*. 7(1), 51-55.
6. Sukumaran, S. and Jeeva, S. (2008). A floristic study on miniature sacred forests at Agasthesshwaram, Southern Peninsular India. *Eur Asian J. Biosci.* 2, 66-72
7. Swaminathan, M. S. and Jana, S. (1992). *Biodiversity: Implications for global food security*. MacMillan Publications, Madras.