



ETHNOBOTNICAL STUDIES OF SOME PLANTS USED BY TRIPURI TRIBE OF TRIPURA, NE INDIA WITH SPECIAL REFERENCE TO MAGICO RELIGIOUS BELIEFS

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**ABSTRACT:** The present study was conducted in villages of different blocks of West Tripura and Khowai districts of Tripura to document the plant species used for magico-religious purposes and to identify the most important species by quantitative ethnobotanical indices. The data was collected through questionnaire and interviews. A total of 59 plants belonging to 42 families used in magico-religious practices were documented. Of these, 37 trees, 11 herbs, 4 grasses, 3 climbers and rest of 4 shrub, vine, woody climber were documented. The most dominant families were Apocynaceae and Poaceae with 4 species each followed by Arecaceae, Malvaceae, and Moraceae with 3 species and others with 1 or 2 species. The most utilized parts were leaves, flowers, seeds, fruits, bark, roots and rhizome. The basic values namely frequency of citation (FC), use reports (UR), number of uses (NU) were determined to calculate ethnobotanical indices namely relative frequency of citation (RFC), relative importance index (RI) and cultural importance index (CI). *Ocimum sanctum* had first position in all indices (CI=1.0, RFC=0.83 and RI 1.00) with highest number of citations (FC=115), use reports (UR=144) and maximum number of uses (NU=4). It was followed by *Aegle marmelos* and *Ficus religiosa*. The species like *Litchi chinensis*, *Mimusops elengii* were less important due to least cultural importance index (0.01).

**Key Words:** Tripuri Tribe, basic values, ethnobotanical indices, Magico-religious, trees

## INTRODUCTION

North East India is comprised of eight states namely Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura and is home to 8 million tribal populations with 225 tribal communities. Also, it is one of the biodiversity hotspots of the world due to richest reservoir of plant diversity in India [1, 2]. Of these eight sister states, Tripura is a land locked state located in biogeographic zone of 9B- North East Hills between 91° 10' to 92° 20' East longitude and 22° 57' to 24° 33' latitude with rich floristic diversity in hills, plains and valleys. The total area of the state is 10,491 km<sup>2</sup> which forms 0.32% of country's geographical area and of which 6294 km<sup>2</sup> area is covered by forest [3]. It is surrounded internationally by Bangladesh in all three sides except in east by a narrow tract of Assam and Mizoram. It accounts 31% of tribal populations of total state's population. The 19 ethnic groups namely Tripuri, Jamatia, Riang, Naotia, Chakma, Bhil, Bhutia, Chaimal, Garo, Halam, Khasia, Kuki, Lepcha, Lushai, Mog, Munda, Orang, Santhal and Uchoi are the inhabitants of Tripura. Most of these tribal communities live in and around dense forests having their own culture, language, food habits and socio religious traditions [4,5]. The available reports reveal that tribes of Tripura have great knowledge of religion and culture. Most of the tribal communities did not have the concept of idol worshipping of Gods earlier. They considered trees and bamboos as the symbols of Gods and Goddesses in their culture. They worship the deity of 'Ker' by constructing typical structure of bamboo culm 'Wathob' till now. Many tribals worship *Alstonia scholaris* (Chethuang) for their well being and its importance is mentioned in the folklore of Tripura. Likewise, very old ponds, hills or big trees as dwelling places of evil spirits/demons are the belief of the tribals [6]. Tripuri is the largest tribal community in Tripura. Ethnically Tripuris belong to Indo-Mongoloid origin and linguistically within Tibeto-Burman family. They speak in 'kokborok'. They are mainly Hindus and believe in different deities, rites and rituals. They use different plant parts in religious ceremonies to drive away the spirits or defeat any malafide forces for the well being of the family. An examination of literature reveals that plants have an important role in many cultures. The magico-religious aspects of plants have received little attention globally as well in India. A number of plant species used for sacrificial rites, traditional form of worship were documented [7, 8]. Sood *et al* [9] recorded 468 plant species of 133 families used in various sacred and magico-religious ceremonies of India. Sharma and Pegu [10] documented 30 plants of 23 families which were related to religious beliefs in 'Dobur Uie' of Mising tribes. On the other hand, Singh [11] reported 10 plant species which were used as indicator in forecasting weather, in predicting natural calamities or as taboo or signals of bad omen among Meiti community. Sahu *et al* [12] documented 48 plant species of 34 families for both magico religious purposes and treatment of different ailments by Kondh tribe. Though a lot of work has been done on documentation of medicinal plants and their utilization in Tripura [13, 14, 15], but so far no report on magico religious aspects of the plants of this region is available. Therefore, the aims of present study are (a) to document the plant species used for magico-religious purposes and (b) to identify the most important species by ethnobotanical indices.

## MATERIAL AND METHODS

### STUDY AREA

The present study was carried out in some villages of West Tripura and Khowai districts of Tripura. West Tripura district lies in 23°16' and 24°14' N latitude and 91°09' and 92°47' E longitude whereas the geographical coordinates of Khowai district are 24°1'N and 91°63'E. These districts have international border with Bangladesh on west side while Dhalai district is on northeast side and Ganati and Sephalijala districts are on south side. The villages Mandai and Jirania blocks of West Tripura district and Padmabil, Talashikar, Kalyanpur and Mungiakami blocks of Khowai district were selected for the present study (Fig.1). All the selected villages are dominated by Tripuri tribe.

### FIELD SURVEY AND DATA COLLECTION

The field survey was conducted in selected villages from December 2013 to March, 2014. Ethnobotanical data were collected through suitable questionnaire and personal interviews. A total of 139 informants were interviewed of which 58 were male and 81 were female. The ranges of age of male informants were 24-95 (Mean age 62±21) years and females were 24-90 (Mean age 55±20) years. The questions were asked in context of plant uses like magico-religious, sacred, rituals, taboos etc. in local dialect 'kokborok'. The information on vernacular names, plant parts used and local beliefs were collected. During survey, plants and their parts were collected and their photographs were taken for identification purposes. The plants were identified with existing literature [16].

### Data analysis

The ethnobotanical information was categorized into five use categories (UC) namely Sacred (SAC), Magical belief (MAG), Religious taboos (TAB), Ceremonies (CER) and Rites (RIT). Sacred category includes the plants used for worshipping and is believed to be an abode of God. The category 'Magical belief' includes the plants which are used to drive away evil spirits or bad eye. Plants which are believed to bring bad omen are categorized in 'Taboos' while the plants used in marriage and religious events are placed in category 'Ceremonies' and those used in funeral rite are included in 'Rites' category. The basic variables like frequency of citation (FC), use reports (UR), number of uses (NU) and ethnobotanical indices like relative frequency of citations (RFC), relative importance index (RI), cultural importance index (CI) were determined.

Ethnobotanical indices relative frequency of citation (RFC), relative importance index were determined by using the formulae (17) as given below.

1. Frequency of citation (FC)
2. Use Reports (UR):

$$UR_s = \sum_{u=u_1}^{u_{NC}} \sum_{i=i_1}^{i_N} UR_{ui}$$

Where,  $UR_s$  is the use report of each species and  $UR_{ui}$  is the summation of the uses reported for each species under each category.

3. Relative Frequency of Citation (RFC):

$$RFC_s = \frac{FC_s}{N} = \frac{\sum_{i=i_1}^{i_N} UR_i}{N}$$

Where, FC is the frequency of citations, N is the number of informants, UR is the number of use reports.

4. Relative Importance Index (RI):

$$RI_s = \frac{RFC_{s(max)} + RNU_{s(max)}}{2}$$

$$\text{Where, } RFC_{s(max)} = \frac{FC_s}{\max(FC)}$$

$$\text{Where, } RNU_{s(max)} = \frac{NU_s}{\max(NU)}$$

Where,  $RFC_{s(max)}$  is the maximum relative frequency of citation,  $RNU_{s(max)}$  is the maximum relative number of uses, FC and NU is the frequency of citation and number of uses respectively,  $\max(FC)$  is the maximum frequency of citation, and  $\max(NU)$  is the maximum number of uses.

5. Cultural Importance Index (CI):

$$CI_s = \sum_{u=u_1}^{u_{NC}} \sum_{i=i_1}^{i_N} UR_{ui} / N$$

Where, UR is the use report of each species under each category and N is the total informants.

## RESULTS AND DISCUSSION

Magico-religious beliefs are related to supernatural techniques to achieve a specific desire through prayers or by performing some rituals [18]. In the present study a total of 59 plants of 42 families used in different categories of magico-religious beliefs/practices are documented. The results presented in Table 1 show that maximum number of plants are cited in ‘magical belief’ and ‘ceremony’ categories and minimum in ‘rites’ category. The documented plant species with their scientific names, vernacular names, plant families, part used and magico-religious belief /uses are listed in Table 2. As shown in Fig.2, the dominant families are Apocyanaceae, Poaceae with 4 number of species each followed by Arecaceae, Malvaceae and Moraceae with 3 number of species, Amaranthaceae, Asteraceae, Combretaceae, Laminaceae, Meliaceae and Rutaceae with 2 number of species and others with 1 number of species. Out of 59 species, 37 species trees, 11 herbs, 4 grasses, 3 climbers and others shrub, vine and woody climbers are documented (Fig.3). The various parts used are leaves, flowers branches, seeds, fruits, bark, roots, rhizomes and even the whole plant. The present study reveals that Tripuri tribe use different plant parts to overcome the unseen power or to drive away the spirits or any mala fide force for the well being of their family [6]. They worship tree species like *Ficus religiosa*, *Anthocephalous cadamba* and *Aegle marmelos*, and consider them as most sacred. The reported literature has also mentioned these species as sacred in our ancient Indian literature [19] as well in other parts of India [20, 21]. The bark or fresh branches of *Santalum album* L., *Aquilaria malaccensis* and dry branches or whole plant of *Ocimum sanctum* are utilized in death rituals to bring purity to the demised person. Leaves and branches of *Ocimum sanctum*, *Aegle marmelos*, *Musa paradisiaca* and *Mangifera indica* are most indispensable during any religious ceremony (Plate 1 & 2). The culm and leaves of *Melaconna baccifera* are most important as a typical structure called ‘Wathob’ (Plate 1) is made from them. Wathob is very important in local rites for performing any religious or marriage ceremony. It is observed that people of this tribe are very superstitious and use other plant parts like seeds, thorns, spikes, roots and rhizome to drive away evil spirits or bad omen. The most preferred species for this purpose is thorns of *Flacourita jangomas* (Plate 1). They prefer to grow plants like *Euphorbia neriifolia* and *Acacia nilotica* at the entrance of village or houses or around the boundary with a belief to avoid any bad omen. Such type of practice is common among tribes of North Cachar Hills of Assam [22] who use *Euphorbia antiquorum*, *E. royleana*, *Bauhinia scandens* and *Musa paradisiaca* to ward off evil spirits, while stem of *Zanthoxylum armatum* is used for same purpose in Western Himalaya [23]. The present study shows similarities in culture with other tribes of India. Also, it is recorded that people of Tripuri tribe do not recommend to plant very big trees near their houses as they consider these as a dwelling place of bad spirits. Sour fruits bearing trees like *Tamarindus indica* and *Emblica officinalis* are considered as taboo with a belief that if their roots enter the house they cause bad health. Similar belief has been seen in Manipur where people avoid to plant *Carica papaya* near their houses (9).

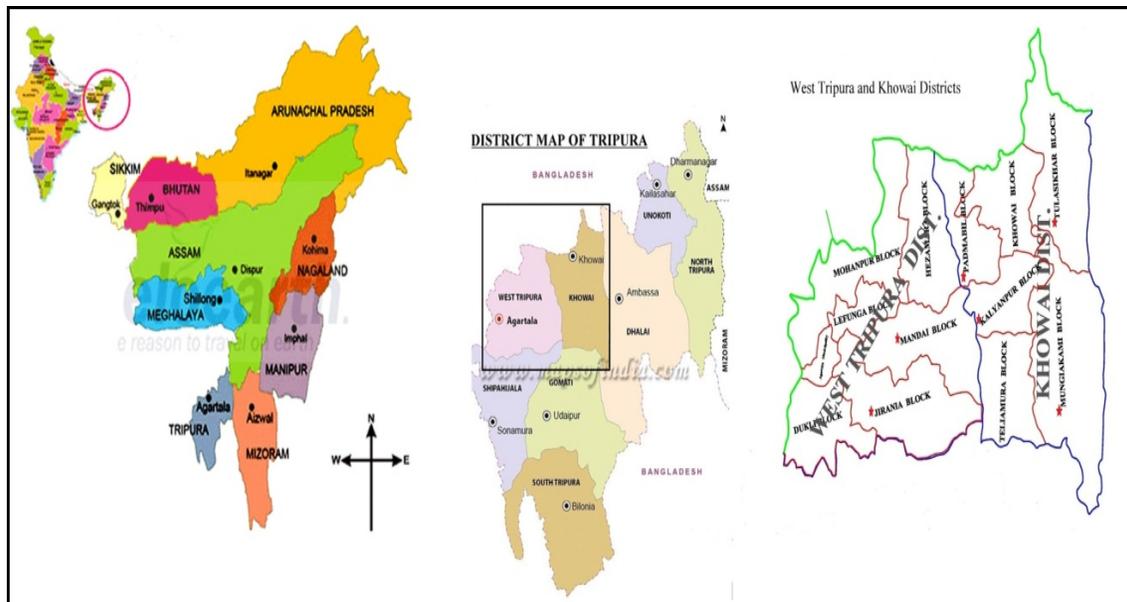


Figure 1: Maps showing the study site

Table 1: Documented plants under each UC (Use Category) and its percentage

Use categories (UC)	Number of species	% of species
rites	8	8
SACRED	13	12
TABOO	22	21
CEREMONY	30	28
MAGICAL BELIEF	33	31

Ethnobotanical quantitative indices are very important as they identify the cultural or economic role of plant species to the society [24]. In the present study, quantitative ethnobotanical indices like cultural importance index (CI), relative frequency of citation (RFC) and relative importance index (RI) are estimated. The results presented in Table 3 shows both category wise and total cultural importance index of 20 species which are mostly used by majority of the people in selected sites. *Ocimum sanctum* is the most culturally significant plant species (Table 3&4).

Category wise *O. sanctum* and *M. baccifera* show highest CI in sacred and ceremony categories (0.70 and 0.68) respectively. *Flacourita jangomas* is used only in magic category with highest CI (0.58). Likewise *Tamarindus indica* is used under taboo category with highest CI (0.46) and *Entada phaseoloides* in funeral rites with CI (0.08). Most of the cited species are trees as compared to shrubs, grasses and climbers which indicate the utilization of various parts of trees like branches, bark, leaves, thorns in different use categories. Table 4 shows the basic values (FC, UR and NU), ethnobotanical indices (CI, RFC and RI) and ranking of species on the basis of ethnobotanical values. In case of same value for any ethnobotanical index of different species, the species quoted by highest number of informants is assigned higher rank. *Ocimum sanctum* scores the 1<sup>st</sup> rank in all ethnobotanical indices. The highest score in all indices is due to citation by maximum number of informants and diverse use of this species in maximum use categories. *Ficus religiosa* and *Aegle marmelos* score 2<sup>nd</sup> and 3<sup>rd</sup> rank and the order of ranking depends on the chosen index. CI places *Ficus religiosa* in 3<sup>rd</sup> position and other indices RFC and RI place it in 2<sup>nd</sup> position which may be due to higher number of informants. Hence, *Ocimum sanctum*, *Aegle marmelos* and *Ficus religiosa* are the most important species on the basis of these indices. *Litchi chinensis*, *Mimusops elengii* and *Tectona grandis* are least important species as these have minimum number of informants (FC=2), use category (NU=1) and use report (UR=1).

**Table 2: Magico-religious beliefs and uses of plants**

S. No.	Scientific name	Vernacular name	Family name	Parts used	Beliefs and Uses
1	<i>Acacia nilotica</i> Linn.	Ganthanakshi	Fabaceae	Whole plant and root	If planted near the house it keeps away the evil spirits. Its roots are used by Ojha to make some magical power to heal.
2	<i>Aegle marmelos</i> Correa ex Koen.	Bel	Rutaceae	Thorns, fruits, leaf and branch	Bel is considered as the sacred for the God Mahadev. Leaves used in religious rites. Dry branches are used in "Jagya", while worshiping or in marriage. Fruits used in worshiping Shiv Chaturdasi. Planted in the east direction as believed that Subrai Raja sits under the tree facing the west direction. If bel tree is planted then it is considered good. Odd number of bel leaves is kept over the coconut fruit kept above the container covered with "Risha". It is used in marriage and also in religious rites. Kali "murti" (idol) is kept under the tree after Kali puja . Its thorns are hanged on the door.
3	<i>Alstonia scholaris</i> (L.) R. Br.	Chethuang	Apocynaceae	Leaf	Apex of the branch with 3 or 5 leaves is used for brushing (suklai) of the children if they suffer from loose motion by an "Ochai" enchanting some "mantras". Leaf petiole (3 in nos.) is tied in white thread and worn on wrist or neck of the kids. Some people plant and worship as it has a legend in the past.
4.	<i>Amaranthus palmeri</i> S. Wats.	Koskoria	Amaranthaceae	Root and bract	Roots from the west side of the plant is taken without breathing and is wrapped on a paper, then tied on waist or in hand in order to prevent any witch craft. It is usually done on Tuesday or Saturday. Thorns from the west side are taken along with the roots of <i>Acacia nilotica</i> Dilile. and put on waist or in hand as tabiz.
5.	<i>Anthocephalus cadamba</i> Miq.	Kaldam	Rubiaceae	Whole plant	It is believed that God Krishna lives under the tree and plays flute. Just like banyan, worships are performed under the tree. It is to be planted near <i>Garcinia xanthochymus</i> Hooker.f..
6.	<i>Aquilaria malaccensis</i> Lam.	Agar	Thymalaeaceae	Bark or branch	Its branch or even its bark is used while burying as it is believed that it purifies the soul of the dead person.
7.	<i>Areca catechu</i> L.	Kuwai	Arecaceae	Fruit	Fruits are required in the religious ceremony and marriage ceremony.
8.	<i>Artocarpus heterophyllus</i> Lam.	Thaipung	Moraceae	Leaf	Leaves are used before puja for performing "Paatkarna" (A pair of leaves are thrown before beginning any puja).
9.	<i>Averrhoa carambola</i> Linn.	Kamaranga	Oxalidaceae	Whole tree	It is considered not good if planted near the house.
10.	<i>Azadirachta indica</i> A. Juss.	Neem	Meliaceae	Whole plant and leaf	If it is planted in south direction, it brings good health to the family and society. Leaves are hanged on doors and windows. Plant parts are offered while burying with a belief to get good voice in their next birth.

11.	<i>Bombax ceiba</i> L.	Borchu	Malvaceae	Whole tree	It is not planted near the house as it is considered not good for the family if its roots enter the house.
12.	<i>Borassus flabellifer</i> L.	Taal	Arecaceae	Whole tree	It is not to be planted near the house as it is considered as a dwelling place of bad spirit.
13.	<i>Bougainvillea glabra</i> Comm. ex Juss.	Khumkagoz	Nyctaginaceae	Flower	Flowers are used in religious ceremonies.
14.	<i>Brassica juncea</i> (L.) Czern.	Hoiro	Brassicaceae	Seed	It drives witch, used along with broom ( <i>Thysanolaema maxima</i> Kuntze), swtwi ( <i>Curcuma longa</i> L.) and flowers of khumchak ( <i>Celosia cristata</i> L.).
15.	<i>Canarium strictum</i> Roxb.	Dhuwa	Burseraceae	Whole tree	It is used for performing religious rites.
16.	<i>Carica papaya</i> L.	Kuwaifal	Caricaceae	Whole tree	It is recommended not to see in the morning and should not be planted in front of the house. Tree bearing male flower is cut off, as it is believed that it will regenerate as female.
17.	<i>Catharanthus roseus</i> (L.) G. Don	Purinikhum	Apocynaceae	Flower	It is used everywhere for worshipping and considered to be the oldest flower to be used since time immemorial.
18.	<i>Celosia cristata</i> L.	Khumchak	Amaranthaceae	Flower	It is used along with broom ( <i>Thysanolaema maxima</i> Kuntze), <i>Curcuma longa</i> L. and <i>Brassica juncea</i> (L.) Czern. to brush a person to remove witch's affect.
19.	<i>Cocus nucifera</i> Linn.	Narikwra	Arecaceae	Fruit	Fruits are used in religious ceremony.
20.	<i>Colocasia esculenta</i> (L.) Schott	Muitu	Araceae	Leaf	Whole plant is used to drive witch power.
21.	<i>Curcuma longa</i> L.	Swtwi	Zingiberaceae	Rhizome	Its rhizome is kept near the new born baby along with a branch of the broomstick. Sometimes it is carried on the journey as well and smeared on the forehead of the baby by spitting little bit on the rhizome. Many times smeared on the mother's feet and then on baby's forehead. It is believed that it'll keep away evil spirits or ghost or prevent from having any bad dreams. Freshly collected rhizome is smeared in between the eyebrows to stop crying of kids. Slices of rhizome are tied together and hanged along with broom stick.
22.	<i>Cynodon dactylon</i> (L.) Pers.	Durba	Poaceae	Leaf	Its apex is used along with cotton and rice grains while giving blessings ("Dangduwa") to the newly married couple along with cotton, <i>Catharathus roseus</i> (L.) G. Don and rice grains ( <i>Oryza sativa</i> Hochst . ex Steud). It is also used in marriage by "Ojha" during "Jagya". Odd no. of leaves (mostly 5 or 7) used in "Bara kwnya", "Kali", "Ama". It is used almost everywhere while worshipping.
23.	<i>Dahlia</i> sp. Cav.	Dahlia	Asteraceae	Flower	Used in religious purpose.
24.	<i>Dillenia indica</i> L.	Thaiplok	Dilleniaceae	Fruit	Dry fruit is hanged on the door to keep away bad spirits. It is hanged along with thorns of <i>Flacourita jangomaas</i> Raeush. It brings bad health to the family or to the whole villagers if it is grown in the middle of the village or if it fruits excessively.
25.	<i>Dipterocarpus turbinatus</i> C.F.Gaertn.	Garjan	Dipterocarpaceae	Whole tree	Religious rites performed under the tree.
26.	<i>Emblica officinalis</i> Gaertn.	Amla	Phyllathaceae	Whole plant	It is considered not good if planted near the house. But some people worship it to get children in their next birth.
27.	<i>Entada phaseoloides</i> (L.) Merr.	Swkwi	Mimosaceae	Pods and seeds	It is used in marriage or in death ceremony. Dry pods are used to keep on the door to prevent bad spirits.

28.	<i>Euphorbia nerifolia</i> Linn.	Sichu	Euphorbiaceae	Whole tree	It is planted in front of the house or on the boundary or at the entrance of the village/house to drive away any bad/ evil spirits.
29.	<i>Ficus religiosa</i> L.	Bwrwifung	Moraceae	Whole tree	Puja is done under the tree. It is considered sacred for “Sanyasis”. Kali “murti” (idol) kept under the tree after the worship is over. It is also believed that when it grows on other trees it must be cut before it reaches the soil. It must be planted along with other trees ( <i>Garcinia xanthochymus</i> , <i>Aegle marmelos</i> (L.) Correa, <i>Emblica officinalis</i> Gaertn. and <i>Ocimum sanctum</i> L.
30.	<i>Flacourita jangomaas</i> Raeush.	Supra	Salicaceae	Thorn	Thorns are plucked either on Tuesday or Wednesday and is used for hanging on the door to prevent bad spirits or witches power. Kali “murti” (idol) kept under the tree after the worship is over.
31.	<i>Garcinia xanthochymus</i> Hooker.f.	Tamal	Clusiaceae	Whole tree	It is worshiped and is always planted near the bel ( <i>Aegle marmelos</i> (L.) Correa) tree.
32.	<i>Gossypium hirsutum</i> L.	Khul	Malvaceae	Seeds	It is used in religious and marriage. It is tied in thread to make “khumtwrwng” (Garland made of thread and tied with odd number of leaves along with cotton).
33.	<i>Hibiscus rosa-sinensis</i> L.	Jaba	Malvaceae	Flower	Flowers are used in the worship of Goddess kali.
34.	<i>Litchi chinensis</i> Sonn.	Lichu	Sapindaceae	Whole tree	It is not considered good if planted near the house.
35.	<i>Mangifera indica</i> Linn.	Thaichuk	Anacardiaceae	Leaf and branch	Its leaves are used in every religious rites , also used in marriage and sometimes hanged on the door. Its leaf along with bel leaf and flower is tied together to make “khumtwrwng”. The mentioned combination is tied for odd number of times in a thread which is worn by “Aya” (Male) in the marriage ceremony on both sides of the shoulder and “Ayajwk” (Female) on the bun. Flower and leaves are provided in the Saraswati puja. Dry branch is used in “jagya”.
36.	<i>Melaconna baccifera</i> Roepert ex Trinius	Wathwiwa	Poaceae	Culm and leaf	It is used in making a unique structure called “Wathob” to perform religious rites. It is considered as a “King of Bamboo”.
37.	<i>Melia azedarach</i> L.	Ing	Meliaceae	Whole plant	If it is planted all around the house, it keeps away the evil spirits.
38.	<i>Mimusops elengii</i> Wight	Bokul	Sapotaceae	Whole tree	If the tree has excessive flowering, it is not considered good. It is believed to be resided by evils bringing bad health to the whole village.
39.	<i>Musa paradisiaca</i> L.	Thalik	Musaceae	Stem and Leaf	Its stem along with some leaves are used in the marriage ceremony on the gate or on the door. Its leaves are popularly used for distributing “Prasad” after the puja. It should not be planted in front of the house and not to be seen in the morning as it brings bad day.
40.	<i>Nicotiana tabacum</i> L.	Hada	Solanaceae	Leaf	Leaves are used in religious ceremony.
41.	<i>Nyctanthes arbor-tristis</i> L.	Sheoli	Oleaceae	Flower	Its flowers are used in festivals.
42.	<i>Ocimum sanctum</i> L.	Tulsi	Lamiaceae	Whole plant and leaf	It is worshiped early morning by putting candles. Its leaves are used almost everywhere for sprinkling water after puja. Dead plant either whole or part of branch is buried along with dead body with a belief that it provides purity to the demised person.
43.	<i>Oryza sativa</i> Hochst. ex Steud	Mai	Poaceae	Seed/Grain	Its grains are used along with “Hoiro” ( <i>Brassica juncea</i> (L.) Czern.) and “Swtwi” ( <i>Curcuma longa</i> L.) on the bed to avoid any sudden shock. It is also needed in death rituals.

44.	<i>Piper betle</i> L.	Phatwi	Piperaceae	Leaf	Leaves are used in the religious ceremony and marriage ceremony.
45.	<i>Plumeria rubra</i> L.	Gulachi	Apocynaceae	Flower	Its flowers are used in religious purpose.
46.	<i>Santalum album</i> L.	Chandan	Santalaceae	Bark or branch	Piece of its wood is used for making paste and put "Tilak" on the forehead. Branch or bark is used in burying. Its branch or bark is also used by "bahmon" along with tulsi ( <i>Ocimum sanctum</i> L.).
47.	<i>Sterculia villosa</i> Roxb.	Lambak	Sterculiaceae	Flower	Its flower are used in Saraswati puja.
48.	<i>Stereospermum personatum</i> (Hassk.) D. Chatterjee	Silai	Bignoniaceae	Whole tree	Puja is performed under the tree.
49.	<i>Streblus asper</i> Lour.	Saruwa	Moraceae	Whole tree	This tree is believed to be a keeper of bad spirit and is prevented not to go near it and also not to be planted near the house. Kali "murti" (idol) is kept under the tree after puja.
50.	<i>Tamarindus indica</i> Linn.	Thentwi	Fabaceae	Whole plant	It should not to be planted near the house as considered not good for the family if roots of the tree enter. Also the tree should not be seen in the morning as it brings bad day.
51.	<i>Tectona grandis</i> Linn. f.	Segun	Verbenaceae	Whole tree	It is not planted near the house.
52.	<i>Tegetes erecta</i> L.	Genda	Asteraceae	Flower	Flowers are used in Laxmi puja
53.	<i>Terminalia arjuna</i> Roxb. ex. DC	Arjun	Combretaceae	Whole tree	It is considered good if planted near the house.
54.	<i>Terminalia chebula</i> Retz.	Bakhla	Combretaceae	Seed	Its seeds are used in marriage ceremony and death rites and rituals. Puja is done under the tree for the newly born child in fifth month after the birth.
55.	<i>Thevetia peruviana</i> (Pers.) Merrill	Koirobi	Apocynaceae	Flower and Leaf	Flowers are used in Saraswati puja. Leaves are used in making "khumtwrwn" (leaves tied in the thread and worn in as such during marriage or used in puja).
56.	<i>Thysanolaena maxima</i> Kuntze	Nokshi	Poaceae	Branch	Its branch is kept on the door to prevent bad spirits or on the bed or near the newly born baby along with <i>Curcuma longa</i> L.
57.	<i>Tinospora cordifolia</i> (Willd.) Miers ex Hook. f. & Thomson	Dukshasundari	Menispermaceae	Stem	A part of the stem is hanged on door to prevent entry of bad spirits.
58.	<i>Zanthoxylum rhetsa</i> (Roxb.) DC.	Muching	Rutaceae	Seed	Seeds worn as "tabiz" for keeping away the witch power.
59.	<i>Zizyphus jujube</i> Mill..	Boroi	Rhamnaceae	Whole tree	The tree is not planted near the house as it is not considered good if roots enter the house and also if seen early in the morning.

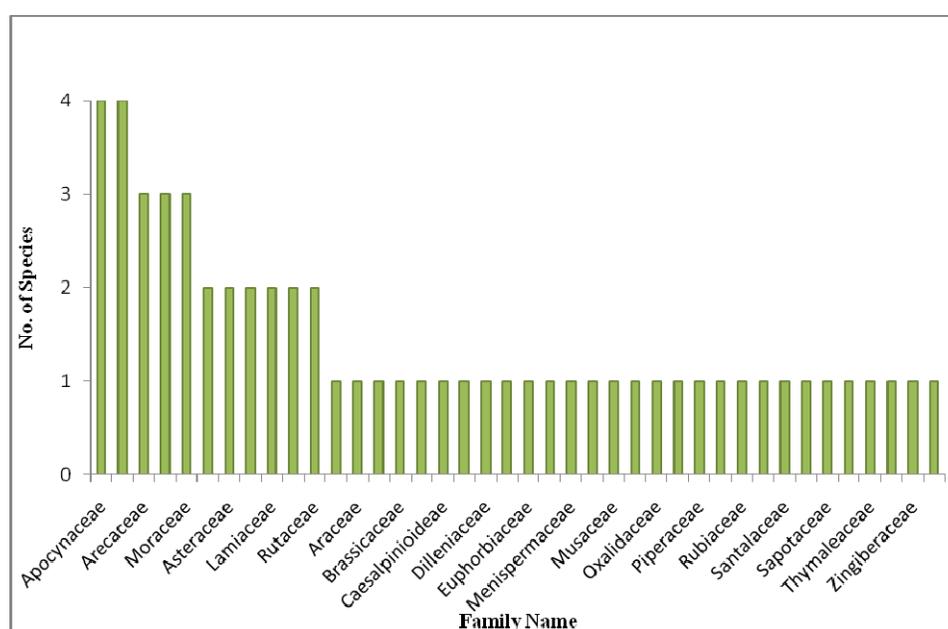


Fig. 2: Histogram showing number of species in each family

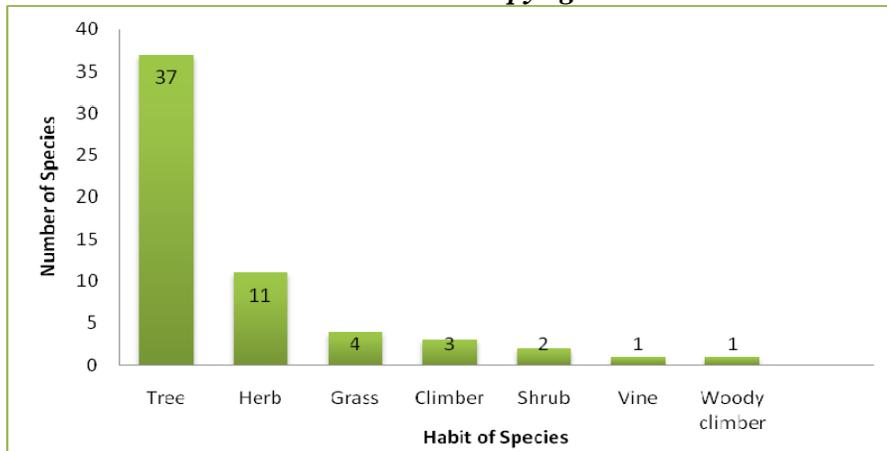


Fig. 3: Histogram showing number of species under each habit

Table 3: Cultural Importance Index (CI) of documented species

S.No.	Species name	MAG	SAC	TAB	RIT	CER	CI
1.	<i>Ocimum sanctum</i> L.	0.06	0.70		0.01	0.22	1.00
2.	<i>Aegle marmelos</i> (L.) Correa	0.1	0.39	0.01		0.41	0.91
3.	<i>Ficus religiosa</i> L.	0.01	0.68	0.02		0.03	0.75
4.	<i>Melaconna baccifera</i> Roepert ex Trinius	0.01				0.63	0.64
5.	<i>Mangifera indica</i> Linn.			0.12		0.49	0.60
6.	<i>Flacourita jangomaas</i> Raeush.	0.58					0.58
7.	<i>Musa paradisiaca</i> L.		0.02	0.11		0.38	0.51
8.	<i>Anthocephalus cadamba</i> (Roxb.) Bosser	0.03	0.46	0.01		0.01	0.51
9.	<i>Tamarindus indica</i> Linn.			0.46			0.46
10.	<i>Curcuma longa</i> L.	0.29			0.02	0.14	0.45
11.	<i>Azadirachta indica</i> A. Juss.	0.16	0.24		0.02		0.42
12.	<i>Entada phaseoloides</i> (L.) Merr.	0.12			0.08	0.14	0.34
13.	<i>Terminalia chebula</i> Retz.	0.07		0.01	0.07	0.17	0.32
14.	<i>Thysanolaena maxima</i> Kuntze	0.3					0.3
15.	<i>Catharanthus roseus</i> (L.) G. Don	0.01				0.22	0.23
16.	<i>Garcinia xanthochymus</i> Hooker. f.	0.04	0.18				0.22
17.	<i>Hibiscus rosa-sinensis</i> L.					0.19	0.19
18.	<i>Cynodon dactylon</i> (L.) Pers.	0.007				0.17	0.17
19.	<i>Thevetia peruviana</i> (Pers.) Merrill					0.17	0.17
20.	<i>Dillenia indica</i> L.	0.07		0.09			0.16

MAG-Magical, SAC- Sacred, TAB-Taboo, RIT-Ritual, CER-Ceremony, CI- Cultural importance index

Table 4: Basic values, ethnobotanical indices and ranking of documented plant species

S.No.	SPECIES NAME	Basic Values			Indices			Ranking		
		FC	UR	NU	CI	RFC	RI	CI	RFC	RI
1.	<i>Ocimum sanctum</i> L	115	144	4	1.00	0.83	1.00	1	1	1
2.	<i>Aegle marmelos</i> (L.) Correa	89	126	4	0.91	0.64	0.89	2	3	2
3.	<i>Ficus religiosa</i> L.	91	104	4	0.75	0.65	0.9	3	2	3
4.	<i>Melaconna baccifera</i> Roepert ex Trinius	89	89	2	0.64	0.64	0.64	4	4	4
5.	<i>Mangifera indica</i> Linn.	80	84	2	0.6	0.58	0.6	5	5	5
6.	<i>Flacourita jangomaas</i> Raeush.	80	80	1	0.58	0.58	0.47	6	6	6
7.	<i>Musa paradisiaca</i> L.	68	71	3	0.51	0.49	0.67	7	7	8
8.	<i>Anthocephalus cadamba</i> Miq.	64	71	4	0.51	0.46	0.78	8	8	7
9.	<i>Tamarindus indica</i> Linn.	64	64	1	0.46	0.46	0.4	9	9	9
10.	<i>Curcuma longa</i> L.	57	63	3	0.45	0.41	0.62	10	10	10
11.	<i>Azadirachta indica</i> A. Juss.	51	59	3	0.42	0.37	0.6	11	11	11
12.	<i>Entada phaseoloides</i> (L.) Merr.	37	48	3	0.34	0.27	0.53	12	13	12
13.	<i>Terminalia chebula</i> Retz.	33	44	4	0.32	0.24	0.64	13	14	13
14.	<i>Thysanolaena maxima</i> Kuntze	42	42	1	0.3	0.3	0.31	14	12	14
15.	<i>Catharanthus roseus</i> (L.) G. Don	31	31	2	0.22	0.22	0.38	15	15	15
16.	<i>Garcinia xanthochymus</i> Hooker. f.	25	31	2	0.22	0.18	0.36	16	17	16
17.	<i>Hibiscus rosa-sinensis</i> L.	27	27	1	0.19	0.19	0.24	17	16	17
18.	<i>Cynodon dactylon</i> (L.) Pers.	23	24	2	0.17	0.17	0.35	18	18	18
19.	<i>Thevetia peruviana</i> (Pers.) Merrill	23	23	1	0.17	0.17	0.23	19	19	19
20.	<i>Dillenia indica</i> L.	21	22	2	0.16	0.15	0.34	20	20	20

FC: Frequency of Citation UR: Use Report NU: No. of Uses CI: Cultural Importance Index RFC: Relative Frequency of Citation RI: Relative Importance Index



*Areca catechu* L.



*Entada phaseoloides* (L.) Merr.



*Ficus religiosa* L. A Tree



*Flacourita jangomas* Raeush : A tree and its thorns



Leaves of *Mangifera indica* Linn. in marriage ceremony



*Melaconna baccifera* (Roepert ex Trinius) "Wathob" used in marriage and religious ceremony



*Mimusops elengii* Wight



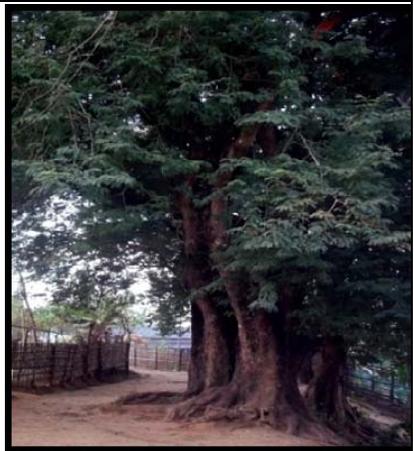
*Musa paradisiaca* L. and its leaves in marriage ceremony



*Ocimum sanctum* Linn.



*Sterculia villosa* Roxb.



*Tamarindus indica* Linn.

PLATE-1



## CONCLUSIONS

The main aims of the present study are to document the plant species used for magico-religion purpose and to identify most important species by ethnobotanical indices. A total of 59 species of 42 families are documented. Of these, 37 trees, 11 herbs, 4 grasses, 1 climber and 4 others shrub, vine and woody climbers are listed out. The dominant families are Apocyanaceae and Poaceae with 4 species each. The documented plants are categorized into five categories namely magical belief (33 Sps.), ceremony (30 Sps.), taboos (22 Sps.), sacred (13 Sps.) and rites (8 Sps.). The cultural importance index of *Ocimum sanctum* is highest (1.0) followed by *Aegle marmelos* (0.91) and *Ficus religiosa* (0.75) and minimum cultural importance index (0.01) in majority of species like *Litchi chinensis*, *Mimusops elengii* etc. Likewise, *Ocimum sanctum* scores 1<sup>st</sup> rank in all basic values like Frequency of citation (FC) Number of uses/use category (NU), use reports (UR) and ethnobotanical indices like RFC, RI, CI. The present study shows that tripuris have considerable knowledge of magico religious beliefs of plants and depend on plant resources to appease the supernatural powers for their well being. Worshipping of plants, performing various religious practices and ceremonies under trees reflect the attitude of tripuris towards conservation of their plant resources indirectly.

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## REFERENCES

- [1] Chatterjee, S., Saikia, A., Dutta P., Ghosh, D., Pangging, G. and Goswami, A.K. 2006. Biodiversity significance of North East India. WWF India, New Delhi.
- [2] Mao, A. A., Hyniewta, T. M. and Sanjappa, M. 2009. Plant wealth of North East India with reference to ethnobotany. Ind. J. Trad. Know. 8: 96-103.
- [3] Anonymous 2011. India state of forest report. Forest Survey of India (MoEF), Dehradun, pp. 322.
- [4] Deb, D., Sarkar, A., Debbarma, B., Dutta, B. K. and Majumdar, K. 2013. Wild edible plants and their utilization in traditional recipe of Tripura, North East India. Adv. Bio. Res. 7 (5): 203-211.
- [5] Sharma, M., Sharma, C. L. and Debbarma, J. 2013. Ethnobotanical uses of some tree species in khowai district of Tripura NE India. Life Sci. Leaflets 4: 60-80.
- [6] Bhattacharjee, P. 1994. Tribal pujas and festivals in Tripura. Tripura state Tribal Cultural Research Institute and Museum. Govt. of Tripura, pp.11-19.
- [7] Dixit, G. 1997. Fire sacrificial plants. Geobios News Rep. 16 (8):47-48.
- [8] Ghate, V. S. 1998. Plants in 'Patra Pooja': notes on their identity and utilization. Ethnobot. 10: 6-15.
- [9] Sood, S. K., Thakur, V. and Lakhnapal, T. N. 2005. Sacred and majico-religious plants in India. Scientific publishers, Jodhpur, pp. 237.
- [10] Sharma, U. K. and Pegu, S. 2011. Ethnobotany of religious and supernatural beliefs of the missing tribes of Assam with special reference to the 'Dobur Uie' J. Ethnobot. Ethnomed. 7(16):1-13.
- [11] Singh, H. B. 2011. Plants associated in forecasting and beliefs within the Meitei community of Manipur, Northeast India. Ind. J. Trad. Know. 10(1): 190-193.
- [12] Sahu, C. R., Nayak, R. K. and Dhal, N. K. 2013. Ethnomedicine and magico religious beliefs of the Kondhtrere in Boudh district of Odisha, India. Life Sci. Leaflets 11: 10-22.
- [13] Das, H. B., Majumdar, K., Dutta, B. K. and Roy, D. 2009. Ethnobotanical uses of some plants of Tripuri and Reang tribes of Tripura. Nat. Prod. Rad. 8(2): 172-180.
- [14] Majumdar, K. and Dutta, B. K. 2007. A study on ethnomedicinal usage of plants among the folklore herbalists and Tripuri medicinal practitioners. Part I. Nat Prod. Rad. 6 (1): 66-73.
- [15] Shil, S. P. and Chowdhury, M. 2009. Ethnomedicinal importance of Pteridophytes used by Reang tribe of Tripura, North East India. Ethnobot. Leaflets 13: 634-643.
- [16] Sharma, D. K. 2010. Biodiversity resource book of Tripura. International Book Distributors, Dehradun, pp. 518.

- [17] Tardio, J. and Pardo-de-Santayana, M. 2008. Cultural importance indices: A comparative analysis based on useful wild plants of Southern Cantabria (Northern Spain). *Eco. Bot.* 62(1): 24-39.
- [18] Kail, T. M. 2008. Magico religious groups and ritualistic activities. A guide for first responders. Boca Raton, Florida, CRC Press, pp.168.
- [19] Choudhury, J. 2012. Tree worship tradition in India and origin of Jagannath cult. *Odisha Rev.*: 55-57.
- [20] Bhatia, N., Mukherjee, T. and Singh, G. 1984. Plants: Traditional worshipping. *Ind. J. His. Sci.* 19(1): 37-42.
- [21] Shah, R. and Patel, R. 2012. Study of traditional worshipping plants of Bossad Taluka (Gujarat) India. *J. Res. Sci. & Tech.* 1(11): 69-73.
- [22] Rout, J. Sajem, A. L. and Nath, M. 2009. Some superstitions botanical folklore of different tribes of North Cachar Hills, Assam (Northeast India). *Ethnobot. Leaflets* 13: 1096-1107.
- [23] Uniyal, S. K., Awasthi, A. and Rawat, G. S. 2002. Traditional and ethnobotanical uses of plants in Bhagirathi Valley (Western Himalaya). *Ind. J. Trad. Know.* 1 (1): 7-19.
- [24] Reyes- Garcia, V. Hunaca, T., Vedez, V., Leonard, W. and Wilkie, D. 2006. Cultural, practical and economic value of wild plants: A quantitative study in Bolivian Amazon. *Eco. Bot.* 60(1): 62-74.