



# ETHNOBOTANICAL STUDY ON PLANTS USED IN MAGICO-RELIGIOUS PRACTICES OF *DEORI* TRIBE IN ASSAM, INDIA

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## Abstract

The present study was done in the Dhemaji and Lakhimpur districts of Assam, India. A total of 84 informants were randomly selected from 13 villages and the whole study was done through questionnaire survey. The present paper deals with documentation, valuation of plants and to assess the plant knowledge based on gender and age especially in the magico-religious practices of the Deori tribe of Assam. A total of 61 species belonging to 33 families were used by the Deori tribe. The dominant family was Poaceae. Herbs were most dominant with 24 species followed by trees (21), shrubs (10), climbers (5) and fern (1). Among all plant parts, the leaf was most dominant part with 22 plant species. *Brassica juncea* was considered as a culturally important plant with the highest cultural importance index (2). There was no significant difference found based on gender and age groups except in taboo use category.

**Key words :** Deori, Assam, magico-religious practices.

## Introduction

*Deori* tribe belonging to Indo-Mongloid group is one of the ethnic communities of Assam and speaks Tibeto-Burman language. The tribe has three clans *i.e.*, *Dibongia*, *Tengaponia* and *Borgonya* based on their settlement near the river system *viz.*, Dibong, Tengapani and Bornadi respectively (Deori, 2011). The literal meaning of *Deori* is “the person that is able to satisfy deities (*Deo*) through worshipping”. The tribe is presently concentrated in Lakhimpur, Dhemaji, Sonitpur, Dibrugarh, Jorhat, Sibsagar, and Tinsukia districts of Assam and Lohit and Changlang districts of Arunachal Pradesh.

The total schedule tribe population of Assam is 3,884,371 and the population of *Deori* tribe is 1.24% of the total tribal population (Census of India, 2011).

*Deori* tribe has a unique socio-cultural system (Deoram, 2013; Deori, 2009; Deori *et al.*, 2007). The *Ebaku Bisu* is one of the major festivals of *Deori* (Pathak and Kumari, 2016). The principal deity of *Deori* tribe is *Kundi Mama*, *Bolia Baba* and *Kechai khati*. They worship in *Deohal*, a worship place of *Deori* tribe

(Pathak, 2017). There are four classes of a priest in *Deori* tribe *viz.*, *Bor Deori*, *Saru Deori*, *Bor Bharali* and *Saru Bharali* (Goswami, 2015). Though, *Deori* tribe has a unique magico-religious belief system with mostly animistic in nature but is no systematic study carried out on the documentation and valuation of plant species used in the magico-religious practices. Therefore, the present study is an attempt to document the plants used in magico-religious practices and their valuation with quantitative ethnobotanical index and to see the variation in knowledge of these plants between gender and age groups.

## Study area

The ethnobotanical study was carried in Dhemaji and Lakhimpur districts of Assam, India. Dhemaji district is located in the northeast region of Assam. It lies between 94°12'E and 95°41'E longitudes and 27°05' N and 27°57' N latitude. The district covers 3,237 sq.km and bounded by Siang district of Arunachal Pradesh in the North, Lakhimpur district in the West and Brahmaputra river in the South. Whereas Lakhimpur district is located at the northeast region of Assam and it lies between 93°42' and 94°20' E longitude and 27°53' and 27°53' N latitude. It is also bounded by Siang district in the North,

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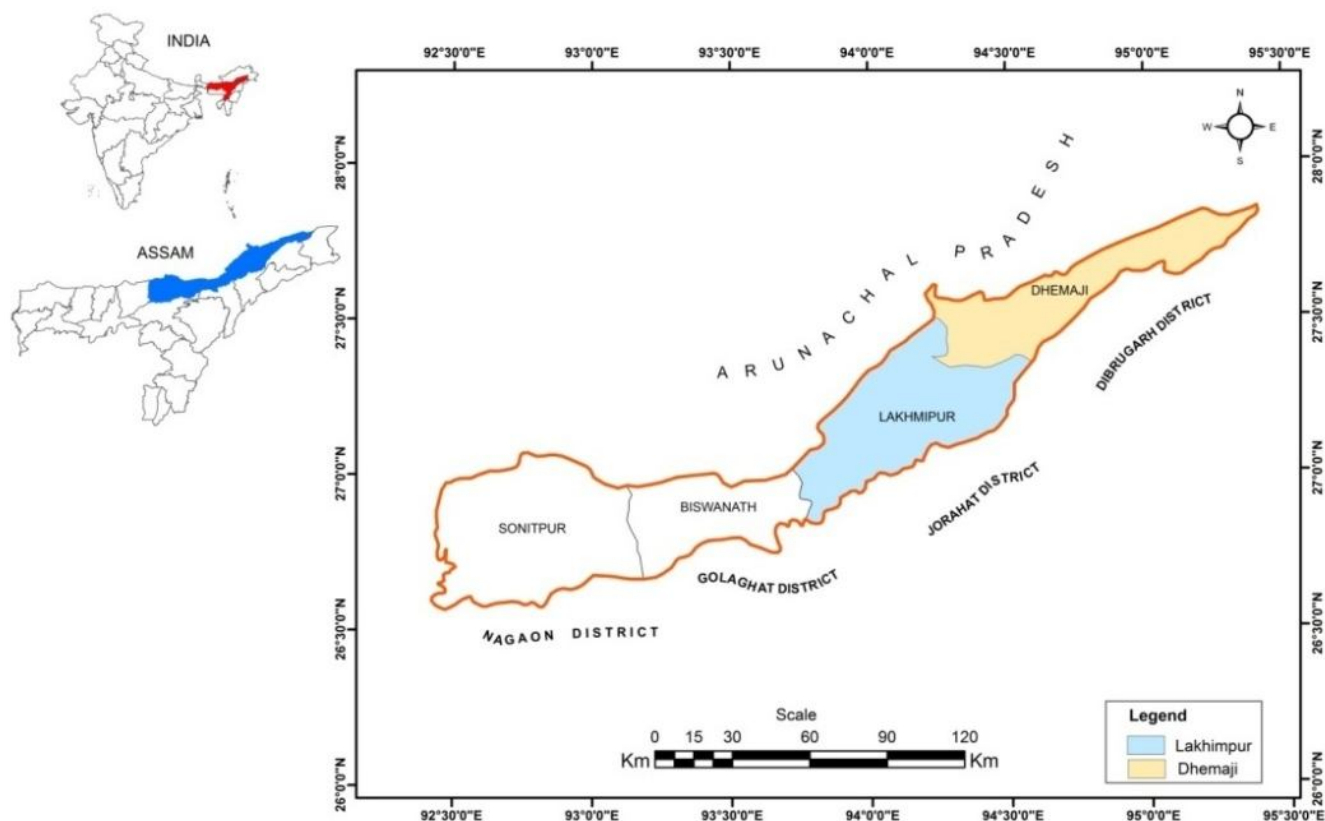


Fig. 1 : Map showing study sites.

Majuli district in South, Dhemaji district in East and Biswanath district in West. The total geographical area of the district is 2,277 sq. km and the total population of the district is 10,42,137 that consists of 5,29,674 male and 5,12,643 female.

### Materials and Methods

The study was carried out from December 2014 to December 2017. A total of 84 informants (22 female and 62 male) were selected through random sampling method from 13 villages of selected districts. Prior Informed Consent (PIC) was taken from informants before the study. The ethnobotanical data like vernacular name of the plants, plant parts used in the magico-religious practices were collected through the interview, informal discussion by questionnaire survey (Jain and Mudghal, 1999) and through personal observations. Herbarium sheets were prepared as per Jain and Rao (1977). The plants were identified with standard literature (Kanjiyal *et al.*, 1934-1940 and Hooker 1875-1897). The local experts were also consulted to identify the plants. The verification of plant genus, species and family was done from the website of the plant list ([www.theplantlist.org](http://www.theplantlist.org)). The voucher specimens were deposited in the Herbarium, Department of Forestry, NERIST, Nirjuli, Arunachal Pradesh.

The cultural importance index (CI) was used for valuation of magico-religious plants (Tardio and Pardeode-Santayana, 2008).

$$\text{Cultural Importance Index (CI)} = \frac{u_{NC}}{u = u_1} \frac{i_N}{i = i_1} UR_{ui} / N$$

Where, N is the number of informants; FC is the frequency of citation; UR is a total number of use reports; NC is the total number of use categories; Ui is the number of use categories reported by informants for a particular species; n is the total number of informants.

The variation in plant knowledge on magico-religious practices was done between male and female and different age groups (>50 years and < 50 years) with questionnaire survey. Mann-Whitney U Test was performed to see the significant differences between age and gender groups.

### Results and Discussion

The present study recorded 61 plant species under 54 genera belonging to 33 families (table 1), which is higher than other studies conducted on different tribes of North East India and other parts of India (Singhal *et al.*, 2017; Sarma and Devi, 2015; Bamin and Gajurel, 2015; Sharma *et al.*, 2014). Maximum number of plants species

**Table 1 :** The details of plant species used in the magico-religious practices.

S. no.	Botanical name, family and voucher no.	Common name and local name	Habit	Part used	Uses
1.	<i>Acorus calamus</i> Linnaeus [Acoraceae]	Sweet flag (E) Bos (A)	H	WP, R	The plant is generally planted around the house premises to drag away evil spirits due to its unique odor. The garland made of rhizomes is used for the protecting the children from the evil spirit and are also used to cure common cold disease.
2.	<i>Aegle marmelos</i> (Linnaeus) Correa [Rutaceae]	Bael (E) Bel (A)	T	WP, L	The tree is considered as a sacred and symbolised two deities viz., <i>Kundi mama</i> and <i>Aie matri</i> . The tree is worshipped by lighting lamps at the base of the tree for peace and prosperity in the family. The leaves are also offered to the God <i>Shiva</i> during the celebration of <i>Shiv ratri</i> .
3.	<i>Allium sativum</i> Linnaeus [Amaryllidaceae]	Garlic (E) Losun (A), Puru Nohoru (D)	H	BL	The scales of garlic are used to drag away evil spirits and also to cure minor diseases like common cold and fever in case of children by keeping it under the pillow. Garlic is offered in a ritual called <i>Siri-yo-midi</i> . This ritual is especially recommended when someone suffering from severe pain and is done during night time most preferably in <i>amabaishya</i> near a tri-junction road and the animistic ritual is performed by the priest ( <i>Deodhai</i> ). Garlic is generally offered in paste form because deities accept such offering.
4.	<i>Alpinia nigra</i> (Gaertn.) Burt [Zingiberaceae]	Bamboo-leaved Galangal (E), Tora pat (A), Dudu (D)	H	S	The fibers are used to prepare rope which is offered to the livestock during the ceremonial bath in <i>Ibaku Bisu</i> festival. In some cases, the rope is prepared by mixing with the fibers obtained from <i>Corchorus capsularis</i> .
5.	<i>Areca catechu</i> Linnaeus [Arecaceae]	Betelnut palm/Arecanut (E), Tamul (A), Guie (D)	T	F	The nuts are considered as a culturally important and are offered to deities during various rituals and ceremonies such as <i>Ibaku Bisu</i> (D), <i>Magh Bisu</i> , <i>Mamaru puja</i> (Plate 1H), <i>Dangoria puja</i> , <i>Ruwaj Jatra</i> (A) or <i>Hali giba Jatra</i> (D) etc. to pay respect to the deities.
6.	<i>Bambusa tulda</i> Roxb. [Poaceae]	Bengal bamboo (E), Jati bah (A), Jati Jeyo (D)	S	S, B	The stems of bamboo are used to prepare bamboo sticks for lighting lamp by putting oil soaked cotton on the top of the stick, which is used especially during <i>Mamaru puja</i> . It is a community-based ceremony done after a week of <i>Ibaku Bisu</i> festival and is mostly done in the forest. This is mainly an animistic ceremony to bid farewell to all the deities invited during the <i>Ibaku Bisu</i> festival. A small branch of bamboo is offered to Goddess <i>Lakshmi</i> during the first transplantation of paddy in the farmland during a ritual locally known as <i>Hali giba Jatra</i> and they believe that paddy may grow as vigorously as the bamboo plant. The culms of bamboo are exclusively used for carrying the dead body during the funeral ceremony.
7.	<i>Bischofia javanica</i> Blume [Phyllanthaceae]	Bishopwood (E), Uriam (A), Djojochia (D)	T	L	The leaves of the plant are boiled and offered to all deities during <i>Sarak puja</i> (Plate 1G).
8.	<i>Bombax ceiba</i> Linnaeus [Malvaceae]	Silk-cotton tree (E), Himolu (A)	T	WP	The planting of this tree in the front yard of the house is not considered auspicious is prohibited because the tree attained a maximum height and it becomes a favorite resting ground for birds like vulture and crow, which is not considered auspicious near the house

*Table 1 continued...*

Table 1 continued...

						premise. Therefore planting of this tree near house premise is considered to be taboo.
9.	<i>Brassica juncea</i> (Linnaeus) Czern. [Brassicaceae]	Indian mustard (E), Horiyo (A), Gieyo (D)	H	SD		The oil derived from seeds of <i>Brassica juncea</i> is used for lighting lamp during all major festivals and ceremonies. The seeds of <i>Brassica juncea</i> are also used to drag away evil spirit by keeping it under the pillow and generally adopted in the case of small children.
10.	<i>Calamus tenuis</i> Roxb. [Arecaceae]	Bareilley cane (E), Jati bet (A), Jati Sokatu (D)	C	S		The tender stems of the plant are boiled and offered to all deities during <i>Sarak puja</i> . (Plate 1G).
11.	<i>Callicarpa arborea</i> Roxb. [Lamiaceae]	Beauty berry (E), Kofu guju (D)	T	B		The branches are offered to the deities during <i>Mamaru puja</i> because it is needed to accomplish the ceremony. The branch is also used during the purification of the bride during the inter-caste marriage ceremony, which is organised in the <i>Deoahal</i> (temple of Deori tribe) with the belief that non-Deori tribe bride needs to get purified through this process for removing any impurities before joining the tribe.
12.	<i>Capsicum annuum</i> Linnaeus [Solanaceae]	Cayenne (E), Joliknya (A) Fanchu (D)	H	F		The dried chilli is burnt to drive away evil spirit through its smoke. The fruits are also offered in a ritual called <i>Siri-yo-midi</i> .
13.	<i>Carica papaya</i> Linnaeus [Caricaceae]	Papaya (E), Aomita (A)	T	F		The fruits of the plants are used for lighting the lamps in the farmland to worship Goddess <i>Lakshmi</i> during the celebration of <i>Kati Bihu</i> festival.
14.	<i>Cascabela thevetia</i> (Linnaeus) Lippold. [Apocynaceae]	Yellow oleander (E), Karobi (A)	S	FR		The flowers of this plant are offered to the deity during a community-based ceremony ( <i>Aie matri hokam</i> ).
15.	<i>Citrus megaloxycarpa</i> Lush. [Rutaceae]	Sour pummel (E), Bor tenga (A), Chokola (D)	S	WP		The plant is generally not planted in the front yard of the house because it is belief that sour taste plant is considered inauspicious to see at early morning while going outside for some work.
16.	<i>Colocasia esculenta</i> (Linnaeus) Schott [Araceae]	Taro (E), Kochu (A), Muduji (D)	H	L, WP		The plant is offered to Goddess <i>Lakshmi</i> during the first transplantation of paddy in the farmland during a ritual locally known as <i>Hali giba Jatra</i> . Wishing that paddy plant may grow as vigorous as <i>Colocasia esculenta</i> . The tender leaves of <i>Colocasia esculenta</i> are used for purifying the newly born baby in a ritual called <i>Hudi labiba</i> . In this ritual, leaves of <i>Colocasia esculenta</i> are used as a vegetable for feast of all elderly ladies including those who help during the delivery of the baby. It is believed that offering of this vegetable to the elderly ladies remove the impurities of the baby get blessing from them.
17.	<i>Corchorus capsularis</i> Linnaeus [Malvaceae]	White jute (E), Morapat (A)	H	BK		The fibers of the plants are used to prepare rope which is offered to the livestock during the ceremonial bath in <i>Ibaku Bisu</i> festival.
18.	<i>Curcuma longa</i> Linnaeus [Zingiberaceae]	Black turmeric (E), Halodi (A)	H	R		The rhizomes are symbolise as gold because it yields yellow dye and are crafted into various shapes of ornaments, which are offered to God of the death ( <i>Yama</i> ) during a ritual called <i>Mora hariba</i> , a ritual done for the departed soul of the ancestors. The rhizomes are also offered to the livestock the ceremonial bath during the celebration of <i>Ibaku Bisu</i> at

Table 1 continued...

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					household level for the betterment of growth and development of livestock. The yellow dye of the rhizome is also used to colour the offered rope.
19.	<i>Cynodon dactylon</i> (Linnaeus) Pers. [Poaceae]	Bermuda grass/Wire grass (E), Duburi (A)	H	L	The leaves of this plants are used to prepare holy water ( <i>Hanti joi</i> ) along with other plants for purification purpose during the funeral ceremony.
20.	<i>Dillenia indica</i> Linnaeus [Dilleniaceae]	Elephant apple (E), Oue Tenga (A); Chopra (D)	T	WP, F	The fruits of the plants are used for lighting the lamps in the farmland to worship Goddess <i>Lakshmi</i> during the celebration of <i>Kati Bihu</i> festival. This fruit is exclusively used in earlier days because of non-availability of the lightning lamp. The planting of <i>Dillenia indica</i> at the front yard of the house is considered as a taboo because they believe that sour taste plants are not considered as auspicious to see either at early morning or white going outside.
21.	<i>Diplazium esculentum</i> (Retz.) Sw. [Athyriaceae]	Edible fern (E), Dhekia (A), Micoji (D)	F	L	The leaves of the plant are boiled and offered to all deities during <i>Sarak puja</i> . (Plate 1G)
22.	<i>Duabanga grandiflora</i> (DC.) Walp. [Rutaceae]	Bristly Dubyaea, lampati (E), Khokhon (A)	T	WP	The plant is not planted in the front yard of a house because they believed that it abode evil spirit.
23.	<i>Erythrina stricta</i> Roxb. [Fabaceae]	Indian coral tree (E), Modar gash (A), Modar Pepong (D)	T	WP	The plant is not planted in the front yard of the house with a belief that it causes quarrel or conflict amongst the family members and therefore planting of this tree is considered as a taboo.
24.	<i>Eupatorium cannabinum</i> Linnaeus [Compositae] (Plate 1A)	Hemp-agrimony/Holy rope (E), Kimaru (D)	H	L	The leaves are used for purifying the worship place, devotees, etc. and also used in many ceremonies done at <i>Deohal</i> . In case of inter-caste marriage, the bride is purified by sprinkling water with the fresh leaves. They believe that purification of the bride is needed during the marriage ceremony in <i>Deohal</i> because she may have some impurities. The leaves are offered to deities inside the <i>Deohal</i> (Temple) during <i>Ibaku Bisu</i> , <i>Magh Bisu</i> , etc. The leaves are used to cure fever, etc. by the priest ( <i>Midi khaba</i> or <i>Dondai</i> or <i>Midigira</i> ). They considered the leaf as sacred and have the potential to purify the impurity.
25.	<i>Ficus benghalensis</i> Linnaeus [Moraceae]	Banyan (E), Bor gash (A)	T	WP	The plant is not planted in the front yard of a house with a belief that it abode evil spirit abode on it.
26.	<i>Ficus hispida</i> L.f. [Moraceae]	Devil fig (E), Bhutung chia (D)	T	L	The leaves of the plant are boiled and offered to all deities during <i>Sarak puja</i> . (Plate 1G).
27.	<i>Ficus racemosa</i> Linnaeus [Moraceae]	Cluster fig (E), Demoru (A)	T	L	The leaves of the plant are boiled and offered to all deities during <i>Sarak puja</i> . (Plate 1G)
28.	<i>Ficus religiosa</i> Linnaeus [Moraceae]	Sacred fig (E), Ahot gash (A)	T	WP	The tree is not planted in the front yard of the house with a belief that it abode evil spirit abode on it. The tree is also considered as sacred tree and is worshiped during <i>Shiv ratri</i> with the lighting of the lamps a for the welfare and prosperity of the family.
29.	<i>Ficus rumphii</i> Blume [Moraceae]	Mock bodh tree (E), Jori gash (A)	T	WP	The plant is not planted in the front yard of a house with a belief that it abode evil spirit abode on it.

Table 1 continued...

Table 1 continued...

30.	<i>Flemingia strobilifera</i> (Linnaeus) W.T.Aiton [Fabaceae]	Luck plant, wild hops (E), Makhiloti (A)	S	B	The branches of the plant are used for beating the livestock in <i>Ibaku Bisu</i> festival during the ceremonial bath of livestock.
31.	<i>Garcinia pedunculata</i> Roxb. Ex Buch.-Ham [Clusiaceae]	Monkey fruit (E), Thakera (A)	T	F	The fruits of the plant are offered to the livestock during the ceremonial bath in <i>Ibaku Bisu</i> by each household for their better growth and development.
32.	<i>Gossypium herbaceum</i> Linnaeus [Malvaceae]	Cotton (E), Copa (A), Khepa (D)	S	FS	The flosses are used exclusively for the lightning of the lamp in most of the rituals and ceremonies.
33.	<i>Hibiscus rosa-sinensis</i> Linnaeus [Malvaceae]	China rose (E), Jaba phul (A), Sangira eba (D)	S	FR	The flowers of this plant are offered to the deity during a community-based ceremony ( <i>Aie Matri</i> ).
34.	<i>Justicia gendarussa</i> Burm.f. [Avanthaceae] (Plate 1B)	Willow-leaved justice (E), Koliya Ashi-eba (D)	S	L	The leaves are tied in bundles and offered to all deities in raw form during <i>Sarak puja</i> and the leaves are also used for preparing holy water to purify the ceremonial place.
35.	<i>Lagenaria siceraria</i> (Molina) Standl. [Cucurbitaceae]	Bottle gourd (E), Lao (A)	C	F	The fruits of the plant are offered to the livestock during the ceremonial bath in <i>Ibaku Bisu</i> by each household for their better growth and development.
36.	<i>Lagerstroemia speciosa</i> (Linnaeus) Pers. [Lythraceae]	Queen of flowers/ Pride of India (E), Ajar (A)	T	WP	The plant is not planted in the front yard of the house with a belief that it causes quarrel or conflict amongst the family members and therefore planting of this tree is considered as a taboo.
37.	<i>Litsea salicifolia</i> (J. Roxb. ex Nees) Hook. f. [Lauraceae]	- Digloti (A)	T	B	The branches of the plant are used for beating the livestock instead of the stick because it is prohibited during <i>Ibaku Bisu</i> festival especially while performing the ceremonial bath of livestock.
38.	<i>Mangifera indica</i> Linnaeus [Anacardiaceae]	Mango (E), Aam (A)	T	B, L	The woods are considered sacred and the branches are used for pyre during cremation with a belief that soul goes directly to God <i>Yama</i> . The leaves of <i>Mangifera indica</i> are also considered auspicious and used for decorating the main entrance of the house ( <i>Chang ghar</i> ) during the marriage ceremony.
39.	<i>Molineria capitulata</i> (Lour.) Herb. [Hypoxidaceae]	Palm grass (E), Humhumiya (D)	H	L	The leaves of the plants are used to purify the newly constructed house, granary, etc. They believe that the sharp edges of the leaf help to cut or remove the impurity ( <i>Dosha</i> ) that might have taken place either knowingly or unknowingly while constructing the house, granary, etc.
40.	<i>Momordica charantia</i> Linnaeus [Cucurbitaceae]	Bitter gourd (E), Kerala (A), Khabamerikha (D)	C	F	The fruits of the plant are offered to the livestock during the ceremonial bath in <i>Ibaku Bisu</i> by each household for their better growth and development.

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41.	<i>Murraya koenigii</i> (Linnaeus) Spreng. [Lythraceae] (Plate 1I)	Currytree (E), Northingho (A)	S	WP, L	The plant is generally planted around the house premises to drag away evil spirits due to its unique odor. The branch of the plant is kept on the wall, door and windows of the house to drag away evil spirit. The leaves are also used to cure common cold and fever in children by keeping them under the pillow.
42.	<i>Musa × paradisiaca</i> L. [Musaceae]	French plantain banana (E), Jati kol (A), Jati tiri (D)	H	F, L	The unripe banana fruits are boiled and offered to all deities during <i>Sarak puja</i> . It is considered as one of the favorite foods of the deities. This plant is used as the best substitute of <i>Phrynium pubinerve</i> and <i>Musa balbisiana</i> in many rituals. The ripened fruits are also offered to the deities in <i>Deohal</i> during <i>Ibaku Bisu</i> , <i>Magh Bisu</i> , etc.
43.	<i>Musa balbisiana</i> Colla [Musaceae]	Wild banana (E), Athia kol (A), Hatiya tiri (D)	H	L, S	The leaves of <i>Musa balbisiana</i> are used as a good substitute of <i>Phrynium pubinerve</i> in many rituals. The stem of <i>Musa balbisiana</i> is also used to prepare the ceremonial altar for performing a ceremony called <i>Sarak puja</i> . The leaves are used for offering nut of <i>Areca catechu</i> , <i>betle</i> leaf, rice flour, seeds of <i>Vigna mungo</i> , etc. in the <i>Deohal</i> during <i>Ibaku Bisu</i> , <i>Magh Bisu</i> , etc.
44.	<i>Ocimum gratissimum</i> Linnaeus [Lamiaceae]	Wild basil (E), Boga tulsi (A), Ram tulsi (A)	H	L	The leaves are used as condiment in preparation of food during <i>Mora haraba</i> and offer to the God <i>Yam</i> as it is his favorite condiment.
45.	<i>Ocimum tenuiflorum</i> Linnaeus [Lamiaceae] (Plate 1F)	Holy basil (E), Krishna tulsi (A), Kolia tulsi (D)	H	L	The leaves are used to prepare purified water ( <i>Hanti jol/ pani</i> ) and used for purification purpose during the funeral ceremony.
46.	<i>Oryza sativa</i> Linnaeus [Poaceae]	Asian rice, Red rice (E), Dhan (A), Mi/Mee (D)	H	SD, WP	The rice flour in boiled by wrapping with a banana leaf in a cone shape and offered to <i>Sarak raja</i> during a ceremony called <i>Sarak puja</i> . (Plate 1G). The rice flour is also offered to the deity in <i>Deohal</i> during <i>Rojuhuwa metuwa</i> (a community-based ceremony done in <i>Deohal</i> during the celebration of <i>Ibaku Bisu</i> festivals) and <i>Boruah metuwa</i> (a ritual done by individuals in the <i>Deohal</i> ). The bundles of straws are used in death ceremony to generate smoke while carrying the dead body for cremation. The paddy seeds are used in a ritual to retain the good faith ( <i>Lakshmi</i> ) of the deceased person locally called <i>Menuchi rakhiba</i> .
47.	<i>Papaver somniferum</i> Linnaeus [Papaveraceae]	Opium poppy (E), Kani (A)	H	F	The latex obtains from the fruits ( <i>Kani</i> ) are offered to the deity ( <i>Aie Matri</i> ) during a community-based ceremony called <i>Aie matri puja</i> . It is a ceremony done annually especially during <i>Ahar mah</i> (June-July) either on Wednesday or Thursday and the worship of the deity ( <i>Aie matri</i> ) is especially done by the female members of the village for the protection of all villagers against all prevailing diseases.
48.	<i>Phragmites karka</i> (Retz.) Trin.ex Steud. [Poaceae] (Plate 1C)	Tall reed (E), Megalaw (D)	H	L	The leaves of <i>Phragmites karka</i> are most preferred in the preparation of the ceremonial altar to perform animistic rituals viz., <i>Menuchi leduba</i> , a ritual related to worship Goddess Lakshmi at the granary; <i>Dangoria</i> , a ritual done to the worship household spirit or the spirit of the forest, etc.; <i>Sarak puja</i> ; etc. The stem and leaf of <i>Phragmites karka</i> are offered to Goddess <i>Lakshmi</i> during the first transplantation of paddy in the farmland during a

Table 1 continued...

Table 1 continued...

					ritual locally known as <i>Hali giba Jatra</i> . They believe that paddy plant may grow as vigorous as <i>Phragmites karka</i> . The leaf of the plant is used in many rituals because it demarcates the ceremonial area and provides protection while performing the ritual, and in some cases, they believe that it provides a resting ground for the deities. The leaves of <i>Themeda villosa</i> , <i>Phrynium pubinerve</i> , <i>Heteropogon contortus</i> and <i>Saccharum ravennae</i> are used as a substitute of <i>Phragmites karka</i> .
49.	<i>Phrynium pubinerve</i> Blume [Marantaceae] (Plate 1D)	- Kau pat (A), Sagerecha (D)	H	L	The leaves are used for offering nut of <i>Areca catechu</i> , <i>betle</i> leaf, rice flour, the seed of <i>Vigna mungo</i> , etc. to the deity in the <i>Deohal</i> , a temple of Deori tribe, during <i>Ibaku Bisu</i> , <i>Magh Bisu</i> , etc.
50.	<i>Piper betle</i> Linnaeus [Piperaceae] (Fig 2B)	Betle (E), Pan (A), Penchu (D)	C	L	The leaf is considered as a culturally important and is offered to deities during various rituals and ceremonies such as <i>Ibaku Bisu</i> (D), <i>Magh Bisu</i> , <i>Mamaru puja</i> (Plate 1H), <i>Dangoria puja</i> , <i>Ruwa Jatra</i> (A) or <i>Hali giba Jatra</i> etc. to pay respect to the deities.
51.	<i>Piper nigrum</i> Linnaeus [Piperaceae]	Black pepper (E), Jaluk (A), Murchi (D)	C	SD	The powdered form of seeds is offered in a bowl made of the leaves of <i>Phrynium pubinerve</i> to the deities during <i>Rojohuwa metuwa</i> and <i>Boruah metuwa</i> of <i>Ibaku Bisu</i> and also in <i>Magh Bisu</i> . The powder of seeds is offered to prevent the leakage of blood of sacrificed fowls and goat offered to the deities. The seeds are also offered in a ritual called <i>Siri-yo-midi</i> .
52.	<i>Saccharum ravennae</i> (Linnaeus) L. [Poaceae]	Ravenna grass (E), Ikora (A)	H	L	The leaves of the plant are used as a substitute of <i>Phragmites karka</i> .
53.	<i>Santalum album</i> Linnaeus [Santalaceae]	Indian Sandalwood (E), Chandan (A)	T	B	The woods are considered as sacred and is added in the pyre during cremation as they believe that soul goes directly to God <i>Yama</i> without dwelling on the earth.
54.	<i>Sarcochlamys pulcherrima</i> Gaudich. [Urticaceae] (Plate 1E)	Dogal tree (E), Mikaji (A), Mekachi (D)	S	L	The leaves of the plant are boiled and offered to all deities during <i>Sarak puja</i> . (Plate 1G)
55.	<i>Solanum melongena</i> Linnaeus [Solanaceae]	Begana (A), Phadung (D)	H	F	The fruits of the plant are offered to the livestock as a ritual while performing the ceremonial bath to livestock during the celebration of <i>Ibaku Bisu</i> by each household for the better growth and development of livestock.
56.	<i>Tabernaemontana divaricata</i> (Linnaeus) R.Br. ex Roem. & Schult. [Apocynaceae] GP-149	Crape jasmine (E), Puru eba (D)	S	FR	The flowers of this plant are offered to the deity during a community-based ceremony ( <i>Aie Matri</i> ).
57.	<i>Themeda villosa</i> (Lam.) A. Camus [Poaceae]	Silky kangaroo grass (E), Birina (A)	H	L	The leaves of the plant are used as a substitute of <i>Phragmites karka</i> in many rituals.
58.	<i>Vigna mungo</i> (Linnaeus) Hepper [Fabaceae]	Mung bean (E), Matimah (A); Debe (D)	H	SD, P	The seeds are ground and offered to the deity in <i>Deohal</i> during various ceremonies like <i>Rojohuwa metuwa</i> , <i>Hawun puja</i> , <i>Ibaku Bisu</i> , <i>Magh Bisu</i> , etc. The cultivation of this plant

Table 1 continued...



Table 1 continued...

					is prohibited near the house hold area in home garden and within paddy field because of <i>Midigira pesa</i> , a deity that gives the curse to the doer. It may result in the suffering of family members with diseases that cannot be cured through modern medicine. The sole remedy of such ailment is to conduct an animistic ritual for the deity.
59.	<i>Zanthoxylum oxyphyllum</i> Edgew. [Rutaceae]	Prickly ash (E), Mejenga (A)	T	L	The leaves of the plant are boiled along with other plants and offered to all deities during <i>Sarakpiuja</i> . (Plate 1G).
60.	<i>Zingiber officinale</i> Roscoe [Zingiberaceae]	Ginger (E), Ada (A), Eyeng (D)	H	WP	The cultivation of this plant is prohibited because <i>Midigira pesa</i> , a deity gives the curse to the doer. It may result in the suffering of family members with diseases that cannot be cured through modern medicine. The sole remedy of such ailment is to conduct an animistic ritual for the deity.
61.	<i>Ziziphus jujuba</i> Mill. [Rhamnaceae]	Jujube (E), Bogori gash (A), Tekoji fofo (D)	T	WP, B	The planting of this tree at the front yard of the house is considered as a taboo because as per their belief system seeing a thorny tree at early morning while going outside for some work is considered inauspicious. The thorny branch of the plant is used for dragging out evil spirits from the house premise, which is generally kept near the window, door, and wall of the traditional house for the protection of family members.

A-Assamese, D-Deori, E-English, B-Branches, BL-Bulb, BK-Bark, F-Fruits, FR-Flowers, FS-Flosses, L-Leaves, WP-whole plant, R-Rhizomes, S-Stem, SD-Seeds, C-Climber, G-Grass, H-Herb, S-Shrub, T-Tree.

Table 2 : Use categories and their percentages.

S. no.	Use categories	Number of species	% of species
1	Sacred and Religious rites (SAR)	47	77.05%
2	Magical belief (MAG)	7	11.47%
3	Taboos (TAB)	13	21.3%

are used in various religious ceremonies indicates that Deori tribe believes in the existence of God, deities and super natural power in the universe. Therefore, many are performed rituals before festivals (*Ibaku bisu*, *Magh bihu*, etc.), transplantation of paddy seedlings, harvesting of crops etc. to get blessing from almighty for their prosperity and happiness.

Poaceae is the dominant family with 6 species followed by Moraceae (5), Malvaceae and Rutaceae (4) etc. The plants belonging to Poaceae family are exclusively used in ceremonial use category. The present study is in agreement with the findings of other workers (Singhal *et al.*, 2017; Sarma and Devi, 2015), whereas Sharma *et al.* (2014) reported the use of family Poaceae in both ceremonial and magical belief system.

Herb is the dominant category consisting of 24 plant species followed by tree (21) and shrubs (10), climbers (5) and fern (1) in the present study (fig. 2) and is similar to the findings reported Assam and Tripura (Singhal *et al.*, 2017). The herbs are mostly used in offering to deities, purification, and preparation of sacred water (*Hantipani*) during death ceremony and also in magical belief system especially for dragging out of evil spirit. Also these herbs are easily available on the home garden, farmland, and wasteland and nearby forests which may be the probable reason for using herbs in various categories.

Leaves are the dominant plant parts with 22 plant species, followed by whole plants (17), fruit (9), branch (7) etc. (fig. 3).

#### Documentation of plants used in the magico-religious practice of the Deori tribe.

The magico-religious practices of the Deori tribe are given in table 1.

The leaves of *Bischofia javanica*, *Clerodendrum glandulosum*, *Diplazium esculentum*, *Ficus racemosa*, *Ficus hispida*, *Sarcochlamys pulcherrima* and *Zanthoxylum oxyphyllum* are boiled and offered to deities with a belief that plants of wild origin are the most favorite to all Gods. The leaves of *Colocasia esculenta*, *Cynodon dactylon*, *Eupatorium cannabinum*, *Molineria capitulata*, *Ocimum tenuiflorum* and *Justicia gendarussa* are considered sacred and therefore these

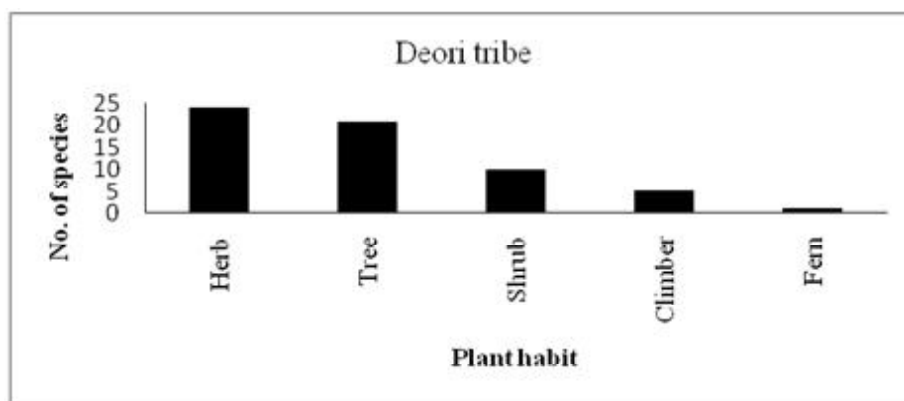


Fig. 2 : Plant habit and number of species.

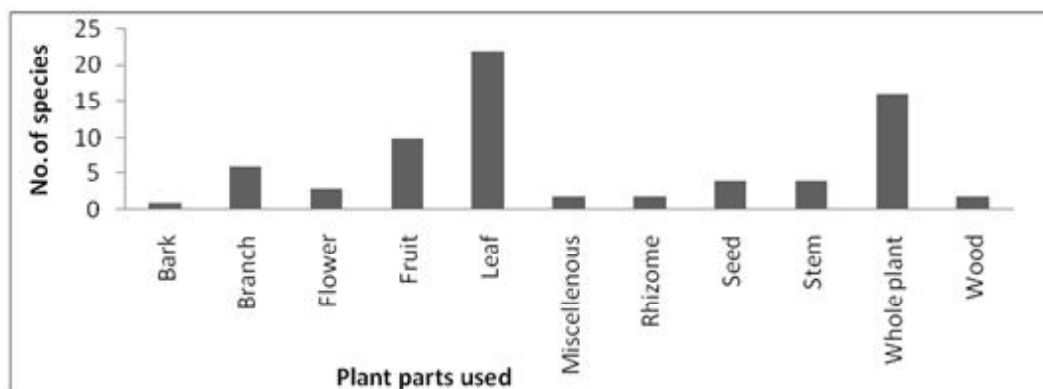


Fig. 3 : Different parts of the plant used in magico-religious practices.

Table 3 : The 15 important magico-religious plants species based on CI value.

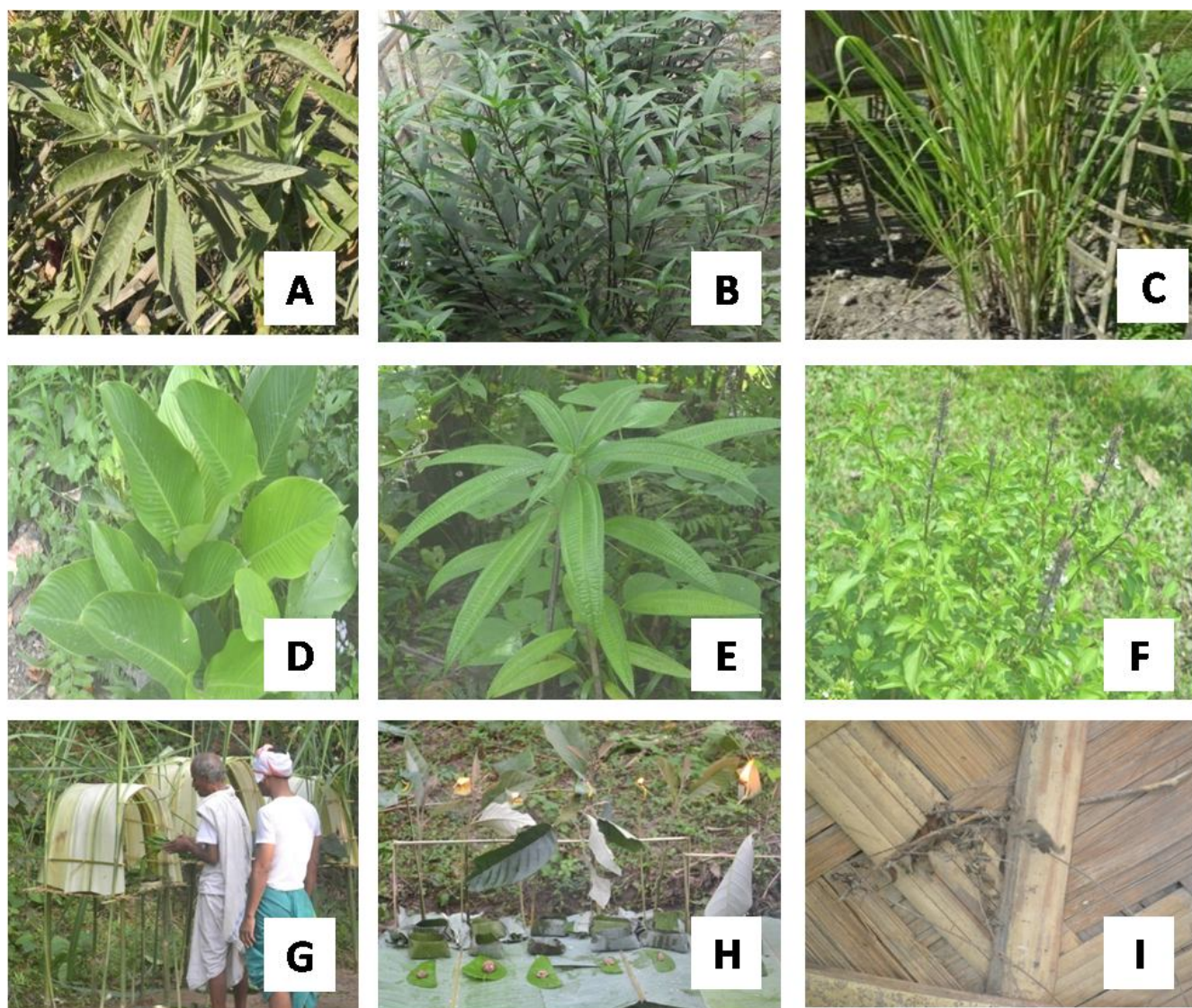
S. no.		SAR	MAG	TAB	CI
1.	<i>Brassica juncea</i> (Linnaeus) Czern.	1	1	0	2.000
2.	<i>Dillenia indica</i> Linnaeus	0.929	0	0.607	1.536
3.	<i>Eupatorium cannabinum</i> Linnaeus	0.988	0.357	0	1.345
4.	<i>Vigna mungo</i> (Linnaeus) Hepper	0.917	0	0.369	1.286
5.	<i>Mangifera indica</i> Linnaeus	0.964	0	0.238	1.202
6.	<i>Ocimum gratissimum</i> Linnaeus	0	0.369	0.786	1.155
7.	<i>Musa balbisiana</i> Colla	1	0	0	1
8.	<i>Acorus calamus</i> L.	0	1	0	1
9.	<i>Gossypium herbaceum</i> Linnaeus	1	0	0	1
10.	<i>Phrynium pubinerve</i> Blume	1	0	0	1
11.	<i>Piper betle</i> Linnaeus	1	0	0	1
12.	<i>Areca catechu</i> Linnaeus	1	0	0	1
13.	<i>Carica papaya</i> Linnaeus	0.988	0	0	0.988
14.	<i>Solanum melongena</i> Linnaeus	0.988	0	0	0.988
15.	<i>Litsea salicifolia</i> (J. Roxb. ex Nees) Hook. f.	0.988	0	0	0.988

SAR- Sacred and Religious rites; MAG-Magical belief system; TAB-Taboo.

are also used for purification of house and person. Leaves of *Heteropogon contortus*, *Musa balbisiana*, *Phragmites karka*, *Phrynium pubinerve*, *Saccharum ravennae* and *Themeda villosa* are large in size and therefore these are used to prepare ceremonial altar for worshipping due to their larger size. Leaves of *Musa* sp.

and *Phrynium pubinerve* are used as offering plate due to their thick texture and big size.

The tribe has a strong magical belief system. Therefore they used plants namely *Acacia farnesiana*, *Allium sativum*, *Acorus calamus*, *Brassica juncea*,



**Plate 1.** Plants used in magico-religious practices (A-F) and magico-religious ceremonies of Deori tribe (G-I): (A) *Eupatorium cannabinum*, (B) *Justicia gendarussa*, (C) *Phragmites karka*, (D) *Phrynium pubinerve*, (E) *Sarcochlamys pulcherrima*, (F) *Ocimum tenuiflorum*, (G) Ceremonial altar made of *Bambusa tulda*, *Phragmites karka* and with covering of *Musa balbisiana* leaf sheaths for *Asiera puja*, (H) *Mamaru puja* done for bid farewell to many deities and offers *Areca catechu*, *Piper betle*, *Piper nigrum*, *Callicarpa tenuis*, etc. (I) Branches of *Murraya koenigii* are kept on the wall to drag evil spirit.

**Table 4 :** Mean number of magico-religious plants ( $\pm$  SD) for three use categories.

	N	Sacred and religious rite	Magical belief	Taboos	Over all species
<b>Gender</b>					
Female	22	43.136 $\pm$ 5.955	4.545 $\pm$ 0.912	6.483 $\pm$ 3.620477	51.136 $\pm$ 8.951
Male	62	44.016 $\pm$ 5.016	4.387 $\pm$ 1.285	6.772 $\pm$ 3.001	50.645 $\pm$ 7.113
<b>P value</b>	0.792	0.262189	0.650	0.624	
<b>Age group</b>					
< 50	63	43.365 $\pm$ 5.237	4.365 $\pm$ 1.195	6.079 $\pm$ 3.409	50.00 $\pm$ 7.552
> 50	21	45.428 $\pm$ 5.163	4.619 $\pm$ 1.1203	8.000 $\pm$ 3.255	53.085 $\pm$ 7.368
<b>P value</b>		0.064	0.385	<0.005	0.138

*Capsicum annuum*, *Murraya koenigii* and *Ziziphus jujube* to drag away evil spirit and *Allium sativum*, *Eupatorium cannabinum*, *Capsicum annuum* and *Piper nigrum* plants are used to cure diseases magically. The present study reveals the use of more number of plants in magical belief system than reported in the literature (Singhal *et al.*, 2017; Sarma and Devi, 2015; Agarwal, 2014, Sharma *et al.*, 2014).

Deori tribe also believes in worshipping of trees like other tribes (Singhal *et al.*, 2017; Pandey and Pandey, 2016; Agarwal, 2014; Sharma *et al.*, 2014; Sahu *et al.*, 2013). They consider *Ficus religiosa* and *Aegle marmelos* as sacred trees as these trees are abode of Gods and deities. They do not raise some trees in front yard of the houses and consider them as taboo. *Bombax ceiba* tree is prohibited to raise in front yard which might be due to presence of thorns, inferior wood and resting place for vulture and crows. The trees like *Citrus megaloxycarpa*, *Dillenia indica*, *Mangifera indica* and *Ziziphus jujuba* are also considered as taboos due to their sour fruits. *Erythrina stricta* and *Lagerstroemia speciosa* are also prohibited with a belief that the growing of these trees in front yard of house may cause quarrel or conflicts among the family members. *Ficus religiosa*, *Ficus rumphii* and *Ficus benghalensis* are also prohibited as they are the abode of evil spirits.

The documented plants are categorized into three use categories namely sacred and religious rites, magical belief and taboos on the basis of their uses in magico-religious practices (table 2), which showed that maximum plants are used in sacred and religious rites (77.05%) followed by taboos (21.3%) and magical belief (11.47%).

Based on three main use categories by using quantitative ethnobotanical index cultural importance index (CI) is determined for their valuation. The results of 15 important magico-religious species given in the table 3 showed that total CI index was highest in *Brassica juncea* and lowest in *Carica papaya*, *Solanum melongena* and *Litsea salicifolia*. On contrary to Sharma *et al.* (2014) reported *Ocimum sanctum* with highest CI value (1.0) followed by *Aegle marmelos* (0.91), *Ficus religiosa* (0.75) in Tripuri tribe etc. Though *Dillenia indica*, *Eupatorium cannabinum*, *Vigna mungo* and *Mangifera indica* plants are used in two used categories, but *Brassica juncea* has the highest C.I. The probable reason for highest CI of *B. juncea* may be due the use of its oil extracted from seeds in lighting of lamp during various festivals, ceremonies and for preparing purified water for purification during funeral ceremony.

The result presented in table 4 showed that there is no significant difference in the knowledge of plants used by male and female in all three use categories. The present investigation is confirmation with the findings of Sop *et al.* (2012). There is significant difference between age groups (<50 and >50 years) especially in taboo use category, which is similar to the finding of Sop *et al.* (2012).

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