

## **Inventory of Traditional knowledge on wild, semi wild and cultivated fruit plants used by Tiwa tribe in Assam: Diversity, nutrition and conservation**

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### **Abstract**

Fruit plants become an important part of the human health, traditions, cultures and socio-economy as well. Present study was undertaken to study the different fruit plants used as source of nutrients, vitamins and minerals by the Tiwa community of Assam, India. Data were collected with standard methodology during 2018-2019. A total of thirty four plant species belongs to 19 families were recorded from the study area uses by the local people. However, due to over-exploitation the population of plants has been decreasing in large number day to day. Therefore, a proper study will help to make a database. Documentation and publication of these finding will ensure the preservation of traditional knowledge, cultural values.

**Key words :** Awareness, Deforestation, Sustainable development, Value addition, Wild plants.

**N**orth east India is belongs to one the “biological hotspot” due to presence of a huge biodiversity in this region. This area is also very rich in cultural and ethnic diversity. Most of the rural people solely depend on forest resources for their livelihood and nutrients supply. Assam is one of the eight states which are also rich in species (flora and fauna diversity) and ecosystems diversity. It may be due the variability of different physical

features, soil factors, climate etc. in this region almost all types of vegetation such as tropical semi evergreen, tropical moist evergreen, moist deciduous, dry deciduous and sub tropical moist evergreen forests are prevalent.

The traditional medicinal systems plays a important role among big section of rural population in the face of the advancement of the modern medicines<sup>1</sup>. Not only medicines, plants are the main sources of main food and

nutrients supply. Selected plant species, their parts, active principles and practices are part of the health regimen of people throughout the world.

Fruit plants which are an important part of the biodiversity supply necessary nutrients, vitamins, minerals, fibre, amino acids and other active metabolites. They become an important part of the human health, traditions, cultures and socio-economy as well. Livelihoods of many locals based on the production, cultivation, trade of these fruit plants in this locality. However, wild and semi-wilds plant also doing a huge role in regards.

Most of the fruit plants can be cultivated in low cost agricultural sectors. When they are collected from natural habitat it creates a pressure of the natural forest areas too. Over-exploitation due to greediness of people has a negative impact on the ecosystem. As a result, excessive cutting of trees, deforestation and habitat loss can takes place. Therefore, needs a proper study to documents and make database on these plants since very less works have been done on this area. Proper study were started 1956 but those investigation are not getting proper acknowledgment and attractiveness because of declining plant population and traditional knowledge as well<sup>4</sup>. Present study was undertaken to study the different fruit plants used as source of nutrients, vitamins and minerals by the Tiwa community of Assam, India

Present study was conducted among the Tiwa tribe of Kamrup and Morigaon District of Assam, which is situated in between 25°46' and 26°49' North Latitude and between 90°48' and 91°50' East Longitude. Climate of

the study area is sub tropical with semi dry summer and cold in winter. Annual rainfall is 1500 mm to 2600 mm. Average humidity is 75%, maximum temperature 38.5°C and min temperature 7°C.

Frequent field trips were carried out during 2017-18 to collect different information on plant resources used by the Tiwa communities as medicines. 10 numbers of villages were selected for details study. From each village 20 nos of respondent were selected. Data were collected by direct observation, interview and informal discussions with the help of a questionnaire from the respondents. Plants specimen were collected and identified and preserved as voucher specimens following standard herbarium techniques<sup>3</sup>. The collected data specimens were also identified in consulting with the standard literatures and with the help of Department of Botany, Gauhati University and USTM.

A total of thirty four plant species were recorded uses by the local people. These fruit plant species representing 19 families (table-1). Maximum plant species belonging to families Musaceae (5 species) followed by Rutaceae, Moraceae, Anacardiaceae, Clusiaceae, Combretaceae, Cucurbitaceae, Myrtaceae, Phyllanthaceae, Oxalidaceae, Dilleniaceae, Elaeocarpaceae, Fabaceae, Flacourticeae etc. (Fig. 1) Growth habit of fruit plants in this study indicated that most of the tree followed by herbs, shurbs and climber (Fig. 2). This study shows that the highest percentage of plants was obtained from wild while rest was from home garden. Plant part is the only fruit is the major part widely employed by local people.

Table-1. List of plant species collected from the study area used as Fruits

Sl no.	Botanical name	Local name (Tiwa)	Family	Habit	Mode of administration
1	<i>Aegle marmelos</i> (L.) Correa	Belphang	Rutaceae	Tree	1. The fruits eaten fresh from trees. 2. Local people used it to make sharbat with pulp, water and sugar, which is used for domestic purpose only. 3. Young fruit is usually sliced and sun-dried and preserved. Dried pieces boiled with water and used as tea. 4. Bael is considered as sacred plants of Tiwa people. leaves and fruit used in their worship.
2	<i>Ananas comosus</i> (L.) Morr	Anarach	Bromeliaceae	Herb	1. Fruits are eaten raw.
3	<i>Annona reticulata</i> L.	Atna khandal	Moraceae	Tree	1. Fruits are eaten raw.
4	<i>Artocarpus heterophyllus</i> Lam.	Kandal	Moraceae	Tree	1. Ripe jackfruit is consumed raw. 2. The seeds from ripe fruits are edible. They are quite commonly used in curry and with vegetable. Seeds are eaten by boiled, roasted also. Seed is often sun dried and preserved to be later used in curry 3. Unripe jackfruit is cooked as vegetable.
5	<i>Artocarpus chama</i> Buch.-Ham.	Shyam kandhal	Moraceae	Tree	1. Ripen pod taken as raw. 2. Seeds are consumed roasted form.
6	<i>Averrhoa carambola</i> L.	Kordoi	Oxalidaceae	Tree	1. Fruits are eaten raw. 2. Fruits are pickled.
7	<i>Baccaurea ramiflora</i> Lour.	Khujung guthi	Phyllanthaceae	Tree	1. Fruits are eaten raw.
8	<i>Citrus maxima</i> Merr	Joriya	Rutaceae	Tree	1. Fruits are eaten raw.
9	<i>Citrus sinensis</i> (L).	Missiri	Rutaceae	Shrub	1. Missiri, are commonly peeled and eaten fresh or squeezed for juice.
10	<i>Citrus limon</i> (L).	Nimuguthi	Rutaceae	Shrub	1. Nimuguthi are used for preparing refreshing drinks and pickles as well as garnishing curry and other dishes.
11	<i>Cucumis sativus</i> L.	Tiyah	Cucurbitaceae	Climber	1. Fruits are eaten raw
12	<i>Cucumis melo</i> L.	Bangi	Cucurbitaceae	Climber	1. Fruits are eaten raw.
13	<i>Dillenia indica</i> L.	Orlong	Dilleniaceae	Tree	1. Fruits are eaten raw. 2. Used as garnishing curry and other dishes.
14	<i>Elaeocarpus serratus</i> L.f.	Jolphai	Elaeocarpaceae	Tree	1. Fruits are eaten raw.
15	<i>Flacourita jangomas</i> (Lour.)Raeusch.	Paniyaal	Flacourtiaceae	Tree	1. Paniyal fruits are eaten raw. 2. Fruits are pickled.
16	<i>Garcinia pedunculata</i>	Tora thekra	Clusiaceae	Tree	1. Fruits are eaten raw.

	Roxb.ex.Buch.-Ham.				
17	<i>Garcinia morella</i> (Gaertn.) Desr.	Jhakhang thekra	Clusiaceae	Tree	1. Fruits are eaten raw.
18	<i>Liichi chinensis</i> Sonner.	Luchi	Sapindaceae	Tree	1. Consume raw.
19	<i>Mimusops elengi</i> L.	Bakul	Sapotaceae	Tree	1. Consume raw.
20	<i>Mangifera indica</i> L.	Thijukhi	Anacardiaceae	Tree	1. Consume raw both ripe and unripe fruit. 2. Pickle is prepared with unripe Thijukhi.
21	<i>Musa balbisiana</i> Colav.	Bhim thelo	Musaceae	Herb	1. Used as fruit.
22	<i>Musa champa</i> Hort.	Cenichampha thelo	Musaceae	Herb	1. Used as fruit.
23	<i>Musa chinensis</i> Sweet.	Jahju thelo	Musaceae	Herb	1. Used as fruit.
24	<i>Musa sapientum</i> L.	Monohar thelo	Musaceae	Herb	1. Used as fruit.
25	<i>Musa velutina</i> Wendl. & Drude.	Malbhog thelo	Musaceae	Herb	1. Used as fruit.
26	<i>Phyllanthus emblica</i> L.	Thipla guthi	Phyllanthaceae	Tree	1. Dried and fresh fruit are used.
27	<i>Psidium guajava</i> L.	Madhuram	Myrtaceae	Tree	1. Used as fruit.
28	<i>Saccharum officinarum</i> Linn	Khushar	Poaceae	Herb	1. Raw chewed to extract the juice.
29	<i>Spondias pinnata</i> Kurz.	Amora	Anacardiaceae.	Shurb	1. Used as fruit.
30	<i>Syzygium cumini</i> (L.) Skeels	Jamuguthi	Myrtaceae	Tree	1. Jamuguthi fruits are eaten raw.
31	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Bhomngora	Combretaceae	Tree	1. Used as fruit.
32	<i>Terminalia chebula</i> Retz.	Silikha guthi	Combretaceae	Tree	1. Dried and fresh fruit are used.
33	<i>Tamarindus indica</i> L.	Tindhuli	Fabaceae	Tree	1. Used as fruit.
34	<i>Ziziphus jujuba</i> Mill.	Bogori	Rhamnaceae	Tree	1. The freshly fully mature, nearly ripe harvested fruit, as well as the sun dried fruit, are eaten. 2. Tiwa people produce sweetened syrup containing dried jujube fruit with water and sugar, during summer season. 3. Bogori used for making pickles. 4. Some Tiwa people sundried jujube fruit are preserved by storing them in an airtight jar during winter season. 5. Traditionally local people the fruit is dried in the sun and the hard nuts are removed. Then, it is pounded and eaten with mixing with salt or sugar. They preserved the pounded jujuba in airtight jar for 1 year.

In most of the cases the fruits are eaten as raw and young fruits are also preferred by the people. Mature fruits help in increase the population, thus helps in conservation of the plant diversity and population as well. The freshly fully mature, nearly ripe harvested fruit, as well as the sun dried fruit are also eaten. Tiwa people produce sweetened syrup containing dried jujube fruit with water and sugar, during summer season. Some Tiwa people sundried jujube fruit are preserved by storing them in a airtight jar during winter season. Traditionally local people the fruit is dried in the sun and the hard nuts are removed.

Then, it is pounded and eaten with mixing with salt or sugar. They preserved the pounded jujuba in airtight jar for 1 year. It is found that fruit and leaves of fruit plants play a main role in their worship. Different plants seeds of ripe fruits are edible. They are quite commonly used in curry and with vegetable. Seeds are eaten by boiled, roasted also. Seed is often sun dried and preserved to be later used in curry. Unripe jackfruit is cooked as vegetable. Nimuguthi (Citrus limon) are used for preparing refreshing drinks and pickles as well as garnishing curry and other dishes.

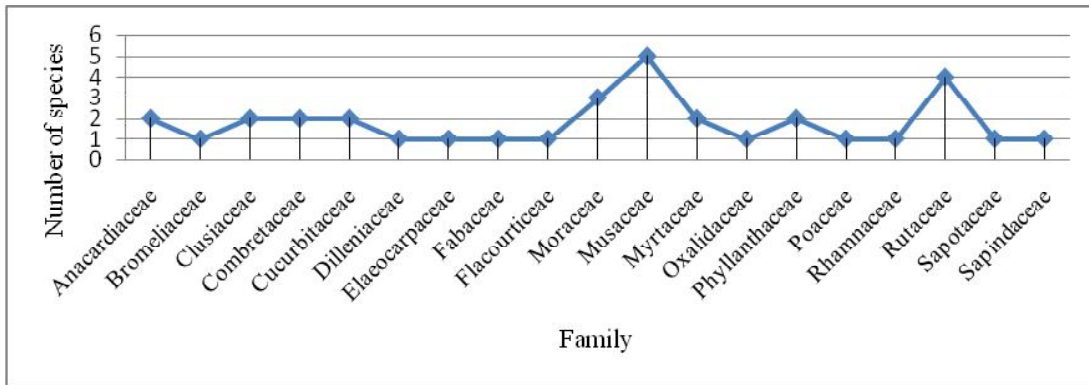


Figure 1. Plant species under different families

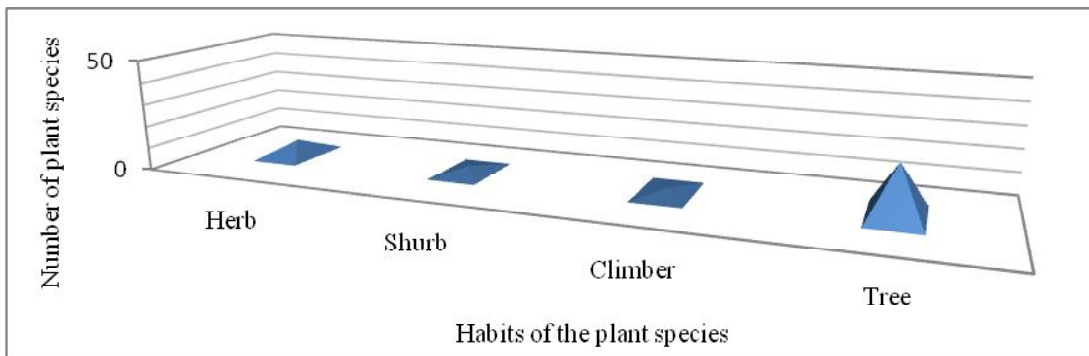


Figure 2. Habits of fruit plant species

Most of the plants used are collected from the forest and natural ecosystems. However, collection from nature and preservation in their own garden can be an important conservation strategy<sup>2</sup>. The traditional method of management of nutrients is still prevalent within the Tiwa tribes. But due to social changes, the tradition has faced serious threat which may leads to loss of traditional practices in near future. The documentation and publication of these finding will ensure the preservation of traditional knowledge, cultural values.

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