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Diversity of Wild Plants used by the Jamatia Tribe of Tripura for their Edible Underground Plant Parts

Gunamoni Das[1] and R. K. Sharma[2]
[1]Assam down town University, Panikhaiti, Guwahati - 781026, Assam.
[2]Department of RS & VK, Govt. Ayurvedic College, Guwahati - 781014, Assam.

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Corresponding Author Email: gunamoni09@gmail.com

Abstract
Tripura is the third smallest state of India and it is a land locked hilly state in the North Eastern India which is surrounded on the North, West and South by Bangladesh. It is accessible to the rest of the country only through the Karimganj district of Assam and Aizawl district of Mizoram. The tribal communities of Tripura are numerated to be 19. Out of the 19 tribes, only the Tripuris are found to be inhabited all over the state. Jamatia is another tribal group of Tripura, having distinct feature of Mongoloid Origin. Earlier Jamatias had to live on Jhum Cultivation. But among the tribals of Tripura they accustomed themselves with plough cultivation after the Tripuris. At present most of them depend on plain land cultivation beside allied economic activities. An extensive survey was conducted during 2017-2018 on some interesting wild plants with underground edible parts used by the Jamatia tribe of Tripura. Underground parts of many wild and cultivated plants constitute an important source of starchy food. The tubers of some plant species like *Amorphophallus, Euryale ferox, Ipomoea*, *Dioscorea, Alocasia* spp, are commonly eaten as vegetables. *Colocasia* sp is much loved to eat by the growing children of this community for making the bone structure stronger. Other underground rhizomatous stocks of *Curcuma, Alpinia, Zingiber* spp are commonly used as spices and condiments., *Ipomoea batatas, Manihot esculenta, Dioscorea sps, Nymphaea sps etc.* are collected in large amount as it is in great demand in Agartala valley market for their delicious taste. Hence, it serves as one of the main source of income for the tribe. Also many underground parts of wild plants are used for other purposes such as medicine, cosmetics etc. The paper reports 42 underground edible parts of some wild plants along with botanical names and their mode of uses are incorporated.

Keywords
Jamatia tribe, Underground edible plants part, Tripura, North East India.

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INTRODUCTION
Tropical forests are major reservoir of plant diversity. These forests inhabit a large number of trees, shrubs, herbs, climbers, epiphytes, faunal wealth and a wealth of non-timber forest products (NTFP) including medicinal and aromatic plants (MAP) and

wild edible plants. Tripura is one of the mega biodiversity hotspots of India. It is also a repository of many plants species which are of immense value to humanity. Plants provide food and other life – supporting commodities and are very important for survival of human beings and other organisms, besides they protect our environment and maintain nature. Wild edible plants play a major role in supplying food for poor communities mainly for tribal and rural people, since it is freely available within the natural habitats and they have knowledge on how to gather and prepare food items from these wild plant resources. Tuber and root crops are the energy reservoirs of nature mainly in the tropical regions. Due to the high starch content and calorie value, these crops have a major role in meeting the food security of marginal farmers and the ethnic people like Jamatia tribe living nearer to the forest tracts where the edible kinds occur; e.g. *Curcuma sp., Angelica, Alocasia, Colocasia sp, Zingiber sp* etc. Taro corms play an important role in the livelihood of thousands of relatively poor people in less developed places and are an excellent source of carbohydrate. The wild edible underground plants part with high diversity are widely distributed in the forests of Tripura and are valuable source of food and medicines for domestic and commercial purposes.

METHODOLOGY

Field study was carried out during the period between October 2017 and December 2018. Details on wild underground edible plants part were recorded by interviewing the local people and local markets were visited for inventory of wild edible plants used for commercial purpose. Tribal informants were consulted to locate and collect these plants. During the field work, along with the documentation, the voucher specimens were also collected and preserved. The identification of specimens was done with the help of relevant literature (Hooker 1872-1897; Kanjilal et al 1934-1940; Balakrishnan 1981 & 1983; Deb 1981 & 1983; Joseph 1982 and Haridasan & Rao 1985 & 1987) and confirmed by consulting available literature.

Fig: Rhizome of *Alocasia macrorrhiza*

Fig: Rhizome of *Alocasia macrorrhiza*

Fig: Rhyzome of *Colocasia esculenta*

Fig: tubers of *Ipomoea batatas*

Fig: Roots of *Nelumbo nucifera*

Fig: Rhizomes of *Curcuma longa*

RESULTS

The present study was conducted during the year 2017-2018 in the forest areas and local markets of Tripura. The Paper presents an account of wild edible underground plants part used by the Jamatia tribe of Tripura. They depend upon forest products for their day to day needs, i.e., food, fodder and shelter etc. Their foods include leaves, tubers, bulbs, rhizomes, flowers fruits and seeds of various wild plants species which they collect from the forest. Basically, Jamatia are agriculturist and still live in primitive state of life. Their main occupation is agriculture. It has been observed that some wild plants have maximum used amongst them are grown by them in their home stead, this led conspicuously to the domestication of some of these as cultigens and this practice is way of conservation of genetic resources (Arora, 1990).

The present study recorded comprehensive data for 42 species of plants (Tables 1) their botanical name, family, parts used and mode of use.

Table-1 List of wild plants used by the Jamatia tribe of Tripura for their edible underground parts

Sl.No	Name of species	Family	Parts used and mode of use
1.	*Alocasia India*	Araceae	Root stocks are cooked and taken as vegetables.
2.	*A. acuminate*	Araceae	Tuberous rhizome is cooked and taken a vegetable
3.	*Alpinia allughas*	Zingiberaceae	New suckers are cooked and used as vegetable.
4.	*Alpinia galanga*	Zingiberaceae	Rhizome decoction smashed with fermented fish and chilli and eaten during both lunch and dinner
5.	*Alpinia nigra*	Zingiberaceae	Rhizome boiled with potato and prepared chutney
6.	*Amorphophallus companulatus*	Araceae	Underground roots stock (corm) is cooked after properly boiled and taken as vegetable
7.	*Amorphophallus bulbifer*	Araceae	Tubers preferred to cook with meat
8.	*Amomum aromaticum*	Zingiberaceae	root is used as Spice
9.	*Angelica glauca*	Apiaceae	Dry seed and root is used as Spice
10.	*Asparagus racemosus*	Liliaceae	Roots are eaten.
11.	*Bambusa balcooa*	Bambusaceae	Newly grown sucker are taken as chutney and pickles; also eaten as cooked vegetable
12.	*B.tulda*	Bambusaceae	Newly grown sucker are taken as chutney and pickles; also eaten as cooked vegetable
13.	*Brassica rapa*	Brassicaceae	The roots are eaten as vegetable. They are eaten raw or cooked
14.	*Curcuma amada*	Zingiberaceae	Fresh rhizome as chutney
15.	*Curcuma longa*	Zingiberaceae	Rhizome is used as Spices
16.	*Curcuma zedoaria*	Zingiberaceae	Rhizome is used as Spices
17.	*Colocasia esculenta*	Araceae	Young leaves and tuberous rhizome are cooked and eaten as vegetable

18.	*Cyperus esculenta*	Cyperaceae	The rhizomes and tuberous roots are eaten raw and other cooking.
19.	*Dioscorea decipens*	Dioscoreaceae	Slender white tuber as vegetable
20.	*Dioscorea trinervia*	Dioscoreaceae	Tuber as vegetable
21.	*Dioscorea villosa*	Dioscoreaceae	Soft tuber sometimes as vegetable/ fodder
22.	*Dioscorea pentaphylla*	Discoreaceae	Tubers are edible after washing and Boiling
23.	*Dioscorea puber*	Discoreaceae	Boiled tuber are eaten as vegetable
24.	*Dendrocalamus hamiltonii*	Bambusaceae	Suckers are eaten as cooked vegetable
25.	*Euryale ferox*	Nymphaeaceae	roots are edible
26.	*Hedychium coronarium*	Zingiberaceae	Rhizome cooked and prepared different food items
27.	*Ipomoea batatas*	Convolvulaceae	The sweet potatoes are eaten raw, boiled and roasted
28.	*Jerusalem artichoke*	Asteraceae	The tubers are cooked, pickled or eaten raw
29.	*Manihot esculenta*	Euphorbiacea	used as fresh tubers, boiled and prepared in the same way as potatoes
30.	*Nelumbo nucifera*	Nymphaeceae	Tender root stocks of rhizomes are used for vegetable purpose.
31.	*Nymphaea Pubescens*	Nymphaeceae	Root stock is taken as cooked
32.	*N. rubra*	Nymphaeceae	Seeds are taken raw and root stocks are used as cooked vegetable
33.	*N. nouchali*	Nymphaeceae	Root stock and stem are cooked and taken as vegetable
34.	*N. Stellata*	Nymphaeceae	Root stock is taken as vegetable
35.	*Phrynium capitatum,*	Marantaceae	Rhizome is taken as vegetable
36.	*Stemona tuberosa*	Stemonaceae	Tuber eaten boiled as vegetable
37.	*Sagittaria sagittifolia*	Alismataceae	Root cooked-eaten along with Molasses
38.	*Smilax china*	Smilacaceae	Tuber are boiled and the juice taken orally as revitalizing tonic
39.	*Xanthosoma saqittifolium*	Araceae	Root stocks, leaves and stem are used as vegetables after cooked or boiled
40.	*Xanthosoma violaceum*	Araceae	Root stocks, leaves and stem are used as vegetables after cooked or boiled
41.	*Zingiber cassumunar*	Zingiberaceae	Rhizomes as condiments, juice with honey for cough problems
42.	*Zingiber montanum*	Zingiberaceae	Yellowish rhizome flesh used as spice

CONCLUSION

The roots, tubers and leaves discovered and used by the traditional societies are now appearing as the effective sources of food for growing population and also proving to be an important source of potentially therapeutic drugs. Thus, the 'Ethnobotanical approach' strongly suggests to study the relationship between plants and people. Due to poor road connectivity and less urbanization most of the ethnic people inhabiting the remote areas of the hill district are secluded from market economy. As they live in close proximity with the forest, they also collect other forest products including medicine for their day-to-day life needs. The study resulted in listing out the underground edible wealth which is used by the Jamatia tribes of Tripura in their day to day life. The local informants were mostly recommended by the village Headmen. Majority of the informants were women, who were considered to be the primary players in wild edible plant collections from the forest areas and selling out those in the local makeshift markets for additional income. Utilization of wild underground plants part will be an effective tool for restoration of traditional knowledge system inherent in Jamatia people. Good scope for unearthing of wild underground edibles exists in interior pockets of this diversity-rich state, which demands an extensive exploration across the state in different seasons along with nutritional value notes. This will help us in better monitoring and

management of these natural resources and socio-economic development of this tribal community.

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