

## Domestication of some wild edible plants in Barail range of Assam: a case study

KK Nath<sup>1</sup>, P Deka<sup>1</sup>, D Nath<sup>2</sup> & SK Borthakur<sup>3\*</sup>

<sup>1</sup>Department of Botany, Mangaldai College, Mangaldai-784125, Assam; <sup>2</sup>Department of Sericulture, Hailong, North Cachar Hills district, Assam; <sup>3</sup>Department of Botany, Gauhati University, Guwahati-781014, Assam

### Abstract

Aboriginal societies have their own approaches in managing their resources. Assam is one of the states of Northeast India with both biological and ethnic diversity. Generally aboriginal societies have been living in complete harmony with natural surroundings. They have their own notions, beliefs and way of sustainable utilization and conserving the plant resources. They are the custodians of much useful information regarding plant resources in the form of oral folklore. The present communication deals with 24 little known wild plant species, which have been conserving in the vicinity of the villages through domestication and/or restricted cultivation for their tubers, stems, leaves, inflorescences or fruits by the Dimasa, the Hmar, the Zeme Naga and the Kuki tribes of Barail Range in Dima Hasao (North Cachar Hills) district of Assam. The initiatives of the ethnic groups of the area are very significant from conservation point of view especially of wild plant genetic resources.

**Keywords:** Assam valley, aboriginal society, edible plants, oral folklore

Northeastern region of India is one of the most biodiverse regions in the world due to its unique biogeographical location. The region represents the transition zone between the Indian, Indo-Malayan and Indo-Chinese biogeographic regions and a meeting place of the Himalayan Mountains and Peninsular India. At the conjunction of the Himalayan and Indo-Burma biodiversity hotspots the region is regarded as a major center of biodiversity and cradle of flowering plants. Although the region occupies only 7.8 per cent of total geographical area of the Indian subcontinent, it harbors about 50 per cent of the floristic wealth of the country which includes nearly 40 per cent of endemic taxa, and home to about 8000 angiospermic plant species.

Assam is one of the states of Northeastern India with a great diversity of ethnic groups including 23 scheduled tribes. The indigenous societies have discovered various uses of natural resources around them, which is based on their necessities, instinct, observation, trial and error and long experience (Jain 2004). Profound understanding and knowledge of tribal societies on plants has helped them in sustainable use and to conserve the plant resources. The Barail Range in Dima Hasao (North Cachar Hills) district of Assam is a land of nature, culture and adventure. It is the most beautiful district and only hill station of Assam, known as 'Switzerland of the East', endowed with all the glory of mother nature, especially with an extremely rich biodiversity, that forms a "Hot Spot" of the Northeast India with rich ethnobotanical diversity as well. The district is the homeland of about 12 different tribes (*viz.* Dimasa, Zeme Naga, Hmar, Kuki, Hrangkhal, Beite, Jaintia,

Khelma, Vaiphei, Bodo, Lusai and Garo). The Dimasa, the Zeme Naga, the Hmar and the Kukis are the four major ethnic groups habitat in Barail Range of the district. Very few studies have been undertaken on wild edible plants of Assam in general (Barua *et al* 2007; Borthakur 1996, 1997; Kar & Borthakur 2007). However, no work is available on domestication of wild plants in Assam in general and Barail range in particular. A study has been undertaken since 2002 to document the uses of wild edible plants by the ethnic groups of Barail Range so as to work out the new and less known uses of wild plants with their botanical identity and to record the conservation initiatives of the wild plants by the ethnic groups of the area through domestication/protected cultivation. The present paper deals with the species, which are conserved in vicinity of the villages through domestication/restricted cultivation by the Dimasas, the Zeme Nagas, the Hmars and the Kukis of the Barail Range in Dima Hasao district, Assam.

### Materials and methods

Field work was conducted in different parts inhabited by four major tribes *viz.* the Dimasa, the Zeme, the Hmar and the Kuki in Barail Range of Dima Hasao district of Assam. The district is situated in the south central part of Assam in between 92° 32' E – 93° 30' E longitude and 24° 58' N – 25° 47' N latitude, covering an area of 4890 sq km and with elevation ranging between 1000m to 1800m. Hailong, the headquarters of the district is the only hill station of Assam.

All ethnic groups of Barail Range have been living in complete harmony with natural surroundings. They have their own notions, beliefs and way of life. They harvest

\*Corresponding author:

E-mail: skb\_gu1@yahoo.co.in

the natural resources of their surroundings in a manner to maintain the sustainability of supply. They have their own traditional conservation practices. The ethnic groups of Barail Range have been using a large number of wild plant species as dietary supplements. Some wild species have been domesticated for tubers, stems, leaves, inflorescences or fruits. By this way some rare and little known plant species have been conserving in vicinity of the villages. Field observations on plants and information on their uses were recorded. Voucher specimens were collected for all the plants used and preserved according to the conventional herbarium techniques (Jain & Rao 1977). Identification has been done either by consulting literature or by consulting literature and herbarium specimens at ASSAM herbarium. The Herbarium specimen on which the present article is based has been deposited in the Herbarium of the department of Botany, Gauhati University, Guwahati, Assam.

#### ENUMERATION OF PLANTS

A brief account of collected plants with scientific names, families and notes on method of uses is given below in alphabetical order to the scientific names. Local name(s) recorded in the field are provided assigning the ethnic groups in abridged form as D = Dimasa, Z = Zeme, K = Kuki and H = Hmar.

*Acacia farnesiana* (L.) Willd. [Mimosaceae]

*Nakampi-chibe* (Z)

Tender fruits are eaten cooked as vegetable. Seeds of mature fruits are used as pulse. Sold in rural markets.

*Achasma loroglossum* (Gagnep) Larsen [Zingiberaceae]

*Derahadi* (D)

Inner soft portion of the stem are eaten cooked as vegetable by the Dimasas.

*Antidesma acuminatum* Wall. [Euphorbiaceae]

*Kubuinria-chi* (Z)

Ripe fruits are eaten raw by children. Leaves are used for seasoning curries.

*Aralia armata* (Wall.) Seem. ex Kurz. [Araliaceae]

*Lingdan* (K), *Ture* (Z)

Tender shoots are eaten cooked as vegetable. A popular vegetable among the Kukis and Zemes and sold in markets. The species is endemic to North Cachar Hills.

*Blumea balsamifera* (L.) DC. [Asteraceae]

*Mugungre* (D), *Andramang* (H)

Leaves are used as vegetable. Sold in markets.

*Chenomorpha griffithii* Hook. f. [Apocynaceae]

*Ankhapoi* (H), *Ankhapi* (K)

Leaves are warped with banana leaf and roasted in burning coal and used as vegetable. Bitter in taste. Sold in markets.

*Clerodendrum colebrookianum* Walp. [Verbenaceae]

*Anphoi* (H)

Tender leaves are roasted in fire by warping with banana leaf and taken as vegetable. Leaves are also eaten boiled. Sold in markets.

*Elsholtzia strobilifera* Benth. [Lamiaceae]

*Langmase* (H), *Langtu* (Z)

Pounded fresh leaves are taken with chilies as chutney. Fresh leaves and dried inflorescences are mixed with other vegetable as flavoring agent. Sold in markets.

*Ensete superbum* (Roxb.) Cheesm. [Musaceae]

*Dongdibe* (Z)

Fresh and also dried leaf sheaths are eaten cooked as vegetable. Dried leaf sheaths are also preserved for use during scarcity. Sold in markets.

*Eurya acuminata* DC. [Theaceae]

*Sizo* (H & K), *Misimbua* (Z)

Tender leaves are eaten cooked with pork. Extensively used by Hmars and Kukis. Sold in local markets.

*Hodgsonia macrocarpa* (Bl.) Cogn. [Cucurbitaceae]

*Nsui-chi* (Z)

Roasted seeds of mature fruits are eaten. Sold in markets.

*Juglans regia* L. [Juglandaceae]

*Juart-chi* (Z)

Seeds of the mature fruits are eaten by the Zemes.

*Perilla frutescens* (L.) Britt. [Lamiaceae]

*Si* (H)

Seeds are used as condiments. Roasted seeds are pounded with raw chilies and taken as chutney. Sold in market.

*Phlogocanthus jenkensii* Cl. [Acanthaceae]

*Alusaw* (D)

Inflorescences are used as vegetable. Sold in markets.

*Polygonum barbatum* L. [Polygonaceae]

*Pha-khai* (H)

Leaves are pounded with raw chilies and taken as chutney.

*Rhus semialata* Murr. [Anacardiaceae]

*Khongna* (D), *Kemeu* (Z)

Ripe and unripe fruits are eaten raw with common salt. Sold in markets.

*Rhynchosyris ellipticum* (Wall. ex Dietr.) A. DC. [Gesneriaceae]

*Mimalai* (D), *Chehelep* (H & K), *Endroigi* (Z)

Tender leaves are eaten cooked as vegetable. Sold in markets.

*Sarcochlamys pulcherrima* (Roxb.) Gaud. [Urticaceae]

*Misaigi* (D), *Endougi* (Z)

Leaves are eaten cooked as vegetable. Sold in markets.

***Solanum spirale*** Roxb. [Solanaceae]*Khanarengma* (D), *Nkabua* (Z)

Boiled fruits are mixed with raw chilies and taken as chutney.

***Spilanthes oleracea*** (L.) R.K.Jensen [Asteraceae]*Klungbua* (Z)

Tender plants and shoots are used as vegetable. Sold in markets

***Trevesia palmata*** (Roxb.) Vis. [Araliaceae]*Khim-plaudi* (D), *Kotebel* (H)

Inflorescences are eaten cooked as vegetable. It is a popular vegetable of the Hmars and the Kukis. Sold in markets.

***Zanthoxylum armatum*** DC. [Rutaceae]*Nechchi* (Z)

Tender fruits are pounded with chilies and taken as chutney.

***Zanthoxylum nitidum*** (Roxb.) DC. [Rutaceae]*Rufna* (D)

Tender leaves are pounded with raw chilies and taken as chutney.

***Zanthoxylum rhetsa*** (Roxb.) DC. [Rutaceae]*Singjar* (H)

Tender shoots are eaten cooked as vegetable. Widely used by the Hmars and the Kukis. Sold in market.

**Discussion and conclusion**

Aboriginal societies have not only use or utilize plant resources available around them but also ensure their availability. Based on their necessities, observation, trial and error method and long experience, they have discovered various uses of plant resources around them. It is the profound understanding about the bioresources in and around the habitations of the ethnic groups that act as an important force in conservation of biodiversity and successful management of natural resources in many

biodiversity rich parts of the world. The present observations reveal that the Barail Range in Dima Hasao (North Cachar Hills) district of Assam is very rich in wild plants having ethnobotanical value and tribal people of the area are very familiar with the knowledge of plants in their ecosystems. All the ethnic groups inhabit in and around the forest areas and for which they have vast knowledge of wild edible plants. Wild edible plants play a very important role dietary supplement of the ethnic groups of the area. They harvest the plant resources of their surroundings in a sustainable way. The present study recorded a total of 24 species belonging to 21 genera and 19 families of Angiosperms which have been domesticated or put under restricted cultivation by the ethnic groups of the area for use as dietary supplements. It is very significant from conservation point of view especially of wild plant genetic resource because these plants are otherwise known to occur only in wild habitats. Further studies on the in the area may unearth a lot more information useful to the biologists in general and conservationists in particular.

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