

Diversity of edible species of *Dioscorea* Plum. ex L. (Dioscoreaceae) from Arunachal Pradesh, India

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Abstract

The genus *Dioscorea* Plum. ex L. is important to the human society as well as from the taxonomic point of view. The tubers of these plants are the staple food for the tribal people of Arunachal Pradesh. The present article is a document on the diversity of this genus in Arunachal Pradesh.

Key word: *Dioscorea*, Tubers, Diversity, Arunachal Pradesh.

INTRODUCTION

Arunachal Pradesh lies on the Northeastern tip of India. It is located between 26° 30' and 29° 28' North latitude and 91° 36' and 97° 30' East longitude. The state is located on the boundary of Paleocentric, Chinese, Malayan and Indian bio-geographic regions. The biotic element from all these regions occurs here making Arunachal Pradesh richest in the species diversity. India holds a rich genetic diversity of tropical root and tuber crops including yams. The Indo-Myanmar region is the centre of origin of Asiatic edible yams. North-Eastern Himalaya along with Western Ghats are the two hot spots of global biodiversity and considerably rich in wild relatives of tropical root and tuber crops (Velayudhan 1998). *Dioscorea* Plum. ex L., a globally important and commercially much potential monocotyledonous genus, includes over 600 species, is the largest genus of Dioscoreaceae. Of these, seven species constitute the most important staple yams, but many of the wild yams are also important food plants. It is a pan-continental genus, found in Africa, India, Southeast Asia, Australia and tropical America (Jayasurya 1984; Wilkin 1998), with about 630 scientifically described taxa. Prain and Burkill (1936) reported the occurrence of about 50 species of *Dioscorea* from India, largely in the west, east and northeast regions. More than 25 tribes and 110 sub-tribes are living in Arunachal Pradesh (Baishya, 2002). Most of them totally depend upon forest for their livelihood. From the preliminary survey among them on the consumption of wild flora and fauna, it has been found that they are consuming the product without any attention for conservation. Different species of *Dioscorea* are the staple food for the tribal people of this state. Though the tubers of *Dioscorea* have great nutritional value but there is no cultivation or farming system for these plants among the people of Arunachal Pradesh but the harvesting rate is very high. This type of illegal and unscientific harvesting will create serious problem for the survival of these important floristic elements.

METHODOLOGY

Species of *Dioscorea* were collected from different places of Arunachal Pradesh during 2004 to 2008 following the methods of Jain & Rao (1977). Those specimens are identified and confirmed by matching with the specimens at ASSAM and Botanical Survey of India's Itanagar herbarium

and by extensive literature survey. The specimens are deposited in the herbarium of the Centre of Biodiversity, Department Of Botany, Rajiv Gandhi University, Itanagar (HAU).

ENUMERATION

During the survey twelve species of *Dioscorea* were collected. Those are enumerated as follows:

Dioscorea alata L., Sp. Pl. 1033. 1753.

Exiccatus: Rono Hills, *Bhaskar* 547, dated 15.12. 2007 (HAU).

Distribution: All over Arunachal Pradesh.

Part used: Root-tuber, edible.

Dioscorea belophylla Voigt ex Haines in For. Fl. Choto Nagpur 530. 1910.

Exiccatus: Rono Hills, *Bhaskar* 453, dated 19.12.2007 (HAU).

Distribution: All over Arunachal Pradesh.

Part used: Root-tuber, edible.

Dioscorea bulbifera L., Sp. Pl. 1033. 1753.

Exiccatus: Rono Hills, *Bhaskar* 670, dated 25.11.2007 (HAU).

Distribution: East Siang, Papumpare, changlang, upper and lower Subansiri, Lohit.

Part used: Root-tuber, edible.

Dioscorea deltoidea Wallich ex Kunth, Enum. Pl. 5: 350. 1850.

Exiccatus: Rono Hills, *Bhaskar* 432, dated 26.10.2007 (HAU).

Distribution: East Siang, Papumpare, changlang, upper and lower Subansiri, Lohit.

Part used: Root-tuber, edible.

Dioscorea glabra Roxburgh, (Hort. Beng. 75. 1814, *nom. nud.*); Fl. Indica ed. 2, 3: 804. 1832.

Exiccatus: Daporijo, *Bhaskar* 256, dated 23.01.2006 (HAU).

Distribution: East Siang, Papumpare, changlang, upper and lower Subansiri, Lohit, East kameng.

Part used: Root-tuber, edible.

Dioscorea hamiltonii Hook.f., Fl. Brit. India 6: 294. 1892.

Exiccatus: Yasuli, *Bhaskar* 621, 16.02.2007(HAU).

Distribution: East Siang, Papumpare, changlang, upper and lower Subansiri, Lohit, East Kameng.
West Kameng

Part used: Root-tuber, edible.

Dioscorea lourifolia Wallich ex Hook.f., Fl. Brit. India 6: 293. 1892.

Exiccatus: Rono Hills, *Bhaskar* 378, dated 02.11.2006 (HAU).

Distribution: East Siang, Papumpare, changlang, upper and lower Subansiri, Lohit, East Kameng.
West Kameng

Part used: Root-tuber, edible.

Dioscorea oppositifolia L., Sp. Pl. 1033. 1753.

Exiccatus: Rono Hills, *Bhaskar* 143, dated 02.12.2006 (HAU).

Distribution: East Siang, Papumpare, Changlang, upper and lower Subansiri, Lohit, East Kameng.
West Kameng

Part used: Root-tuber, edible.

Dioscorea orbiculata Hook. f., Fl. Brit. India 6: 292. 1892.

Exiccatus: Pasighat, *Bhaskar* 756, dated 11.01.2008 (HAU).

Distribution: East Siang, Papumpare, Lower Subansiri, Lohit, .East Kameng.

Part used: Root-tuber, edible.

Dioscorea purpurea Roxburgh, Hort. Beng. 72. 1814, *nom. nud.*); Fl. Indica ed. 2, 3: 799. 1832.

Exiccatus: Rono Hills, *Bhaskar* 376, dated 24.12.2006 (HAU).

Distribution: East Siang, Papumpare, changlang, upper and lower Subansiri, Lohit,.East Kameng.
West Kameng

Part used: Root-tuber, edible.

Dioscorea spicata A.W. Roth, Nov. Pl. Sp. 371. 1821.

Exiccatus: Balijan, *Bhaskar* 578, dated 15.12.2007 (HAU).

Distribution: East Siang, Papumpare, Upper and lower Subansiri, Lohit,.East Kameng.

Part used: Root-tuber, edible.

Dioscorea wallichii Hook.f., Fl. Brit. India 6: 295. 1892.

Exiccatus: Roing, *Bhaskar* 156, dated 02.11.2006 (HAU).

Distribution: East Siang, Papumpare, changlang, upper and lower Subansiri, Lohit,.East Kameng.
West Kameng

Part used: Root-tuber, edible.

DISCUSSION

The genus *Dioscorea* of Dioscoreaceae is one of the dominant elements for the monocot flora of this region. Some researchers documented this genus but it is in a confusing state. A proper documentation of these important plants is yet to be done. Most of the species of *Dioscorea* are used as food by the tribal people of this state. On the other hand, Different species of *Dioscorea* have vast potentiality for the sustainable development of the local community. Plenty of land is available in Arunachal Pradesh, if the local people are made aware of the importance and utilization with marketing potentiality of these plants and are trained for organized cultivation and marketing, it will help not only its conservation but will also help to uplift the economy of these extremely poor people.

From the preliminary survey in the tribal villages and different area of this state, some important points have noted for organize cultivation like: (1) most of these species are threatened with extinction, (2) price of tubers increasing rapidly, (3) it is a labour intensive crop, (4) cultivation method is quite simple, (5) input and management cost is low, (6) it can be grown as a rain-fed crop, and (7) it can be grown easily in abandoned *jhum* lands.

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