

Ethnobotanical survey in the Bamangola Block of Malda District, West Bengal (India): I. Edible plants

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[Received 14.04.2015; Revised & accepted 10.06.2015; Published 30.06.2015]

Abstracts

Ethnobotanical survey to record the traditional knowledge related to the edible plants in the Bamangola Block of Malda District of West Bengal (India) recorded 115 species of plants those are used variously as edibles. This include two species of Pteridophytes, 95 species of dicotyledons and 18 species of monocotyledonous plants. Mode of use, their marketability of these plants also has been discussed.

Key words: Bamangola Block, Malda, Ethnobotany, Edible plants

INTRODUCTION

The use of plants in the traditional human society is generally referred as Ethnobotany (Jones 1941). With progress of civilisation and inroad of such facilities even in remote traditional societies are causing rapid depletion of such knowledge. In most of the areas, worldwide, the traditional knowledge is not recorded and the younger generation, in most of the cases, is reluctant to practice such activities. But, majority of confidentially maintained are passed over orally over the generations. When a generation stops practicing it the hard earned human knowledge gets lost along with its potentiality to improve our living conditions (Harshberger 1896; Vartak & Gadgil 1980; Berlin 1992).

Traditional societies are, in general, very much conservative. There are strict social rules to control the leakage of their traditional knowledge (TK) outside the society. Sometimes the collected TK needs proper verification as there is every possibility to get a fake data where the resource person tries to satisfy both, his own society and the outside receiver.

The Indian subcontinent is inhabited by over 53 million tribal people belonging to over 563 such communities like *Santal, Munda, Oraon, Naga, Momba, Karbis, Saora, Sarasia, Irulus, Chenchus, Kharia, Baigas, Bando* etc. with some degenerated communities like *Ongae, Great Andamanies, Jarawa, Sentinelese, Shompen, Toda, Toto, Asur, Birhore, Lodha* etc. those come under 227 linguistic groups (Rao 1996). They inhabit varied geographic and climatic zones of the country and are living in complete harmony with the nature. Tribals constitute about 7.7 % of India's total population and utilize about 10,000 plant species for their healthcare, food and other material requirements (Jain 1991; Pushpangadan 1994, 2002). They can utilize the resources without disturbing the delicate balance of the ecosystem. Tribal people thus mostly remained as stable societies and are unaffected by the social, cultural, material and economic evolutions that are taking place in the civilized societies. India is very rich for its 16 agro-climatic zones and its heritage of ancient civilization with age-old human knowledge recorded in literatures like *Vedas, Puran, Sanhitas, Neghuntas, Nidans*, Epics (*Ramayana, Mahabharata*), *Geeta*, *Quaran*, archaeological remains and

sacred groves and is a virgin field for ethnobotanical studies to find first-hand information for further inter-disciplinary and intra-disciplinary researches of paramount importance.

The Malda district [240402 202 2 N - 250322 082 2 N latitudes and 870452 502 2 E - 880282 102 2 E longitudes] of West Bengal is centrally located in the state and is the home for quite a good number of traditional communities. As per Census 2011, the Malda district has geographical area of 3733 sq kms and the total Population is 3,997,970 (Male - 2,061,593 and Female - 1,936,377) of which Scheduled Cast population is 554165 and Scheduled Tribe population is 227047. Very few or stray works like Chowdhury & Das (2009) and Biswas & Das (2011, 2012) documented some ethnobotanical information from the tribal dominated parts of Malda District where local uses of some plants also have been noted, but true ethnobotanical works are lacking in the district.

For the present survey Bamangola block of Malda District has been selected due to its high tribal population and, they include mainly *Santhal*, *Oraon*, *Munda*, *Baskey*, and *Hembram*. These tribal people were mainly migrated from Jharkhand, Medinipur, Bihar and Bangladesh. Most tribal populated villages of Bamangola block are Faridpur, Khiripara, Turupmile, Thinagar, Maldanga, Barinda, Gobindapur, Bamongram, Bamongola, Banssa, Simla, Malipara *etc.* [Anonymous 2001a,b]

Bamongola block has geographical area of 206.20 sq km and is located centrally at 250102 122 2 N latitudes and 880202 062 2 E longitudes. This block [<http://en.wikipedia.org>] comprises of 6 Gram Panchayats, 181 Villeges and 142 Mouzas. Gram Panchayats are Madnabati, Gobindapur-Maheshpur, Chandpur, Jagdala, Bamangola and Pakuahat. As per 2001 census, Bamongola block has a total population of 127,156 which include males 65,196 and females 61,960. Out of them total Schedule Caste Population is 63,459 and total schedule Tribe Population is 25,083 (Anonymous 2001b). The present article records the edible plants taken by the people of the study area in different manner.

MATERIALS AND METHODS

Since in most of the tribal societies, there is no written document of their knowledge, which they gathered by the experience of trial and error experiments through the generations and also by observing the nature. The entire methodology for the present dissertation was primarily based on the interaction with the people, pursuing them to share their traditional knowledge and analysing the documented data scientifically.

For the ethnobotanical survey the methods adopted by Schultes (1960, 1967); Jain (1981, 1987, 1991), Rai *et al.* (1998), Rai & Bhujel (1999), Rai (2002), and Al Corn (1995) has been followed. A questionnaire prepared on the model of Jain (1987) and Tag (2007) for this purpose. The extensive fieldwork was conducted during 2011 to 2013.

The list of surveyed villages and the resource persons have been recorded in Table 1.

Few students of Gour Mahavidyalaya (College), Malda coming from the study area were used basically to develop the rapport and to understand the area. As the basic requirement, the PIC was obtained from the village heads to conduct the study.

While in the field, a large number of information were enquired and recorded in pre-designed questionnaire, which was prepared following Jain (1987) and Tag (2007). The local and urban markets were surveyed to know the commercial value of the wild plants or their products. Cross checking of collected knowledge is extremely important. This was done in the same or in different village.

Table 1. The list of villages and the names of resource persons interviewed.

Village	Name of informant	Age	Sex
Madhya Lakhipur	Sajanur Bibi	75	F
Kutradanga	Besaruddin Mandal	80	M
Khakripara	Bhola Mardi	40 – 45	M
	Maklu Hembram		M
	Junha Mardi		F
Dangapara	Tufan Mandal	55	M
Jharna para	Hasina Khatun	65	F
Gobindapur	Hajiruddin Sarker	60	M
Parameshwarpur	Ranu Mandal	60	F
Nowghoria	Ratan Hansda	64	M
Maheshpur	Sanati Murmu	40	F
Jagadalla	Sitamoni Oraon	50	F
Gopinathpur	Abinash Mandal	55	M
Khiri para	Gobinda Mandal	45	M
Datulipara	Baidyanath Barman	55	M
Natun para (khatil)	Nirmal Goswami	72	M
Baro mile	Budhhuram Chaudhury	65	M
Jahanabad	Nagen Mandal	65	M
Kupadaha	Mrinmoy Sarker	18	M
	Santosh Roy	65	M
Dattapara	Najrul Shah	45	M

Apart from interviews, direct observation on the daily life of Tribal people also helped to record the related plants. The daily or weekly markets (*haat*) were also visited regularly to study the marketability of wild or cultivated plants, vegetables and other plants products collected and/or produced in this area. Various plant materials were observed and in some cases brought for the conservation.

Collected voucher specimens were recorded in the Field Note Book and the processed into mounted herbarium sheets following Jain & Rao (1977) and are now stored in the Botany laboratory of Gour Mahavidyalaya and a set of which will be deposited in NBU Herbarium. The plants were basically identified in this laboratory using different available floras (Grierson & Long 1983, 1987, 1991, 1994, 1999, 2001; Noltie 1994, 2000; Hajra *et al* 1995, 1997; Hara 1966, 1971; Hara *et al* 1978, 1982) and were matched at NBU and CAL herbaria.

For nomenclatural treatment www.theplantlist.org and for family delimitation APG III (2009) classification has been followed for this work.

RESULT

A total of 115 species of edible species of plants has been recorded during the survey and has been enumerated in Table 2.

Table 2. List of wild edible plants recorded from Bamangola Block of Malda District of West Bengal [Abbreviations used: Bk = Bark, Fl = Flower, Frt = Fruit, Infl = Inflorescence, Lf = Leaf, Rt = Root, Rhz = Rhizome, Sd = Seed, Sht = Shoot, St = Stem, Tg = Twig, Wd = Wood, WP = Whole Plant, Yng = Young, NK = Not Known]

Plants [Families]	Local Name	Parts Used	Mode of use
<i>Acmella calva</i> (A.P. de Candolle) Jansen [Asteraceae]	<i>Kalijhar, Jariphul</i>	Yng Sht	Green vegetable
<i>Adenantha pavonina</i> Linnaeus [Leguminosae : Mimosoideae]	<i>Chandanbichi</i>	Frt	Green vegetable
<i>Aegle marmelos</i> (Linnaeus) Correa [Rutaceae]	<i>Bael, Bel</i>	Ripe Frt	Raw

Plants [Families]	Local Name	Parts Used	Mode of use
<i>Alocasia fallax</i> Schott [Araceae]	<i>Kalo kachu, Buno kachu</i>	Lf, St	Green vegetable
<i>Alocasia macrorrhiza</i> (Linnaeus) G. Don [Araceae]	<i>Man kachhu</i>	Lf, St	Green vegetable
<i>Alternanthera paronychioides</i> A. St. Hilaire [Amaranthaceae]	<i>Sanchi, Vucuhra - katha</i>	Sht	Green vegetable
<i>Alternanthera philoxeroides</i> (Martius) Grisebach [Amaranthaceae]	<i>Jal Sanchi, Malancha</i>	Sht	Green vegetable
<i>Alternanthera sessilis</i> (Linnaeus) A.P. de Candolle [Amaranthaceae]	<i>Gudru saag, Nunia saag, Chhenchi saag</i>	Yng Sht	Green vegetable
<i>Amaranthus spinosus</i> Linnaeus [Amaranthaceae]	<i>Kantanote, Kantakhuria</i>	Yng Sht	Green vegetable
<i>Amaranthus viridis</i> Linnaeus [Amaranthaceae]	<i>Pora notey, Bon notey</i>	Yng Sht	Green vegetable
<i>Amorphophalus paeoniifolius</i> Nicolson [Araceae]	<i>Bon-Oll</i>	Tuber, Lf	Green vegetable
<i>Ananas comosus</i> (Linnaeus) Merrill [Bromeliaceae]	<i>Anaras, Bhui Kathar</i>	Fr	Fr vegetable; raw & cooked
<i>Annona reticulata</i> Linnaeus [Annonaceae]	<i>Nona</i>	Ripe Fr	Raw
<i>Annona squamosa</i> Linnaeus [Annonaceae]	<i>Aata</i>	Ripe Fr	Raw
<i>Argemone mexicana</i> Linnaeus [Papaveraceae]	<i>Seyal kanta</i>	Yng Sht	Green vegetable
<i>Artocarpus heterophyllus</i> Lamarck [Moraceae]	<i>Kathar, Kanthal</i>	Lf, Fr, Sd	Fr vegetable, cooked, raw
<i>Artocarpus lacucha</i> Buchanan-Hamilton [Moraceae]	<i>Dewa, Dahua</i>	Ripe Fr	Raw
<i>Averrhoa carambola</i> Linnaeus [Oxalidaceae]	<i>Kamranga</i>	Fr	Fruit vegetable, cooked, raw
<i>Azadirachta indica</i> Jussieu [Meliaceae]	<i>Neem</i>	Lf, Fr	Bitter vegetable
<i>Bacopa monnieri</i> (Linnaeus) Wettstein [Plantaginaceae]	<i>Brahmi saag</i>	Yng Sht	Green vegetable
<i>Bauhinia purpurea</i> Linnaeus [Leguminosae : Caesalpinioideae]	<i>Lal Kanchan</i>	Yng Sht, bud, Fl	Vegetable, cooked
<i>Boerhavia diffusa</i> Linnaeus [Nyctaginaceae]	<i>Khapra saag, Punarnava</i>	WP	Vegetable
<i>Borassus flabellifer</i> Linnaeus [Arecaceae]	<i>Taal</i>	Mesocarp, endosperm	Raw, cooked
<i>Brassica nigra</i> (Linnaeus) K. Koch [Brassicaceae]	<i>Kalo Sarisha, Kali Sarsan</i>	Lf, Sd	Green vegetable, condiment
<i>Cajanus cajan</i> (Linnaeus) Millspaugh [Leguminosae : Faboideae]	<i>Arhar</i>	Sd	Pulse
<i>Carica papaya</i> Linnaeus [Caricaceae]	<i>Pepe, Mewa</i>	Yng & ripe Fr	Cooked & raw
<i>Centella asiatica</i> (Linnaeus) Urban [Apiaceae]	<i>Thankuni, Chaklapata, Beng saag</i>	WP	Green vegetable
<i>Cheilocostus speciosus</i> (J. Koenig) C.D. Specht [Costaceae]	<i>Kemuk</i>	Yng Lf, Rhz	Green vegetable
<i>Chenopodium album</i> Linnaeus [Amaranthaceae]	<i>Bhatua saag, Betho saag</i>	Yng Sht	Green vegetable
<i>Chenopodium giganteum</i> D. Don [Amaranthaceae]	<i>Bhatua saag</i>	Yng Sht	Green vegetable
<i>Cinnamomum tamala</i> (Hamilton) T. Nees & J.E.C. Ebermaier [Lauraceae]	<i>Tejpatta</i>	Bk, Lf	Flavouring spices

Plants [Families]	Local Name	Parts Used	Mode of use
<i>Cissus quadrangularis</i> Linnaeus [Vitaceae]	<i>Harzora</i>	Yng Sht	Vegetable
<i>Citrus maxima</i> (Burman) Merrill [Rutaceae]	<i>Batabi lebu</i>	Ripe Frt	Raw
<i>Citrus medica</i> Linnaeus [Rutaceae]	<i>Lebu, Nimbu</i>	Frt	Raw
<i>Clerodendrum viscosum</i> Ventenat [Lamiaceae]	<i>Ghato, Vhauti</i>	Yng Lf	Vegetable
<i>Coccinia grandis</i> (Linnaeus) Voigt [Cucurbitaceae]	<i>Janglikundri, Telakuch</i>	Lfy Sht, Fr	Green vegetable
<i>Colocasia esculenta</i> (Linnaeus) Schott [Araceae]	<i>Kalo kachu</i>	Lf, Rhz	Green vegetable
<i>Commelina benghalensis</i> Linnaeus [Commelinaceae]	<i>Kana saag</i>	Yng Sht	Green vegetable
<i>Corchorus capsularis</i> Linnaeus [Malvaceae]	<i>Tita Paat</i>	Lf	Green vegetable
<i>Corchorus olitorius</i> Linnaeus [Malvaceae]	<i>Mitha Paat</i>	Lf	Green vegetable
<i>Coriandrum sativum</i> Linnaeus [Apiaceae]	<i>Dhaniya</i>	Lf, Infl, Fr	Pickles, spice
<i>Curcuma amada</i> Roxburgh [Zingiberaceae]	<i>Amada, Jangli hardi</i>	Rz	Pickles, spice
<i>Curcuma longa</i> Linnaeus [Zingiberaceae]	<i>Hardi, Haldi</i>	Rhz	Spice
<i>Dillenia indica</i> Linnaeus [Dilleniaceae]	<i>Chalta</i>	Persistent calyx	Vegetable
<i>Dioscorea deltoidea</i> Wallich ex Kunth [Dioscoreaceae]	<i>Githa lahara, Bhyakur</i>	Rhz	Vegetable
<i>Dioscorea pentaphylla</i> Linnaeus [Dioscoreaceae]	<i>Rani bhyagur, Bhegur</i>	Yam	Vegetable
<i>Diplazium esculentum</i> (Koenig ex Retzius) Swartz [Athyriaceae]	<i>Dhenki saag, Kukri saag</i>	Yng frond	Green vegetable
<i>Elaeocarpus floribundus</i> Blume [Elaeocarpaceae]	<i>Jalpai</i>	Frt	Raw
<i>Enydra fluctuans</i> Loureiro [Asteraceae]	<i>Hinche saag, Helencha saag</i>	Yng Sht	Green vegetable
<i>Eryngium foetidum</i> Linnaeus [Apiaceae]	<i>Bilati dhania</i>	Lf	Flavouring spices, salads
<i>Ficus benghalensis</i> Linnaeus [Moraceae]	<i>Borh, Bot</i>	Ripe fig	Raw
<i>Ficus hispida</i> Linnaeus f. [Moraceae]	<i>Khasrey, Kak-Dumur, Koksa</i>	Frt	Green vegetable
<i>Foeniculum vulgare</i> P. Miller [Apiaceae]	<i>Mouri</i>	Frt	Flavouring spices
<i>Glinus oppositifolius</i> (Linnaeus) A.P. de Candolle [Molluginaceae]	<i>Gima saag, Deila saag</i>	WP	Green vegetable
<i>Heliotropium indicum</i> Linnaeus [Boraginaceae]	<i>Hatisur</i>	Yng Lf	Green vegetable
<i>Hibiscus sabdariffa</i> Linnaeus [Malvaceae]	<i>Chuka saag</i>	Lf	Vegetable, pickles
<i>Hygrophila auriculata</i> (C.H.U. Schumacher) Heine [Acanthaceae]	<i>Kulekhara</i>	Yng Sht	Green vegetable
<i>Ipomoea aquatica</i> Forsskål [Convolvulaceae]	<i>Kalmi saag, Jal kalmi</i>	Yng Sht	Green vegetable
<i>Ipomoea batatas</i> (Linnaeus) Lamarck [Convolvulaceae]	<i>Misti Alu, Ranga Alu</i>	Lf, tuber	Green vegetable
<i>Lantana camara</i> Linnaeus [Verbenaceae]	<i>Kuttush</i>	Frt	Raw
<i>Lasia spinosa</i> (Linnaeus) Thwaites [Araceae]	<i>Kanta kachu</i>	Yng Lf	Green vegetable

Plants [Families]	Local Name	Parts Used	Mode of use
<i>Lasia spinosa</i> (Linnaeus) Thwaites [Araceae]	<i>Kanta kachu</i>	Yng Lf	Green vegetable
<i>Leucas zeylanica</i> (Linnaeus) W.T. Aiton [Lamiaceae]	<i>Guma saag, Dorpi, Dondokalash</i>	Lf, Yng Sht	Green vegetable
<i>Limonia acidissima</i> Groff [Rutaceae]	<i>Kath Bel, Kont Bel, Kaitbel</i>	Ripe Frt	Raw
<i>Luffa acutangula</i> (Linnaeus) Roxburgh [Cucurbitaceae]	<i>Jhinga</i>	Yng Sht, Frt	Vegetable
<i>Luffa cylindrica</i> (Linnaeus) Roemer [Cucurbitaceae]	<i>Dhundal, Gomra</i>	Yng Sht, Yng Frt	Vegetable
<i>Malva verticillata</i> Linnaeus [Malvaceae]	<i>Laffa saag</i>	Yng Lf, Yng Sht	Green vegetable
<i>Mangifera indica</i> Linnaeus [Anacardiaceae]	<i>Aam</i>	Frt	Cooked & raw, pickles
<i>Manihot esculenta</i> Crantz [Euphorbiaceae]	<i>Simal tarul</i>	Tuberous Rt	Food, pickles
<i>Marsilea minuta</i> Linnaeus [Marsileaceae]	<i>Susni saag</i>	Lf	Green vegetable
<i>Mentha x piperita</i> Linnaeus [Lamiaceae]	<i>Pudina, Babari</i>	WP	Salads, pickles
<i>Mimusops elengi</i> Linnaeus [Sapotaceae]	<i>Bakul</i>	Ripe Frt	Raw
<i>Momordica charantia</i> Linnaeus [Cucurbitaceae]	<i>Karela, uchhe</i>	Unripe & ripe Frt	Fruit vegetable
<i>Momordica dioica</i> Roxburgh ex Willdenow [Cucurbitaceae]	<i>Chetheli, Ban karela</i>	Green Frt	Fruit vegetable
<i>Moringa oleifera</i> Lamarck [Moringaceae]	<i>Sajna saag</i>	Lf, Fl, Frt	Green vegetable
<i>Morus alba</i> Linnaeus [Moraceae]	<i>Tunt</i>	Ripe Frt	Raw
<i>Mucuna pruriens</i> (Linnaeus) A.P. de Candolle [Leguminosae : Faboideae]	<i>Alkusi, Kewach</i>	Pods, Sd	Substitute of pulses
<i>Murraya koenigii</i> (Linnaeus) Sprengel [Rutaceae]	<i>Karipata</i>	Lf	Spices, flavouring agent
<i>Musa x paradisiaca</i> Linnaeus [Musaceae]	<i>Biche kala, Kala, Kera, Kela</i>	Infl, green & ripe Frt, stem inside Lf sheaths	Vegetable, raw
<i>Mussaenda roxburghii</i> Hooker f. [Rubiaceae]	<i>Katmatiya, Dhobi Kaat</i>	Yng Sht	Green vegetable
<i>Neolamarckia cadamba</i> (Roxburgh) Bosser [Rubiaceae]	<i>Kadam</i>	Ripe Frt	Raw
<i>Nyctanthes arbor-tristis</i> Linnaeus [Oleaceae]	<i>Sheuli, Sephali</i>	Lf	Green vegetable
<i>Oldenlandia corymbosa</i> Linnaeus [Rubiaceae]	<i>Khetpapra saag</i>	WP	Green vegetable
<i>Oxalis corniculata</i> Linnaeus [Oxalidaceae]	<i>Khatta saag, Amruli saag, Aamboli saag</i>	WP	Green vegetable, pickle
<i>Paederia foetida</i> Linnaeus [Rubiaceae]	<i>Gandal, Gandha bhadali</i>	Lf	Green vegetable
<i>Phoenix sylvestris</i> (Linnaeus) Roxburgh [Arecaceae]	<i>Khajuur</i>	Ripe Frt	Raw, pickles
<i>Phyllanthus emblica</i> Linnaeus [Phyllanthaceae]	<i>Amloki, Aonla, Amla</i>	Frt	Raw, Dry

Plants [Families]	Local Name	Parts Used	Mode of use
<i>Piper longum</i> Linnaeus [Piperaceae]	<i>Pipul, Pipla, Jangli pipul</i>	Lf, Frt	Masticatory, Flavouring agent
<i>Piper peepuloides</i> Roxburgh [Piperaceae]	<i>Pipul saag</i>	Lf, Yng Sht	Masticatory, Flavouring agent
<i>Portulaca oleracea</i> Linnaeus [Portulacaceae]	<i>Botol saag, Nona Saag</i>	WP	Green vegetable
<i>Premna mollissima</i> Roth [Lamiaceae]	<i>Baro sinduwer, Gineri</i>	Lf	Green vegetable
<i>Psidium guajava</i> Linnaeus [Myrtaceae]	<i>Amrud, Piyara, Ambok</i>	Frt	Raw
<i>Punica granatum</i> Linnaeus [Lythraceae]	<i>Darim, Anar</i>	Ripe Frt	Raw
<i>Raphanus raphanistrum</i> subsp. <i>sativus</i> (Linnaeus) Domin [Brassicaceae]	<i>Mula, Muli</i>	Fresh Rt tuber, Lf	Vegetable
<i>Rumex maritimus</i> Linnaeus [Polygonaceae]	<i>Ban palang, Kukur jiwba</i>	Lf	Green vegetable
<i>Senna occidentalis</i> (Linnaeus) Link [Leguminosae: Caesalpinioideae]	<i>Kalkasunda, Chakunda</i>	Lf	Green vegetable
<i>Senna tora</i> (Linnaeus) Roxburgh [Leguminosae : Caesalpinioideae]	<i>Chakmake, Chakra saag</i>	Lf	Green vegetable
<i>Sesbania grandiflora</i> (Linnaeus) Persoon [Leguminosae : Faboideae]	<i>Bakphool</i>	Fl	Vegetable
<i>Sesbania sesban</i> Britton [Leguminosae : Faboideae]	<i>Jayanti</i>	Lfy Sht	Green vegetable
<i>Solanum americanum</i> Miller [Solanaceae]	<i>Kakmachi</i>	Yng Sht, ripe Frt	Green vegetable
<i>Solanum torvum</i> Swartz [Solanaceae]	<i>Agnibegun, Gothbegun</i>	Yng Frt	Fruit vegetable
<i>Sphagneticola calendulacea</i> (Linnaeus) Pruski [Asteraceae]	<i>Bhringaraj</i>	Lfy Sht	Green vegetable
<i>Spinacia oleracea</i> Linnaeus [Amaranthaceae]	<i>Palangi Saag, Palong</i>	WP	Green vegetable
<i>Spondias pinnata</i> (Linnaeus f.) Kurz [Anacardiaceae]	<i>Amru, Amra, Amaroo</i>	Frt	Fruit vegetable, raw, pickles
<i>Stellaria media</i> (Linnaeus) D. Villars [Caryophyllaceae]	<i>Chikny Saag</i>	Lfy Sht	Green vegetable
<i>Syzygium cumini</i> Linnaeus) Skeels [Myrtaceae]	<i>Khudijam</i>	Ripe Frt	Raw
<i>Tamarindus indica</i> Linnaeus [Leguminosae : Caesalpinioideae]	<i>Tentul</i>	Yng Lf, Frt	Raw, pickles
<i>Terminalia bellirica</i> (J. Gaertner) Roxburgh [Combretaceae]	<i>Barra, Bahera</i>	Frt kernel, cotyledons	Raw
<i>Terminalia chebula</i> Retzius [Combretaceae]	<i>Harra, Haritaki</i>	Frt kernel	Raw
<i>Trichosanthes dioica</i> Roxburgh [Cucurbitaceae]	<i>Patuka, Jangli patal</i>	Lf, Frt	Green / frt vegetable
<i>Typhonium trilobatum</i> (Linnaeus) Schott [Araceae]	<i>Kharkon</i>	WP	Green vegetable
<i>Vitex negundo</i> Linnaeus [Lamiaceae]	<i>Nisinda, Nirgundi, Simali</i>	Lf	Green vegetable

Plants [Families]	Local Name	Parts Used	Mode of use
<i>Xanthium strumarium</i> Linnaeus [Asteraceae]	<i>Bon okhra, Aagra</i>	Yng Lf	Green vegetable
<i>Xanthosoma sagittifolium</i> (Linnaeus) Schott [Araceae]	<i>Dudh kochu</i>	Yng Lf, Rhz	Green vegetable
<i>Zingiber officinale</i> Roscoe [Zingiberaceae]	<i>Ada, Aduwa, Adrak</i>	Rhz	Spices, pickles, flavouring agent
<i>Ziziphus jujuba</i> Miller [Rhamnaceae]	<i>Kul, Bayer, Ber</i>	Frt	Raw, pickles

Numerically the taxonomic distribution of the recorded species has been presented in Table 3 below.

Table 3. Numerical distribution of recorded edible plants from the Bamangola Block of Malda district.

Taxon	Rank of Taxon		
	Family	Genus	Species
Pteridophytes	2	2	2
Dicotyledons	43	78	95
Monocotyledons	8	15	18
Angiosperms	51	93	113
TOTAL:	53	95	115

DISCUSSION

The present ethnobotanical survey recorded the use of 115 species belonging to 95 genera and 53 families of wild plants as food which are consumed by rural and tribal people of Bamangola block in the Malda district of West Bengal. The recorded wild edible plants from Bamangola block in Malda district have been presented in Table 2.

Of these only two are pteridophytes, namely *Marsilea minuta* (Marsileaceae) and *Diplazium esculentum* (Athyriaceae). Both these plants are quite good and preferred vegetables and are regularly marketed.

Monocotyledonous plants are represented by 18 species of 15 genera from 08 families. With highest number seven species has been recorded for Araceae, which is followed by three species from Zingiberaceae and two species from Arecaceae and Dioscoreaceae.

As much as 95 species of 78 genera belongs to 45 families of Dicotyledonous plants has been recorded from the Bamangola Block of Malda district to use as edible plants by the traditional villagers. Among these Amaranthaceae comes first with its eight species, which is closely followed by Cucurbitaceae (6 spp.) and Lamiaceae (5 Spp.). Malvaceae, Leguminosae, Moraceae, Apiaceae and Myrtaceae are also well represented in the list.

Most of the recorded plants used as vegetables are weedy in nature and grow in homestead, stagnant pool and small ponds-locally called as *Doba* or *Pukur*, as well as on non-fertile fallow land with alluvial soil of Barind region and suffers from drought and remains without cultivation almost round the year. Generally poor people collect these plants for their own consumption and few of these are also sold in village or even semi-urban and urban markets i.e. *Haats*. From the survey in the area's village markets a considerable number of 25 wild edible plants are recorded on sale and includes *Alternanthera sessilis*, *Amaranthus*

spinosus, *Bacopa monnieri*, *Boerhavia diffusa*, *Centella asiatica*, *Chenopodium album*, *Colocasia esculenta*, *Diplazium esculentum*, *Enydra fluctuans*, *Glinus oppositifolius*, *Hygrophila auriculata*, *Ipomoea aquatica*, *Leucas indica*, *Marsilea minuta*, *Moringa oleifera*, *Murraya koenigii*, *Mussaenda roxburghii*, *Paederia scandens*, *Sesbania grandiflora*, *Trichosanthes dioica*, *Typhonium trilobatum*, etc.

Good number wild edible plants such as *Acmella calva*, *Argemone mexicana*, *Azadirachta indica*, *Bacopa monnieri*, *Bauhinia purpurea*, *Boerhavia diffusa*, *Senna occidentalis*, *Centella asiatica*, *Chenopodium album*, *Cissus quadrangularis*, *Clerodendrum viscosum*, *Coccinia grandis*, *Cheilocostus speciosus*, *Curcuma amada*, *Dioscorea deltoidea*, *Enydra fluctuans*, *Heliotropium indicum*, *Hygrophila auriculata*, *Ipomoea aquatica*, *Leucas indica*, *Marsilea minuta*, *Mucuna pruriens*, *Nyctanthes arbor-tristis*, *Paederia foetida*, *Phyllanthus emblica*, *Piper longum*, *Sphagneticola calendulacea*, *Sesbania grandiflora*, *Terminalia bellirica*, *Terminalia chebula*, *Vitex negundo* etc. are recorded to use by the local people also as medicine.

Some plants have been newly reported to be edible in this locality (Jain 1991). These are *Acmella calva*, *Alternanthera paronichioides*, *Alternanthera philoxeroides*, *Argemone mexicana*, *Cissus quadrangularis*, *Clerodendrum viscosum*, *Heliotropium indicum*, *Leucas indica*, *Portulaca oleracea*, *Premna mucronata*, *Rumex maritimus*, *Vitex negundo*, *Sphagneticola calendulacea* and *Xanthium strumarium*.

Analysis of the elements presented in Table 1 shows the presence of at least 21 species of naturalised and semi-naturalised species, which are now very much a part of the Indian flora (Das 2002; Khuroo *et al.* 2012). At the same time, the list does not include any RET element.

The food value of most of these plants is unknown though the local people prepare quite tasty food using these species. Considering the taste, food value and preference some of these wild edible plants can be taken for proper cultivation and marketing.

Acknowledgements

The author is thankful to the University Grants Commission for financial assistance in the form of a Minor Research Project to carry this work.

LITERATURE CITED

- Al Corn, J.B. 1995. The scope and aims of ethnobotany in developing world. In R.E. Shultes & S.V. Reis (eds.), *Ethnobotany: Evolution of Discipline*. Dioscoroides Press, Portland, Oregon. 23 – 39.
- Anonymous 2001a. *Final Population Totals, West Bengal, Rural Frame. West Bengal*. Directorate of census operations. Retrieved 2008-11-10. [<http://web.cmc.net.in/wbcensus/>]
- Anonymous 2001b. *Provisional Population Totals, West Bengal, Table - 4. Maldah District (06)*. Government of West Bengal. Retrieved 2010-10-25. [<http://web.cmc.net.in/wbcensus/>]
- APG III. 2009. An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG III, *Bot. J. Linn. Soc.* 161(2): 105– 121, doi:10.1111/j.1095-8339.2009.00996.

- Berlin, B. 1992. *Ethnobiological Classification: Principles of categorization of plants and animals in Traditional Societies*. Princeton University Press, Princeton, New Jersey.
- Biswas, Kishor & Das, A.P. 2011. Documentation of wild leafy vegetables from the tribal dominated parts of Malda District of West Bengal, India. In C. Ghosh & A.P. Das (Eds.), *Recent Studies in Biodiversity and Traditional Knowledge in India*. Sarat Book House, Kolkata. Pp. 301 – 306.
- Biswas, Kishor & Das, A.P. 2012. Plants used for dental and oral healthcare in Northern part of West Bengal. In G.G. Maiti & S.K. Mukherjee (Eds.), *Multidisciplinary Approaches in Angiosperm Systematics*. University of Kalyani, Kalyani. Pp. 648 – 651.
- Chowdhury, M. & Das, A.P. 2009. Inventory of some ethno-medicinal plants in wetland areas in Maldah district of West Bengal. *Pleione* 3(1): 83 – 88.
- Das, A.P. 2002: Survey of naturalised exotics in the flora of Darjiling Hills, West Bengal, (India). *J. Econ. Tax. Bot.*, 26(1): 31 – 37.
- Grierson, A. J. C. & Long, D.G. (ed.) 1983, 1994, 1987. *Flora of Bhutan*. Vol. 1, parts 1 - 3, Royal Botanic Garden, Edinburgh.
- Grierson, A.J.C. & Long, D.G. 1991, 1999, 2001. *Flora of Bhutan*, Vol. 2, Parts 1 - 3. Royal Botanic Garden, Edinburgh.
- Hajra, P.K.; Nain, V.J. & Daniel, P. 1997. *Flora of India*. Vol. 4. Botanical Survey of India, Calcutta.
- Hajra, P.K; Rao, R.R; Singh, D.K & Uniyal, B.P. 1995. *Flora of India*, Vols.12 &13. Botanical Survey of India, Calcutta.
- Hara, H. (ed.), 1966. *The Flora of Eastern Himalaya*, Tokyo University, Tokyo.
- Hara, H. (ed.), 1971. *The Flora of Eastern Himalaya*, Second Report, Tokyo University, Tokyo.
- Hara, H.; Stearn, W.T. & Williams, L.H.J. 1978. *An Enumeration of the Flowering Plants of Nepal*. Vol. 1. British Museum, London
- Hara, H. & Williams, L.H.J. 1979. *An Enumeration of the Flowering Plants of Nepal*. Vol. II. British Museum, London
- Hara, H.; Chater, A.Q. & Williams, L.H.J. 1982. *An Enumeration of the Flowering Plants of Nepal*. Vol. III. British Museum, London.
- Harshberger, J.W. 1896. The Purpose of Ethnobotany. *Bot. Gaz.* 26: 146 - 158.
- Jain, S.K. 1981 (ed.). *Glimses of Indian Ethnobotany*. Oxford & IBH. New Delhi.
- Jain, S.K. 1987. *A manual of Ethnobotany*. Scientific Publishers. Jodhpur
- Jain, S.K. 1991. *Dictionary of Indian Folk Medicine and Ethnobotany*. Deep Publications, Delhi
- Jain, S.K. & Rao, R.R. 1977. *A Handbook of Field and Herbarium Methods*. Today & Tomorrow's Printers & Publishers, New Delhi.
- Jones, V.H. 1941. The nature and scope of Ethnobotany. *Chron. Bot.* 6(10): 219 – 221.
- Khuroo, Anzar A.; Reshi, Z.A.; Malik, A.H.; Weber, E.; Rashid, I. & Dar, G.H. 2012. Alien flora of India: taxonomic composition, invasion status and biogeographic affiliation. *Biol. Invasions* 14:99-113. DOI 10.1007/s10530-011-9981-2

- Noltie, H.J. (ed.), 1994, 2000. *Flora of Bhutan*, Vol. 3, Parts 1 & 2. Royal Botanic Garden, Edinburgh.
- Pushpangadan, P. 1994. *All India Coordinated Research Project on Ethnobiology (AICRPE) – An Overview*. Ministry of Env. & Forests, Govt. of India.
- Pushpangadan, P. 2002. The role of ethnobotany in the 21st century. In A.P. Das (Ed.), *Perspectives of Plant Biodiversity*. Bisen Singh Mahendra Pal Singh, Dehradun. Pp. 613 – 619.
- Rai, S.K. 2002. *Studies on the Ethnobotany of Darjeeling Himalaya*. Ph.D. thesis, University of North Bengal, India.
- Rai, S.K. & Bhujel, R.B. 1999. Note on some less known ethnomedicinal plants from the Darjeeling Himalayas. *J. Hill Res.* 12(2): 160 – 163.
- Rai, P.C.; Sarkar, A.; Bhujel, R.B. & Das, A.P. 1998. Ethnobotanical studies in some fringe areas of Sikkim and Darjeeling Himalayas. *J. Hill Res.* 11(1): 12 – 21.
- Rao, R.R. 1996. Traditional knowledge & sustainable development : Key role of ethnobotanists. *Ethnobotany* 8 (1& 2): 14 - 24.
- Schultes, R.E. 1960. Tapping our heritage of ethnobotanical lore. *Econ. Bot.* 14: 257 – 262.
- Schultes, R.E. 1967. The place of ethnobotany in the ethnopharmacologic search for psychoactive drugs. In Efron, D. (ed.) *Ethnopharmacologic search psychoactive drugs*. Washington: VSPHS Publ. No. 1945: 103 – 124.
- Tag, Hui 2007. *A systematic study of plants of ethnomedicinal importance used by the Khampti tribe of Arunachal Pradesh*. Ph.D. thesis, Rajib Gandhi University, Itanagar, Arunachal Pradesh.
- Vartak, V.D. & Gadgil, M. 1980. Studies in Ethnobotany: a new vistas in botanical science. *Biovigyanam* 6: 151 - 156.