

CHAPTER: 8

8. Economic Botany

All three terrestrial, aquatic and marshy land plants are growing over the wetland regions in different seasons. Among the vegetation so many plants have been identified and recorded by several authors, round the world, for their importance in human society. A number of plants growing in wetlands of Maldah district are of much economic values. For this part of the work economically important plants were recognized with reference to published literature as well as from the observation in Maldah and outside the district. Such plants were categorized as food, fodder, medicine, building materials, ornamental, fish poison, human poison etc.

Some of the important literature consulted for this includes H. B. Singh and R. K. Arora (1978) who prepared the Indian wild edible plant list. In addition, Kirtikar & Basu (1935), R.N. Chopra *et al.* (1956), Das & Mandal (2003) prepared lists of Indian medicinal plants. There are so many authors who have works on this part like Biswas & Chopra (1940), Hajra & Chakraborty (1981), Das & Chanda (1990), Jain (1991), Asolkar *et al.* (1992), Pandey *et al.* (2002), Misra & Dash (2002), Dubey *et al.* (2002). Shah & Das (2002), Rai & Bhujel (2002) also contributed substantially to such knowledge-pool for the North Bengal plants.

The wetland of Maldah is very rich in biodiversity. A very good number of economically important plants are growing over there. Many of these wetland plants are commonly sold in local markets for different forms like green vegetable, medicine, broom, fodder, ornamentals etc. Detail study on economical plants of Maldah district is not recorded but some strong comments are made by Prain

(1902), Acharyya (1998) and Ghosh (2002). No such any detail work is available from this part of the country. However, Acharyya (1998) enlisted few ethnobotanical plants grown in crop field from this district.

8.1. Result and Discussions

During the study several major and wildly grown species of great economic value has been recorded. These plants are enumerated below:

8.1. 1. Enumeration

[*Abbreviation used:* GCB=Gabgachi-chatral beel complex, A=Adh soi beel, G=Gour adhi dob beel, GB=Gold bold beel, K=Konar beel, H=Hazar Takia beel, S=Sanak beel, SO=Sonaiguri beel, SI=Singsar beel, N=Nayagram beel, SD=Sagardighi, L=Laxipur beel, BT=Belatuli beel, M=Madhaipur beel.]

8.1.1.1 Useful plants

A. Dicotyledons

Ranunculus sceleratus

Distribution: K, HT, SI, S, GB, GCB, N.

Uses: It is an aromatic herb, which is useful in rheumatism, dysuria, asthma, and pneumonia. In homeopathic treatment it is used against skin diseases. Seed powder is used as tonic and for kidney troubles.

Euryale ferox

Local name: Makhana or Makhna.

Distribution: K, SO, S, GB, GCB,

Uses: Roasted seeds and fruits are considered to be commercially much viable. Perisperms of seeds contain 77% carbohydrate (Nath & Chakraborty 1985) and 10-12% proteins (Jha 1987). It is a nutritious and easily digestible food. Seed powder is used as a substitute of arrowroot (Singh & Arora 1978). It has aphrodisiac properties and also used against dysmenorrhoea, dysentery, rheumatism and in the treatment of seminal loss (Chopra *et al.* 1956; Sharma 1969; Nadkarni 1976).

Nelumbo nucifera

Local name: Padda.

Distribution: Only ephemeral water bodies of Gajol, Habibpur and Bamongola blocks.

Uses: The leaves are occasionally used as food plates.

Flowers are used in Hindu and Buddhist temples for religious purposes.

Medicinally this flower is used as cardiac tonic and also used in fever and liver trouble; seeds past are given against skin diseases as cooling agent. Leaves are occasionally used as vegetable. Rhizome powder is useful in dysentery, diarrhoea and piles.

Nymphaea pubescens

Local name: Saluk, Vat or Sapla .

Distribution: K, HT, SI, S, GA, L, GB, GCB, N.

Uses: The villagers commonly eat rhizomes and seeds during monsoon period.

The rhizomes are used for dysentery and dyspepsia and are very often sold in the village markets during monsoon months.

The root powder and paste is used in piles and in skin diseases respectively. The flowers are astringent and cardistonic and are used in treatment of diarrhoea.

Mature seeds are used as a cooling agent for cutaneous diseases. The flowers are used by Hindus for religious purposes.

Nymphaea nouchali

Local name: Nil padda.

Distribution: K, HT, SI, S, GB, GCB, N.

Uses: The petioles, stems and peduncles are cooked as vegetable in villages. The roots and seeds are also fried and eat.

Powder of Rootstock is given for curing dyspepsia, diarrhoea and piles. Flowers are useful in palpitation of heart.

Flowers are use in Hindus for religious purpose.

An infusion of the roots and stems are considered emollient and diuretic; used for urinary tract diseases.

The leaf and young twig is generally used as vegetable. Infusion of roasted leaves is given for cough, fever and in Indo-China it is used in measles.

Pentapetes phoenicea

Distribution: K, HT, SI, S, GB, GCB, N.

Uses: Roots are astringent and capsules are used for the bowels.

Biophytum sensitivum

Distribution: K, HT, SI, S, GA, L, GB, GCB, N.

Uses: Leaves are said to be diuretic.

Oxalis corniculata

Local name: Amrul.

Distribution: In all wetlands.

Uses: It has immense medicinal values; sometime cooked as vegetable. Leaves contain Vit-C and having astringent and antiseptic properties. Plant decoctions cure dyspepsia, piles, anaemia and tympanias.

Aeschynomene asper

Local name: Sola.

Distribution: K, HT, SI, S, GA, L, GB, GCB, N.

Uses: Used as fodder and for making bottle cork, toy and decorative articles; also used as surgical lint. Leaves are edible.

Aeschynomene indica

Local name: Sola.

Distribution: K, HT, SI, L, GA, SI, S, GB, GCB, N.

Uses: Stems used in decorative purposes and for bottle corks.

Medicago lupulina

Distribution: K, HT, SI, S, BT, M, GB, GCB, N.

Uses: This plant has a number of medicinal properties and is a good laxative. It is grown for green manure and fodder.

Ammannia baccifera

Distribution: K, HT, SI, S, M, GA, GB, GCB, N.

Uses: Leaves are acrid, used to raise blisters, in rheumatism, fever and in other diseases.

Ludwigia adscendens

Distribution: All wetlands.

Uses: The entire plant except root is recommended as an antibacterial and diuretic in case of fever, cystitis, dysuria and hemorrhagic dysentery.

Trapa natans* var. *bispinosa

Local name: Paniphal or Jalsingara.

Distribution: GB.

Uses: Green fruits are eaten either raw or cooked; but fish cultivation is seriously hampered for its wide cultivation in ponds. Leaf used in blood dysentery.

Mollugo pentaphylla

Distribution: K, HT, SI, S, BT, M, GA, GB, GCB, N.

Uses: The plants contain carotene and Vit-C, used as stomachic, aperient, antiseptic, emmenagogue and as poltice on sores.

Centella asiatica

Local name: Thankuni.

Distribution: in all wetlands.

Uses: Useful in the process of nutrition and excretion; thus helping to restore the normal body function; used as tonic in skin diseases, leprosy, nervousness and blood diseases. It produces necrotic effect and produces headache and insensibility. Leaves juice and root powder are useful in stomach trouble of the babies. Leaf juice is also administered in amoebic dysentery, diarrhoea, injuries on head and improve memory; also useful in syphilitic skin diseases both internally and externally.

Oenanthe javanica

Dominated Wetlands: K, HT, SI, S, BT, M, GB, GCB, N.

Uses: Eaten as vegetable and also used for flavouring as condiment.

Seseli diffusum

Local name: Ban jawan.

Distribution: K, HT, SI, BT, M, GB, GCB, N.

Use: Fruits and entire plants are said to be use in veterinary practices. Fruits are used as stimulant, stomachic, and for expelling round worms.

Oldenlandia biflora

Distribution: K, HT, BI, M, GB, GCB, N.

Uses: Used in remitting fever, gastric irritation and nervous depression.

Oldenlandia corymbosa

Dominated Wetlands: K, HT, SI, S, GB, GCB, N.

Use: Decoction of the plant is useful in remitting fever with gastric and nervous depression; taken with honey in case of vomiting. Useful in jaundice, liver diseases and as anthelmintic.

Eclipta prostrata

Local name: Kesut.

Distribution: In all wetlands.

Uses: The whole plant is considered as tonic and an agent opening the body passage in hepatic and spleen enlargement and is an emetic. Juice of the plant mixed with aromatics is administered for jaundice. Leaves are beneficial in scorpion bite. Leaf juice along with honey is remedy for catarrhoea in infants and for cough and cold.

Enydra fluctuens

Local name: Helencha.

Distribution: All wetlands.

Uses: The leaves are used as laxative; given against hookworm and bile problem; eaten as a vegetable.

Grangia maderaspatana

Distribution: In all wetlands.

Uses: Leaves are useful in stomach trouble, irregular menses; infusion used in hysteria and for relieving pains. Juice of leaves is used in earache.

Sphaeranthus indicus

Distribution: K, HT, SI, S, GB, GCB, N.

Uses: Decoctions of plants are used as diuretic in urethral discharges. The watery juice of plants is used as laxative and in stomach troubles.

Ageratum conyzoides

Distribution: K, HT, SI, S, GB, GCB, N.

Uses: Whole plant used in diarrhoea and dysentery by tribes of Orissa (Mishra & Dash, 2002). Pest of whole plant used as antidote for snakebite (Dubey *et al.* 2002).

Vernonia cinerea

Distribution: K, HT, SI, S, GB, GCB, N.

Uses: The plant is used in the form of decoction to promote perspiration in fever. The seeds are used as an anthelmintic and also given to horses as a tonic.

Anagallis arvensis

Distribution: K, HT, SI, S, GB, GCB, N.

Uses: Medicinally used in cerebral affections, hydrophobia, leprosy and epilepsy.

Nymphoides hydrophylla

Distribution: In all wetlands

Use: Stalks and leaves are pounded with oil and applied to ulcers and insect bites; and a decoction is used as a wash for parasitic skin affections; seeds anthelmintic.

Nymphoides indica

Distribution: K, HT, SD, S, GB, GCB, N.

Uses: The plants are used as a substitute for Chireta in fever and jaundice.

Hydrolea zeylanica

Distribution: K, HT, SI, S, GA, GB, GCB, N.

Uses: The leaves are useful as antiseptic and as a poultice for ulcer.

Coldenia procumbens

Distribution: K, HT, BT, M, SI, S, GB, GCB, N.

Uses: Fresh leaves are made into paste and applied to rheumatic swellings. Dried plants with equal part of fenugreek seeds are rubbed to a fine powder and applied warm on suppuration of boils.

Ipomoea aquatica

Local name: Kolmi.

Distribution: In all wetlands

Uses: The leaves and young stem used as vegetable.

Leaf juice acts as a mild purgative and is supposed to purify blood; the juice is also considered as emetic, acting on the nerves of stomach, as antidote to the poisonous action of opium and arsenic. The plants are considered healthy for female sufferings from nervous and general debility.

Ipomoea carnea* var. *fistulosa

Distribution: In all wetlands

Uses: Stem juice used in pain by tribes of Orissa (Mishra & Dash, 2002).

Jatropha gossypifolia

Distribution: GCB, N.

Uses: Whole plant used in as purgative and in stomach ache by tribes of Orissa (Mishra & Dash, 2002).

Euphorbia hirta

Distribution: In all wetlands

Uses: Latex used as eye sore by tribes of Orissa (Mishra & Dash, 2002).

Solanum nigrum

Distribution: In all wetlands

Uses: Fruits used in pharyngitis and toothache by tribes of Orissa (Mishra & Dash, 2002).

Scoparia dulcis

Local name: Jastimadhu.

Distribution: K, HT, SI, S, GA, M, GB, GCB, N.

Uses: Plant used in diabetes and root past is given against leprosy (Pandey, 2002).

Limnophila indica

Distribution: K, HT, SI, S, GB, GCB, N.

Uses: Entire plant is considered as an antiseptic and when made into a liniment with coconut oil, is used in elephantiasis. Juice of the plant is rubbed over body in fevers. It is also given internally with ginger, cumin and other aromatics in dysentery.

Limnophila heterophylla

Distribution: K, HT, GA, L, GB, GCB, N.

Uses: Plant possesses a faint aromatic and is slightly bitter; juice of the plant is given in chronic bronchitis; it is applied also to skin eruptions.

Lindernia crustacea

Distribution: K, HT, SI, S, GB, GCB, N.

Uses: Used for bilious affections and dysentery in Indo-china; also used in poultices for boils, sores, ringworms and itches.

Mazus pumilus

Distribution: K, HT, SI, BT, M, S, GB, GCB, N.

Uses: Infusion of plant is used as tonic.

Veronica anagallis-aquatica

Distribution: B.

Uses: Leaves are eaten as vegetable.

Bacopa monnieri

Local name: Bramhi.

Distribution: K, BT, HT, SI, S, GB, GCB, N.

Uses: Leaves used as brain tonic. The decoction of whole plant is used against snake bite (Dubey *et al.* 2002).

Hygrophila auriculata

Local name: Kulekhara or Dangrakata.

Distribution: K, HT, SI, GA, GB, GCB, N.

Uses: Both root and leaf decoctions used as diuretic in the treatment of dropsy, and also for jaundice and the diseases of the urino-genital tracts. Seed extract after mixing with other medicines is given to the mother after delivery.

Hygrophila difformis

Distribution: SI, GA, GB, GCB, N.

Uses: Very good fodder for cattle.

Rungia pectinata

Distribution: K, HT, SI, S, GB, BT, M, GCB, N.

Uses: Leaf decoction is used in smallpox and has cooling effect.

Lippia javanica

Distribution: K, HT, SI, S, GB, GCB, N.

Uses: Plants used as a sage in cookery; leaves used as vegetable in Khasi hills, considered stomachic and nervine in some parts of Brazil and Paraguay.

Mimosa pudica

Local name: Lajjabati.

Distribution: K, HT, SI, S, GB, GCB.

Uses: Leaf decoction used in sexual weakness. Leaves and roots used in piles, fistula, hydrocele and blood dysentery (Pandey *et al.* 2002).

Leucas indica

Local name: Dhurpi or Dorpi.

Distribution: K, HT, SI, S, GB, GCB, M.

Uses: Plants are antipyretic and used as insecticides. Flowers used in cough and cold (Pandey, 2002).

Alternanthera sessilis

Distribution: In all wetlands.

Uses: This taxon is useful as galactic cholagogue and febrifuge; stems and leaves as poultice in snake bite, as stimulant to increase the breast milk and also used in eye troubles; leaves are applied as hair tonic.

Amaranthus viridis

Local name: Kuria or Note.

Distribution: K, HT, SI, S, GA, L, GB, GCB, N.

Uses: Eaten as an emerging vegetable and is a strong purgative properties.

Amaranthus spinosus

Local name: Katakhoria or Katanote.

Distribution: K, HT, SI, S, GA, L, GB, GCB, N.

Uses: Root used in boils and carbuncles by tribes of Orissa (Mishra & Dash, 2002).

Chenopodium album

Local name: Bathua.

Distribution: K, HT, SI, S, GB, GCB, N.

Uses: Leaves are sometimes used as vegetable and had medicinal values.

Chenopodium ambrosioides

Local name: Chathua.

Distribution: K, S, GB, GCB, N.

Uses: Leaf juice given against the tapeworm.

Persicaria barbata

Distribution: K, HT, SI, S, GB, GCB, N.

Uses: The roots are used as an astringent and as a cooling agent. The seeds are used to relieve gripping pains of colic.

Persicaria orientalis

Distribution: K, HT, SI, S, GA, BT, M, L, GB, GCB, N.

Uses: Considered as good tonic and as agent useful in healing wounds.

Polygonum plebeium

Distribution: In all wetlands.

Uses: Dried and powdered plants are taken internally in pneumonia; root is given in bowel complains.

Rumex dentatus

Distribution: K, HT, SI, S, GB, GCB, N.

Uses: Roots are used as astringent and applied in cutaneous disorders.

Ceratophyllum demersum

Distribution: K, GA, GB, L.

Uses: Said to be used in biliousness as cooling agent.

B. Monocotyledons

Blyxa octandra

Distribution: GB, N, L.

Uses: Used as an in aquarium plant.

Hydrilla verticillata

Distribution: K, HT, SI, S, GA, L, GB, GCB, N.

Uses: Used as aquarium plants and is also a good fish food.

Nechamandra alternifolia

Distribution: All wetlands.

Uses: Used as fish food.

Ottelia alismoides

Local name: Panikola.

Distribution: K, HT, SI, S, GB, GCB, GA, L, N.

Uses: Village boys used to eat its young fruits. The fruits are sometimes cooked as vegetable, mostly by the fishermen. Whole plant can be used for making compost or green manure (Nasker *et. al.* 1985.)

Vallisneria spiralis var. *denseserrulata*

Distribution: GB, B, L, N, SD.

Uses: This plant is stomachic; used in leucorrhoea, haemotherima, giddiness, morbid thrust and rheumatism. Largely used in domestic aquaria and it has great capacity in purifying water so fish culture is helped directly or indirectly.

Costus speciosus

Distribution: Ephemeral water bodies and GB.

Uses: Roots-bitter, astringent, purgative, depurative, stimulant, tonic and anathemantic. Rootstocks on rhizomes are considered as raw materials for commercial production of diosgenin, steroids like sex hormone used for making oral contraceptives.

Crinum asiaticum

Distribution: Ephemeral water bodies.

Uses: Tubers are useful in case of vomiting, urinary discharges.

Monochoria hastata

Distribution: In all wetlands

Uses: Tender stalk and leaves are eaten as vegetable; rootstalk is used as food for cattle and pigs. Used as alternative tonic, cooling agent, also used in insanity. Poultice of the leaves applied in boils. The roots when chewed relieve toothache.

Monochoria vaginalis

Distribution: In all wetlands.

Uses: Used for producing Green manure

Commelina benghalensis

Distribution: K, HT, SI, S, GA, B, GB, GCB, N.

Uses: Plant is bitter, useful in dermatology as refrigerant, laxative, beneficial in leprosy, in constipations. Root is used to relieve headache.

Commelina diffusa

Distribution: K, HT, SI, S, GB, GCB, N.

Uses: Useful in burns, itches and boils; leaves used for poulticing sores.

Murdannia nudiflora

Distribution: In all wetlands.

Uses: Plants are cooked and used in the treatment of leprosy. It is considered useful in headache, asthma, piles, stomach and kidney trouble and some other diseases.

Typha angustifolia

Local name: Hogla.

Distribution: GCB & ephemeral water bodies of Kaliachak block.

Uses: Dry leaves used in making mat, temporary shades and as thatch. Root stock is used as astringent and diuretic. Inflorescence used as famine food by the poor villagers.

Colocasia esculenta

Local name: Kachu.

Distribution: In all wetlands.

Use: Entire plant including young inflorescence used as vegetable.

Lasia spinosa

Local name: Kantasharu

Distribution: Ephemeral water bodies of Gajol block.

Uses: Young leaves eaten as vegetable.

Pistea stratiotes

Local name: Takapana.

Dominated Wetlands: K, HT, SI, S, GB, GCB, N.

Uses: This aquatic weed frequently clogging the water surface and hampered the inland fish culture. But, it possesses adequate antiseptic, antidysenteric, antitubercular and insecticidal properties. Leaves used in piles, asthma and cough. Used as fodder for duck and cattles.

Lemna perpusilla

Distribution: In all wetlands.

Uses: Food for ducks and fishes.

Fronde reported to possess cooling, astringent and diuretic properties; useful in skin diseases and as ophthalmic wash.

Spirodela polyrrhiza

Distribution: In all wetlands.

Uses: Food for fishes and ducks.

Wolffia arrhiza

Distribution: Ephemeral water bodies of Tal.

Uses: Food for fishes and ducks.

Sagittaria guayanensis

Distribution: K, HT, SI, S, GA, GB, GCB, N.

Uses: Rhizome used as vegetable by tribes of Orissa (Mishra & Dash, 2002).

Sagittaria sagittifolia

Distribution: K, B, GCB, N.

Uses: Plants possessing antiseptic properties. The fleshy corms are used as food by poor villagers.

Acorus calamus

Local name: Boch.

Distribution: Ephemeral water bodies of *Tal* and *Diara*.

Use: Small pieces of rhizome taken orally in case of gastritis and stomach pain and is also chewed directly for tonsillitis and cough (Rai & Bhujel, 2002).

Aponogeton crispum

Distribution: K, HT, SI, S, GA, L, GB, GCB, N.

Uses: The stolons are eaten by the poor villagers during famine; and used as aquarium plants for its beautiful translucent leaves with rippled ends.

Aponogeton natans

Distribution: K, HT, SI, S, GB, GCB, N.

Uses: The rootstock contains much starch and is edible.

Potamogeton crispus

Distribution: SO, B, GCB.

Uses: Relish much by the herbivorous carps.

Potamogeton nodosus

Distribution: K, HT, SI, S, GA, GB, GCB, L, N.

Uses: Leaves are food for fish.

Cyperus rotundus

Dominated Wetlands: K, HT, SI, S, GB, GCB, N.

Use: Root is considered useful in diarrhoea, leprosy, thirst, fever, blood diseases, pain, vomiting, stomach disorder, as anthelmintic in expelling worms, and in leprosy as diuretic.

Schoenoplectus articulatus

Distribution: K, HT, SI, S, GB, BT, M, L, GCB, N.

Uses: Tubers are said to be useful in diarrhoea and vomiting and is a purgative.

Cynodon dactylon

Local name: Durbaghass.

Distribution: In all wetlands.

Uses: Root juice orally taken in case of liver cirrhosis, indigestion and burning sensation in urination (Rai & Bhujel, 2002).

Imperata cylindrica

Local name: Kush.

Distribution: K, HT, SI, S, GB, GCB, N, M, BT.

Uses: Generally use in Hindu for religious purpose. Used as fodder and making ropes. It is reported that root juice taken orally as wormifuge (Rai & Bhujel, 2002).

Vetiveria zizanioides

Distribution: K, HT, SI, S, GB, BT, M, L, GCB, N.

Uses: Roots made into aromatic mats used as coolant in summer; oil in perfumery; leaves for making paper.

C. Pteridophytes:

Azolla pinnata

Distribution: In all wetlands.

Uses: Produce very good green manure.

Ceratopteris thalictroides

Distribution: K, HT, B, BT, L, GB, SI, S, GB, GCB, N.

Use: Frond pest used in treating in skin diseases. Young fronds used as vegetable.

Marsilea minuta

Distribution: All wetlands.

Use: Medicinal; leaves used as vegetable. Rhizome poisonous.

8.1.1.2. Poisonous Plants

Persicaria hydropiper

Distribution: In all wetlands.

Poisonous effect: Acrid juice of the plant is used in diuretic cases, uterine disorder and as immersion in causing precocious maturity of the young and as fish poison.

Kyllinga nemoralis

Distribution: K, HT, SI, S, M, BT, B, GB, GCB, N.

Poisonous effect: Roots reported to be poisonous and used as a refrigerant.

Mikania micrantha

Distribution: K, HT, SI, GB, GCB.

Poisonous effect: Some tribes use leaves of this species as fish poison.

Parthenium hysterophorus

Distribution: K, HT, SI, GB,

Poisonous effect: The aerial parts mainly trichoms and pollens are responsible for dermatitis, severe allergy and respiratory troubles.

Ricinus communis

Local name: Rerhi.

Distribution: Ephemeral water bodies of *Diara* region.

Poisonous effect: Entire plants and seeds cause serious allergic affect, diarrhea, burning of mouth and throat, damage of kidney and liver. Seed oil used as strong purgative.

Solanum nigrum

Distribution: K, HT, SI, S, GB, GCB, BT, N.

Poisonous effect: Plant parts and fruits cause gastric pain, drowsiness and paralysis.

8.2. Ethnobotany

The name 'Ethnobotany' derived from two Greek words *Othnikos* or *ethnos* meaning nation or race and *botanikos* or *botane* means plants. Dr. J. W. Harshberger (1885) first coined the term "*Ethnobotany*" which means the close relationship between plants and primitive associates. In the words of Jain & De (1966), Ethnobotany means the relationship between indigenous people and their plant surroundings. Manilal (1988) explained ethnobotany as entire realms of useful relationship between man and plant. In this study, ethnobotanical work is considered the plants those are growing in the wetland areas of this part of the country. The wetlands support various types of plants and many of those are used by local people living in the vicinity of wetlands. The rich flora of Maldah wetlands provide materials for survival for numerous people. Most of the wetlands of this area are situated at the very remote areas.

People living in the vicinity of wetlands are generally very needy and are mainly Muslims, Hindus and some tribals. In Maldah 39 sub communities are known to reside, of which *Santals*, *Oraon*, *Mundas* and *Paharias* are with considerable population structure. The three administrative Blocks Habibpur, Gajol and Bamongola are densely populated by different tribes around the wetlands along with *Tangan* river. The other wetlands of Chanchal, Harischandrapur and English Bazaar are also inhabited by some tribes. The poor and tribal people of those areas collect several plants for different purpose such as food, fodder, medicinal, fuel, building materials etc. (Plate: XX).

Some poor people collect various edible plants, which are widely, grow in these areas and sale in village markets or supply to town markets in urban areas. Many local peoples including tribes, used several plants in their Unani method of treatment. Several species they collect and use as building materials and for thatching their houses.

Several plant species have been found during the present work to use by local ethnic people. The record formed a long list of wetland plants. The recorded plants are categories in several segments like edible plants, medicinal plants, building materials, green manure, ornamental etc.

8.2.1. Edible plants

As much as round 26 species of edible plants has been recorded. Of these, leaf and young twigs of 16 plants; seeds and fruits of 6 plants; petioles and pedicles of 4 plants; and underground parts of one plants are edible parts (table 8.1).

Table 8.1 : Edible Plants

Scientific name	Family	Vernacular Name	Purpose of use
<i>Alternanthera sessilis</i>	Amaranthaceae	Khenchisak	Young twig and leaf as vegetable
<i>Amaranthus spinosa</i>	Amaranthaceae	Khuria	Young twig and leaf as vegetable
<i>Amaranthus viridis</i>	Amaranthaceae	Kata Khuria	Young twig and leaf as vegetable
<i>Celosia argentea</i>	Amaranthaceae	Suggi sak	Young leaf as vegetable
<i>Chenopodium album</i>	Chenopodiaceae	Bothua sak	Young leaf as vegetable
<i>Colocasia esculenta</i>	Araceae	Kachu	Young twig, leaf, Inflorescence and rhizome as vegetable
<i>Colocasia nymphaefolia</i>	Araceae	Kachu	Young twig, leaf, Inflorescence and rhizome as vegetable
<i>Digera muricata</i>	Amaranthaceae	Jamaika sak	Young leaf as vegetable
<i>Elydra fluctuens</i>	Asteraceae	Helancha	Young twig and leaf as vegetable
<i>Euryale ferox</i>	Asteraceae	Makhna	Fried seeds are edible

<i>Glinus oppositifolius</i>	Molluginaceae	Gimma	Young twig and leaf as vegetable
<i>Hygrophila auriculata</i>	Amaranthaceae	Kulekhara	Young twig and leaf as vegetable
<i>Ipomoea aquatica</i>	Convolvulaceae	Kolmi	Young stems are eaten as vegetable
<i>Leucas indica</i>	Labiatae	Dorpi	Young twig and leaf as vegetable
<i>Malva verticillata</i>	Malvaceae	Laffa	Young leaf as vegetable
<i>Marsilea minuta</i>	Marsileaceae	Susni	Young leaf as vegetable
<i>Portulaca oleracea</i>	Portulacaceae	-	Young leaf as vegetable
<i>Nelumbo nucifera</i>	Nelumbonaceae	Padda	Fleshy seeds are eaten
<i>Nymphaea pubescens</i>	Nymphaeaceae	vat	Petioles are used as vegetable and Fried seeds are edible
<i>Ottelia alismoides</i>	Hydrocharitaceae	Panikola	The village children's eat the seed
<i>Oxalis corniculata</i>	Oxalidaceae	Amrul	Young leaf as vegetable
<i>Physalis minima</i>	Solanaceae	-	Young twig and leaf as vegetable
<i>Polycarpon prostratum</i>	Caryophyllaceae	-	Young twig and leaf as vegetable
<i>Scirpus articulatus</i>	Cyperaceae	Chirchiri	Fried seeds are edible
<i>Solanum nigrum</i>	Solanaceae	-	Young twig and leaf as vegetable
<i>Trapa natans</i> var. <i>bispinosa</i>	Trapaceae	Paniphal	Fleshy pulp of spiny triangular fruits is eaten and marketed

8.2.2. Fodder Plants

Several wetland angiosperms are recorded to use as most important fodder plants. However, the list is dominated by grasses and sedges. Young twig, straw, leaves of fodder plants are mainly given to the domestic cattles as food. Among the dicotyledons *Alternanthera philoxiroides*, *Alternanthera paronychioides*, *Stellaria wallichiana*, *Mollugo pentaphylla*, *Oenanthe javanica* etc. are very much used as fodder plants and are collected by local people for their cattles. On the other hand grasses and sedges like *Axonopus compressus*, *Coix aquatica*, *Cynodon dactylon*, *Pèrotis indica*, *Echinochloa crus-galli*, *Echinochloa colona*, *Echinochloa colona Sacciolepis indica*, *Sacciolepis interrupta*, *Sacciolepis indica*, *Sporobolus diander*, *Setaria glauca*, *Chloris inflata*, *Digitaria bicornis*, *Eleusine indica*, *Oplismenus burmannii*, *Paspalum scrobiculatum*, *Eragrostis gangetica*, *Cyperus difformis*, *Cyperus rotundus*, *Kyllinga brevifolia* etc. are mostly used fodder species along with some other monocotyledons like *Eichhornia crassipes* *Monochoria hastata*, *Commelina benghalensis*, *C. diffusa*, *C. longifolia*, *Murdannia nudiflora*, *Sagittaria sagittifolia* etc.

8.2.3. Medicinal Plants

During the survey of wetlands of Maldah district 33 plant species found to be recorded as medicinal value used by the local poor and tribal villagers who inhabit around the wetlands. Out of the recorded 33

species, 26 are dicotyledons and 7 are monocots. These plants are used for curing more than 20 diseases like Blood dysentery, cough & cold, skin diseases, anemia etc (Table: 8.2).

Table 8.2: Medicinal plant and its uses

Scientific name	Family	Vernacular Name	Purpose of use
<i>Acorus calamus</i>	Acoraceae	Boch	Aromatic rhizome and leaf ash is given in case of Headache and also given orally against cough and cold
<i>Alternanthera sessilis</i>	Amaranthaceae	Kenchisak	Leaf and root paste is given orally in case of blood dysentery
<i>Amaranthus spinosa</i>	Amaranthaceae	Katakhuria	The leaf paste with <i>Jatropha zendurosa</i> used externally against the body pain. Root and leaf paste is given in case of Blood dysentery
<i>Bacopa monnieri</i>	Scrophulariaceae	Bramhi	Leaf or young twig is given in case of strong memory and nervous system
<i>Centella asiatica</i>	Apiaceae	Thankuni	Leaf juice is given in case of gastrotisation and liver stimulant
<i>Costus speciosus</i>	Costaceae	-	Rhizome pest against treatment of jaundice.
<i>Datura stramonium</i>	Solanaceae	Dutro	Fruit juice with mustered oil given in case of Ear pain
<i>Eclipta alba</i>	Asteraceae	Kesut	Cooling agent in case of head and as black dye of hair
<i>Erydra fluctuens</i>	Asteraceae	Helancha	Leaf is given against the anemia
<i>Glinus oppositifolius</i>	Molluginaceae	Gimasak	Root paste is given orally against the white discharge. The flower paste mixing with wood paste of <i>Santalum album</i> is given in case of dysentery
<i>Hygrophila auriculata</i>	Acanthaceae	Kulekhara	Leaf part used in case of anemia
<i>Lasia spinosa</i>	Araceae	Kantasaru	Leaves paste is given orally against the asthma of human as well veterinary treatment
<i>Leucas indica</i>	Lamiaceae	Dorpi	Leaf juice taken in case of toothache and also in case of infection in the mouth
<i>Mimosa pudica</i>	Mimosaceae	Lajjaboti	Root paste is given in case of Blood pressure
<i>Nymphaea pubescens</i>	Nymphaeaceae	Sapla/Bhat	Flower paste is given in case of white discharge

<i>Nymphaea rubra</i>	Nymphaeaceae	Lal sapla	Flower paste is taken orally in case of Blood dysentery and piles
<i>Blumea lacera</i>	Asteraceae	-	Early deplacentation of cow
<i>Clerodendrum viscosum</i>	Verbenaceae	Bhat	Root pest is given in case of fever
<i>Colocasia nymphaefolia</i>	Araceae	Kachu	Rhizome paste with the root paste of <i>G. oppositifolia</i> is given in case of red discharge
<i>Croton bonplandianus</i>	Euphorbiaceae	Maricha	Latex is given externally on the cut place for stopping the bleeding
<i>Tonningia axillaris</i>	Commelinaceae	Kachla	Plant pest given against the pain in nail corner
<i>Cynodon dactylon</i>	Poaceae	Durbagash	Ant hemorrhagic
<i>Fumaria indica</i>		Bandhania	Purify the blood in Skin disease
<i>Oxalis corniculata</i>	Oxalidaceae	Amrul	Leaf pest given against the dysentery
<i>Physalis minima</i>	Solanaceae	Handikundi	Ash given against the skin disease
<i>Scoparia dulcis</i>	Scrophulariaceae	Jasthimadhu	Leaf paste use in case of fever and red urine
<i>Solanum nigrum</i>	Solanaceae	Handikundi	Leaf decoction given against eye disease.
<i>Solanum torvum</i>	Solanaceae	Bengarbata	Fruit juice applies for body pain and ear pain.
<i>Sida acuta</i>	Malvaceae	Chipshirip	Leaf decoction given against blood dysentery.
<i>Cyperus rotundus</i>	Cyperaceae	Takudara	Root pest given against paralysis.
<i>Crinum asiaticum</i>	Amaryllidaceae	Birpiaj	Root pest applies against dermatitis.
<i>Ricinus communis</i>	Euphorbiaceae	Aradom	Leaves against pain during child birth
<i>Solanum surattense</i>	Solanaceae	Henje	Fruit pest given against cold and cough

8.2.4. Building & Fencing materials

Local poor tribals use some wild plants for making their houses and protect their count-yard through fencing. Nine species of angiospermic plants have been recorded during the study (Table: 8.3). Among all the monocotyledonous species two are trees, one is shrub and rest are grasses.

Table 8.3: House building materials

Scientific Name	Family	Vernacular Name	Purpose of Use
<i>Borassus flabellifer</i>	Aracaceae	Tal	Dried leaves use as roof, wall material along with Bamboos in preparation of house. The Stem is used as pillar or the house

<i>Phoenix sylvestris</i>	Aracaceae	Khejur	Dried leaves use as roof, wall material along with Bamboos in preparation of house. The Stem is used as pillar or the house
<i>Diplachne fusca</i>	Poaceae	-	Local poor people used the dried plants as roof, wall material along with Bamboos in preparation of house
<i>Saccharum arundinaceum</i>	Poaceae	-	Local poor people used the dried plants as roof, wall material along with Bamboos in preparation of house
<i>Imperata cylindrica</i>	Poaceae	Kush	Web into mat like structure for making their houses
<i>Ipomoea carnea</i>	Convolvulaceae	Kolmi	Dried plants and sometimes living plants along with bamboos used to give the boundary of house land or the vegetable garden
<i>Saccharum spontaneum</i>	Poaceae	Kash	Local poor people used the dried plants as thatching and wall material along with bamboos in making houses
<i>Vetiveria zizanioides</i>	Poaceae	Binna	Local poor people used the dried plants as roof, wall material along with Bamboos in preparation of house
<i>Sclerostachya fusca</i>	Poaceae	-	Local poor people used the dried plants as roof, wall material along with Bamboos in preparation of house

8.2.5. Broom, Utensils, Religious and Ornamentals

During the survey 13 such species have been recorded these are used for different purpose. Among them 3 grass species are used for making brooms and mats. Nine species are used in different religious acts, 2 as in ornamental used for Hindu and tribal deity and in different occasion like marriage and one species used for making utensils. Details have been provided in Table. 8.4.

Table 8.4: Broom, Utensils, Religious and Ornamentals

Scientific Name	Family	Vernacular Name	Purpose of Use & Market value
<i>Aeschynomene asper</i>	Fabaceae	Sola	The dried stem used in preparation of different ornamentals. It mainly used in preparation of different crowns, neckles ect. for God and Goddess and for human also
<i>Aeschynomene indica</i>	Fabaceae	Sola	The dried stem used in preparation of different ornamentals. It mainly used in preparation of different crowns, neckles ect. for God and Goddess and for human also
<i>Nymphaea rubra</i>	Nymphaeaceae	Lal Sapla	Flower and flower bud used in different Hindu temple for worship. Flower and flower buds are marketed in village and town market at rate of Rs. 1-7 (per flower) and Rs. 1-4 (per bud) respectively

<i>Nymphaea pubescens</i>	Nymphaeaceae	Sapla	Flower and flower bud used in different Hindu temple for worship. Flower and flower buds are marketed in village and town market at rate of Rs. 1-7 (per flower) and Rs. 1-4 (per bud) respectively
<i>Nymphaea nouchali</i>	Nymphaeaceae	Neel sapla	Flower and flower bud used in different Hindu temple for worship. Flower and flower buds are marketed in village and town market at rate of Rs. 1-7 (per flower) and Rs. 1-4 (per bud) respectively
<i>Nelumbo nucifera</i>	Nelumbonaceae	Padma	Flower, flower bud and fruits are used in different Hindu temple for worship. The leaves are used as plates in different occasions. The leaves, Flower and flower buds are marketed in village and town market at rate of Rs. 15-20 (per 100 leaves), Rs. 2-10 (per flower) and Rs. 2-6 (per bud) respectively
<i>Cynodon dactylon</i>	Poaceae	Durbaghas	Use with flower in different Hindu occasion
<i>Vetiveria zizanioides</i>	Poaceae	Binna	Dried leaves and straws are used for preparation of different type of good quality brooms and tools. These products are mainly prepared by the poor villagers and tribal peoples and also marketed in havoc amount
<i>Calamus erectus</i> var. <i>schizospathus</i>	Aracaceae	Bnet	Stem used as utensil material
<i>Imperata cylindrical</i>	Poaceae	Kush	Dried plants used in different Hindu occasion
<i>Saccharum spontaneum</i>	Poaceae	Kash	Dried leaves and straws are used for preparation of different type of brooms and tools. These products are mainly prepared by the poor villagers and tribal peoples and also marketed in havoc amount
<i>Datura stramonium</i>	Solanaceae	Dhutra	The flowers used by the local people in worship of lord Shiva and treated as very important flowers for it. These flowers are also marketed in town market in package with <i>Cynodon dactylon</i> , <i>Tegetes minuta</i> , Leaves of <i>Aegle marmelos</i> at the rate of Rs. 3-5
<i>Clerodendrum viscosum</i>	Verbinaceae	Bhnat	The flowers used by the local people in worship of lord shiva and treated as very important flowers for it. These flowers are also marketed in town market in package with <i>Cynodon dactylon</i> , <i>Datura stramonium</i> , and Leaves of <i>Aegle marmelos</i> at the rate of Rs. 3-5

8.2.6. Fuel Plants

During dry period local poor people, mostly women and children collect several dried plants and/or plant parts to use as fuel. Out of these, 8 most important species have been recorded. *Clerodendrum viscosum*, *Ficus heterophylla*, *Ipomoea carnea*, *Ludwigia octavalvis*, *Ludwigia perennis*, *Melochia corchorifolia*, *Saccharum spontaneum* and *Xanthium stramonium* are major species that are used by the local people as fuel

8.2.7. Green manure

Few plants are directly or indirectly used by local people for making green manure.

i. *Azolla pinnata* is used as very good manure for its high nitrogen fixing capacity through its symbiont *Anabaena azollea* which lies inside it. *Lemna perpusilla*, *Salvinia cucullata*, *Spirodela polyrrhiza* along with *Pistea stratiotes* also produce very good green manure. The village people directly apply it on newly prepared crop field. Different species of *Nechamandra*, *Vallisneria*, *Ottelia* and *Najas* are also used for making green manure.

ii. *Eichhornia crassipes* also used as green manure in two different ways:

a. The fresh plant collected from wetlands are directly spread on the crop field; after few days, plants dried up, decomposed and gradually get slowly mixed with the soil.

b. On the other hand, the dried plants burn on the field along with *Monochoria hastata* and *Monochoria vaginalis* to makes ash, which is used as fertilizer.

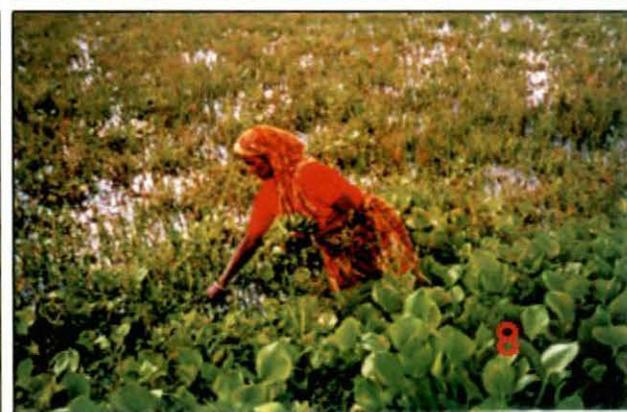
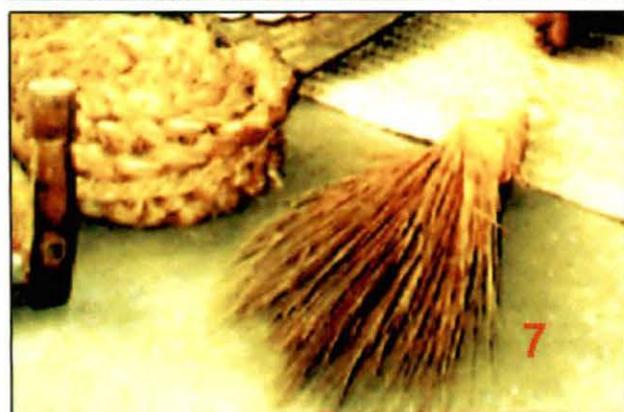
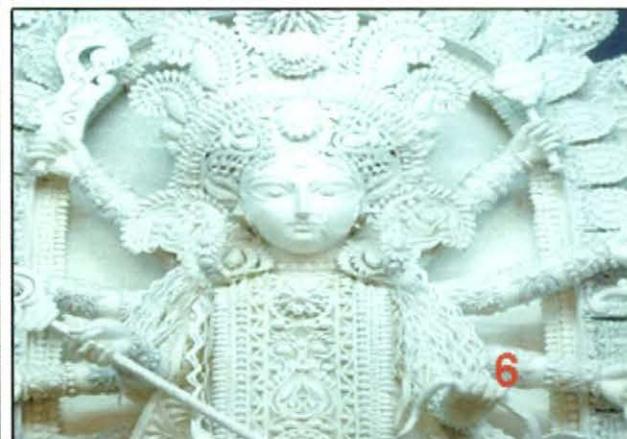
8.2.8. Miscellaneous

Except the major use, some plants are also used in different other purposes (Table: 8.5)

Table 8.5: Miscellaneous

Sl. No.	Scientific Name	Family	Vernacular name	Purpose of Use
1.	<i>Eichhornia crassipes</i>	Pontederiaceae	Kachuripana	Petiole used as floating element for fishing instrument

2.	<i>Piper longum</i>	Piperaceae	-	The leaf and fruits are used in Haria (Traditional Rice beer) preparation by the Oraon people for improving the taste
3.	<i>Scoparia dulcis</i>	Scrophulariaceae	Jastimadhu	Leaf is used in Haria (Traditional Rice beer of Santal, Oraon, Mundas) preparation as sweetening material
4.	<i>Vallisneria spiralis</i>	Hydrocharitaceae	Jhaji	The plant used as ornamental in aquarium



1. & 3. Fodder collection, 2. Fuel 4. & 5. Building materials, 6. Ornamental, 7. Broom & utensils, and 8. Collection of wild vegetables