



## WILD AND SEMI WILD ANGIOSPERMIC AQUATIC FLORA OF MITHILA REGION (DARBHANGA)

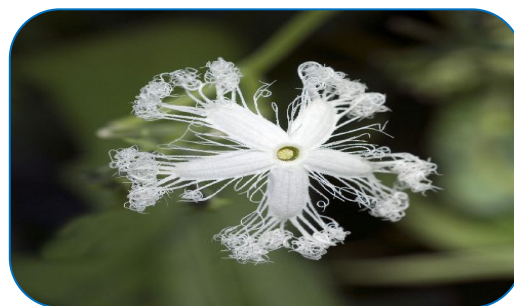
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### ABSTRACT :

*This paper put light on the aquatic and wetland angiospermic plants of Darbhanga (Mithila), North Bihar with their ethno botanical impotence. The other aspect that to make people aware of potentialities of employability of the natives by enhancing the productivity of these plants. Aquatic plants hold several economic values and ecological significance (sculthrope 1971, NAS, 1976) Seshavathoram(1990) In fact aquatic plants constitute a free crop of great potential value. A highly productive crop that requires no tillage, fertilizer, seed or cultivation potential animal feed, human food soil addilives, fuel production and waste water treatment (NAS 1976) These have immense medicinal value and also play a key role in determining the structure and function of ecosystems. Submerged aquatic plants supply oxygen to water as a result its suitable for pisciculture (sambamurty 2005) These wetland provide livelihoods for millions of people who live within around them.*



**KEYWORDS :** crop, fertilizer, seed, livelihoods, wetland.

### INTRODUCTION :

Darbhangha district is a important region of north Bihar known for its fine network of rivers emanating from the Himalayas and also for large numbers of other natural and manmade water bodies Thousand of ponds, tanks, *chaurs* and *moin* constitute the lifeline of the area by saving as the source of irrigation and pisciculture wetland in this region are repository of aquatic biodiversity and provide a basics sustainable livelihood to associated populace. Darbhanga is famous for its ponds (Tal) fishes varieties (*machh*) and makhan (euryle farox) Darbhanga characterized by thick alluvial soil, good rainfall, high humidity, ample sunshine and many perennial water sources, monsoonal rains ponds ditches, road side canals, paddy fields temporary water depression, present investigation was formulated to study aquatic and wetland angiospermic plants of Darbhanga district and to document this different ethobotinical properties prevalent among local people

### MATERIALS AND METHOD:-

Detailed investigation made on the utilization of aquatic and wetland plants sources basic of food, fodder, folk medicine, rituals and cultural practices, fence, flood fighting, fishoues practices, handicraft materials, components of mixed cropping (garma dhan {Paddy with Makhana}.

According to survey report August (2011-2014) total number of ponds in Darbhanga district are 225. Present study is based on 23 ponds: These ponds are of perennial water body, water body of subjected to human interference, waterbodies reciving all types of domastic sewage and seasonal water bodies. Some wetlands, marshes.

1. **Perennial water bodies:-** Example Ganga sagar, Harahi pokhar, mirjagalib khan talab, Diggi pokhar etc. shyma maa temple campus.
2. **Seasonal water bodies:-** some ponds in saramohanpur area, shyma maa temple area, rajkumar gangh area donar gumti area, Sanskrit university campus.
3. **Water body subject to human interference:-** Benipur, ashapur area, subhankarpur area.
4. **Waterbody reciving all types of domastic sewage:-**Ganga sagar, opposite smriti aryoge sansthan, DMCH area etc besides the railways tracks diches were also observed. These ponds were visited every month from January 2019 upto January 2020. The plants were collected from different strata level. Herbaria were prepared local people and local hakims and vaides were consulted for preliminary identification of plants. Identification was made with the help of M.U., Botany dept., Bodhgaya, P.G. Dept. of L.N.M.U. Darbhanga and Heins flora Botany of Bihar and Orissa. Common name Botanical name, season of occurrence, properties with special properties if any were recorded. Besides it their parts which are used for different purpose were recorded. These plants are, free floating, noeted floating, rooted submerged, rooted emergent freely submerged and wetlands plants.

## RESULTS AND DISCUSSION

The result revealed that recorded plants species were under use by the local inhabitants for food, fodder mat and basket weaving, thatching materials sure various diseases. The ethnobotanical survey of aquatic angiosperms of Darbhanga region shall provide further intermation on ecobiotechnological applications of economically important species. In Darbhanga region most of the ponds experience a considerable rise during the month of August to November and a notable recession during January to June. This shows a direct bearing on growth and activities of the plants species which thrive during the September to December. Both monocots and dicots species were collected and studied. Total species were collected 36 in no. belongs to 24. Family belonging both monocots and dicots. These plants are of different aquatic habitate some were submerged, semi submerged free floating etc. these angiospermic plants maintain aquatic balance of aquatic ecosystem. Submerged plants produce dissolve  $O_2$  at littoral zone while this provide environment for pisciculture. The check list of collected aquatic wetland angiosperms are placed as follows.

1:- *Alternanthera sessilis* (Dicots) Emergent anchored hydrophyte

Local name- malencho, Garundi

Family- Amaranthaceae

Uses- Skin disease, Acne, Asthma

2:- *Acorus calamus* (Monocots)

Local name- Bach

Uses- Rhizome livelihood family – Acoraceae purposes

3:- *Asteracantha longifolia* (Dicots)

Local name- Talmakhana

Family- Acanthaceae.

Uses- Leaves livelihood purposes used as Blood purifier Rich sources of iron.

4:- *Aeschynomene* sp. (Dicots) Emergent anchored

Local name- Korhila, wood.

Family- fabaceae.

Uses-stem livelihood purposes making handicraft, seed are used in pox.

5:- *Cyperus esculentus* (major weed of paddy area) (Monocots) wetland.

Local name- chichorh

Family-cyperaceae.

Uses- subterranean tuber used in as subsidiary food upper plant are used as biomass fuel.

6:- cyperus rotandus (Monocots) weed wetland.

Local name- moth ghass

Family- cyperaceae

Uses-clumus livelihood purposes as fine mats making according to gupta elal (2018) used as medicine for stomach ace.

7:- ceratophyllum demersum (Monocots) Submerged free floating

Local name- Jhanjhi

Family- ceratophyllaceae

Uses- used as a protective cover of fresh laid pawn and young fish fry ornamental use in aquarium.

8:- Commelina benghalensis (Monocots) wetland hydrophyte.

Local name- spiderwort, kanshira

Family- Commelinaceae

Uses- leaves are used in dye, and treat diarrhoea, plants also used in women infertility.

9:- Eichhornia crassipes (Monocots) free floating

Local name- jal kumbhi

Family- Pontederiaceae

Uses- leaves are used as manure and fodder plants acts as fish chaching device locally named as Jhanga while plant also absorbed heavy metals dissolved pond.

10:- Euryale ferox (Dicots) Floating leaved anchored

Local name- makhana

Family- Nymphaeaceae

Uses- seeds are eaten raw. used in medicine. One of the traditional food stuff of Darbhanga very high nutritive value.

11:- Euphorbia hirta (Dicots) Wetland

Local name- Asthma plant.

Family- Euphorbiaceae

Uses- Respiratory disorder

12:- Eclipta alba Hassk (Dicots) Wetland

Local name- false daisy, bhringraj, Bhangraeyai

Family- Asteraceae

Uses- Ayurvedic medicine for being liver tonic, beneficial effects on diabetes, eye health and used in hair tonic. Oil is made, Local hair dye is made.

13:- Hydrilla verticillata (Monocots) Submerged anchored hydrophyte

Local name- kureli

Family- Hydrocharitaceae

Uses- whole plant are used in referring the sugar, used as a O<sub>2</sub> source in pond ecosystem while also used in lab to show photosynthesis experiments.

14:- Hydrolea zeylanica (Dicots) emerged anchored

Local name- kars chara

Family- Hydrophyllaceae

Uses- used as fodder for animal. Plant have antiseptic properties used in ulcers.

15:- Heliotropium indicum (Monocots) Wetland

Local name- Naga danti

Family- Boraginaceae (forget-me-not)

Uses- leaves used in soothe the pain of conjunctivitis flowers are used to control menstrual blood loss, skin ulcers.

16:- *Ipomoea carnea* (Dicots) wetlands

Local name- palit, besharam

Family- convolvulaceae

Uses- leaves as a fodder, plants as fences stem after drying used as fuel, used in production of biogas and lignin present in the stem present used in making of paper.

17:- *Ipomoea aquatic* (Dicots) Floating shoots anchored

Local name- kalmilata, kalmisaag

Family- convolvulaceae

Uses- leaves are used in vegetable ritual value plant during house warming use in pisciculture when stems are dried used as fuel. Flood fighter.

18:- *Jussiaea repens* (Dicots) wetlands

local name- marshy jasmine, pani khutora

family- Onagraceae

uses- Medicine

19:- *Lemna minor* (Monocots) Free floating

Local name- Duckweed

Family- Lemnaceae

Uses- animal fodder, bioremediator for waste water nutrient recovery.

20:- *Monochoria vaginalis* (Monocots)

Local name- sarkachu

Family- pontederiaceae

Uses- leaves and roots are used in local medicines.

21:- *Nymphoides indicum* (Dicots) floating leaved anchored

Local name- panchuli

Uses- plants are used as a substitute for chiretta in fever and jaundice. Blood purifier.

22:- *Nouchalli Burm* (Dicots) Floating leaved anchored

Local name- shapla

Family- Nymphaeaceae

Uses- The rhizome and pedicels are eaten raw. The puffed seeds are eaten, powder rhizome in piles, dysentery and dyspepsia.

23:- *Nymphaea stellata* (Dicots) floating leaved anchored

Local name- bhet

Uses- whole plant, ornamental purpose uses in vegetables

24:- *Nelumbo nucifera* (Dicots) Floating leaved anchored

Local name- kamal, Indian lotus padma

Family- Nymphaeaceae

Uses- symbol of eternity religious purpose cardiactonic Rhizomes are used in piles seeds (Kamalgatta) as energy food.

25:- *Oxalis corniculata* (Monocots) Submerged

Local name- Amrul

family- Oxalidaceae

Uses- fresh leaves are used to improve the appetite and digestion of dyspeptic patients. Used in boils.

26:- *Ottelia alismoides* (Monocots) Submerged anchored hydrophyte.

local name- duck lettuce

family- Hydrocharitaceae

uses- Peltis and tender leaves are used as vegetables. Agroforestry uses to improve the water quality.

27:- *Polygonum glabrum*- wild (Dicots) emergent anchored

Local name- knotweed, rakta-rohidaa

Family- Polygonaceae

Uses- plant juice and root stock- used in pneumonia jaundice, purifier.

28:- *Pistia stratiotes* (Monocots) free floating

Local name- kachuli (monoicous)

Family- Araceae

Uses- fish fodder

29:- *Potamogeton crispus* (Monocots) Submerged

Local name- unknown

Family- potamogetonaceae (pond weed)

Uses- food for aquatic birds and mammals and as an oxygenator of water.

30:- *Phyllanthus niruri* (Dicots) wetland

local name- pani chitki

family- Phyllanthaceae

uses- fruits are useful in inflammation.

31:- *Ranunculus sceleratus* (Dicots) wetlands

Local name- Jal dhania

Family- Ranunculaceae (dicot)

Uses- whole plant local medicine use.

32:- *Scirpus articulatus* (Monocots) wetlands

Local name- patpati, khobi

Family- cyperaceae

Uses- plant is a good oxygenator. Pops of seeds are used in making sweets (*Lai*) and used in fasting days.

Green used as fodder

33:- *Sesbania rostrata* (Dicots) wetland

Local name- manger

Family- fabaceae

Uses- seed, leaves, stem, subsidiary food, fuel, and fodder, shelter for birds and also as a flood fighter. Semi aquatic leguminous tree form symbiotic relationship with gram negative rhizobia and fix nitrogen. Used as green manure.

34:- *Typha Sp.* (Monocot) wetland

Local name- Pater

Family- Typhaceae (monocot)

Uses- leaves – mat making

35:- *Trapa natans* Var. *bispinosa* (Roxb.) (Dicots) free floating

Local name- singhara/water chestnut

Family- Trapaceae

Uses- fruit used in food, eaten raw or boiled make dry powdered used as 'upwas' stuff. rich incalcium

36:- *Vetiveria Zizanioides* (Monocot) wetland

Local name- khus, katara

Family- Poaceae

Uses- root, leaves, inflorescence stalk, aromatic plant, soil binder, "sikki" handicraft use cooling agent, tonic and blood purifier.

37:- *Wolffia arrhiza* (Monocot) Free floating

Local name- Bindupana

Family- Lemnaceae

Uses- used in pisciculture

There is a need to devise methods for better utilization of aqua phytis in north bihar (Darbhanga) to meet the demands of leafy green as source of micro nutrients, drugs source of material for production of paper handicraft, fodder, flood fighting pisciculture materials. Information of multiple use of aquatic

macrophytes indicate wealth of ethnobotanical information of local people. The plants were collected by local people of the area from natural environments, particularly from ponds, surrounding village, field crops, river bank and canals as means of livelihood and source of income. Majority of the aquatic plants are wild or semi-wild. Some plants are also considered as suitable reducing pollution and thus purifying water. Some plants provide seasonal or annual occupation to local inhabitants.

It is a matter of concern that land use pattern in Darbhanga division is changing fast. Water bodies are the soft target of that change. Aquatic species are at higher risk. It is also important to note that most of the traditional uses of aquatic plants are novel and they need both popularization and preservation.

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