

Indigenous Knowledge of Some Grasses in Purulia District, West Bengal, India

Harasourav Mallick and Subrata Raha, Botany, Raghunathpur College, W.B. India

Abstract

The origin of the grass family (Poaceae) appears to be older than Human races and used for various purposes from prehistoric time makes the family an important part of our socio-economic life. The members of Poaceae provide the staple food for mankind, fodder for herbivores and perhaps most important group among the plants. Beside medicine, they provide shelter, shade, fibre, molasses, drinks, and particularly the bamboos which are indispensable for our daily life. Grasses are used in the preparation of garden lawn and also have a great soil binding capacity. A Survey of Grasses was carried out in Purulia district along with their ethnobotanical usages by the tribal peoples was carried out in different seasons from October 2013 to September 2015. Altogether 29 Grasses of Poaceae were collected, identified and preserved as herbarium sheets. Their flowering season and ethnobotanical uses were also recorded. The tribals of the District Purulia are mostly dependent on the herbal treatment for their primary health care which is attributed partly to their socio-economic and cultural status. The traditional knowledge regarding these plants and their uses has to be assessed and put to use in modern medicine.

Key words: *Poaceae, grasses, ethnobotanical uses, tribal people, Purulia*

1. Introduction

Purulia is a part of Chotanagpur plateau and the westernmost district of West Bengal. Jaina Bhagavati-Sutra of 5th century A.D. mentioned that Purulia was one of the 16 Mahajanapadas and was a part of the country known as Vajra-bhumi in ancient times. Purulia lies between 22.60 degree and 23.50 degree north latitude and 85.75 degree and 86.65 degree east longitude. The total geographical area of the district is 6259 sq. kms., out of which the urban and rural areas are 79.37 sq. kms. (1.27%) and 6179.63 sq. kms. (98.73 %) respectively. As per Satellite Imagery data, 29.69 % of total Geo area is under forest coverage (including social forestry), 10.15 % are identified as Wasteland and the rest used for agricultural practices. Average annual rainfall varies between 1100 and 1500 mm. The relative humidity is high in monsoon season, being 75% to 85%, but in hot summer it comes down to 25% to 35%. Temperature varies over a wide range from 7 degree Celsius in winter to 47 degree Celsius in the summer. The district is characterized by undulating topography with hilly terrains in the western and southern parts. General elevation of the land surface ranges from 150 m to 300 m. and the master slope being towards the east and south-east (The Official Website of Purulia District). In general three types of soils have been recognized in this district viz. (1) Residual types derived from weathering of granites (2) Lateritic soil in the upland areas (3) Clay loam to clay in the valleys. Soil is acidic (pH varying between 5.5 -7.2). The Panchokot hills of Gondwana basin on the northern boundary are rich in medicinal plants, where more than 80 % of tribal people are dependent on herbs and traditional healers. The dependency on herbal medicine was also observed among the forest dwellers who live adjacent to Dalma hills near Bandwan, located on the south east corner of the district. The Ajodhya Hills on the south west boundary, a connecting link between Hazaribag and Dalma Range are rich in

biodiversity and mainly inhabited by, Bhumijis, Kherias, Birhores, Lodhas, Mundas, Oraons, Paharias and Santhals.

The tribals use a wide range of plants including fungi, ferns, herbs, shrubs, trees, climbers, stem parasites etc. and also insects, blood, bones, ash and other living or dead organic residues. A wide range of grasses are also used by these people as a food, vegetable, drink, fodder, medicine, insect repellent, furniture, frame, rope and other articles. Poaceae or the grass family is one of the largest families of monocot containing 10000 species belongs to 700 genera in the world. (Sur & Roy Choudhary, 2015)

2. Review of Literature

Hooker, J.D. in his Flora of British India (1896) first prepared the comprehensive account of the grasses of this subcontinent (India, Bangladesh and Pakistan). He also studied the grasses of Burma and Malaya (contained in the 7th volume) and Ceylon and his account of these appeared as the 5th volume of Trimen's Hand Book of Ceylon (1900). Bor, N.L (1960) published "The Grasses of Burma, Ceylon, India and Pakistan." Jain et al. (1975) provided an enumeration of grasses of Bihar, Orissa and West Bengal. Some paper works and district floras like Mazumder (1956, 1959 a, b, 1965), Guha (1971), Guha, et al. (1976 & 1984), Pal, et al. (1991), Sanyal (1994), Mitra & Mukherjee (2005), Dashora & Gosavi Vinod, (2013), Saha, Hoque, Mallick, & Panda (2013), Sur and Roy Choudhary (2015) have been done.

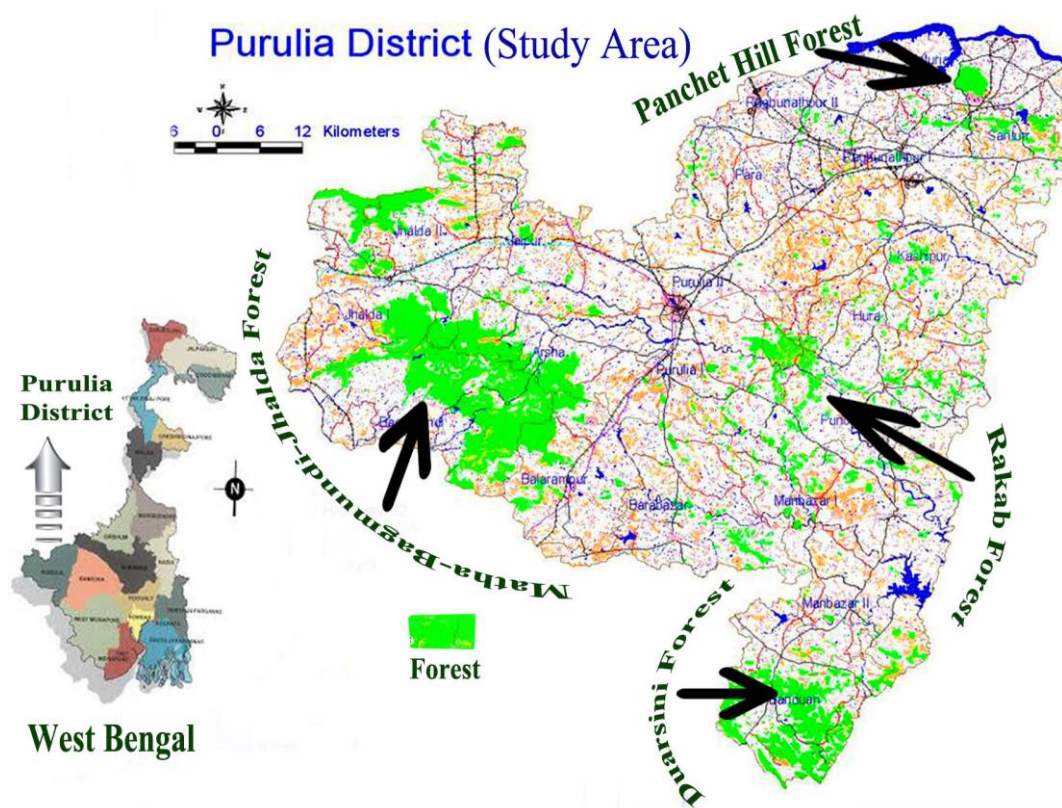
The present work has been taken to fulfill the following objectives:

- Survey and documentation of the ethno botanically important plants of Panchakot Hill
- Exploration of ethno botanical information.
- Awareness generation among the students regarding conservation and use of medicinal plants at Paharbera School.

3. Methodology

A Survey of Grasses was carried out in Purulia district along with their ethnobotanical usages by the tribal peoples was carried out from October 2013 to September 2015. Altogether 29 Grasses of Poaceae were collected and preserved as herbarium sheets. Their flowering season and Santali vernacular names were also recorded. The specimens were identified with the experts and standard reference books (Flora of Bankura District, 1994; The Grasses flora of West Bengal, India, 2015). Much of the information regarding the healing properties of herbs is confined to the tribes and ethnic groups. Much of the information regarding the healing properties of herbs was procured after interacting with tribal people and healers of Duarsini near Bandwan; Matha, Bagmundi, Arsha, Begunkodor, Kalimati, Suisa, at the foothill of Ajodhya range. Survey and collection of information was also carried out in the villages located inside Rakab forest on the eastern part of the district. Inhabitants of the villages viz. Ankduara, Kochbel, Pahargora, Sieulibari, Baghmara, Paharpur, Parbbatpur, Dhara located encircling Panchakot Hills extended their helping hands in the present piece of work (Figure 1).

Figure 1. Map of Purulia showing the areas of investigation



Source: Brief Profile of Purulia District: official website of Purulia

4. Results and Discussion

In the present investigation 29 grasses were found to be ethno-botanically significant and widely used in traditional medicine and other purposes. Their scientific names, local names (in Santali), flowering seasons and uses are given below (Table 1)

It has been noted that most of the grasses are used for curing different ailments of both human and cattle. It was recorded that four grasses are used for their haemostatic activities, four for skin diseases, three for cold and cough, one for human and one for cattle eye disorder, one for rheumatism, three for gastric disorder, one as antidiabetic, two as analgesic, one as anti-dysenteric, one in obstetrics, two are used to cure jaundice, two are used as antipyretic, one is diuretic, one used as abortifacient, one is used to cure dysuria, one used in dyspepsia, one in headache, one is astringent and one used as cardiotoxic.

Table 1. List of Plants belonging to Poaceae with their ethno botanical uses

Sl. No.	Scientific name	Santali Name	Flowering Season	Uses
1.	<i>Apluda mutica</i> L.	Tati ghas	January-November	Root paste with mustard oil is applied on the mouth sore of children and cattle to cure fungal infection. The plant used as a thatching material. Crushed or dried leaves applied on wounds to control bleeding.
2.	<i>Aristida setacea</i> Retz.	Chuch-ho	August- December	Inflorescence is used in itching and in ringworm.
3.	<i>Bambusa arundinacea</i> (Retz.) Willd.	Matang	Irregular and rare	It is used in manufacturing a number of products, like building materials, carpentry, farming, forestry, hunting and fishing apparatus, musical instruments, handicrafts, stakes, pots, etc. Young new shoots of bamboo are eaten. Leaf extract is used as astringent, expectorant, cardiotoxic, haemostatic. It is used to treat infantile epilepsy.
4.	<i>Bothriochloa pertusa</i> L.	Begi ghas	September-January	Decoction of Fresh inflorescence with long pepper (in 3: 1 ratio) is given to children to cure cold and cough.
5.	<i>Brachiaria mutica</i> (Forsk.) Stapf.	Mota-gundi	May-December	Fresh stem juice with water applied as eye drop to cure watering eyes of cattle.
6.	<i>Chloris barbata</i> Sw.	Sara ghas		Leaf extract used as analgesic and antidiabetic. Whole plant extract used in rheumatism.
7.	<i>Chrysopogon aciculatus</i> (Retz.) Trin	Chorkanta	August-January	Fresh rhizome along with black peppers taken to cure stomach pain and gastric disorder. Whole plant is used for making broom.
8.	<i>Cymbopogon martini</i> (Roxb.) Wats.	Rusa ghas	September-February	Leaf juice is used as nasal drop to cure headache. Whole plant is used for thatching the roof. Used as insect and mosquito repellent.
9.	<i>Coix lacryma-jobi</i> L.	Baksi-horeng	August-January	Decoction of the seed in empty stomach is taken to cure dysentery.
Sl. No.	Scientific name	Santali Name	Flowering Season	Uses
10.	<i>Cynodon dactylon</i> (L.) Pers.	Dubi ghas	Throughout the year	Fresh juice of rhizome or leaf is applied to check bleeding. Plant juice is applied on outer portion of eyelid to cure irritation due to summer heat.
11.	<i>Dactyloctenium aegyptium</i> (L.) P. Beauv.	Matshyam	July – November	Grains paste is used in post natal clear. Plant paste is used as fish poison.
12.	<i>Desmostachya bipinnata</i> (L.) Stapf.	Kush ghas	June – December	Root paste with long Pepper is given to cure jaundice.

13.	<i>Echinochloa colonum</i> (L.) Link.	Shyama ghas	July – October	Fresh plant juice with a pinch of salt is used to cure indigestion. Root paste is applied to cure acute burning pain.
14.	<i>Echinochloa crus-gali</i> (L.) P. Beauv	Khondmala	June – November	Seeds are edible after boiling. Plant paste is applied to cure carbuncle. Fresh plant juice with dry turmeric powder given for the treatment of internal haemorrhage.
15.	<i>Eulaliopsis binata</i> (Ritz.) C.E. Hubb.	Babui	June-December	Decoction of root is given in fever. Used to make rope and string.
16.	<i>Eleusine indica</i> Gaertn.	Malkantari	August – November	Fresh root paste with ginger and pepper seeds are given as an antidote of snake bite.
17.	<i>Heteropogon contortus</i> (L.) P.Beauv. ex Roem. & Schult.	Kumeria	September-January	Fresh root (20 g) is made into paste, and this paste is given as an antidote of viper biting. Root is also used as stimulant.
18.	<i>Hygroryza aristata</i> (Retz.) Nees ex Wt. & Arn.	Dolddi	October-March	Cattle are fed with this plant for increased vigour .
19.	<i>Paspalum scrobiculatum</i> L.	Khado dhan	August – November	Grains are used for the preparation of country liquor. Plant juice is used in scorpion sting.
20.	<i>Saccharum officinarum</i> L.	Akh	January-March	Stem juice is diuretic, has cooling effect. Given in Jaundice.
21.	<i>Saccharum spontaneum</i> L.	Kansi	August -November	Decoction of root is taken to cure the eruption on the skin caused due to excessive consumption of country liquor. The plant is used for thatching the roof.
Sl. No.	Scientific name	Santali Name	Flowering Season	Uses
22.	<i>Sclerostachya fusca</i> (Roxb.) A.Camus	Jun	August-October	Culms are used for climbing of creeper plants.
23.	<i>Setaria glauca</i> (L.) P. Beauv.	Khukura	July-October	Low grade country liquor is prepared. The boiled seeds are given as a diet for patient suffering from fever.
24.	<i>Setaria verticillata</i> (L.) P. Beauv.	Solnaja	August-November	Inflorescences are mixed with the stored grains to expel the rodents.
25.	<i>Sporobolus diander</i> (Retz.) P. Beauv.	Khui ghas	September-December	Stem given to the cattle to promote lactation. Whole plant is used for making broom.
26.	<i>Thysanolaena maxima</i> (Roxb.) Kuntze	Baha janh	August – December	Root is used as abortifacient. Whole plant is used for making brooms.
27.	<i>Triticum aestivum</i> L.	Gaham	December-March	Decoction of root is given to cure the painful and interrupted urine discharge.
28.	<i>Vetiveria zizanioides</i> (L.) Nash	Siromou	December-September	Root decoction is given before meal to cure dyspepsia. Root paste is applied on forehead to cure headache. Root ash is taken with lukewarm water to reduce acidity.
29.	<i>Zea mays</i> L.	Jadra dari	July-September	Fresh flowers are crushed into paste along with and turmeric and camphor is applied to cure skin disease.

The seeds of *Echinochloa crus-gali* are edible after boiling and also used to cure carbuncle. Three grasses are used for thatching huts of villagers and three are used in broom making. *Eulaliopsis binata*. (Babui ghas) is used in rope and string and basket preparation. *Bambusa arundinacea* are used in making frame, basket, scaffold, flute, instruments for fishing and hunting, furniture etc. The young shoots are also consumed as vegetable. Root extract of *Heteropogon contortus* is consumed as stimulant of human and *Hygroryza aristata* is used for cattle. *Cymbopogon martini* is used as insect and mosquito repellent and *Setaria verticillata* is used as rodent repellent. The stem of *Sporobolus diander* is given to cattle to promote lactation. Two grasses are used in the preparation of country liquor and one is used as fish poisoning agent. Two plants (*viz. Eleusine indica* and *Heteropogon contortus*) are used as an antidote for snake poison and one for scorpion sting. Thus a wide usage of grasses in human and veterinary medicine, food, fodder, drink and manufacture of different articles have been observed.

5. Conclusion

Purulia is rich in forest, minerals and dominated by tribal people. The different ethnic groups are largely dependent on forest resources for their food, fodder, fuel, medicine and furniture. This district bears a great resource of ethnobotanic importance with a wide scope of research for ethnobotanists. But unfortunately, till date no comprehensive ethnobotanical survey was conducted in this district except a few reports (Chakraborty and Bhattachrjee, 2006; De and Dey, 2010; Das et al., 2015; Raha & Mallick, 2015). This detailed study has been undertaken as an initiative approach for documenting the valuable ethnobotanical information gathered from some tribal, nontribal medicine man and villagers. There is a great similarity of medicinal use of those plants but sometimes differ in composition for the treatment of simple to chronic diseases. It is very difficult to assess which plant is actually effective in curing a particular disease because some healers use a combination of different plants to cure certain diseases. Only the future chemical, molecular and clinical studies of active constituents of these plants can give some indications about their mode of action. Many species are becoming endangered due to over exploitation. It is realized by the present investigators that Mapping of endangered species, *in situ* and *ex situ* conservation and multiplication for commercial use is urgently required. During the present survey, it was also observed that the young tribal people shows a little interest to learn their traditional therapy from their elders because of engulfing urbanization and modernization and migration to cities due to economic pressure. Awareness generation at grass root level for judicious use of resources should be organized at block / village level.

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