

Ethnobotany of indigenous wild grasses of Bhagalpur district (Bihar), India

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Abstract

This paper deals with 15 indigenous wild grasses used by rural people of Bhagalpur district (Bihar), India for medicinal, religious and miscellaneous purposes. *Chrysopogon aciculatus* (leg swelling), *Chrysopogon zizanioides* (febrifuge, relief from ophthalmic infection), *Eleusine indica* (febrifuge for livestock) and *Hygorrhiza aristata* (skin diseases) are medicinally useful, *Chrysopogon zizanioides* and *Desmostachya bipinnata* are used as sacred plants in religious ceremonies of Hindu, *Aristida setacea*, *Phragmites karka*, and *Thysanolaena maxima* are used for brooms, *Chrysopogon aciculatus* and *Narenga porphyrocoma* for making baskets and *Eulaliopsis binata* for rope making.

Key Words: Ethnobotany, indigenous grasses, Bhagalpur, Bihar.

Introduction

Grasses are the most important monocotyledonous plants that occur anywhere with great abundance (Sekhar & Murugesan 2017, Dashahre *et al.* 2020). They constitute a natural group of angiosperms belonging to the family Poaceae and form an integral component of vegetation in almost all habitats such as grasslands, wetlands, deserts, forests, croplands, etc. (Bor 1960, Gibson 2009, Singh 2011, 2016a, Palit *et al.* 2017, Abhijit & Krishnamurthy 2020). The value of grasses to mankind has been recognised since the dawn of human civilization. Grasses are well known to provide food, forage and a multitude of products like medicine, fibres, alcohol, essential oils, etc. However, some grasses are harmful to man and cattle (Jain 1986, Edgar 1994, Katewa *et al.* 2001, Mitra & Mukherjee 2009, Low 2015, Dubey *et al.* 2018). Overall grasses perform very important role in the life of both human beings and animals. Their real utilization requires comprehensive elaboration of ethnobotanical knowledge at regional level to unfold, widen and strengthen the dimension of grass resource and its actual management as the natural resources to boost the economy of native rural folks. A review of literature evinces that the ethnobotanical studies of grasses of Bhagalpur district, Bihar are restricted to some grass species (Singh 1997, 2016 a & b, Singh & Pandit 2015) while the area is regarded to be bountiful in grass flora (Paul 1967, Jha & Varma 1990). Therefore, this quest was undertaken to record the ethnobotanical uses of indigenous wild grasses of Bhagalpur district, Bihar.

Study Area

The area of investigation Bhagalpur district (25°07' - 25°30' NL and 86°37' - 87° 30' EL, 141 feet MSL) is situated in the southern part of the Bihar state, India. It is surrounded in the East by Godda and Sahebganj districts of Jharkhand state and in the West by Munger and Khagaria, in the North by Madhepura, Purnea and Katihar, in the South by Banka districts of Bihar state. It is spread over an area of 2569 km² that forms the part of Gangetic plain with newer alluvium soil. It experiences the usual monsoon type of climate divided into three distinct seasons of a year.

Materials and Methods

The diverse habitats existing in different parts of Bhagalpur district (Bihar) were frequently visited in each season during August 2019- September 2022 aiming at documentation of ethnobotanical uses of indigenous wild grasses in the life and economy of native rural folks. Ethnobotanical information on grasses was collected through interviews and discussions as per semi-structured questionnaires in common local language like Hindi, Angika, Bhojpuri, Santhali, and with the help of bilingual persons depending on the locality of the study area. These pursuits were done by selecting knowledgeable native persons of men, women and young folks including herdsmen, shepherds, handicraftsmen, traditional healers (Vaidya, Kaviraj, Hakim), veterinarians priests etc. of different communities as informants. The grass specimens were collected, pressed, dried and the herbarium was prepared according to the standard methods (Lawrence



1951, Jain & Rao 1977). The grass specimens were critically examined and properly identified with the help of available grass floras (Haines 1961, Hooker 1973, Kabeer & Nair 2009) and also consulting the Herbarium of University Department of Botany, Tilka Manjhi Bhagalpur University, Bhagalpur (Bihar), India (BHAG). The identified specimens of grasses have been deposited in the above mentioned herbarium.

Enumeration

The grasses are enumerated and arranged in alphabetical order with respect to their botanical name followed by English name, vernacular name (VN), Voucher number (VANI- collection number) and ethnobotanical uses.

1. *Aristida setacea* Retz., Brightly needle grass or Broom grass, VN- *Kharangghas*, VANI-119
Brooms are made from the culms along with spikelets.
2. *Arundo donax* L., Giant reed, VN- *Narkat*, VANI-04
Plants are grown for the purpose of fencing. Dried culms are utilized for construction of walls and thatching roofs of huts. Culms are also made into indigenous flute (Vernacular- *bansuri*)
3. *Chrysopogon aciculatus* (Retz.) Trin., Golden false beardgrass, VN- *Chirchirighas*, VANI-20
It is used for grazing and as lawn grass. Culms are utilized to make brooms for muddy houses and to weave small cases locally called *dalia*, *daura*, etc. Root paste is applied to control swelling of legs.
4. *Chrysopogon zizanioides* (L.) Roberty, Vetiver/ Khus, VN- *Katrighas*, VANI-109
Root extract is poured in eye for instant relief from infection. Root infusion is used as febrifuge. The grass is of religious significance for Hindus residing in villages in and around Naugachia (Bhagalpur district, Bihar) as it constitutes an important item during the celebration of **Karma Dharma festival** in the area.
5. *Coix lacryma-jobi* L., Job's tears, VN- *Jardighas*, VANI-22
Inflorescences are utilized as ornament by the tribals.
6. *Dactyloctenium aegyptium* (L.) Willd., Egyptian crowfoot grass, VN- *Makraghas*, VANI-27
To get quick relief from spider bite, its grain paste is applied on affected portion(s) on the skin of human body.
7. *Desmostachya bipinnata* (L.) Stapf, Halfa grass/ Big cordgrass, VN- *Kush*, VANI-30
This grass is of utmost religious significance for Hindus as it finds utility as a very sacred plant in their most of the ceremonial functions. In almost all religious ceremonies, a ring made of its leaf is essentially worn in the ring finger of right hand by the person who performs the rite. This is done as per direction of the priest (Vern. *Pujari*) who leads all the activities of ceremony. The religious value of this grass is more pronounced in libation to ancestors (Vern. *Pitri tarpan*). For this spiritual rite, its leaves are given four shapes, each having its own function. Out

of these shapes, a ring is worn in the ring finger of right hand as done in other ceremonies, another shape is hold on to the same hand, third shape kept in between index and ring fingers of left hand and fourth shape tagged with waist. This grass is commonly employed in making ideal seat for worshipping and meditation.

8. *Eleusine indica* (L.) Gaertn., Goose grass/ Crowfoot grass, VN- *Kodoghas*, VANI-40
The herdsmen and shepherds use the roots of this grass as a medicine to cure fever of their livestock.
9. *Eulaliopsis binata* (Retz.) Hubb., Chinese alpine rush/ Sabai grass, VN- *Sabai ghas*, VANI-49
The leaves are used for making ropes, called sabai ropes, which are usually employed in weaving cots (Vern. *Charpai/ Khatia*) and in religious ceremonies such as marriage, worship, etc.
10. *Hygrophysa aristata* (Retz.) Nees ex Wt. & Arn., Asian watergrass, VN- *Janglidal*, VANI-53
Grain paste is regularly applied on affected portion(s) for relief from skin diseases.
11. *Narenga porphyrocoma* (Hance) Bor, VANI-65
The leaves are used in making baskets and ropes.
12. *Paspalidium flavidum* (Retz.) A. Camus, Yellow watercrown grass, VANI -78
This grass is fed to buffaloes to increase milk quantity in them.
13. *Phragmites karka* (Retz.) Trin. ex. Steud., Tall reed, VN- *Narkat*, VANI-87
Culms are weaved into baskets, mats, chairs, etc. and used to make indigenous flute (Vern. *bansuri*), pens (Vern. *likehni*), etc. Brooms are made from culms with panicles. Dried culms are employed in making hedge.
14. *Sporobolus indicus* (L.) R. Br., Smut grass/ Rat tail grass, VANI-103
Its tough culms are utilized to make hats.
15. *Thysanolaena maxima* (Roxb.) Kuntze, Broom grass, VN- *Jhadughas*, VANI-106
The attractive brooms are made from the panicles. Rural folks consume flower buds in case of indigestion and vomiting.

Results and Discussion

The present study reveals that the rural folks have sound knowledge of ethnobotanical uses of indigenous wild grasses which grow spontaneously in the territory of Bhagalpur district (Bihar), India. The medicinally useful indigenous grasses are *Chrysopogon aciculatus* (control of leg swelling), *Chrysopogon zizanioides* (febrifuge, relief from ophthalmic infection) and *Eleusine indica* (febrifuge for livestock) and *Hygrophysa aristata* (remedy of skin diseases). *Chrysopogon zizanioides* and *Desmostachya bipinnata* are of religious importance for Hindus in **Karma Dharma festival** and in most of the ceremonial functions. The miscellaneous applications of aboriginal wild grasses deserve attention for broom making (*Aristida setacea*, *Phragmites karka*,

Thysanolaena maxima), basket weaving, matting, handicraft preparation (*Chrysopogon aciculatus*, *Narenga porphyrocoma*, *Phragmites karka*), fencing (*Arundo donax*), rope making (*Eulaliopsis binata*), etc. The ethnobotanical uses of grasses are well equipped for the life and economy of poor people of the region.

The useful indigenous wild grasses seem to be potential in continuing their contribution in the livelihood of rural folks of the district. However, these valuable bioresources are depleting due to construction of buildings, increase in arable area and introduction of aggressive alien plants. Simultaneously, young generation's apathy towards traditional knowledge about plant resources and inclination towards urban life style are aggravating the problems. Therefore, it is imperative to document the previous traditional knowledge from experienced persons of remote areas, to create awareness among rural people for sustainable utilization of grasses and to educate properly the young generation to identify potential grass species for establishment of grass-based cottage industries for socio-economic augmentation of rural folks.

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