Ethnobotanical Usages of Grasses in Central Punjab-Pakistan

Arifa Zereen, Tasveer Zahra Bokhari & Zaheer-Ud-Din Khan

ABSTRACT- Poaceae (Gramineae) constitutes the second largest family of monocotyledons, having great diversity and performs an important role in the lives of both man and animals. The present study was carried out in eight districts (viz., Pakpattan, Vehari, Lahore, Nankana Sahib, Faisalabad, Sahiwal, Narowal and Sialkot) of Central Punjab. The area possesses quite rich traditional background which was exploited to get information about ethnobotanical usage of grasses. The ethnobotanical data on the various traditional uses of the grasses was collected using a semi- structured questionnaire. A total of 51 species of grasses belonging to 46 genera were recorded from the area. Almost all grasses were used as fodder, 15% were used for medicinal purposes in the area like for fever, stomach problems, respiratory tract infections, high blood pressure etc., 06% for roof thatching and animal living places, 63% for other purposes like making huts, chicks, brooms, baskets, ladders stabilization of sand dunes.

Index Terms: Ethnobotany, Grasses, Poaceae, Fodder, Medicinal Use, Central Punjab

INTRODUCTION

Poaceae or the grass family is a natural homogenous group of plants, containing about 50 tribes, 660 genera and 10,000 species [1], [2]. In Pakistan Poaceae is represented by 158 genera and 492 species [3].They are among the most cosmopolitan of all flowering plants. The species are more numerous in the tropics but their abundance is greatest in the temperate regions. The great adaptability of different species has enabled them to thrive under the most varied conditions; some of them are aquatic and others are characteristic of extremely arid and desert places [4]. The economic importance of grasses is realized from the fact that man has been growing cereal grasses for food from ancient times [5].Ethnobotanically grasses are very important as they are main source of fodder and forage for cattle.

Various scientists carried out ethnobotanical research on grasses and collected valuable data. Mitra and Mukherjee [6] studied ethnobotanical usage of 16 taxa of grasses from 4 tribal communities of West Dinajpur district of West Bengal. In a similar study of the grasses of West Bengal, India it was found that 52 grass species belonging to 35 genera were being used in 144 different manners by 10 tribal communities of the area [7]. Marwat et al., [8] studied the ethnobotanical importance of grassy weeds in Dera Ismail Khan District, KPK, Pakistan, and recorded 22 weed species of grasses were used by local people for various purposes. Chaudhari et al., [9] studied ethnobotanical utilization of grasses in Thal Desert, Pakistan. During this study about 29 species of grasses belonging to 10 tribes were collected that were being utilized for 10 different purposes.

Punjab is the second largest province of Pakistan with an area of 205,344 km^2 and is located between latitudes 27.42°and 34.02°N and longitudes 69.81°and75.23° E at the northwestern edge of the geological Indian plate in South Asia. Central Punjab comprises of fertile plains of the mighty Indus River and its tributaries that run from north to south. The landscape is greatly irrigated with a vast network of canals all over the province. Intensity of the weather is noticeable from hot and infertile southern region to cool Himalayan Mountains in the North. Physiographically the region is a part of a vast stretch of alluvial deposits laid by the tributary rivers of the Indus. The agricultural lands (predominant land use) are at an elevation of 130 m to 190 m above mean sea level [10]. The variation in temperature and rain fall prevails throughout the year.

Central Punjab is quite rich in terms of biodiversity and studies are conducted by many researchers on different aspects of plant species but the grasses are neglected and unexplored in this area and no effort has been made to study grasses deeply. In recent study the traditionally important grass species were recorded from Central Punjab, Pakistan with indigenous knowledge and their conventional uses.

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MATERIALS AND METHODS:

Several field trips were made during different seasons of the year for collection of plant material. The plant specimens were properly pressed, dried and mounted on herbarium sheets, according to standard procedures [11]. The plant specimens were identified with the help of Nasir and Ali [12], Ali and Nasir [13], Nasir and Rubina [14] and Ali and Qaiser [15]. A semi structured questionnaire was prepared to record ethnobotanical information from local people of different age groups mostly between 35 to 75 years, including hakims (herbal practitioners). The collected information was also validated with the available literature. Botanical names of the plants were arranged in alphabetical order. Each entry had botanical name followed by their local name, part of plant used, ethnobotanical information and phenology.

RESULTS & DISCUSSION

The collected data was arranged in alphabetical order of botanical name, local name, part used, traditional uses and flowering period (Table 1) A total of 51 species of grasses belonging to 46 genera were recorded which were being used by local inhabitants for various purposes such as fodder, medicine, roof thatching, fuel etc. Among the 51 species collected 15% are used for medicinal purposes in the area like for fever, stomach problems, respiratory tract infections, high blood pressure etc., 06% for roof thatching and animal living places, 63% for other purposes like making huts, chicks, brooms, baskets, ladders stabilization of sand dunes (Table 2, Fig. 1).Two species, *Saccharum bengalense* and *Cymbopogon jwarancusa* are used in veterinary medicines while *Arundo donax* and *Saccharum bengalense* as fuel. *Cenchrus setigerus* is helpful in stabilization of sand dunes in arid areas whereas *Phalaris minor* is mixed with stored wheat to keep mice away is a finding which is in accordance with those of Chaudhari et al., [9] on ethnobotanical evaluation of grasses from Thal Desert. One species, *Lolium temulentumis* poisonous species and can cause death of livestock which is accordance to the findings of Mitra and Mukherjee [7] while studding grasses of West Bengal, India. Saccharum species have multipurpose use as they are used inhuman medicines, veterinary medicines, roof thatching, paper industry, burning, fodder etc. [9]. Grasses play an important economic part in the area as most of the species are used as fodder for the animals.

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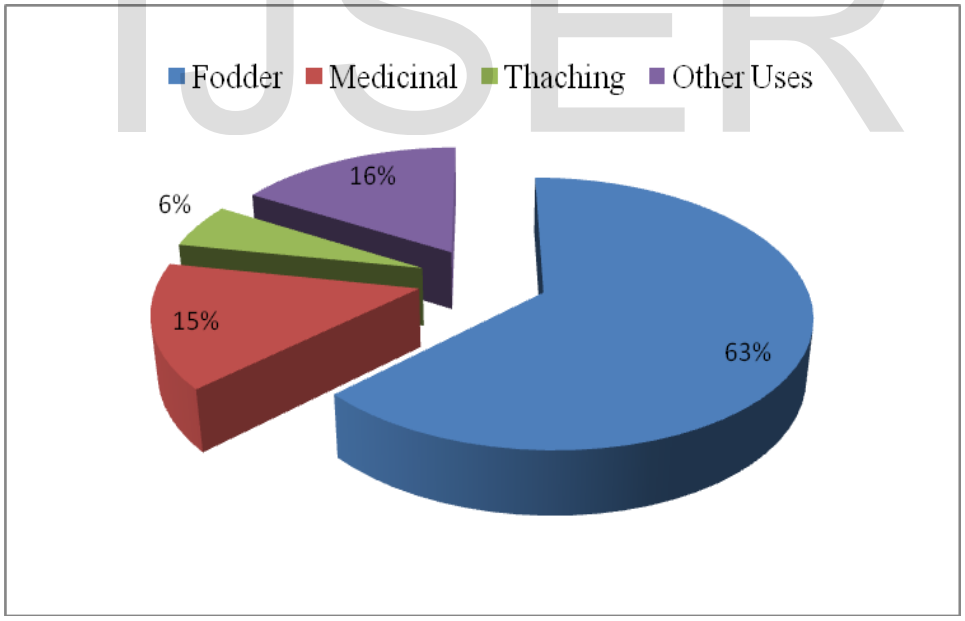

Fig 1: Comparative Percentage of Grasses Used For Different Purposes

Table 1: Ethnobotanical Data of grasses in Central Punjab

Sr.No.	Botanical Name	Local Name	Part Used	Ethnobotanical Data and Flowering Period
1	*Aristida adscensionis* Linn.	Lamba	Whole Plant	Plant is used as fodder for animals. **Fl. Pr.** March-November
2	*Arundo donax* Linn.	Nara bans, Nar, Nalu, Nal	Whole Plant	Decoction of rhizome is diuretic and stimulates menstrual discharge. Dried plant is used for roofing and as fuel. Soft parts and leaves are eaten by animals. **Fl. Pr.** June-December
3	*Avena fatua* Linn.	Jangli Jai	Whole Plant	The plant is used as fodder by animals. It is a common weed of wheat fields. **Fl. Pr.** March-May
4	*Bambusa glaucescens* (Willd.) Sieb. ex Munro	Bans	Culms and branches	The wood (culms) is used as timber in making huts and ladders. The strips of tender branches are also used in basket making.
5	*Bothriochloa bladhii* (Retz.) S.T. Blake	Palvan	Whole Plant	Plant is used as fodder for animals. **Fl. Pr.** May-November
6	*Brachiaria ramosa* (Linn.) Stapf	Sawari	Whole Plant	The plant is used as fodder for animals. **Fl. Pr.** July-November
7	*Brachiariareptans* (Linn.) Gardner & Hubbard	Hausa	Whole Plant	Plant is used as fodder for animals. **Fl. Pr.** July-September
8	*Cenchrus biflorus* Roxb.	Bhurat	Whole plant	Plant is used as fodder by grazing animals. The decoction of fruit is considered as diuretic. **Fl. Pr.**January-April and September-November
9	*Cenchrus setigerus* Vahl, Enum.	Anjan, Dhaman	Whole Plant	It is considered as a very fine fodder grass. Help in the stabilization of sand dunes in arid areas. **Fl. Pr.** August-January and April
10	*Chrysopogon serrulatus* Trin.	Chita Gha	Whole Plant	Plant is used as fodder for animals. **Fl. Pr.** April – September

11	*Cymbopogon jwarancusa* (Jones.) Schult	Khavi, Kattan	Whole Plant	The extract of root, leaves and flower is given in fever. Plant cures cough and flue. Plant is also used in veterinary medicines. It is not good fodder species. Plant smoke repel mosquito. **Fl. Pr.** April-November
12	*Cynodon dactylon* (Linn.) Pers.	Khabbal, Dab, Tala, Koora, Madana	Whole plant	Plant is used as fodder by grazing animals. An infusion of grass is given orally for treatment of blood pressure. Plant's paste is applied on wounds to check bleeding. **Fl. Pr.** Almost throughout the year
13	*Dactyloctenium aegyptium* (Linn.) Willd.	Madhana, Koora	Whole plant	It is used as fodder by grazing animals. Dried grain is eaten by women suffering from bellyache after child birth. Its seeds are used for the treatment of typhoid fever. **Fl. Pr.** July-October
14	*Desmostachya bipinnata* (Linn.) Stapf	Dabh, Kusa	Whole plant	A collection of dried stem is named as 'Jharoo', used for home sweeping. Plant is used for fodder and roof thatching. Tea of roots is effective against high blood pressure. **Fl. Pr.** July-November
15	*Dichanthium annulatum* (Forssk.) Stapf	Palwan, Marvel	Whole plant	This is a favorite fodder grass of animals. **Fl. Pr.** March-November
16	*Digitaria arvensis* Linn.	-------	Stem	It is a weed of crop fields. **Fl. Pr.** August
17	*Digitaria ciliaris* Linn.	Shamokha	Whole Plant	It is used as fodder for cattle. **Fl. Pr.** August- November
18	*Digitaria longiflora* (Retz.) Pers	Indian Crab Grass	Whole Plant	The plant serves as fodder for animals. **Fl. Pr.** August-September
19	*Digitaria radicosa* (Presl) Miq.	Trilling Crab Grass	Whole Plant	Plant is used as fodder for animals. **Fl. Pr.** October
20	*Digitaria setigera* Roth ex. Roem. & Schult.	Ungli Gha, Fonio	Whole plant	Plant is used as fodder by grazing animals. **Fl. Pr.** July-August
21	*Digitaria violascens* Link, Hort.	Violet Crab Grass	Whole Plant	The plant is used as fodder for animals. **Fl. Pr.** July-August

22	*Diplachne fusca* (Linn.) P. Beauv. Ex Roem. & Schult.	Jhang Sari, Lawandi	Whole Plant	Buffaloes are very fond of this grass. **Fl. Pr.** March-November
23	*Echinochloa colona* (Linn.) Link	Cockspur	Whole plant	Plant is used as fodder by grazing animals. It cures ingestion. **Fl. Pr.** May-September
24	*Echinochloa crus-galli* (Linn.) P.Beauv.	Sanwak	Whole plant	Cattle use it as fodder. **Fl. Pr.** June-October
25	*Enneapogon persicus* Boiss., Diagn.	Jiu	Whole Plant	It is a useful pasture and fodder plant. **Fl. Pr.** May-June
26	*Eragrostis atrovirens* (Desf.) Trin. Ex Steud.	Thalia Grass	Whole Plant	Used as fodder for animals. **Fl. Pr.** Almost throughout year
27	*Eragrostis japonica* (Thunb.) Trin.	Panghas	Whole Plant	Eaten by cattle when other food is not available. **Fl. Pr.** July-October
28	*Eragrostis minor* Host, Gram. Austr.	Choti Ghas	Whole Plant	It is used as fodder for animals. The plant is a weed of cultivated fields. **Fl. Pr.** May-September
29	*Eragrostis pilosa* (Linn.) P. Beauv.	Nika sanwak	Whole Plant	It is considered to be good fodder for buffaloes. **Fl. Pr.** July-October
30	*Imperata cylindrica* (Linn.) Raeuschel	Dabh, Siru	Aerial parts	Early green vegetation is used by grazing animals.The root is emollient and fumigant for piles. **Fl. Pr.** April-June
31	*Leptochloa chinensis* (Linn.) Nees	Naru	Whole plant	Plant is used as fodder by grazing animals. **Fl. Pr.** July-October
32	*Leptochloa panicea* (Retz.) Ohwi	Paja	Whole Plant	The plant is used as fodder for animals. **Fl. Pr.** February-March
33	*Lolium temulentum* Linn.	Cockle	Whole plant	It is a weed and parasitizes wheat fields. The plant is poisonous and can cause death. **Fl. Pr.** April-August
34	*Ochthochloa compressa* (Forssk.) Hilu	Phalwan, Chhimbar	Whole plant	Plant is used as fodder by grazing animals. **Fl. Pr.** March-September
35	*Panicum antidotale* Retz.	Gharam	Whole plant	Plant is used as fodder by grazing animals. **Fl. Pr.** March-October

36	*Panicum maximum* Jacq.	Bansi Gha	Whole Plant	Plant is used as fodder for animals. **Fl. Pr.** June-October
37	*Panicum atrosanguineum* Hochst. Ex A. Rich	Moti Gha	Whole Plant	This is excellent fodder grass found in plains. **Fl. Pr.** August-September
38	*Paspalidium punctatum* (Burm.) A.	Nseila	Whole Plant	The plant is used as fodder for animals. **Fl. Pr.** September-October
39	*Phalaris minor* Retz.	Dumbi sitti	Whole plant	Plant is used as fodder by grazing animals. It is mixed with stored wheat to keep mice away. **Fl. Pr.** March-May
40	*Phragmites australis* (Cay.) Trin. ex Steud.	Dila	Roots	The roots and rhizomes of the plant have antiemetic, diaphoretic and diuretic characteristics and used in sugar. **Fl. Pr.** November-February
41	*Poa annua* Linn.	Annual Blue Grass	Whole plant	Plant is used as fodder by grazing animals. **Fl. Pr.** Almost throughout the year
42	*Poa infirma* Boiss. & Hohen. ex Boiss	-------	Whole Plant	The plant is used as fodder by animals. **Fl. Pr.** March-November
43	*Polypogon monspeliensis* (Linn.) Desf.	Malhar	Whole plant	Plant is used as fodder by grazing animals. **Fl. Pr.** Almost throughout the year
44	*Rostraria cristata* (Linn.) Tzvelev	------	Whole Plant	It is recommended as good fodder grass. **Fl. Pr.** April-July
45	*Saccharum bengalense* Retz.	Kana, Sarkanda	Aerial parts	Fresh leaves are soaked in the mouth of cattle for the treatment of mouth diseases. Dried stem or whole plants are used for roofing and thatching as well as for boating and burning also. **Fl. Pr.** October-January
46	*Saccharum spontaneum* Linn.	Khai, Kaan	Whole plant	Fresh and green leaves used as fodder for goat and cattle. Mature and dried crop is used for pulp in paper industry. The fresh leaves are used for making the ropes and cordages by the local people by twisting them. The culms and leaves are used

				as a thatching material for their roofs. Root is diuretic and demulcent. **Fl. Pr.**July-September
47	*Setaria intermedia* Roem.& Schult.	Chirchira	Whole plant	Plant is used as fodder by grazing animals. **Fl. Pr.** September
48	*Setaria pumila* (Poir) Roem. & Schult.	Ban Kangni	Whole plant	Plant is used as fodder by grazing animals. **Fl. Pr.** June-October
49	*Setaria verticillata* (Linn.) P. Beauv.	Barchittas	Whole plant	Plant is used as fodder by grazing animals. **Fl. Pr.** Almost throughout the year
50	*Tetrapogon villosus* Desf. Fl. Atlant.	Sager	Whole Plant	Plant is used as fodder for animals. **Fl. Pr.** March-September
51	*Urochloa panicoides* P. Beauv.	Harat, Jhun	Whole Plant	It is excellent fodder both for cattle and horses. **Fl. Pr.** July-September

Table 2: Usage of grasses in Central Punjab

Sr.No	Botanical Name	Fodder	Medicinal	Thatching	Other Uses
1.	*Aristida adscensionis* Linn.	+	-	-	-
2.	*Arundo donax* Linn.	+	+	+	+
3.	*Avena fatua* Linn.	+	-	-	+
4.	*Bambusa glaucescens* (Willd.) Sieb. ex Munro	-	-	-	+
5.	*Bothriochloa bladhii* (Retz.) S.T.Blake	+	-	-	-
6.	*Brachiaria ramosa* (Linn.) Stapf	+	-	-	-
7.	*Brachiariareptans* (Linn.) Gardner & Hubbard	+	-	-	-
8.	*Cenchrusbiflorus*Roxb.	+	+	-	-
9.	*Cenchrussetigerus*Vahl, Enum.	+	-	-	+
10.	*Chrysopogonserrulatus*Trin.	+	-	-	-
11.	*Cymbopogonjwarancusa*(Jones.) Schult	+	+	-	+
12.	*Cynodondactylon*(Linn.) Pers.	+	+	-	-
13.	*Dactylocteniumaegyptium*(Linn.) Willd.	+	+	-	-
14.	*Desmostachyabipinnata*(Linn.) Stapf	+	+	+	+
15.	*Dichanthiumannulatum*(Forssk.) Stapf	+	-	-	-
16.	*Digitariaarvensis*Linn.	-	-	-	+
17.	*Digitariaciliaris* Linn.	+	-	-	-
18.	*Digitarialongiflora* (Retz.) Pers	+	-	-	-
19.	*Digitariaradicosa* (Presl) Miq.	+	-	-	-
20.	*Digitariasetigera*Roth ex. Roem. &Schult.	+	-	-	-
21.	*Digitariaviolascens* Link, Hort.	+	-	-	-
22.	*Diplachnefusca* (Linn.) P. Beauv. Ex Roem. &Schult.	+	-	-	-
23.	*Echinochloacolona*(Linn.) Link	+	+	-	-
24.	*Echinochloa crus-galli*(Linn.) P.Beauv.	+	-	-	-
25.	*Enneapogonpersicus*Boiss.,Diagn.	+	-	-	-

26.	*Eragrostisatrovirens*(Desf.) Trin. Ex Steud.	+	-	-	-
27.	*Eragrostis japonica* (Thunb.) Trin.	+	-	-	-
28.	*Eragrostis minor* Host, Gram. Austr.	+	-	-	+
29.	*Eragrostispilosa* (Linn.) P. Beauv.	+	-	-	-
30.	*Imperatacylindrica*(Linn.) Raeuschel	+	+	-	-
31.	*Leptochloachinensis* (Linn.) Nees	+	-	-	-
32.	*Leptochloapanicea* (Retz.) Ohwi	+	-	-	-
33.	*Loliumtemulentum* Linn.	-	-	-	+
34.	*Ochthochloacompressa*(Forssk.) Hilu	+	-	-	-
35.	*Panicumantidotale*Retz.	+	-	-	-
36.	*Panicum maximum* Jacq.	+	-	-	-
37.	*Panicumatrosanguineum*Hochst. Ex A. Rich	+	-	-	-
38.	*Paspalidiumpunctatum* (Burm.) A.	+	-	-	-
39.	*Phalaris minor* Retz.	+	-	-	+
40.	*Phragmitesaustralis* (Cay.) Trin. exSteud.	-	+	-	-
41.	*Poaannua*Linn.	+	-	-	-
42.	*Poainfirma*Boiss. &Hohen. ex Boiss	+	-	-	-
43.	*Polypogonmonspeliensis*(Linn.) Desf.Malhar	+	-	-	-
44.	*Rostrariacristata* (Linn.) Tzvelev	+	-	-	-
45.	*Saccharumbengalense*Retz.	-	+	+	+
46.	*Saccharumspontaneum*Linn.	+	+	+	+
47.	*Setariaintermedia*Roem.&Schult.	+	-	-	-
48.	*Setariapumila*(Poir) Roem. &Schult.	+	-	-	-
49.	*Setariaverticillata*(Linn.) P. Beauv.	+	-	-	-
50.	*Tetrapogonvillosus*Desf. Fl. Atlant.	+	-	-	-
51.	*Urochloapanicoides* P. Beauv.	+	-	-	-

+ sign depicts grass is used whereas – sign depicts grass is not used for the said purpose