

Floristic Study and Spikelet Variation of Fodder Grasses in District Baramulla

Sajad Suliman

Carrer Point University, Kota (Raj.), India

Abstract: Baramulla is one of the largest district of Jammu and Kashmir. It is blessed with large biodiversity and vegetative cover. It is covered with lofty mountains, grasslands, wetlands, possess large area under cultivation. The climate conditions of district Baramulla favors diverse vegetation. Floristic study provides us information of plant wealth of particular area. The grasses are diverse in taxonomy diversity and form a natural homogenous group of plants playing important role in lives of human beings and animals. Current study revealed, the occurrence of 16 grass species used as fodder and there spikelet variation was studied taxonomically.

Keywords: Floristic study, Grasses, spikelet, taxonomic diversity

1. Introduction

District Baramulla is largest District in UT of Jammu and Kashmir in terms of both area and population. The District head quarter of Baramulla town lies between 34°11'53'' N and 74°21'50''E at a height of 1850 m (6069 ft.) MSL. Baramulla is surrounded by District Kupwara in the North and Northeast, Srinagar & Budgam Districts lie in the east and southeast and has Line of control towards the west. The most famous, lofty Pir-Panjal ranges cover District Baramulla from south and southwest and separates this District from Poonch District of Jammu province.

The District Covers an area of 2072.42km², comprising of 544 villages. Administratively, the district is divided into 08 tehsils, which include Uri, Baramulla, Pattan, Tangmarg, Sopore, Rohama, Boniyar & Kunzer. District Baramulla covers large forest area and becomes important resource. Forests are spreading over an area of 2963 sq. km and the district has 71% area is under forests. The various communities inhabiting district like Gujjars, Bakarwals and Paharis constitute a significant proportion of the District.

River Jehlum is the only river passing through the town and some other areas of the district, having several bridges constructed on it. There are several streams which emerge from the glaciers of several areas and many canals which pass through different villages and finally mix up with river Jehlum. The water of these streams and canals is used for irrigation, washing, drinking etc. by the local people.

Our earth is blessed with diverse group of vegetation. The varying biodiversity is beneficial for mankind. Humans depend on plants and their products from ancient times. The Report on State of the World's Plant 2016 revealed that there are an estimated 3, 91, 000 species of vascular plants and among these 3, 69, 000 are flowering plants. The report also

reports that an estimated 20, 617 endangered plant species tests have been performed and represent a quarter of all Red List species, but only about 5% of all plants. The Poaceae being the largest and almost universal monocotyledonous family of great economic and environmental significance. It comprise of about 11, 290 species in approximately 707 genera. Grasses belong to family Poaceae with diverse taxonomic diversity. Grasses being rich in nutrients are used for food, fodder, medicine. They grow in diverse habitat like rocks, marshy areas, forest, wetlands, and pasturelands. Some economic grasses are cultivated for crops, fodder, Medicine in open fields. Despite of utmost importance of grasses to mankind, the study on grasses continues to be neglected subject especially in India. This is mainly because of a feeling that it is a difficult group for identification, small size of floral organs, special terminology and complicated structure of spikelet and inflorescence. To know the plant wealth of a particular area floristic study is carried out.

2. Material and Methods

In current study field work was carried out in different areas of District Baramulla including Forests, wetlands, grasslands, cultivated fields. The specimen was collected, preserved in the form of herbarium. Collected specimen was identified using standard taxonomical keys. The flora was evaluated for fodder properties and after proper identification spikelet of collected species was studied taxonomically.

3. Results

The floristic study shows the collection of 16 species of fodder grasses and their spikelet variation was studied taxonomically.

Table 1

S. No.	Species	Common name	Collection date
1	<i>Oryza sativa</i> L.	Chawal, Dhan	MAY-JUNE
2	<i>Polypogon monspeliensis</i> (L.) Desf.	Rabbit Grass	APRIL-MAY
3	<i>Hordeum murinum</i> L.	Hare barley	APRIL-MAY
4	<i>Cortaderia selloana</i>	Pampas grass	APRIL-MAY
5	<i>Bromus hordeaceus</i> L.	Soft brome	MAY-JUNE

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6	<i>Cynodondactylon</i> (L.) Pers.	Doab grass	MARCH-APRIL
7	<i>Triticumaestivum</i> L.	Wheat	MAY-JUNE
8	<i>Loliumperenne</i> L.	Ray grass	APRIL-MAY
9	<i>Digitariasanguinalis</i> (L.) Scop.	Hairy crabgrass	APRIL-MAY
10	<i>Dactylisglomerata</i> L.	Cocks foot	MARCH-APRIL
11	<i>Eragrostisnigra</i> Nees ex Steud.	-	MAY-JUNE
12	<i>Avena sativa</i> L.	Oats	MAY-JUNE
13	<i>Pennisetumpurpureum</i> Schumach.	Elephant grass	MAY-JUNE
14	<i>Setariapunila</i> (Poir.) Roem. &Schult.	Rerbajra	MAY-JUNE
15	<i>Zea mays</i> L.	Corn	MAY-JUNE
16	<i>Phragmites australis</i> (Cav.)Trin. exSteud.	Common reed	MARCH-APRIL

Spikelet study of fodder grasses:

*Oryza sativa*L.

Spikelet is flattened, 6-10 mm long, elliptic, glumes are minute, vestigial lemmas subulate, 2-4 mm long, glabrous, fertile lemma 5-nerved, hispidulous, hard, as long as spikelet; palea same texture and length as lemma, 3-nerved.

Polypogon monspeliensis L. Desf.

Spikelets 1-flowered, 2 mm long; glumes nearly equal, chartaceous, 1-nerved, as long as the spikelet, oblongawned, hispid on back, margins ciliate, awn from the sinus; Lemma chartaceous, obovate, 1 mm long, apex 4-toothed, 5-nerved, awned; palea membranous, long as lemma, oblong, 2-keeled, minutely 2-toothed; anther 0.5 mm long.

Hordeummurinum L.

Central spikelet is sessile or with a pedicel up to 1.8 mm long, glumes are lanceolate, long awned, up to 26 mm long, lemma lanceolate, 7-12 mm long, awn 18-50 torn long, anthers 0.2-1.4 mm long. Lateral spikelets well-developed, male or barren, pedicellate, glumes slightly dissimilar, the inner lanceolate, ciliate below, the outer setaceous, both long-awned, 16-30 mm long including the awn.

Cortaderiaselloana L.

Spikelet dimorphic, florets 2-5, glumes linear or lenocolate, acuminate, lemmas 3-veined, which are gradually tapering to an entire apex continuing into aslender awn.

Female spikelet: Glumes are 8-9mm, lemmas 8-14mm, densely silky villous, palea 2.5-3mm, minute staminodes present.

Male spikelet: Glumes are 9-18mm, lemmas 11-17mm, sparsely pilose, palea 4-6mm.

*Bromushordeaceus*L.

Spikelets narrowly ovate to oblong, 6-12-flowered, 12-22mm long without awns, lemmas are overlapping and covering internodes, glumes pubescent, in which lower narrowly elliptic, 5-8mm long, 3-7 nerved, the upper elliptic, 6-9mm long, 5-7-nerved, lemmas narrowly elliptic to narrowly ovate, bluntly angled on the margins, the lower 8-11mm long, soft herbaceous with narrow margins, 7-9-nerved, pubescent, minutely 2-toothed at the tip with a straight awn which are 5-10mm long from just below tip, palea is shorter than lemma, ciliolate on the keels, anthers are 0.7-15mm long.

Cynodondactylon(L.) Pers.

Spikelets sessile, strongly laterally compressed, small, usually 1-flowered, unawned, alternate, imbricate along one

side of rachis, with upper glume outside; rachilla articulate below lemma, protruding or not, sometimes with a rudimentary flower; glumes smaller than lemma; seldom equal, narrow, keeled, acute or mucronate, 1 nerved or upper glume 3 nerved, both or only the lower glume persistent; lower lemma boat shaped, firmly herbaceous, keeled, lodicules are 2, stamens are 3, glabrousovary, styles are 2 in number and free, stigmas are plumose, protruding sideways.

Triticumaestivum L.

Spikelet consists of 3-9 flowers, glumes are oblong to ovate, coriaceous and 5-11 nerved, 1-2 keeled, obtusebidentate or truncate, lateral nerves are diverging into the teeth, mucronate or awned, lemmas rounded on back or keeled near the tip. The tip is similar to glumes.

Loliumperenne L.

Spikelets in *Loliumperenneis* 2-10 flowered nearly 10 mm long, lower glume absent, upper glume subcoriaceous, narrowly lanceolate, 8mm long and 5nerved. Lemmas are sub equal, mostly awnless, chartaceous, broadly lanceolate, 5 nerved, the lowest is 7 mm long. Palea is oblong, length similar as lemma, 2keeled, minutely ciliate along keels and anther 3 mm long.

*Digitariasanguinalis*L. Scop.

Spikelets ca. 3 mm long, lanceolate, usually paired, one pedicellate and other sessile or shortly pediceled; pedicel compressed and margins serrate; lower glume minute, triangular, ca. 0.2 mm long, membranaceous; upper glume ca. 1/2-3/4 as long as spikelet, 3 veined, margins ciliated; lower lemma and upper lemma similar, long as the spikelet, 5-7 veined, median 3 veins far apart, glabrous, lateral one close and obscure, more or less ciliated along interveins and margins, upper floret cartilaginous with length as spikelet.

Dactylisglomerata (L.)

Spikelet 2-4 flowered, 7 mm long, glumes lanceolate, weakly 2-3 nerved, hairy are present on lateral, 4 mm long. The upper subcoriaceous, 5 mm long, lemma lanceolate, 5.5 mm long, chartaceous, 5 nerved, with a short awn at the apex, hairy on back and margins; paleachartaceous, narrowly lanceolate, 2 keeled, minutely ciliate on keels, margins folded and overlapping. Anther 2 mm long.

*Eragrostisnigra*Nees ex Steud.

Spikelets strongly laterally, compressed, 2 numerous flowered, rarely only 1 fertile flower with sterile lemma above the floret. Florets all bisexual or upper ones reduced, rarely otherwise; rachilla zigzag, or straight, tough or gradually breaking up at maturity; glumes equal or lower glume 1-3nerved; lemma ovate or ovate-oblong, rounded.

Lodicules 2, Stamens 2-3 in number. Ovary glabrous, styles usually 2 and are short, the stigmas exerted laterally. Caryopsis enclosed in lemma, globose, ellipsoid or oblong.

***Avena sativa* L.**

The spikelet of *Avena sativa* is nodding, consists of 1-2 florets which are persistent and did not fall at maturity, 2-2.5 cm long. Glumes are subequal, margin hyaline, rounded on the backside, 7-11 nerved, lemma stiff, lower half possess hairs, 7-9 nerved, awns are not usually present. Palea shorter than the lemma, minutely hairy on the two keels.

***Pennisetum purpureum* Schumacher.**

Spikelets 2-flowered, 5 mm long, solitary, sessile, surrounded by an involucre of bristles, falling off together with spikelet when mature. Glume deltoid, 1/4 long as spikelet; lower lemma lanceolate, membranaceous, minutely hispidulous, margins ciliate, with length as spikelet, 5 veined, palea absent; upper lemma lanceolate in back view, membranaceous, minutely hispidulous, lower half indurate, glabrous, 5 veined, palea of similar texture, 2 veined. Anthers 3 in number, with a tuft of hairs at one end.

***Setaria pumila* (Poir.) Roem. & Schult.**

Spikelets all or in part subtended by one or more setae at base; bristles scabrid, persistent after spikelets have fallen off. Spikelets articulate with short pedicel, ovate elliptic-oblong, flat or faintly convex at one side, strongly convex at other side, totally glabrous, mucicous, 2-flowered; glumes with widely embracing base, herbaceous, often with anastomosing veins; lower glume on flat side of spikelet, short, 1-5-veined; upper glume larger, 5-9-veined; lower lemma as long as spikelet, 5-8 veined, herbaceous; upper lemma equally long, strongly convex, 5 veined, distinctly transversely rugose-tuberculate, coriaceous; number of stamens 3; ovary glabrous; style 2, free, stigmas plumose.

***Zea mays* L.**

Spikelets are unisexual, Staminate spikelets paired and 9mm long, lower glume lanceolate, keeled, pubescent, long ciliate, margin thinner, 9-11 it has nerves, as long as the spikelet. The upper glume is oblong, lanceolate, 7 nerved, the lower lemma with thin hair on the back and edges, 3 nerved and about 8 mm long. Palea is the same length as a lemma; the length of the upper lemma is shorter than the lower palea; anthers 3 approximately 6 mm long. Pillillate inflorescence axillary, spikelets multi-row in thick, almost wooden axes, enclosed by large bracts or spathes, very long styles, such as silky threads.

***Phragmites australis* (Cav.) Trin. ex Steud.**

Spikelets with the lowest floret male or bare, glumes shorter than lemma the lowest, 3-5 muscular, floret callus linear, plum. Lemmas hyaline, 1-3 with nerved, glabrous, long caudate, palea 2/3 length of lemma.

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