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Research Article

AGROMORPHOLOGICAL CHARACTERISATION OF FOXTAIL MILLET (*Setaria italica* L. Beauv) AT RAMPUR, CHITWAN, NEPAL

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Abstract

Ten foxtail millet accessions were collected from different parts of Nepal and were characterized for different agro morphological traits at Institute of Agriculture and Animal Science, Rampur, Chitwan. Ten accessions were experimented in Randomized Complete Block Design with three replications. Observations were taken for quantitative traits i.e. days to heading, days to anthesis, days to maturity, peduncle length, plant height, flag leaf length, flag leaf breadth, flag leaf length breadth ratio and stay green period and yield attributing traits i.e. panicle length, panicle exertion, number of panicle per square meter, hundred grain weight, five panicle weight and yield per plant. The mean performance was obtained and correlation analysis was performed between grain yield and other traits. Observations were also taken for qualitative traits i.e. tip of first leaf, anthocyanin at leaf base, lobe compactness, length of bristles, anthocyanin presence, leaf blade altitude, flag leaf color, lobe in panicles, panicle lodging, inflorescence compactness, overall color, panicle anthocyanin, panicle shape and growth habit. Significant differences were observed among the accessions for many characters. Based on quantitative and yield attributing traits, Humla-149 was considered the best performing accession. The UPGMA clustering and PCA analysis revealed three distinct clusters of the studied accessions. Most closely related accessions were Co-1896 and Co-5645 and most distantly related accessions were Co-1896 and Humla-522.

Keywords: Foxtail millet; *Setaria italica*; agromorphological characterization; cluster analysis

Introduction

Millets are underutilized and neglected crops of grass family that are hardy. These crops can grow well in dry zones and marginal lands as rain-fed crops (Singh *et al.*, 2015), making them the preferred cereal crop for drought prone areas. Millets were domesticated around 8000 years ago in the highlands of central China (Amgai *et al.*, 2011). Foxtail millet (*Setaria italica* (L.) Beauv.) is thought to be indigenous to southern Asia and considered one of the oldest cultivated millets (Oelke, 1990). It is an important cereal crop in Nepal, cultivated on 271,183 ha with the production of 304,105 mt and productivity of 1,121 kg/ha (MoAD, 2014). Foxtail millet is a self-pollinating crop with chromosome numbers, 2n=18, classified under the family Poaceae and subfamily Panicoideae (Fedorov, 1974). It is cultivated in around 26 countries, and ranks second among the millets as for world production. About six million tons of foxtail millet is produced globally; mainly in southern part of Europe, in temperate, subtropical and tropical Asia (Marathee, 1993). Foxtail millet is taken as a significant cereal since old times and has important role in development of human civilization in Asia and Europe (Li *et al.*, 1996; Lu *et al.*, 2009). Also, constituting the richness of diferent amino acids and nutritional minerals taken as food, it exhibits high photosynthetic efficiency and drought tolerance (Dai *et al.*, 2008; Dai *et al.*, 2011a). Additionally, its cooked porridge is also a traditional food in Asia, Europe, North America, Australia, and North Africa. It is generally grown on marginal areas and lands having scarcity of irrigation. The crop can perform well even with little fertilizer and organic manures (Dai *et al.*, 2009; Dai *et al.*, 2011a, b).

The foxtail millet is an annual crop. It has stems with little branching, and has a well-developed, deep root system. The stem of the plant stalk is composed of loose tissues. The leaf-blade is wide-lanceolate type, is long-acuminate, dense scabrous, and with bright colour midrib and the leaf edges are serrate. Leaf-sheaths are longer than the nodes. The collar is indistinct and the ligule are small, short and thick. Inflorescence has a main stalk with short branches which bears spikes and bristles. The plant bears two flowers per spikelet, in which the upper flower is bisexual. The cultivated varieties have two to three bristles in one spikelet.

The fruit is a caryopsis and has grains of different colours. The seeds are enclosed within thin, papery hulls bearing small, convex seed, which is either oval or elliptical (Malm and Rachie, 1971). The grains can be cooked in same procedure as of rice. The crop has many food applications as porridge, pudding, breads, rolls, chips, cakes, flour and noodles. Healthy and medical food products can be manufactured from this crop, which can be to maintain good health (Kamatar, 2013; Kamatar *et al.*, 2014a; Kamatar *et al.*, 2014 b; Kotagi *et al.*, 2013).

Foxtail millet consumption improves glycemic control, inhibits hyperinsulinemia and decreases plasma lipid concentrations in persons with type-2 diabetes (Jali *et al.*, 2012). According to Tirajoh (2012), foxtail millet can be used as a poultry feed ingredient to replace corn, specifically yellow foxtail millet. Millets are grown primarily as feeding seed for birds, hay or as an alternative crop for cash. Millets are consumed by low economic statused people and also as forage crop, in the developing countries (Baker, 2003). The nutrient composition is at par or even higher to staple cereals as wheat and rice (Gopalan *et al.*, 2004). Minerals, vitamins, amino acids and phytochemicals content is high in millets, and thus the crop is termed as nutri-cereals. The crop also has higher content of dietary fibre and non-starchy polysaccharides. Millets have a low glycemic index and they release sugars slowly (Bala Ravi, 2004). Millets are also used for the manufacturing of malt in the brewing industry. Millet flour serves as a stabilizer (in ice creams) and it is also added to wheat flour for preparing special types of pastries and bread. Some millet grain extracts are also used in cosmetic industry for making different care products. In Nepal, foxtail millets are grown up to 3150m, constituting a rich and diverse collection of millet genotypes (Upreti, 1999). Approximately 790 millet accessions have been identified from different parts of Nepal (Gupta *et al.*, 2000). The study of genetic diversity and genetic relatedness is necessary for crop improvement and in developing appropriate strategies for the conservation, exploitation and utilization of foxtail millet accession (Upadhya and Joshi, 2003). High genetic diversity has been reported among different foxtail millet accessions of Nepal collected by Nakayama *et al.* (1999).

Nakayama et. al. grouped Nepalese foxtail millet landraces into tropical group based on the Pro2f allele of prolamin (Nakayama *et al.*, 1999), however, the study also showed Pro2b allele was found to be uncommon in the studied accessions. Kawase and Sakamoto (1984) also reported variation in esterase alleles in Nepalese foxtail millets. Significant variabilities are observed in foxtail millet for yield and other yield contributing traits (Kamatar *et al.*, 2014; Brunda *et al.*, 2014) and in nutritional traits (Brunda *et al.*, 2014).

Not much study and research has been done on the neglected crops, especially on foxtail millets. Characterization of the accessions of foxtail millet can provide pivotal information for the breeding of crop and in the management of genetic resources. Characterization and evaluation of local foxtail millet landraces is necessary for the utilization in crop improvement. Also, cluster study of these landraces can be pivotal to identify accessions with diverse traits, which can be helpful in breeding programs. The characterization of foxtail millets will help to explore the genetic variability available in Nepal, which ultimately contribute in exploitation of genetic resources for the future breeding research. The objective of the present study was to characterize agro-morphology and evaluate grain yield of foxtail millet accession collected from different parts of Nepal and to analyze genetic diversity and association among economically important traits.

Materials and Methods

Ten foxtail millet (*Setaria italica* (L.) Beauv.) accessions collected from different parts of Nepal were studied (Table 1). The seed samples were obtained from National Genetic Resource Centre, Khumaltar, Lalitpur, Nepal. The research plot was laid out in Randomized Complete Block Design (RCBD) with 10 foxtail millet accessions as treatment and three replications. The unit plot size was 1 m^2 and had 4 rows of crop sown at a distance of 25 cm between the rows. Inter block spacing of 1m and inter plot spacing of 50 cm was maintained. Fertilizer application was done at the rate of 30:20:0 kg NPK per ha. The seeds were sown continuous at about 2.5 cm deep on rows with inter row spacing of 25 cm. The panicles in each plot were harvested separately by cutting from the peduncle base and placed in paper envelops. The harvestings were done from 23rd September 2015 till 18th October 2015.

Phenological Observations

Days to heading, flag leaf duration, days to anthesis, days to flag leaf senescence, days to maturity, flag leaf length breadth ratio, plant height, panicle length, hundred seed weight and yield per plant were recorded.

Qualitative Observations

Characters were evaluated following the foxtail millet descriptor (IBPGR, 1985). First leaf shape: assessed at Zadok's scale 11, seedling anthocyanin coloration of basal leaf sheath: assessed at Zadok's 15, foliage colour: assessed at Zadok's 35, plant growth habit: assessed at Zadok's 35, plant anthocyanin coloration of leaf pedestal assessed at Zadok's 35, leaf altitude of blade: assessed at Zadok's 47, panicle anthocyanin coloration of bristles, anther color: assessed at Zadok's 65, length of bristles: assessed at Zadok's 65, panicle attitude in relation to stem: assessed at Zadok's 91 and panicle shape: assessed at Zadok's 91; were evaluated based in foxtail millet descriptor.

Table 1: Details of 10 foxtail millet accessions included in the study

SN	Accession	Local name	District	Location	Altitude (m, asl)
1	Co-1896	Kaguno	Jumla	Chandannath-1	2,290
2	Co-3474	Kaguno	Bajhang	Sunkuda-8, Suwakot	1,764
3	Co-5148	KaloKaguno	Humla	Kharpunath-7	2,200
4	Co-5645	SetoKaguno	Lamjung	Ghanpokhara-6	1,800
5	Humla-149	RatoKaguno	Humla	Raya	2,300
6	Humla-150	KaloKaguno	Humla	Raya	2,300
7	Humla-164	PiyaloKaguno	Humla	Chhipra	2,100
8	Humla-213	KaloKaguno	Humla	Saya	2,200
9	Humla-522	SetoKaguno	Humla	Syanda	2,050
10	Humla-523	RatoKaguno	Humla	Syanda	2,050

Data entry and processing was carried out using Microsoft Excel 2016 and Microsoft Word 2016 software. Mean and Standard deviations, Analysis of variance (ANOVA), mean performance and DMRT was calculated by using RStudio version 3.1.1. Pearson's correlation co-efficient was computed by using IBM SPSS Statistics 21. Multivariate analysis was done with Minitab 15.0.

Results and Discussions

This study focused on the characterization of 10 foxtail millet accessions collected from several part of Nepal using different agro-morphological attributes evaluated at Rampur, Chitwan. Results showed significant variation of studied traits among the accessions, and it was possible to group accessions based on genetic similarity

Quantitative Traits

Significant variation was found among the studied accessions for days to heading, days to anthesis, days to maturity, yield per plant, panicle exertion, panicle length, peduncle length, flag leaf length-breadth ratio, stay green period and number of panicle per m^2. It was non-significant for plant height, flag leaf length, flag leaf breadth, five panicle weight and hundred grains weight. Mean performance of accessions for these traits is presented in Appendix 1. Phenotypic variation of the foxtail millet accessions was found to be related to the diverse geographic origins. Most of studied traits (Appendix 1) are quantitative and the extensive variability among accessions is probably attributed to the genetic differences and also due to the environment from which they were collected (Moriss, 2009).

Correlation Coefficient Analysis

Pearson's correlation coefficients between different studied traits are presented in Appendix 2.

Qualitative Traits

Characterization of the qualitative traits revealed a wide variation among the accession. High variation in agro-morphological traits among the foxtail millet accessions was reflected by the wide ranges for most of the studied traits. Variation was observed in terms of tip of cotyledon leaf, anthocyanin pigmentation, colour of the plant and leaf, growth habit of the plants, panicle shape, lobe characteristics of the panicle and inflorescence. All the accessions were erect in habit and had white anther color. The qualitative attributes of the studied accessions presented in Appendix 4.

Cluster Analysis

The clustering of foxtail millet accessions based on morpho-physiology, agronomic traits and grain yield presented in Fig. 1. Based on the similarity percentage and related characters three clusters were constructed. Most closely related accessions were Co-1896 and Co-5645 and most distantly related accessions were Co-1 In cluster 1, four accessions, Co-1896, Co-5645, Co-5148 and Humla-149 are grouped. It is observed that high value of traits like panicle exertion, panicle length, peduncle length, flag leaf length breadth ratio, panicle number per square meter and yield per plant are associated with the accessions found in this cluster. In cluster 2, four accessions, Co-3474, Humla-164, Humla-213 and Humla-522 are grouped. It is observed that high value of trait like panicle length, days to heading, days to anthesis and days to maturity are associated with the accessions found in this cluster. Likewise, in cluster 3, two accessions, Humla-150 and Humla-523 are grouped. It is observed that high value of trait like harvest flag leaf length breadth ratio, and low value of traits like plant height, days to booting, days to heading and days to maturity are associated with the accessions found in this cluster. The observation of first cluster and the associations therein of high value for the traits like panicle exertion, panicle length, peduncle length, flag leaf length breadth ratio, panicle number per square meter and yield per plant hint that selection of accession from the first cluster can be worthwhile.

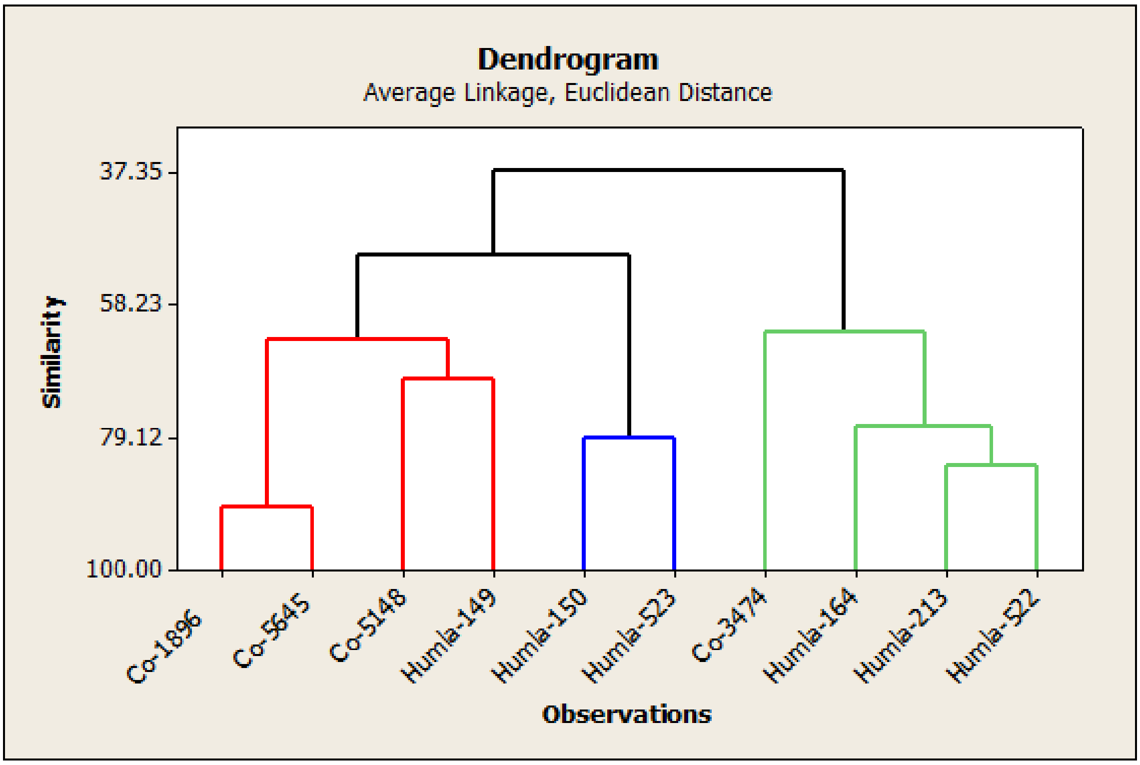

Fig. 1: UPGMA clustering of 10 foxtail millet accessions grown at Rampur, Chitwan, Nepal in 2015

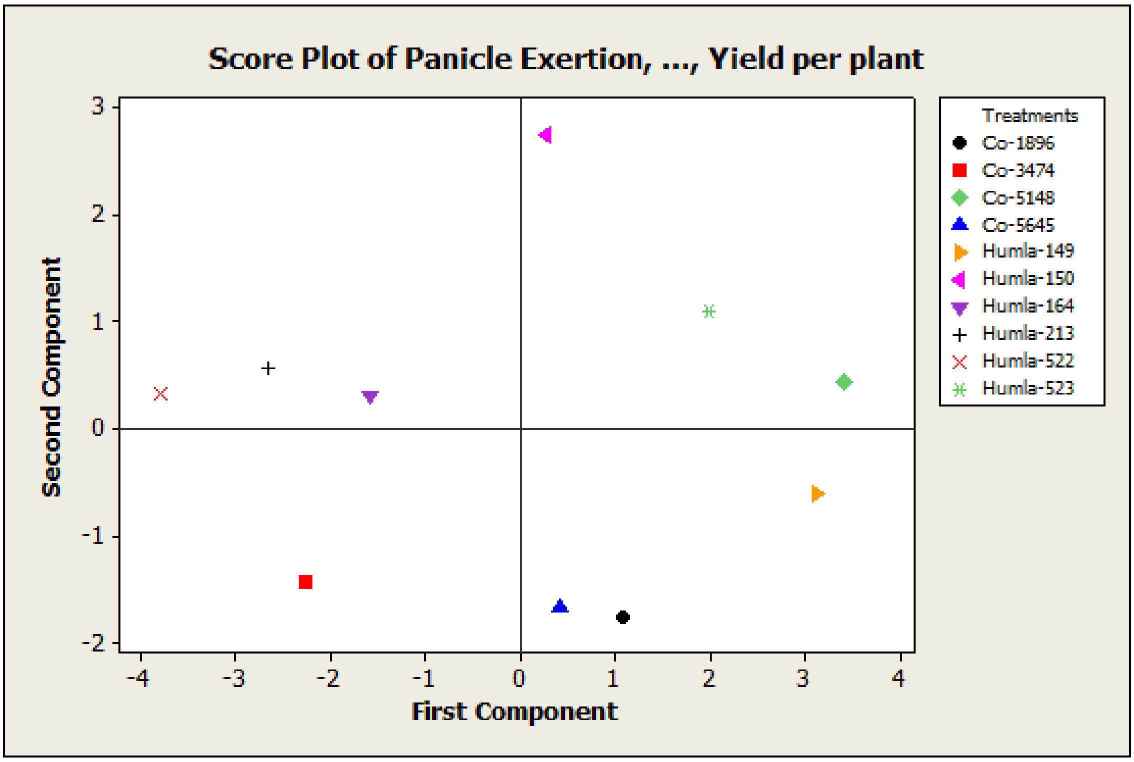

Fig. 2: Principal component analysis of first two components of 10 foxtail millet accessions grown at Rampur, Chitwan, Nepal in 2015

Principal Component Analysis (PCA)

The PCA in general confirmed the groupings obtained through cluster analysis. Results of PCA are given in Appendix 3 and Fig. 2. The first two principal components with ≥ 1 eigen value accounted for 81.6 % of the total variance. Individually, PC 1, PC 2 and PC 3 contributed 61.9, 19.7 and 9.4 % of total variation, respectively.

Successful breeding of high yielding varieties depends on the yield contributing morphological traits and choosing small number of important traits having positive correlation. Flag leaf area, plant height, peduncle length and number of tillers per plant are an important morphological yield contributing traits that are positively correlated with yield per plant (Khaliq *et al.*, 2008). The present study also suggested that high yielding accessions of foxtail millet may be selected by indirect selection of flag leaf length, flag leaf breadth, peduncle length, number of panicle per square meter. The accession Humla-149 showed best performance for most of the yield related traits and therefore can be relevant one for further evaluation in other locations of Nepal similar to Chitwan valley.

In a previous study by Reddy et. al. (2006), in which they had collected and characterized 1535 foxtail millet accessions from 26 countries that included 21 accessions from Nepal had higher grain yield than in the present study. The lower grain yields in this study might be due to the infestation of disease and pests.

Amgai *et al.* (2011) studied five Nepalese foxtail millet accessions. In our study, grain yield was positively influenced by the traits like peduncle exertion, peduncle length, plant height, flag leaf length, stay green period, five panicle weight and number of panicle per square meter (Appendix 2). Similarly, the grain yield was positively contributed by flag leaf length and flag leaf breadth, whereas days to heading, and days to anthesis were negatively correlated with the grain yield indicating that early maturing materials had higher grain yields. These findings are found to be in line with Amgai *et al*. (2011).

The number of days between the maturity time and heading time denotes the grain filling period. Longer grain filing period is a desirable combination that the breeders are interested to find. In this study, the correlation analyses revealed that those accessions which mature early i.e. shorter grain filling duration yielded higher than compared to the late maturing accessions. The accessions that matured late might have experienced heat stress during grain filling and therefore suffered from yield loss. Heat stress is considered as one of the major environmental factors decreasing the crop yield as the stress induces many molecular, biochemical and physiological changes, which affects the crop growth and the grain yield negatively (Prasad et. al., 2008).

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Appendix 1: Mean of traits of 10 foxtail millet accessions under study

Treatments	Panicle Exertion Cm	Panicle length cm	Peduncle length Cm	Plant Height cm	Flag Leaf Length Cm	Flag Leaf Breadth cm	Length Breadth Ratio	Stay Green Days	Five Panicle Weight gm	Panicle number per m^2	Days to heading	Days to anthesis	Days to maturity	Hundred grain weight
Accessions														
Co-1896	10.111 [b]	9.222 [abcd]	22.750 [abc]	66.944	17.444	1.200	14.628 [abc]	26.000 [a]	2.266	61.000 [ab]	43.666 [cd]	47.333 [bc]	71.333 [ab]	0.08
Co-3474	5.277 [c]	10.944 [abc]	14.611 [d]	59.666	17.655	1.222	14.244 [abcd]	19.67[abcd]	1.366	46.67 [abc]	55.000 [a]	57.666 [a]	76.666 [a]	0.053
Co-5148	16.111 [a]	7.667 [cd]	27.766 [a]	61.877	20.111	1.277	15.893 [a]	22.000 [abc]	2.353	56.00[abc]	35.666 [e]	39.333 [d]	60.666 [c]	0.068
Co-5645	9.611 [b]	9.111 [abcd]	19.055 [bcd]	75.555	19.944	1.611	12.462 [bcde]	23.34 [ab]	3.000	61.000 [ab]	45.666 [bc]	48.333 [b]	70.000 [b]	0.049
Humla-149	13.077 [ab]	11.978 [a]	25.100 [a]	63.333	22.000	1.611	13.707 [abcd]	20.67 [abc]	1.872	71.666 [a]	34.666 [e]	39.666 [d]	59.000 [c]	0.012
Humla-150	10.283 [b]	7.300 [cd]	18.616 [cd]	49.277	19.111	1.255	15.339 [ab]	12.666 [d]	0.868	35.666 [bc]	39.666 [de]	43.333 [cd]	58.000 [c]	0.068
Humla-164	10.194 [b]	11.806 [ab]	16.638 [d]	64.250	18.855	1.555	12.251 [cde]	15.000 [cd]	1.400	33.000 [bc]	49.666 [ab]	53.000 [a]	70.000 [b]	0.046
Humla-213	8.611 [bc]	5.777 [d]	17.222 [cd]	53.777	13.511	1.166	11.621 [de]	18.00 [bcd]	1.033	26.000 [c]	53.000 [a]	56.000 [a]	73.666 [ab]	0.046
Humla-522	5.277 [c]	6.556 [d]	8.888 [e]	42.722	14.000	1.333	9.741 [e]	17.67[bcd]	1.000	25.666 [c]	53.000 [a]	55.000 [a]	73.000 [ab]	0.052
Humla-523	11.744 [b]	8.211 [bcd]	24.466 [ab]	52.844	18.666	1.222	15.333 [ab]	18.34[bcd]	1.248	41.34[abc]	36.333 [e]	39.666 [d]	61.666 [c]	0.056
Grand Mean	10.030	8.857	19.511	59.025	18.130	1.345	13.522	19.333	1.640	45.800	44.633	49.933	67.400	0.064
F-test	0.000 ***	0.007**	0.000 ***	0.264	0.375	0.476	0.001 **	0.023 *	0.190	0.023 *	0.000***	0.000***	0.000***	0.557
LSD	4.114	3.269	5.393				2.578	6.767		27.729	5.327	4.343	5.113	0.072
CV (%)	23.911	21.520	16.115	23.733	23.485	22.805	11.114	20.405	58.857	35.294	6.957	5.282	4.422	65.780

Appendix 2: Pearson's correlation coefficient among different traits of accessions of foxtail millet under study

	Days to Heading	Days to Anthesis	Days to Maturity	Panicle Length (cm)	Panicle Exertion (cm)	Peduncle Length (cm)	Plant Height (cm)	Flag Leaf Length (cm)	Flag Leaf Breadth (cm)	Flag Leaf Length Breadth Ratio	Stay Green Period	Five Panicle Weight (gm)	No of Panicle per square metre	100 grain weight (gm)	Yield per plant (gm)
Days to Heading	1														
Days to Anthesis	0.979**	1													
Days to Maturity	0.847**	0.859**	1												
Panicle Length (cm)	-0.159	-0.102	-0.022	1											
Panicle Exertion (cm)	-0.772**	-0.752**	-0.639**	0.255	1										
Peduncle Length (cm)	-0.769**	-0.781**	-0.601**	0.242	0.832**	1									
Plant Height (cm)	-0.233	-0.214	0.020	0.637**	0.474**	0.479**	1								
Flag Leaf Length (cm)	-0.591**	-0.576**	-0.393*	0.586**	0.599**	0.529**	0.698**	1							
Flag Leaf Breadth (cm)	-0.275	-0.249	-0.114	0.573**	0.295	0.212	0.703**	0.799**	1						
Flag Leaf Length Breadth Ratio	-0.590**	-0.599**	-0.478**	0.151	0.576**	0.568**	0.181	0.508**	-0.099	1					
Stay Green Period	-0.205	-0.163	0.275	0.209	0.201	0.269	0.457*	0.214	0.178	0.144	1				
Five Panicle Weight (gm)	-0.318	-0.317	-0.011	0.464**	0.476**	0.498**	0.887**	0.686**	0.663**	0.176	0.541**	1			
No of Panicle per square metre	-0.553**	-0.515**	-0.286	0.517**	0.372*	0.534**	0.589**	0.645**	0.534**	0.291	0.500**	0.648**	1		
100 grain weight (gm)	-0.373*	-0.334	-0.221	0.049	0.111	0.155	-0.093	-0.051	-0.116	0.129	0.297	-0.139	0.237	1	
Yield per plant (gm)	-0.567**	-0.600**	-0.299	0.361	0.626**	0.745**	0.649**	0.625**	0.446*	0.370*	0.507**	0.796**	0.656**	-0.070	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Appendix 3: Statistics of Multivariate analysis of accessions under study

Eigen analysis of the Correlation Matrix

Eigen value	6.1904	1.9704	0.939	0.4917	0.2667	0.079	0.0373	0.0255	0.0002	0
Proportion	0.619	0.197	0.094	0.049	0.027	0.008	0.004	0.003	0	0
Cumulative	0.619	0.816	0.91	0.959	0.986	0.994	0.997	1	1	1

Variable	PC 1	PC 2	PC 3
Panicle Exertion	0.361	0.146	0.063
Panicle length	0.099	-0.34	-0.862
Peduncle length	0.383	-0.003	0.086
Length Breadth Ratio	0.304	0.115	-0.112
Stay Green	0.157	-0.583	0.418
Panicle/m2	0.306	-0.417	-0.116
Days to heading	-0.381	-0.191	-0.002
Days to anthesis	-0.377	-0.2	-0.043
Days to maturity	-0.316	-0.398	0.125
Yield per plant	0.339	-0.318	0.166

Cluster Centroids

Variable	Cluster 1	Cluster 2	Cluster 3	Grand centroid
Panicle Exertion	12.2275	7.3398	11.0135	10.0296
Panicle length	9.4945	8.7707	7.7555	8.8572
Peduncle length	23.6677	14.3398	21.541	19.5112
Length Breadth Ratio	14.1725	11.9643	15.336	13.5219
Stay Green	22.9997	17.583	15.4995	19.333
Panicle/m2	62.4165	32.833	38.4995	45.7997
Days to heading	39.916	52.6665	37.9995	44.6329
Days to anthesis	43.6662	55.4165	41.4995	47.933
Days to maturity	65.2498	73.333	59.833	67.3997
Yield per plant	0.1463	0.0457	0.0845	0.0937

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Appendix 4: Characterization of Agro-morphological traits of accessions of foxtail millet under study

Accession	Tip of leaf (1=pointed, 2=pointed to round)	Anthocyanin presence at Zadok 15 (1=Presence, 0=absence)	overall color (1-light green,2-medium green,3-dark green)	Growth habit (1-erect,2-semi erect,3-spreading)	Anthocyanin at leaf base (1-presence, 0-absence)	Anther color (0-pink)	Leaf blade altitude (1 erect, 2 semi erect, 3 horizontal and 4 drooping)	Length of bristles (1-very short,2-medium,3-long)
Co-1896	1	0	2	1	0	0	3	3
Co-3474	2	0	2	1	0	0	3	3
Co-5148	1	1	2	1	1	0	4	2
Co-5645	2	0	3	1	0	0	2	2
Humla-149	2	1	1	1	1	0	4	2
Humla-150	2	1	2	1	1	0	3	2
Humla-164	1	0	2	1	1	0	3	3
Humla-213	2	0	2	1	0	0	3	1
Humla-522	1	0	2	1	1	0	3	2
Humla-523	1	1	2	1	1	0	3	3

Accession	Panicle anthocyanin (1-presence ,0-absence)	Panicle shape (1 conical, 2 spindle, 3 cylindrical, 4 club, 5 duck mouth, 6 cat foot and 7 branched)	Length of bristles (1 short, 3 medium and 5 long)	Lobe in panicles 1 present, 0 absent	Lobe compactness 3 loose, 5 medium, 7 compact, 9 spongy)	Inflorescence compactness Lobe compactness 3 loose, 5 medium, 7 compact, 9 spongy	Flag leaf color 1 light green, 2 medium green, 3 dark green	Panicle anthocyanin (1-presence ,0-absence)
Co-1896	0	3	3	1	7	7	2	0
Co-3474	0	3	3	1	3	5	2	0
Co-5148	1	3	2	1	3	3	1	1
Co-5645	0	3	2	1	5	9	2	0
Humla-149	0	3	2	1	5	5	2	0
Humla-150	0	3	2	0		5	2	0
Humla-164	0	3	3	1	3	5	3	0
Humla-213	0	3	1	0		7	2	0
Humla-522	0	3	1	0		5	1	0
Humla-523	0	3	3	1	3	5	1	0