Pak. J. Bot., 43(3): 1679-1684, 2011.

FLORISTIC INVENTORY OF PIR MEHR ALI SHAH ARID AGRICULTURE UNIVERSITY RESEARCH FARM AT KOONT AND ITS SURROUNDING AREAS

RAHMATULLAH QURESHI[1*], G.R. BHATTI[2] AND GHULAM SHABBIR[3]

[1]*Department of Botany, Pir Mehr Ali Arid Agriculture University, Murree Road Rawalpindi Pakistan.*
[2]*Centre for Biodiversity & Conservation, Shah Abdul Latif University, Khairpur, (Mir's), Sindh, Pakistan.*
[3]*Plant Breeding and Genetics, Pir Mehr Ali Arid Agriculture University, Murree Road Rawalpindi Pakistan.*

Abstract

The aim of present study was to provide botanical inventory of the study area. For this purpose, floristic survey was carried out during April, 2008 to March, 2009. One hundred thirty plant species belonging to 105 genera and 37 families were identified from the study area. Of them, 97 species were of dicot and 33 monocot. Poaceae was found the most dominant family in the flora of the Koont Farm that contributed 23.26% followed by Asteraceae (13.18%), Fabaceae (7.75%), Amaranthaceae, Euphorbiaceae (6.25% each), Solanaceae (4.65%) and Boraginaceae (3.10%), while rest of the families had few species. It has been observed that most of the life-span of recorded taxa was annual natured (52%) followed by perennial (40%) and biennial (8%). Therophytes were the most abundant life form that constituted 43% of the total flora, followed by phanerophytes (19%), cryptophytes (15%), hemicryptophytes (13%) and xeropsammophytes (10%).

Introduction

Inventory of floras by plant taxonomists is a common practice throughout the world to have information about plants. A flora is a compiled checklist of plant species growing in any geographic area. Through this practice, valuable data is recorded which could be used as reference for future studies. Since the world is extremely variable, hence a vast range of floras are available ranging from concise or Field Floras to Research Floras. A reasonably good flora provides a work, which can be used for proper identification of all our plant-wealth so that its utilization could be taken up on a scientific and systematic basis. The identification of local plants along with the description of an area is very important because it can show specific species of the local area and their occurrence, growing season, species hardness, distinct species, finding new species and the effect of climatic conditions like drought and over-grazing on vegetation (Ali, 2008).

From Potohar range there are few studies previously reported (Ahmed, 1964; Bhopal & Chaudhri, 1977a&b; Stewart, 1952; 1961). However, these floras have missed very important taxa and even small pockets like the project area. Besides, there is a big gap in time period; therefore there is an immediate need of the hours to revise the flora of whole country.

The study area (Koont Farm) is located in Rawalpindi district on Chakwal Road at the borderline of tehsil Gujjar Khan. It is bounded with north side by Rawalpindi, Islamabad and Attock, south side by Jhelum, Lahore and Gujrat, East side by Kashmir and Kahuta and west side by Chakwal and Khushab. It lies at the beginning of the Potohar plateau and the Salt Range, the most of the area is a barani and the terrain is mainly of undulated and gully in nature mostly covered with scrub vegetation in the southwest and leveled plains interspaced with dry rocky patches in the north and northeast (Qureshi, 2009).

Most of the soils of the study area are sandy loam and sandy clay loam with minor variations of loamy sand. There is dominance of sand particle in the soil of the study along with alkalinity and sodicity. Therefore these soils are deficient in organic matter and phosphorus, which results sparse vegetation in the project area. The study area lies in the subtropical region with the exception of a little on the cooler side, owing to its elevation, from central Punjab. Winter temperatures normally range between –4°C and 25°C, and summer temperatures average between 15°C and 40°C and may go up to a maximum of 15°C (Anon., 1998).

The aim of this study is to provide baseline information of the existing flora to develop herbarium at PMAS Arid Agriculture University with correctly identified plant specimens of Koont Farm and its surrounding areas. This paper presents the flora and life-forms of the study area which will serve in teaching and research in various fields of plant sciences.

Materials and Methods

The whole area was thoroughly surveyed during April 2008-March, 2009 for the collection of plant specimens. The collected specimens were processed by conventional method for drying and making herbarium sheets. All specimens were identified with the help of Flora of Pakistan (Nasir & Ali, 1970-1989; Ali & Nasir, 1989-1991; Ali & Qaiser, 1993-1995, 2000-2008), Flora of Karachi (Jafri, 1966) and Flora of Nara Desert (Qureshi, 2004). The determined specimens were matched in the National Herbarium, NARC Islamabad and deposited in the Herbarium of Pir Mehr Ali Shah Arid Agriculture University Rawalpindi for record. Life-form classes were determined by following Raunkiaer (1934) and Abd el-ghani (2000). The local people were interviewed to get vernacular names of taxa and their local uses and given in Table 1.

Results

A total of 130 plant species belonging to 105 genera and 37 families have been identified from the study area (Table 1). Their life-span comprised of 52% annual, 40% perennial and 8% biennial (Fig. 1). Family Importance Index (FIV) indicates that Poaceae was the most dominant family in the flora of Koont farm that contributed 23.26% species, followed by Asteraceae (13.18%), Fabaceae (7.75%), Amaranthaceae, Euphorbiaceae (6.15% each), Solanaceae (4.65%) and Boraginaceae (3.10%), while the other 30 families shared 35.66% (Table 2). The whole flora comprised of 97 dicot and 33 monocot families. In addition, most of the species were growing as weeds (90 species) in rabi and kharif crops (Wheat & Brassica respectively). For quick identification, local names were also recorded from the study area and provided in Table 1.

There was good diversity of life-forms spectrum of the existing flora. Therophytes were the most abundant life form represented 43% of the total flora, followed by phanerophytes (19%), cryptophytes (15%), hemicryptophytes (13%) and Xeropsammophytes (10%) (Fig. 2). Herbs were dominating the area with 47.69%, followed by grasses (23.08) and shrubs (20.00%), while rest of the habit forms were less in percentage (Fig. 3).

*E-mail: phytotaxonomist@gmail.com, rahmatullahq@yahoo.com, rahmatullahq@uaar.edu.pk

Table 1. Plant species along with family, local names and habit, life-span and life-forms from university research farm at Koont and its surrounding areas.

S. No.	Plant species	Local name	Family	Habit	Life-span	Life form
1.	*Abutilon bidentatum* Hochst. ex A. Rich.	----	Malvaceae	Shrub	Perennial	Xeropsammophytes
2.	*Acapcia modesta* Wall.	Phulai	Mimosaceae	Tree	Perennial	Phanerophyte
3.	*A. nilotica* (L.) Delile	Desi Kikar	Mimosaceae	Tree	Perennial	Phanerophyte
4.	*Achyranthes aspera* Linn.	----	Amaranthaceae	Shrub	Perennial	Xeropsammophytes
5.	*Adiantum capillus-veneris* L.	Persiansha	Adiantaceae	Herb	Perennial	Hemicryptophyte
6.	*Aerva javanica* (Burm. f.) Juss.	Boi	Amaranthaceae	Shrub	Perennial	Xeropsammophytes
7.	*Agave americana* L.	----	Agavaceae	Shrub	Perennial	Phanerophyte
8.	*Ageratum conozoides* Mill.	----	Asteraceae	Herb	Annual	Therophyte
9.	*Alhagi maurorum* Medic.	Jawansa	Fabaceae	Subshrub	Perennial	Phanerophyte
10.	*Alternanthera pungens* Kunth.	----	Amaranthaceae	Herb	Annual	Cryptophye
11.	*Amaranthus hybridus* L.	Choleri	Amaranthaceae	Herb	Annual	Therophyte
12.	*A. viridis* L.	Cholai	Amaranthaceae	Herb	Annual	Therophyte
13.	*Anagallis arvensis* L.	Billi boti	Primulaceae	Herb	Annual	Therophyte
14.	*Aristida cyanatha* Nees ex Steud.	Lumb	Poaceae	Grass	Annual	Therophyte
15.	*Artemisia dubia* Wall.	Choamoa	Asteraceae	Shrub	Biennial	Phanerophyte
16.	*Asphodelus tenuifolius* Cavan.	Piazi	Lilaceae	Herb	Annual	Cryptophye
17.	*Avena fatua* L.	Jangali jai	Poaceae	Grass	Annual	Therophyte
18.	*Barleria cristata* L.	----	Acanthaceae	Subshrub	Perennial	Phanerophyte
19.	*Bidens chinensis* (L.) Willd.	----	Asteraceae	Grass	Perennial	Phanerophyte
20.	*Boerhavia repens* L. var. *procumbens* (Roxb.) Hk. f.	----	Nyctaginaceae	Herb	Biennial	Xeropsammophytes
21.	*Brachiaria reptans* (L.) Gard. & C.E. Hubb.	----	Poaceae	Grass	Annual	Therophyte
22.	*Calotropis procera* (Willd.) R. Br.	Akh	Asclepiadaceae	Shrub	Perennial	Phanerophyte
23.	*Cannabis sativa* L.	----	Cannabinaceae	Subshrub	Biennial	Phanerophyte
24.	*Capparis decidua* (Forssk.) Edgew.	Karir	Capparidaceae	Shrub	Perennial	Xeropsammophytes
25.	*Capsella bursa-pastoris* (L.) Medic.	Shephard purse	Brassicaceae	Herb	Annual	Therophyte
26.	*Carthamus oxycantha* M.B.	Pohli	Asteraceae	Subshrub	Annual	Therophyte
27.	*Celosia argentea* L.	----	Amaranthaceae	Herb	Annual	Therophyte
28.	*Cenchrus biflorus* Roxb.	----	Poaceae	Grass	Annual	Therophyte
29.	*C. ciliaris* L.	----	Poaceae	Grass	Biennial	Xeropsammophytes
30.	*C. setigerus* Vahl	----	Poaceae	Grass	Biennial	Hemicryptophyte
31.	*Chenopodium album* L.	Bathu	Chenopodiaceae	Herb	Annual	Therophyte
32.	*C. ficifolium* Sm.	----	Chenopodiaceae	Herb	Annual	Therophyte
33.	*C. murale* L.	----	Chenopodiaceae	Herb	Annual	Therophyte
34.	*Chloris barbata* Sw.	----	Poaceae	Grass	Annual	Therophyte
35.	*Chrozophora tinctoria* (L.) Juss.	Neel Kanti	Euphorbeaceae	Herb	Annual	Therophyte
36.	*Chrysopogon aucheri* (Boiss.) Stapf	----	Poaceae	Grass	Perennial	Phanerophyte
37.	*Cichorium intybus* L.	Kasni	Asteraceae	Herb	Annual	Therophyte
38.	*Cirsium arvense* (L.) Scop.	Leh	Asteraceae	Herb	Annual	Therophyte
39.	*Cistanche tubulosa* (Schenk) R. Wight	----	Orabanchaceae	Root parasite	Annual	Therophyte
40.	*Convolvulus arvensis* L.	Hirran Khuri	Convolvolaceae	Climber	Perennial	Chamaephyte
41.	*Conyza bonariensis* (L.) Cronquist	Gidar Buti	Asteraceae	Herb	Annual	Therophyte
42.	*Corchous olitorious* L.	----	Tiliaceae	Herb	Annual	Therophyte
43.	*Coronopus didymus* (L.) Sm.	Jangli haloon	Brassicaceae	Herb	Annual	Hemicryptophyte
44.	*Cymbopogon jwarancusa* (Jones) Schult.	Khawi	Poaceae	Grass	Perennial	Xeropsammophytes
45.	*Cynodon dactylon* (L.) Pers.	Khabal gha	Poaceae	Grass	Perennial	Chamaephyte
46.	*Cynoglossum lanceolatum* Forssk.	----	Boraginaceae	Herb	Annual	Therophyte
47.	*Cyperus compressus* Linn.	----	Cyperaceae	Sedge	Perennial	Chamaephyte
48.	*C. rotundus* L.	Daila	Cyperaceae	Sedge	Perennial	Chamaephyte
49.	*Dactyloctenium aegyptium* (L.) P. Beauv.	Madhana Ghaas	Poaceae	Grass	Annual	Chamaephyte
50.	*Datura innoxia* Mill.	Dhatura	Solanaceae	Shrub	Perennial	Phanerophyte
51.	*Desmostachya bipinnata* (L.) Stapf	Baroon Dhab	Poaceae	Grass	Perennial	Chamaephyte
52.	*Dichanthium annulatum* (Forssk.) Stapf	Murgha Ghaas	Poaceae	Grass	Perennial	Chamaephyte
53.	*D. foveolatum* (Delile) Roberty	----	Poaceae	Grass	Perennial	Chamaephyte
54.	*Diclyptera roxburghiana* Nees	----	Acanthaceae	Herb	Annual	Therophyte
55.	*Digera muricata* (L.) Mart.	Tanga	Amaranthaceae	Herb	Annual	Therophyte
56.	*Digitaria sanguinalis* (L.) Scop.	----	Poaceae	Grass	Annual	Hemicryptophyte
57.	*Echinops echinatus* Roxb.	Unt Katara	Asteraceae	Subshrub	Annual	Therophyte
58.	*Eclipta prostrata* (L.) L.	Bhangra	Asteraceae	Herb	Perennial	Hemicryptophyte
59.	*Eragrostis cilianensis* (All.) Vig.	----	Poaceae	Grass	Annual	Therophyte
60.	*E. minor* Host.	----	Poaceae	Grass	Annual	Therophyte
61.	*Euphorbia helioscopia* L.	Chhatri Dodak	Euphorbiaceae	Herb	Annual	Therophyte
62.	*E. dracunculoides* Lam.	----	Euphorbiaceae	Herb	Biennial	Therophyte
63.	*E. granulata* Forssk.	Dodi khurd	Euphorbiaceae	Herb	Perennial	Hemicryptophyte
64.	*E. hirta* L.	Dudhi Kalan	Euphorbiaceae	Herb	Annual	Therophyte
65.	*E. indica* Lam.	Dudhi	Euphorbiaceae	Herb	Annual	Therophyte

Table 1. (Cont'd.).

S. No.	Plant species	Local name	Family	Habit	Life-span	Life form
66.	*E. prostrata* Ait.	Dudhi Khurd	Euphorbiaceae	Herb	Perennial	Hemicryptophyte
67.	*Fagonia indica* Burm. f.	Dhamasa	Zygophyllaceae	Herb	Perennial	Xeropsammophytes
68.	*Ficus bengalensis* L.	Peepal	Moraceae	Tree	Perennial	Phanerophyte
69.	*F. carica* L.	Injeer	Moraceae	Tree	Perennial	Phanerophyte
70.	*Fumaria indica* (Hausskn.) H.N. Pugsley	Shahtra papra	Fumariaceae	Herb	Annual	Therophyte
71.	*Galium aparine* L.	----	Rubiaceae	Herb	Biennial	Chamaephyte
72.	*Gymnosporia royleana* (Wall. ex Lawson	Patakhi	Celastraceae	Shrub	Perennial	Phanerophyte
73.	*Heliotropium crispum* Desf.	----	Boraginaceae	Subshrub	Perennial	Xeropsammophytes
74.	*H. europaeum* L.	Hathi Sunda	Boraginaceae	Herb	Annual	Xeropsammophytes
75.	*Imperata cylindrica* (L.) P. Beauv.	Dabh Gha	Poaceae	Grass	Perennial	Hemicryptophyte
76.	*Indigofera linifolia* (L. f.) Retz.	----	Fabaceae	Herb	Annual	Therophyte
77.	*Ipomoea carnea* Jacq.	Akri	Convolvulaceae	Shrub	Perennial	Phanerophyte
78.	*Kickxia ramosissima* (Wall.) Janchen	----	Scrophulariaceae	Herb	Annual	Therophyte
79.	*Launaea procumbens* (Roxb.) Ram. & Raj.	Dodkal	Asteraceae	Herb	Perennial	Hemicryptophyte
80.	*Malva parviflora* L.	Double roti/ Sonchal	Malvaceae	Herb	Annual	Hemicryptophyte
81.	*Malvestrum coromendelianum* (L.) Garcke	Dhamhni Buti	Malvaceae	Subshrub	Biennial	Hemicryptophyte
82.	*Mazus japonicus* (Thunb.) O. Ktze.	----	Scrophulariaceae	Herb	Annual	Therophyte
83.	*Medicago polymorpha* L.	Maina	Fabaceae	Herb	Annual	Therophyte
84.	*Melilotus indica* (L.) All.	Senji	Fabaceae	Herb	Annual	Therophyte
85.	*Ochthochloa compressa* (Forssk.) Hilu	----	Poaceae	Grass	Perennial	Chamaephyte
86.	*Orabanche aegyptiaca* Pers.	----	Orabanchaceae	Root Parasite	Annual	Therophyte
87.	*Oxalis corniculata* L.	Khatti boti	Oxalidaceae	Herb	Perennial	Chamaephyte
88.	*Parthenium hysterophorus* L.	Chatak Chandni	Asteraceae	Subshrub	Perennial	Hemicryptophyte
89.	*Paspalidium flavidum* (Retz.) A. Camus	----	Poaceae	Grass	Perennial	Hemicryptophyte
90.	*P. paspaloides* (Michx.) Scribner	----	Poaceae	Grass	Perennial	Hemicryptophyte
91.	*Peganum hermala* L.	Harmal	Zygophyllaceae	Herb	Annual	Therophyte
92.	*Phalaris minor* Retz.	Dumbi Sitti	Poaceae	Grass	Annual	Therophyte
93.	*Poa annua* L.	----	Poaceae	Grass	Annual	Therophyte
94.	*Polygonum plebejum* R. Br.	----	Poaceae	Herb	Annual	Hemicryptophyte
95.	*Polypogon monspeliensis* (L.) Desf.	----	Poaceae	Grass	Annual	Therophyte
96.	*Prosopis juliflora* Swartz	Jangli kikar	Mimoceaceae	Shrub	Perennial	Phanerophyte
97.	*Pupalia lappacea* (L.) Juss.	----	Amaranthaceae	Herb	Perennial	Phanerophyte
98.	*Rhynchosia minima* (L.) DC.	Alri balri	Fabaceae	Climber	Perennial	Chamaephyte
99.	*R. pulverulenta* Stocks	----	Fabaceae	Climber	Perennial	Chamaephyte
100.	*Ricinus communis* L.	Arind	Euphorbiacea	Shrub	Perennial	Phanerophyte
101.	*Rumex dentatus* L.	Jangli palak	Polygonaceae	Herb	Annual	Therophyte
102.	*Saccharum griffithii* Munro ex Boiss.	Kahi	Poaceae	Large Grass	Perennial	Phanerophyte
103.	*S. spontaneum* L.	Kah	Poaceae	Large Grass	Perennial	Phanerophyte
104.	*Saussurea heteromalla* (D. Don) Hand.-Mazz.	----	Asteraceae	Herb	Annual	Therophyte
105.	*Sesbania bispinosa* (Jacq.) W.F. Wight	Dangari	Fabaceae	Herb	Annual	Therophyte
106.	*Setaria verticillata* (L.) P. Beauv.	----	Poaceae	Grass	Annual	Therophyte
107.	*Silybum marianum* Gaertn.	Kandiyari	Asteraceae	Subshrub	Annual	Therophyte
108.	*Sisymbrium irio* L.	Khoob Kalan	Brassicaceae	Herb	Annual	Therophyte
109.	*Solanum incanum* L.	Mahokari	Solanaceae	Subshrub	Perennial	Phanerophyte
110.	*S. nigrum* L.	Mako	Solanaceae	Herb	Annual	Therophyte
111.	*S. surattense* Burm. f.	Choti mahokari	Solanaceae	Herb	Biennial	Chamaephyte
112.	*S. villosum* Miller	Kaach Maach	Solanaceae	Herb	Annual	Therophyte
113.	*Sonchus arvensis* L.	Dodh Bhatal	Asteraceae	Herb	Annual	Therophyte
114.	*S. oleraceus* L.	Dodak	Asteraceae	Herb	Annual	Therophyte
115.	*Sorghum halepense* (L.) Pers.	----	Poaceae	Grass	Perennial	Chamaephyte
116.	*Stellaria media* (L.) Cyr.	----	Caryophyllaceae	Herb	Annual	Therophyte
117.	*Tamarix aphylla* (L.) Karst.	Frash	Tamaricaceae	Tree	Perennial	Xeropsammophytes
118.	*Taraxacum officinale* F. H. Wiggers	Dandelion	Asteraceae	Herb	Annual	Hemicryptophyte
119.	*Themeda anathera* (Nees) Hack.	----	Poaceae	Grass	Perennial	Chamaephyte
120.	*Trianthema portulacastrum* L.	----	Aizoaceae	Herb	Annual	Chamaephyte
121.	*Tribulus terrestris* L.	Bhakra	Zygophyllaceae	Herb	Annual	Hemicryptophyte
122.	*Trichodesma indicum* (L.) R. Br.	Gaozeban	Boraginaceae	Herb	Annual	Xeropsammophytes
123.	*Trigonela monantha* ssp. *incisa* (Benth.) Ali	----	Fabaceae	Herb	Annual	Therophyte
124.	*Urtica pilulifera* L.	Bichho boti	Urticaceae	Herb	Annual	Phanerophyte
125.	*Vicia faba* L.	Rewari	Fabaceae	Herb	Annual	Therophyte
126.	*V. sativa* L.	Rewari	Fabaceae	Herb	Annual	Therophyte
127.	*Withania somnifera* (L.) Dunal	Asgand	Solanaceae	Shrub	Perennial	Phanerophyte
128.	*Xanthium indicum* Koenig ex Roxb.	Gokhru kalan	Asteraceae	Shrub	Biennial	Phanerophyte
129.	*Zizyphus mauritiana* Lam.	Bair	Rhamnaceae	Shrub	Perennial	Phanerophyte
130.	*Z. nummularia* (Burm. f.)Wight & Arn.	Jhar bairi	Rhamnaceae	Shrub	Perennial	Xeropsammophytes

Table 2. Family Important Index (FIV) of the flora of Koont Farm.

S. No.	Family	Spp. #	% Age
1.	Poaceae	30	23.08
2.	Asteraceae	17	13.08
3.	Fabaceae	10	7.69
4.	Amaranthaceae	8	6.15
5.	Euphorbiaceae	8	6.15
6.	Solanaceae	6	4.62
7.	Boraginaceae	4	3.08
8.	Brassicaceae	3	2.31
9.	Chenopodiaceae	3	2.31
10.	Malvaceae	3	2.31
11.	Mimosaceae	3	2.31
12.	Zygophyllaceae	3	2.31
13.	Acanthaceae	2	1.54
14.	Convolvulaceae	2	1.54
15.	Cyperaceae	2	1.54
16.	Moraceae	2	1.54
17.	Orabanchaceae	2	1.54
18.	Rhamnaceae	2	1.54
19.	Scrophulariaceae	2	1.54
20.	Adiantaceae	1	0.77
21.	Agavaceae	1	0.77
22.	Aizoaceae	1	0.77
23.	Asclepiadaceae	1	0.77
24.	Cannabinaceae	1	0.77
25.	Capparidaceae	1	0.77
26.	Caryophyllaceae	1	0.77
27.	Celastraceae	1	0.77
28.	Fumariaceae	1	0.77
29.	Lilaceae	1	0.77
30.	Nyctaginaceae	1	0.77
31.	Oxalidaceae	1	0.77
32.	Polygonaceae	1	0.77
33.	Primulaceae	1	0.77
34.	Rubiaceae	1	0.77
35.	Tamaricaceae	1	0.77
36.	Tiliaceae	1	0.77
37.	Urticaceae	1	0.77

Discussion

This study provides a floristic list of plant species found in university research farm at Koont (Table 1). Along the slopes, vegetation comprised of grasses and shrubs. Since, the area receives sufficient rains therefore much of the area was occupied by annuals and grasses (Fig. 1). This vegetation can utilize the transient water stored in the upper soil synchronic with precipitation. The upper dry layer of the surface deposits acts as a protective layer, moisture is stored in subsurface layers, and the underlying sandstone provides added water storage capacity. As presented in the results, the dominance of annual plant species is an evident of rainwater. Therophytes and phanerophytes were the most frequent, indicating a typical subtropical to tropical life-form spectrum in the study area. Therophytes constituted 43% of the floristic composition, followed by phanerophytes (Fig. 2). The dominance of both therophytes and phanaerophytes over other life forms reveals that it might be a response to the harsh climate and anthropogenic pressure on the flora by human as well as animals. The other possible reason could be the availability of plentiful moisture in the form of rains. This type of study is already reported by Qureshi (2008) from Chotiari wetlands complex, Sindh.

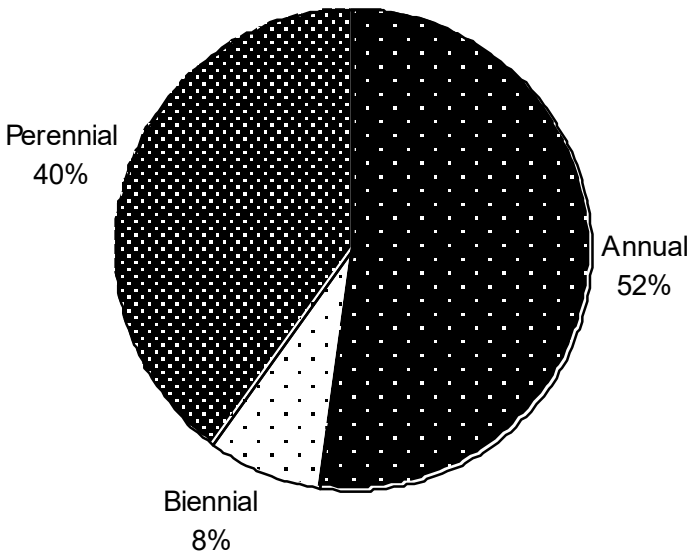

Fig. 1. Life-span of the flora of Koont Farm.

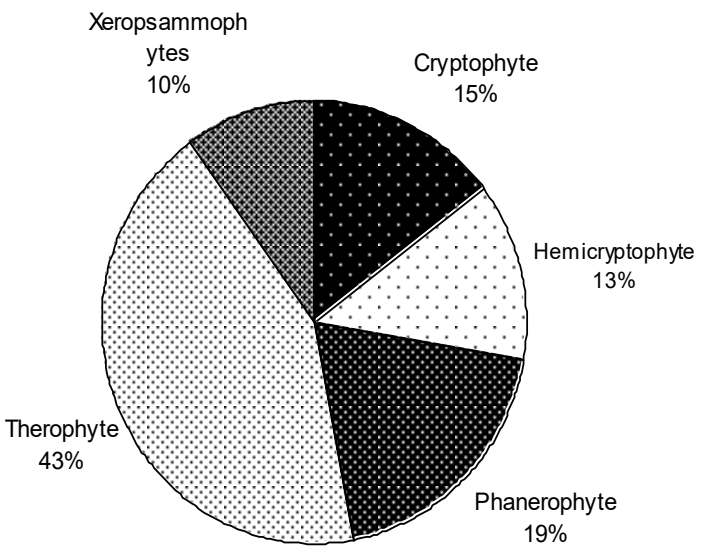

Fig. 2. Life-form classes of the flora of project area.

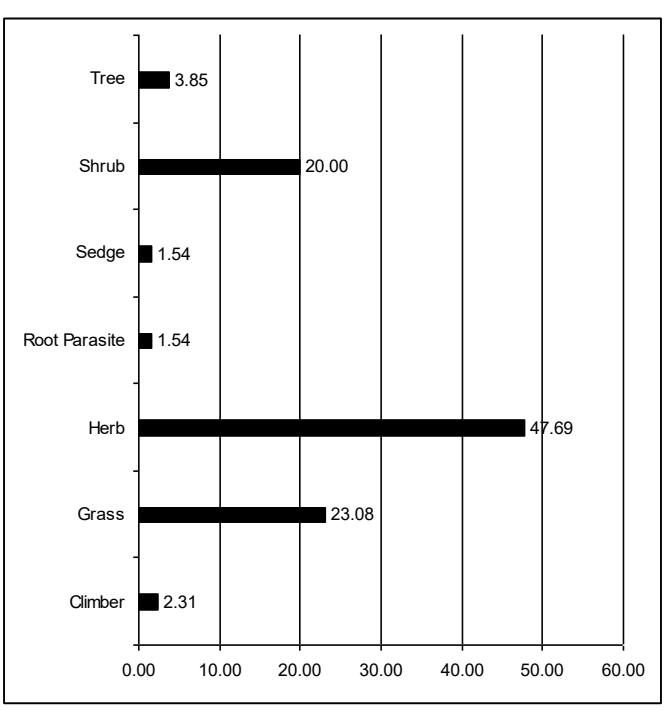

Fig. 3. Habitual spectrum of the flora of the study area.

The xeropsammophytes such as *Abutilon bidentum, Achyranthus aspera, Aerva javanica, Boerhavia repens, Capparis decidua, Cenchrus ciliaris, Cymbopogon jwarancusa, Fagonia indica*, *Heliotropium crispum, H. europaeum, Tamarix aphylla, Trichodesma indicum* and *Zizyphus nummularia* were found in dry non saline sandy sites with higher fertile soils, where infiltration is higher and water accumulates in deeper layers. These species are also recorded from the Nara Desert, Pakistan (Qureshi, 2004; Qureshi & Bhatti, 2005).

Most of the flora was indigenous with few exceptions like *Parthenium hysterophorus*. This species is an exotic weed infesting a large area in the farm. This is well known weed and infested many countries (Williams & Grovers, 1980). Like other Asteraceous species, it has minute seeds armed with hairy attachment that facilitate its dispersal by wind. Therefore, it is spreading at an alarming pace in various parts of the country (Shah & Khan, 2006; Qureshi *et al.*, 2009). Grassy weeds like *Avena fatua, Cynodon dactylon, Dactyloctenium aegyptium, Desmostachya bipinnata, Digitaria sanguinalis, Phalaris minor, Polypogon mospeliensis* alongwith sedge *Cyperus rotundus* were mostly infesting rabi and kharif crops in research farm alongwith annual herbs. In addition, *Anagalis arvensis, Asphodelus tenuifolius, Brachiaria reptans, Capsella bursa-pastoris, Chenopodium album,Carthamus oxycantha, Cirsium arvense,*

Fumaria indica, Medicago polymorpha, Melilotus alba, Convolvulus arvensis, Alternanthera pungens, Malvestrum coromendelianum, Polygonum plebejum, Stellaria media and *Tribulus terrestris* were broad leaved weeds frequently found in the area. These are problematic weeds, which require continuous hoeing and weeding to reduce the competition amongst the desired species.

No endemic species has been recorded from the study area; however this area has never been explored before and this paper provides baseline information about the flora of Koont farm. However, *Dichanthium foveolatum* and *Ochthochloa compressa* are not previously reported from the Potohar range.

Conclusion

This taxonomic checklist of plant species provides a preliminary data of the of PMAS-Arid Agriculture University research farm at Koont. Although present study tried to record flora of the whole area, yet it was a glimpse of the area. It is believed that there is ample opportunity that many plant species were left unrecorded hence there is need for long-term comprehensive study to document flora and vegetation of the area in question. However, the present work will serve to students and researcher for the identification of plants of given area.

Acknowledgement

This study is carried out under the research project entitled, “Floristic Inventory of University Research Farm at Koont and its Surrounding Areas” funded by Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi, Pakistan, which is thankfully acknowledged.

References

Abd el-ghani, M.M. 2000. Floristics and environmental relations in two extreme desert zones of western Egypt. *Global Ecology & Biogeography*, 9: 499-516.

Ahmed, I. 1964. Vegetation of the salt range. *Pak. J. For.,* 14: 36-62.

Ali, S. I. 2008. The significance of flora with special reference to Pakistan. *Pak. J. Bot.*, 40(30): 967-971.

Ali, S.I. and M. Qaiser (Eds.). 1993-1995 & 2000-2008. *Flora of Pakistan* (*Fascicle series*). Islamabad, Karachi.

Ali, S.I. and Y.J. Nasir (Eds.). 1989-1991. *Flora of Pakistan* (*Fascicle series*). Islamabad, Karachi.

Anonymous.1998. District Census Report of Chakwal. Population Census Organization, Statistical Division, Government of Pakistan, Islamabad.

Bhopal, F.G. and M.N. Chaudhri. 1977a. Flora of Pothohar and adjoining areas. Part-I. The Centrospermae. *Pak. Syst.,* 1(1): 38-128.

Bhopal, F.G. and M.N. Chaudhri. 1977b. Flora of Pothohar and adjoining areas. Part-II. Casuarinaceae to Polygonaceae. *Pak. Syst.,* 1(2): 1-98.

Jafri, S.M.H. 1966. *The Flora of Karachi,* The Book Corporation, Karachi, Pakistan.

Qureshi, R. 2004. *Floristic and Ethnobotanical Study of Desert Nara Region, Sindh*. Ph.D. Thesis. Department of Botany, Shah Abdul Latif University, Khairpur. Vol. I: 1-300.

Qureshi, R. 2008. Preliminary floristic list of Chotiari Wetland Complex, Nawab Shah, Sindh, Pakistan. *Pak. J. Bot.*, 40(6): 2281-2288.

Qureshi, R. A. Waheed and M. Arshad. 2009. Weed communities of wheat crop in district Toba Tek Singh, Pakistan. *Pak. J. Bot.*, 41(1): 239-245.

Qureshi, R. 2009. *Floristic Inventory of University Research Farm at Koont and its surrounding areas*. Final technical report funded by Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi.

Qureshi, R. G.R. Bhatti. 2005. Nara Desert, Pakistan: Part-1: Soils, Climate and Vegetation. *Rangelands,* 27(5): 27-31.

Rankiaer, C. 1934. *Life form of Plants and Statistical Plant Geography.* Clarendon press, Oxford.

Shah, G.M. and M.A. Khan. 2006. Checklist of noxious weeds of District Mansehra, Pakistan. *Pak. J. Weed Sci. Res.*, 12(3): 213-219.

Stewart, R.R. 1952. Catalogue of plants of Rawalpindi district (Punjab). *For. Rec*., 2(1): 1-90.

Stewart, R.R. 1961. Additions and correction to Rawalpindi District Flora. *Pak. J. For.,* 11: 51-63.

William, D.J. and R.H. Grovers. 1980. The influence of temperature and photoperiod on growth and development of *Parthenium hysterophorus* L. *Weed Research*, 20(1): 47-52.

(Received for publication 26 October 2009)