

DISTRIBUTION AND POPULATION OF WEEDS IN THE MAIZE FIELDS OF MASTUJ, DISTRICT CHITRAL

Farrukh Hussain, Ali Murad¹ and Qutabuddin Marwat²

Abstract

Frequency, population density and herbage coverage of 68 weed species in the maize fields of Tehsil Mastuj, District Chitral, were determined during August, 1993.

*The most common species of weeds with 51-80% occurrence were *Anthemis tinctorica* L., *Lotus corniculatus* L., *Melilotus indica* (L.) All., *Nepeta kokania* Regal and *Potentilla pamarica*. Wolf. While *Ceratium cerastoides* (L.) Br., *Chroispora macropoda* Trautv. *Chenopodium botrys* L. *Epilobium angustifolium* Linn. and *Melilotus indica* (L.) All. had high density than other species in the area. *Anthemis tinctorica* L., *Hyoscyamus pusillus*, *Labeo ex. D Don* and *Matricaria praececox* D.C exhibit somewhat better herbage cover in comparison with other species. Most of the weeds (55.88%) fell into Constancy class II.*

It is concluded that similar habitat conditions had helped in the uniform occurrence and high population of weeds in the area. Such weeds might become problem if left unchecked in the area.

Introduction

Weeds affect of agroecosystem by sharing the habit resources with crops to ultimately reduce their yield (Zimdhall, 1980; Hussain, 1983). They provide habits for plant pathogens and serve as an alternate host for other harmful organisms (Rao, 1983; Mehmood, 1987; Shad, *et al*; 1986). Weed suppress crops when they attain certain minimum population in the field. Therefore every weed would not be agronomically important. To locate serious weeds in an area, their population dynamics, frequency and herbage coverage (growth) is determined. Ghafoor *et al.* (1987) recognized ten most serious weeds in Pakistan.

Weeds form the maize fields of Neelum Valley, Azad Kashmir (Ahmad, 1991), Bagh, Azad Kashmir (Khan, 1992), Muzaffarabad (Hussain, *et al.*, 1990). Dera Ismail Khan (Subhan *et al.*, 1985), Weed management study (Rashid *et al.*, 1993) have been reported.

¹ *Phytoecology Lab., Department of Botany, University of Peshawar.*

² *National Herbarium, NARC, Islamabad.*

There is no such information on the weeds of maize fields from any part of Chitral. The present communication, therefore, reports the distribution, population and herbage cover of weeds of maize field from this isolated part of Pakistan. It would contribute to the existing knowledge regarding weeds of maize fields. The findings might of help to agronomists, ecologists and scientists involved in the weed-maize management.

Materials and Methods

Four maize growing village viz: Kargin, Chapari, Kuz and Brep, all within the radius of 15 K.m from each other, of Tehsil Mastuj, District Chitral were analyzed for weeds during August 1993. Two, 1 Sq m. quadrats/field were laid in 10 randomly selected maize fields in each sit. Density, Frequency, constancy and herbage coverage of each weed species was determined in each of the sites following Hussain (1989). Weeds were classified into five constancy classes as given by Oosting (1959). Nomenclature followed here is that of Stewart (1972) and Nasir and Ali (1971-1993). The collected species were compared with the herbarium specimens at National Herbarium, National Agriculture Research Center, Islamabad.

Results and Discussion

There were 68 weed species in maize crop. of them, Kargin had 15, Chapari 22, Khuz 18 and Brep 13 species (Table 1).

Species with 51-80% frequency were *Anthemis tintorica* L., *Filago germanica* L., *Lotus corniculatus* Linn., *Nepeta kokanica* Regel. and *Potentilla pamirica* Wolf., had high frequency as compared to other species (Table-I). Species with 41-50% frequency included *Ceratium cerastioides* (L.) Britton., *Epilobium angustifolium*, Linn., *Erigeron acer* L. *Eritrichum canum* (Benth) Royal & Kit., *Euphorbia wallichii* Hk., *Galium asperifolium* Wall., *Hyoscyamus pulillus* Ladeb. ex. D.Don. *Ixiolirion montanum* Labill. Hab., *Lactuca clarkii*, *Launaca procumbens* Roxb., *Malcolamia cabulica* L., *Matricaria praecox* D.C., *Myosotis arvensis* (L.) Hill., *Nepeta eriostachya*. Benth *Nepeta glutinosa* Benth., *Oxyria digyma* L., *Pimpinella stewartii* (Dunn) E. Nasir., *Pleurospermum stylosum* C.B. Clark., *Poa sinaica* Steud., *Sedum ewersii* Ladeb., *Stellaria media* (L.) Vill., *Taraxacum dealbatum* Hand. Mazz., *Thymus linearis* Jales. and *Veronaa anagalus aquatica* L. in the area (Table-I). While rest of the species had less than 40% distribution. of them, *Alajja rhomboidea* (Benth) Konn. Gal., *Asragalus gilgitensis* Ali., *A. amherstanus* Royle., *Cicer macranthum* M.Pop., and *Delphinium mordhagnii* Wendbow were some common weeds in Kargin. *Carex infuscata* Ness., *Chriospora macropoda* Trautv., *Cortia schmidii* E. Nasir., *Draba cachemirica* Gandoger., and *Medicago lupulina* L. were found in Chapari, *Arabis amplexicalis* Edgew., *Chenopodium foliosum* Moench., *Epilobium cylindricum* D.Don., *Gnaphalium thomsonii* Hk.f, *Senecio dubius* Ladeb and *Nepeta podostachys* Benth. were recorded only from khuz. *Avena sativa* Retz., *Brachyactis roylei* D.C. *Centaurium meyeri* (Bunge), *Conyza stricta* Willd., *Euphorbia osyridea* Boiss., *Geranium rutundifolium* Linn., *Lamium amplexicaule* L., *Lepyrodiclis holosteoides* C.A Mey; *Lotus corniculatus* L. *Parnassia cabulica* Planch ex. Clarke., *Potentilla ornithopoda* Tausch., *Sonchus oleraceus*

L. and *Ranunculus arvensis* L. were restricted to Brep with less than 40% occurrence (Table 1).

The density of weeds exhibited with respect to locality. In Kargin, *Euphorbia wallichii*, *Lotus corniculatus*, *Melilotus indica* and *Sedum ewersii* had 10-15 individuals / 1 sq.m whole remaining species had lower density. In Chapari, *Ceratium cerastioides*, *Chriospora macropoda*, *Lotus corniculatus*, *Malcolmia cabulica*, *Melilotus indica* and *Potentilla ornithopoda* had 10-20 individual/1sq.m. Rest of the species had poor density. *Ceratium cerastioides*, *Chenopodium botrys* *Epilobium cylindricum*, *E. anagustifolium*, *Malcolmia cabulica* and *Pleiaropermum stylosum* had better density in Khuz while in Brep, *Brachyactis roylei*, *Galium asperifolium* *Launaea procumbens*, *Nepeta glutinosa* and *Potentilla pamirica* showed 10-20 individual/1 sq.m. The remaining species had low density in the area (Table-I).

Species having 11-15% herbage coverage in Kargin were *Anthemis tinctorica* and *Delpinium nordhagenii*; in Chapari *Anthemis tinctorica*, *Chiospora macropoda* and *Potentilla pamirica*; in Khuz the same herbage %age was exhibited by *Nepta eriostachys*, *plearosperrum stylosum*, *Ceratium cerastioides*, *Chenopodium botrys*, *Lactuca clarkiei*, *Launaea Procumbens* and *Malcolmia cabulica* during August, while in Brep, *Brachyactis roylei*, *Galium asperifolium*, *Launaea procumbens*, *Mutricaria praecox*, *Nepta glutinosa*, *Pimpinella stewertii* and *Veronica anagalus - aquaticica* had the same herbage cover. The remaining species had less than 9% coverage in the area (Table-I).

Looking at their constancy it appeared that 38 species fell in constancy class II (55.88%), species in class III (35.29%), 6 species in class IV (8.82%) (Table-I). There were only 6 constant species in the area. This suggests the heterogenous habitat features in the area, with similar climate. There is variation in soil character and agronomic practices which might have caused the observed differences.

Weeds due to their excellent adaptations, viability and resistance to the prevailing environmental conditions are universal in their distribution. Even best managed crops might contain weeds. The distribution and population density of weeds depends upon local, geographical and agronomic practices. The ecological status of the weeds is variable in the area due to the habitat such as agricultural fields many species occur but are sporadic in their distribution. *Euphorbia*, *Phalaris* (Hussain *et al.*, 1985, 1990) are reported by allelopathic. Weeds share the available resources with regard to habitat, nutrients etc to reduce the growth level of crops (Saced *et al* 1977; Chaudhry *et al*; 1978; Zimdhal, 1980; Ayaz *et al*; 1993).

Herbage coverage depends upon the habitat, growth stages and the community among which they grow. Crop with considerable height like maize might effect the prostrate and lower weed growth by reducing light. Therefore, any plant growing in adverse condition have low coverage and the over-competing species exhibit better coverage than unsuccessful ones. The present recorded weeds are mostly annual, which are relatively easier to check.

Some of weeds are important medicinally, viz Glycyrrhiza, Capparis Matricaria and Artemisia, which are also used for curing various diseases locally. While other are cultivated and used as condiments as, Coriandrum, some leguminous weeds as Cicer, Melilotus and Medicago improve soil nutrient by their N₂ fixing ability through nodulated roots. Various species are used as vegetable, and fodder for the livestock. Species of Chenopodium can grow successfully in saline soil where other plant can not tolerate, thus can be used for saline agriculture.

Table 1. Frequency, Constancy, Density And Coverage of Weeds in Maize Fields of Tehsil Mastuj, District Chitral, During August, 1993

Species	FREQUENCY				DENSITY				COVERAGE				
	Ka	Ch	Kh	Br	Cons	Ka	Ch	Kh	Br	Ka	Ch	Kh	Br
<i>Alajja rhomboidea</i> (Ben) I.Gal	25	-	-	-	25	0.95	-	-	-	0.3	-	-	-
<i>Anthemis tinctorica</i> L.	30	30	10	-	75	0.65	0.65	0.5	-	0.7	0.9	0.35	-
<i>Artemisia laciniata</i> Wil.	-	-	5	-	25	-	-	0.05	-	-	-	0.2	-
<i>Arenebia euchroma</i> (Roy. ex. Benth) John St.	5	-	-	-	25	0.4	-	-	-	0.1	-	-	-
<i>Arabis amplexicaulis</i> Edew.	-	-	5	-	25	-	-	0.1	-	-	-	0.15	-
<i>Astragalus gilagitensis</i> Ah.	20	-	-	-	25	0.85	-	-	-	0.25	-	-	-
<i>Astragalus amherstanus</i> Roy.	15	-	-	-	25	0.1	-	-	-	0.25	-	-	-
<i>Avena sativa</i> Retz	-	-	-	10	25	-	-	-	0.7	-	-	-	0.25
<i>Brachyactis roylei</i> D.C.Wen.	-	-	-	25	25	-	-	-	1.15	-	-	-	0.6
<i>Carex infusca</i> Nees.	-	10	-	-	25	-	0.75	-	-	-	0.25	-	-
<i>Centaureum meyeri</i> (Bun) Dr.	-	-	-	10	25	-	-	-	1.0	-	-	-	0.2
<i>Cerastium cerastoides</i> (L) Britton.	-	20	35	-	50	-	1.4	2.5	-	-	0.5	0.7	-
<i>Chriospora macropoda</i> Te.	-	15	-	-	25	-	1.65	-	-	-	0.6	0.7	-
<i>Chenopodium botrys</i> L.	-	-	35	-	25	-	-	2.35	-	-	-	1.1	-
<i>C. foliosum</i> Moench	-	-	10	-	25	-	-	0.15	-	-	-	0.3	-
<i>Cortia schmidii</i> E.Nr.	-	10	-	-	25	-	0.7	-	-	-	0.3	-	-
<i>Conyze stricta</i> Wil.	-	-	-	5	25	-	-	-	0.05	-	-	-	0.05
<i>Cicer macranthum</i> M.Pop.	10	-	-	-	25	0.3	-	-	-	0.2	-	-	-
<i>Daphnium nordhagruü</i> Wen.	15	-	-	-	25	0.95	-	-	-	0.35	-	-	-
<i>Draba cachemirica</i> Gab.	-	5	-	-	25	-	0.1	-	-	-	0.1	-	-
<i>Epilobium cylindricum</i>	-	-	25	-	25	-	-	1.85	-	-	-	0.7	-
<i>Epilobium angustifolium</i>	15	-	30	-	50	0.95	-	1.25	-	0.35	-	0.6	-
<i>Engeron acer</i> spp. acer L.	15	5	-	-	50	0.9	0.15	-	-	0.25	0.2	-	-
<i>Eriochium canum</i> Var. <i>Canum</i> (Bth) Royle. Kit.	-	5	-	20	50	-	0.05	-	0.8	-	0.1	-	0.5
<i>Euphorbia wallichii</i> Hk.	15	30	-	-	50	1.45	0.25	-	-	0.4	0.25	-	-

Species	FREQUENCY				DENSITY				COVERAGE				
	Ka	Ch	Kh	Br	Cons	Ka	Ch	Kh	Br	Ka	Ch	Kh	Br
<i>Euphorbia wallichii</i> Hk.	15	30	-	-	50	1.45	0.25	-	-	0.4	0.25	-	-
<i>Euphorbia ostrydea</i> Bioss.	-	-	-	10	25	-	-	-	0.16	-	-	-	0.35
<i>Filago germanica</i> L.	5	-	5	5	75	0.35	-	0.4	0.2	0.1	-	0.1	0.1
<i>Galium asperifolium</i> Wall.	-	-	10	40	50	-	-	0.15	2.4	-	-	0.25	1.1
<i>Geranium rotundifolium</i> Linn.	-	-	-	15	25	-	-	-	0.95	-	-	-	0.45

(Contd.)

<i>Gnaphalium thomasonii</i> Hk. f.	-	-	10	-	25	-	-	0.35	-	-	-	0.25	-
<i>Hyoscyamus pusillus</i> Ladeb ex. D. Dou.	-	-	20	5	50	-	-	0.7	0.05	-	-	0.65	0.1
<i>Isolirion montanum</i> Labüll. Hab.	-	20	10	-	50	-	0.25	0.25	-	-	0.2	0.3	-
<i>Krasheimkovia</i> <i>ceratoides</i> (L.) Gaelden.	-	-	15	-	25	-	-	0.15	-	-	-	0.25	-
<i>Lactuca clarkii</i> Hook. f.	-	15	25	-	50	-	0.4	0.6	-	-	0.25	0.7	-
<i>Launaea procumbens</i> Roxeb.	-	-	30	40	50	-	-	0.95	2.4	-	-	0.75	1.1
<i>Lamium amplexicaule</i> L.	-	-	-	5	25	-	-	-	0.7	-	-	-	0.1
<i>Leprodiclis</i> <i>holosteoides</i> C.A.Mey.	-	-	-	15	25	-	-	-	0.6	-	-	-	0.25
<i>Lotus corniculatus</i> var. <i>terrifolius</i> L.	-	-	-	10	25	-	-	-	0.55	-	-	-	0.25
<i>L. corniculatus</i> Var. <i>corniculatus</i> Linn.	25	35	5	-	75	1.1	1.65	0.1	-	0.5	0.5	0.2	-
<i>Malcolmia cabulica</i> L.	-	10	25	-	50	-	1.5	1.35	-	-	0.1	0.7	-
<i>Matricaria praecox</i> D.C.	-	15	-	20	50	-	0.5	-	1.35	-	0.3	0.3	-
<i>Malcolmia afariana</i>	-	-	-	5	75	1.1	-	-	0.05	0.5	0.5	-	0.1
<i>Medicago indica</i>	25	35	-	5	75	1.1	1.65	-	0.05	0.5	0.5	-	0.1
<i>Medicago lupulina</i>	-	5	-	-	25	-	0.25	-	-	-	0.1	-	-
<i>Myosotis alpestris</i>	5	-	-	-	25	0.7	-	-	-	0.15	-	-	-
<i>M. arvensis</i>	5	20	-	-	50	0.15	0.45	-	-	0.05	0.5	-	-
<i>Nepeta podostachys</i>	-	-	5	-	25	-	-	0.13	-	-	-	0.15	-
<i>N. eriostachya</i> Benth	-	15	25	-	50	-	0.2	0.6	-	-	0.15	0.7	-
<i>N. glutinosa</i> Benth	-	5	-	30	50	-	0.2	-	1.5	-	0.2	-	0.65
<i>N. kokarica</i> Regal	10	15	-	10	75	0.4	0.55	-	0.55	0.25	0.3	-	0.25
<i>Oxya digna</i> L.	-	5	-	15	50	-	0.15	-	0.55	-	0.35	-	0.3
<i>Parnassia cabulica</i>	-	-	-	15	25	-	-	-	0.2	-	-	-	0.2
<i>Pimpinella stewartii</i>	12.5	-	-	20	50	0.75	-	-	0.6	0.28	-	-	0.7
<i>Pleurospermum stylosu</i>	5	-	35	-	50	0.15	-	1.5	-	0.15	-	0.6	-
<i>Polygonum afghanicum</i>	-	-	5	-	25	-	-	1.0	-	-	-	0.1	-
<i>Poterilla supna</i> L.	-	-	-	5	25	-	-	-	0.4	-	-	-	0.2
<i>Poa bulbosa</i> L.	-	-	-	5	25	-	-	-	0.4	-	-	-	0.1

Species	FREQUENCY				DENSITY				COVERAGE				
	Ka	Ch	Kh	Br	Cons	Ka	Ch	Kh	Br	Ka	Ch	Kh	Br
<i>Poa sinaica</i> Stend.	-	5	-	15	50	-	2.25	-	0.55	-	0.1	-	0.3
<i>Potentilla pamiica</i> Wolf	5	15	-	25	75	0.35	1.65	-	1.3	0.3	0.6	-	0.35
<i>P. prnithopoda</i> Tausch. Var. <i>orinthopoda</i> .	-	-	-	15	25	-	-	-	0.65	-	-	-	0.45
<i>Ranunculus arvensis</i> L.	-	-	-	5	25	-	-	-	0.35	-	-	-	0.1
<i>Sedum ewerdii</i> Ladeb.	20	-	-	5	50	1.5	-	-	0.05	0.3	-	-	0.15
<i>Senecio dubius</i> Ladeb.	-	-	5	-	25	-	-	0.2	-	-	-	0.15	-
<i>Sonchus oleraceus</i> L.	-	-	-	10	25	-	-	-	0.7	-	-	-	0.3
<i>Stellaria media</i> (L.) Val.	-	5	-	5	50	-	0.35	-	0.1	-	0.15	-	0.15
<i>Taraxacum deulbatum</i> Hand. Mazz.	5	5	-	-	50	0.3	0.2	-	-	0.1	0.1	-	-
<i>Thymus linearis</i> Sub. Spp. hedeqi Jales.	-	5	5	-	50	-	0.25	0.05	-	-	0.2	0.1	-
<i>Veronica anagalus-</i> <i>aquatica</i> L.	-	-	20	10	50	-	-	0.65	0.55	-	-	0.5	0.25

KEYS:

Ka	=	Kargin
Ch	=	Chapari
Kh	=	Khuz
Br	=	Brep
Cons.	=	Constancy class

(Concluded)

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