

## IMPORTANT WEEDS OF WHEAT CROP OF MALAKANDHER FARM, NWFP AGRICULTURAL UNIVERSITY, PESHAWAR

Zahid Hanif, Sabz Ali Khan, Khan Bahadar Marwat,  
Ijaz Ahmad Khan and Ikramullah<sup>1</sup>

### ABSTRACT

The Important weeds of wheat were determined using quadrat method at Malakandar farm, Agricultural University Peshawar, Pakistan, during Rabi season, 2003-4. The most dominant weed families were Poaceae, Compositae, Leguminosae and Brassicaceae. Taking Relative density and Relative frequency into consideration the importance value of weeds were found in the following order, viz. *Mellilotus Parviflora* (28.90%) , *Phalaris minor* (27.19%) , *Anagallis arvensis* (21.6%), *Coronopsis didymus* (19.01%), *Fumaria indica* (18.74%), *Ammi visnaga* (18%), *Avena fatua* (16.23%), *Convolvulus arvensis* (9.22%), *Euphorbia helioscopia* (7.85%) and *Cynodon dactylon* (5.84%), respectively. The greater the importance value, the more competitive is the weed.

**Key words:** Peshawar wheat Relative density Relative Frequency Importance value weeds.

### INTRODUCTION

Wheat (*Triticum aestivum* L.) is used as the major food source all over the world including Pakistan. It is an annual, self-pollinated and photoperiodically long day plant. It is planted on 37% of the cropped area of the country. It produces several tillers plant<sup>1</sup> depending upon soil fertility crowding and environmental conditions. Wheat supplies about 73% of the calories and protein of the average diet (Heyne, 1987). In Pakistan total area under wheat crop during 2001-02 was 8057.5 thousand hectares and production was 18225.5 thousand tons. During the same year, total area and production in N.W.F.P was 746.9 thousand ha, and 890.5 thousand tons respectively (Anonymous, 2002).

The weeds control is the basic requirement and the major component of crop management in the production system (Young *et al.*, 1996 and Norris, 1982). Weeds cause one of the biggest problems in agriculture. They use the soil fertility, available moisture, nutrients and compete for space and sunlight with crop plant, which result in yield reduction. Weeds deteriorate the quality of farm produce and consequently reduce the market value (Pervaiz and Quazi, 1999).

Weed infestation is a serious problem in wheat crop. Uncontrolled weeds can reduce wheat yield by 25-30% in Pakistan (Nayyar *et al.*, 1994) or even higher depending upon weed infestation (Anonymous, 1997). Weeds effect the growth of the desired crops species due to the competition, allelopathy and by providing habitat for other harmful organism. The major losses in wheat yield at the national level due to weed infestation amount to a grain loss of 1.25-2.5 million tons per year (Ahmad *et al.*, 1984). The annual losses to wheat crop in Pakistan and NWFP in monetary terms amount to Rs. 28 and 2 billions respectively (Pervaiz and Quazi, 1992). Weeds losses in wheat have exceeded 25 billion during 1998 (Marwat, 1998). Annual losses in wheat amount to more than 28 billion at the national level and 2 billion in N.W.F.P (Hassan and Marwat, 2001).

1 Department of Weed Science, NWFP Agricultural University, Peshawar – Pakistan.

*Avena fatua*, *Phalaris minor*, *Poa annua*, *Cirsium arvense*, *Convolvulus arvensis*, *Ammi visnaga*, *Chenopodium album*, *Fumaria indica*, *Carthamus oxycantha*, *Cynodon dactylon*, and *Euphorbia helioscopia* are competitive weeds in wheat fields of NWFP (Khan and Hassan, 2002). In view of importance of the problem, the present study was conducted to find out the Rabi season weeds flora, specially in wheat crop, which will further help in future in formulating a good weed control program

#### MATERIALS AND METHODS

Weeds were randomly sampled from an area of one hectare land at Malakandher Research Farm, NWFP Agricultural University, Peshawar, using 1 m<sup>2</sup> quadrat at randomly selected 30 sites. Density and Frequency were calculated which were used to compute Relative scale following Hussain, 1989. Both Relative Density and Frequency were summed together to get Importance Value for each species. Based on the Importance Value weeds were ranked in order of their importance.

#### RESULTS AND DISCUSSION

The results revealed that the field was dominated with weed species of families, Poaceae, Compositae, Leguminosae and Brassicaceae. *Ammi visnaga* is an invasive weed and is spreading very rapidly in Peshawar valley and is regarded as a growing threat to rabi crops in future.

The lowest relative density (0.35%) was observed for *Vicia* spp. The maximum (18.38 %) density was observed for *Mellilotus parviflora*, while the lowest relative frequency (1.05 %) was observed for *Sorghum halepense*. The highest (10.52 %) relative frequency was observed once again for *Mellilotus parviflora*.

Similar kinds of weeds were reported by Hassan *et al* (2003) and Khan *et al* (2003) and the results are partially agreed with Anwar *et al* (2003). Focusing on the importance value of weeds considered on the basis of Relative density and Relative frequency *Mellilotus parviflora* (28.90%) and *Phalaris minor* (27.19%) were the two top most weeds, these observations are in agreement with that of Chema *et al* (2003) While importance value of some other top weeds in descending order viz. *Anagallis arvensis* (21.6%), *Coronopsis didymus* (19.01%), *Fumaria indica* (18.74%), *Ammi visnaga* (18%), *Avena fatua* (16.23%), *Convolvulus arvensis* (9.22%), *Euphorbia helioscopia* (7.85%) and *Cynodon dactylon* (5.84%) respectively. The greater the importance value, the more competitive is the weed. Some other weeds having low importance value e.g *Vicia* spp., *Sorghum halepense*, *Galium aparinc*, *Linum* spp., *Sisymbrium irio*, *Silybum marianum*, *Spergula arvensis*, *Rumex dentatus* and *Cirsium ravenis* may get importance in future by producing and dispersing large no of seeds.

The variation in the relative densities and relative frequencies of different weeds probably due to crop rotation, production and viability of weed seeds, cultivar competition and various soil and climatic condition etc.

Keeping in view the public demand in future, an attempt should be made to examine several major questions related to these problems:

- 1) How serious are the Agricultural losses due to weeds in various localities?
- 2) What kinds of different weeds control strategies should be employed and what are their relative efficiencies?
- 3) What are the socioeconomic benefits and risks of various weeds control technologies to the society?
- 4) What are the merits and demerits of new weed management strategies that Agriculturalists are developing?

**Table-1. Showing the importance value of weeds of wheat crop in the ranking order from top to bottom at Malkandher farm, NWFP Agricultural University, Peshawar**

S.No	Species	Family	Density	Relative Density	Frequency	Relative Frequency	Importance Value
1	<i>Mollisotus parviflora</i> L	Leguminosae	27.86	18.38	1.00	10.52	28.90
2	<i>Phalaris minor</i> Retz	Poaceae	26.33	17.37	0.933	9.82	27.19
3	<i>Anagallis arvensis</i> L	Primulaceae	18.40	12.13	0.90	9.47	21.6
4	<i>Coronopus didymus</i> (L.) Smith	Brassicaceae	15.53	10.24	0.833	8.77	19.01
5	<i>Fumaria indica</i> L	Fumariaceae	12.47	8.22	1.00	10.52	18.74
6	<i>Ammi visnaga</i> L	Umbelliferae	15.6	10.29	0.733	7.71	18
7	<i>Avena fatua</i> L.	Poaceae	9.73	6.41	0.933	9.82	16.23
8	<i>Convolvulus arvensis</i> L	Convolvulaceae	5.47	3.61	0.533	5.61	9.22
9	<i>Euphorbia helioscopia</i> L.	Euphorbiaceae	3.4	2.24	0.533	5.61	7.85
10	<i>Cynodon dactylon</i> (L.) Pers	Poaceae	4.07	2.68	0.30	3.16	5.84
11	<i>Cusium arvens</i> (L) Scop	Compositae	3.20	2.11	0.233	2.45	4.56
12	<i>Rumex dentatus</i> L.	Polygonaceae	1.47	0.97	0.30	3.16	4.13
13	<i>Spergula arvensis</i> L	Caryophyllaceae	2.533	1.67	0.233	2.45	4.12
14	<i>Silybum marianum</i> L : Gaertn	Compositae	1.00	0.66	0.267	2.81	3.47
15	<i>Sisymbrium irio</i> L.	Brassicaceae	1.133	0.74	0.233	2.45	3.19
16	<i>Linum spp</i> L.	Linaceae	0.933	0.61	0.67	1.76	2.37
17	<i>Galium aparine</i> L	Rubiaceae	0.733	0.48	0.13	1.40	1.88
18	<i>Sorghum halepense</i> (L.) Pers	Poaceae	1.2	0.78	0.10	1.05	1.83
19	<i>Vicia spp</i> L.	Leguminosae	0.533	0.35	0.133	1.40	1.75
Total	19	13	151.60	99.95-100	9.50	99.94-100	

#### REFERENCES CITED

- Ahmad, S., I. Ahmad, M. Banaras and M.A.Gill. 1984. Effect of row spacing and weed control on growth and yield of wheat. *J. Agric. Res.*, 22(2), 113-117.
- Anonymous. 1996-97. Wheat recommendations, Directorate of Agri. Information, Govt. of Pakistan, Lahore.
- Anonymous. 2002. Agriculture Statistics of Pakistan, Ministry of Food, Agriculture and Livestock, Government of Pakistan, Islamabad.

- Anwar, S., W.A. Shah, M. Shafi, J. Bakhat and M.A. Khan. 2003. Efficiency of sorghaab (Sorghum water extract) and herbicides for weed control in wheat (*Triticum aestivum* L) crop. Pak.J. Weed Sci.Res.9 (3-4) 161-170.
- Cheema, Z.A., I. Jaffer and A. Khaliq 2003 reducing Isoproturon doze in combination with sorghaab for weed control in wheat. Pak.J. Weed Sci. Res.9 (3-4) 153-159.
- Hassan, G., B. Faiz, K.B. Marwat and M. Khan 2003. Effects of planting methods and tank mixed herbicides on controlling grassy and broad leaf weeds and their effect on wheat cv. Fakhr-e-Sarhad. Pak.J. Weed Sci. Res. 9 (3-4):1-12.
- Hassan, G. and K.B. Marwat. 2001. Integrated weed management in agricultural crop. National Workshop on Technologies for Sustainable Agriculture, Sep. 24-26, 2001, NIAB, Faisalabad, Pakistan.
- Hussain, F. 1989. Field and laboratory manual of plant ecology, NGL Islamabad.
- Heyne, E. G. 1987. Wheat and wheat improvement. 2<sup>nd</sup> edition. Madison, Wisconsin, USA.
- Khan, M.I., G. Hassan, I.A. Khan and I. Khan 2003. Studies on post-emergent chemical weed control in wheat in wheat (*Triticum aestivum* L.). Pak.J. Weed Sci. Res.9 (3-4):147-152.
- Khan, N. and G. Hassan. 2002. Efficacy of different herbicides for controlling grassy weeds in wheat crop at different times of applications. Weed Sci. Deptt., NWFP. Agri. Uni., Peshawar, Pakistan.
- Norris, R.F. 1982. Interactions between weeds and other pests in the agroecosystem. P. 343-406. In J. L. Hatfield and I. J. Thomson (ed.) Proc. Conf. on Biometeorology in integrated pest management, Univ. of California, Davis, CA, 15-17 July, 1980. Academic press. New York.
- Nayyar, M., M. Shafi, M.L. Shah and T. Mehmood. 1994. Weed eradication duration studies in wheat. Absts. 4<sup>th</sup> Pakistan Weed Sci. Conf., 9.
- Pervaiz, K. and M.H. Quazi. 1992. Status of food production in Pakistan. Progr. Farming, 12:5.
- Marwat, K.B. 1998. Weeds losses in Pakistan: A Fact sheet. NWFP Agri Uni. Peshawar, Pakistan.
- Young, F.L., A.G. Ogg Jr., D.L. Young and R.I. Papendick. 1996. Weed management for crop production in the northwest wheat (*Triticum aestivum*) region. Weed Sci. 44 (2): 429-436.