

# INVESTIGATION OF WEEDS IN WHEAT (*TRITICUM ASTIVUM*) CROPS OF TEHSIL KOTLI, KOTLI AZAD JAMMU AND KASHMIR

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<b>Abstract</b>	<i>Weed infestation is one of the most drastic factor which adversely effects the quantity as well as quality of products of cereal crops like wheat, which is a staple food crop round the globe. The aim of the study was to document the weed flora of wheat crops of tehsil Kotli, for this purpose a survey study was conducted from sowing to harvesting period of wheat (Nov 2019 to April 2020). Thirty one weed species belonging to twenty six genera and sixteen families were reported. Asteraceae was the dominating family with eight species (26%), followed by Poaceae with 4 (13%) species, both Brassicaceae and Polygonaceae had 3 (10%) species, Papaveraceae had 2 (6%) species while remaining eleven families had one species by each. It's necessary that awareness should be created among the farmers and proper methods should be adopted for their eradication.</i>
<b>Keywords</b>	<i>Weed's diversity, kotli AJK, Wheat, Economy, Invasive Species</i>

## INTRODUCTION

Wheat occupies the central position among the cereal crops round the globe. It's the most important cereal crop of Pakistan. In 2018-19, it was cultivated on about 8.75 million Hector area of Pakistan.<sup>[1]</sup> Pakistan occupies 8th position among the most wheat producing countries, about 3.35% of the world's wheat production. Various biotic and abiotic factors reduce its production rate. Among biotic factors, weeds are considered as most infesting agents which adversely lower the quantity as well as quality of crops.<sup>[2]</sup> Weeds are the unwanted plant species present in crops which invade and reduces yield, as weeds compete with the main crop plants for space, light, nutrients and water etc.<sup>[3]</sup> Weeds not only directly participate in lowering the production but also attracts insects which attacks on crops and further reduce yield.<sup>[4]</sup>

Weeds adversely affect the economic status of a country which ultimately leads to poverty and hunger in undeveloped and developing like African and Asian countries. In Pakistan, they cause about 28 billion PKR annual loss to wheat crop alone and overall about 130 billion PKR annual losses.<sup>[5]</sup> In Australia and USA, an annual loss of about 3.3 and 138 billion dollars respectively were reported due to weed infestation in crops.<sup>[6,7]</sup> Different researchers and investigators had reported various weed species from different regions of the country. Among all weeds *Parthenium hysterophorus* is adversely effecting the flora and fauna of country, due to occurrence of allelo chemicals in it.<sup>[8]</sup> Weeds may be of grassy or sedges type belongs to monocot and dicot families.<sup>[9]</sup>

## MATERIAL AND METHOD

The present study was designed from sowing to harvesting period (November 2019 to April 2020) of Wheat, *Triticum aestivum*, for the documentation of weeds, by survey, of selected areas of tehsil Kotli.

## STUDY AREA

Soil of tehsil Kotli is very fertile from agriculture point of view. Focus was on major cultivated areas of Kotli which were selected for research after general survey of various cultivated sites of

tehsil Kotli (as shown in Fig. 1). In this regard, twelve villages viz. Sarhota No. 2, Samror, Choki-Moong, Roli, Dhamool, Dana, Maneel, Fagoosh, Baralli, Sarda, Kurti and Kohmar were selected

and visited for the observation and collection of samples.



Fig. 1, Map of study area, tehsil Kotli of District Kotli Azad Jammu and Kashmir

**SAMPLE COLLECTION**

Weed samples were collected, by proper scientific way, from the fields of wheat, *Triticumaestivum*, of selected areas, during the course of study. Specimens were also captured in camera.

**PLANT IDENTIFICATION**

Identification of specimens was done on the morphological bases and were confirmed with the help of available taxonomic literature and also by help of online various weed science and other plant science websites.

**STATISTICAL ANALYSIS**

The data was Statistically analyzed and summarized by MS Excel 2013.

**RESULTS AND DISCUSSION**

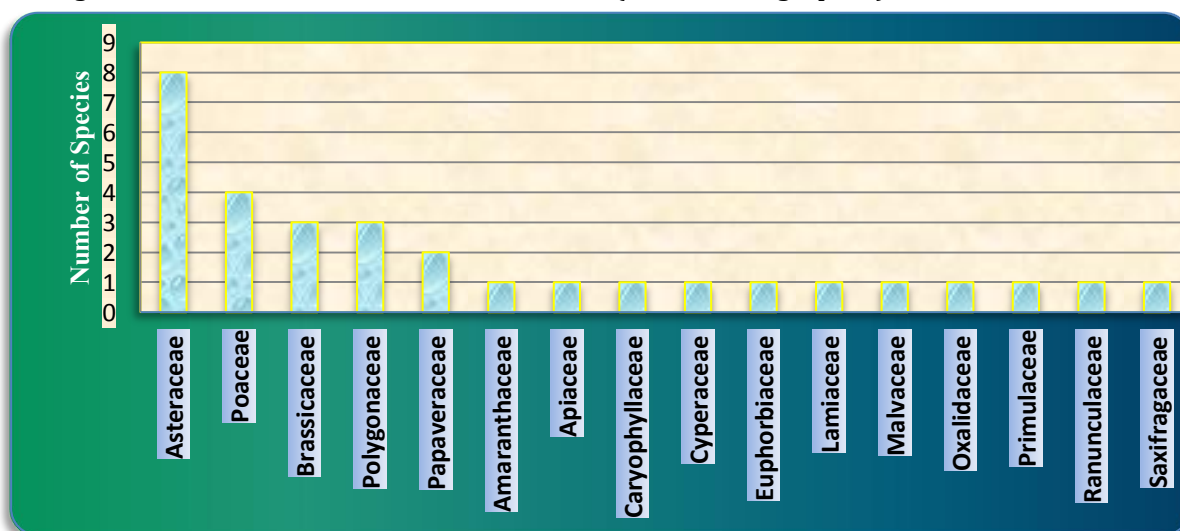
Table 1, List of weeds, reported from the investigated areas of tehsil Kotli, AJ&K

Botanical Name	Family	Local/ vernacular name	English name
<i>Anagallisarvensis</i> L.	Primulaceae	Phoolbooti	Pimpernel,
<i>Avenafatua</i> L.	Poaceae	Janglijoo	Wild oat
<i>Calendula arvensis</i> (Vaill.) L.	Asteraceae	Gul-e-sharfi	Field marigold
<i>Capsellabursapastoris</i> (L.) Medik.	Brassicaceae	Booti	Shepherd's purse
<i>Centaureaiberica</i> Trevir. & Spreng.	Asteraceae	Kandarii	Iberian knapweed
<i>Chenopodium album</i> L.	Amaranthaceae	Booti	Goose foot
<i>Cirsiumarvense</i> (L.) Scop.	Asteraceae	Booti	Field thistle
<i>Cirsiumvulgare</i> (Savi) Ten.	Asteraceae	Booti	Bull thistle
<i>Cynodondactylon</i> (L.) Pers.	Poaceae	Khabal	Crab grass
<i>Cyperusrotundus</i> L.	Cyperaceae	Ghass, kaa	Purple nutsedge
<i>Digitariasanguinalis</i> (L.) Scop.	Poaceae	Khabal, ghass	Crabgrass
<i>Euphorbia helioscopia</i> L.	Euphorbiaceae	Dhoodalbooti	Sun spurge
<i>Fumariaindica</i> Pugsley	Papaveraceae	Papara	Indian fumitory
<i>Fumariaofficinalis</i> L.	Papaveraceae	Papara	Indian fumitory
<i>Heucherarichardsonii</i> L.	Saxifragaceae	Booti	Alum root
<i>Lamiumamplexicaule</i> L.	Lamiaceae	Phoolbooti	Henbit
<i>Lepidiumapetalum</i> Willd	Brassicaceae	Booti	Pepper weed
<i>Lepidiumdensiflorum</i> Schrad.	Brassicaceae	Booti	Pepper weed
<i>Malvastrumcoromandelianum</i> (L.) Garcke	Malvaceae	Booti	
<i>Oxalis corniculata</i> L.	Oxalidaceae	Booti	Yellow sorrel
<i>Partheniumhysterophorus</i> L.	Asteraceae	Gajarbooti	Santa maria
<i>Phalaris minor</i> Retz.	Poaceae	Sittaabooti	Canary grass

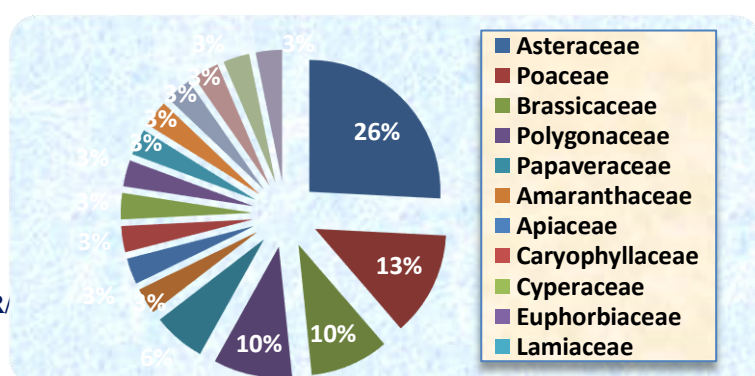
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<i>Rumex crispus</i> L.	Polygonaceae	Halfaree	Curly dock
<i>Rumex crispatus</i> DC.	Polygonaceae	Halfaree	Greek dock
<i>Rumex obtusifolius</i> L.	Polygonaceae	Halfaree	Broad leaved dock
<i>Saussurea heteromalla</i> (Himalaya)	Asteraceae	Kandyari	Sawwort
<i>Scandix pecten-veneris</i> L.	Apiaceae	Chawalbooti	Stork's needle
<i>Silene conoidea</i> L.	Caryophyllaceae	Khumbooti	Weed silene
<i>Silybum marianum</i> (L.) Gaertn.	Asteraceae	Kanda booti, kandyari	Mary thistle, Milk thistle
<i>Taraxacum officinale</i> (L.) Weber ex F.H. Wigg	Asteraceae	Baloobooti,	Dandelion, blowball
<i>Thalictrum foliolosum</i> DC.	Ranunculaceae	Booti	Leafy meadowrue

In present study, thirty one weed species were recorded which belongs to twenty six genera and sixteen families. The detailed list of reported weed species along with their botanical name, family name, local/ vernacular name and English name are given in Table-1. Among the reported families, Asteraceae was dominating family with eight species followed by Poaceae with four species. Brassicaceae and Polygonaceae had three species each and Papaveraceae family had only two species while Amaranthaceae, Apiaceae, Caryophyllaceae, Cyperaceae, Euphorbiaceae, Lamiaceae, Malvaceae, Oxalidaceae, Primulaceae, Ranunculaceae and Saxifragaceae had one species each (as shown is graph-1). The percentage occurrence of each family is represented in graph-2, which shows that Asteraceae family with 26% occurrence is the leading family. Poaceae occupies second position with 13% occurrence. Brassicaceae and Polygonaceae with 10% occurrence of each family shares third position and Papaveraceae family had 6% occurrence while Amaranthaceae, Apiaceae, Caryophyllaceae, Cyperaceae, Euphorbiaceae, Lamiaceae, Malvaceae, Oxalidaceae, Primulaceae, Ranunculaceae and Saxifragaceae families had 3% occurrence of each (as shown is graph-2).



**Graph-1.** No. of species in different families.



It was observed that all these weed species had occupied a large cultivated area of wheat crop which affect the development and per acre production of crop. Few farmers

try to eradicate them by hands after rain at their early or before flowering stages but due to occurrence of various toxic chemicals in weeds, cause allergic effects. While mostly farmers use various chemicals besides positive affects it harms the beneficial insects of other

crops and fruiting plants. Although chemical method is effective but expensive and local farmers can't afford it. It's necessary that they should be eradicated by eco-friendly way, which should not expensive and be affordable for local farmers. Different weed eater insects can be used against these weeds as: *Bucculatrixparthenica*, *Carmentalthacae*, *Conotrachelusalbocinereus*, *Epiblemastrenuana*, *Listronotussetosipennis*, *Platophalonidiamystica*, *Smicronyxlutulentus* and *Zygogrammabicolorata* etc are being used against Parthenium.<sup>[17]</sup> Which have proved very effective. Therefore, weeds need proper identification and agronomic practices to reduce their growth in the fields to increase the production of crop.

## CONCLUSION

From the present study, it is concluded that in order to boost up the productivity and enhance the quality of crops, we should have to control the infestation of weeds and its necessary that awareness should be created among the farmers and cheapest and eco-friendly methods should be adopted for their eradication.

## CONFLICT OF INEREST

Author has no conflict of interest.

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## REFERENCES

1. <http://www.pbs.gov.pk/>
2. Memon, R.A, G. R. Bhatti, S. Khalid, A. Mallah and S. Ahmad. 2013. Ahmed Illustrated weed flora of wheat crop of Khairpur district, Sindh. Pak. J. Bot., 45(1): 39-47.
3. Marwat, K.S., K. Usman, N. Khan, U. M. Khan, A. E. Khan, A. M. Khan and A. Rehman. 2013. Weeds of wheat crop and their control strategies in Dera Ismail Khan District, Khyber PakhtunKhwa, Pakistan. Am. J. Plant Sci., 4(1): 66-76.
4. Shabbir, A. and R. Bajwa. 2006. Distribution of Partheniumweed(*Partheniumhysterophorus*L.): An alien invasive weed species threatening the biodiversity of Islamabad. Weed Biol. Manage., 6(2): 89-95.
5. Hassan, G. and K.B. Marwat. 2001. Integrated weed management in agricultural crops. National Workshop on Technologies for Sustainable Agriculture, Sep. 24- 26, 2001. NIAB, Faisalabad, Pakistan.
6. Pimentel, D., R. Zuniga and D. Morrison. 2005. Update on the environmental and economic costs associated with alien invasive species in the United States. Ecologic. Econ., 52:273288.
7. Adkin, S.W. and S.C. Navie. 2006. Parthenium weed: A potential major weed for agro ecosystem in Pakistan. Pak. J. Weed Sci. Res., 12(1-2): 19-36.
8. Syed AwaisHussain Shah, An Overview of PartheniumHysterophorus, With Reference to Kotli AJ&K , *International Journal of Scientific Research and Engineering Development – Volume3 Issue 1, Jan-Feb 2020* URL: [www.ijred.com/volume3/issue1/IJSRED-V3I1P40.pdf](http://www.ijred.com/volume3/issue1/IJSRED-V3I1P40.pdf)
9. Sosa, A. J., M. V. Cardo and M. H. Julien. 2016. Predicting weed distribution at the regional scale in the native range: environmental determinants and bio control implications of *Phyla nodiflora*(Verbenaceae). Weed Res., 57(3): 193-203.
10. Ali, S.I., Nasir, E., (Eds.) 1970–2002. Flora of Pakistan, 01-215.
11. Ali, S.I., Qaiser, M., 1986. A phyto-geographical analysis of phanerogams of Pakistan and

## ORIGINAL ARTICLE

Kashmir. Proc. R. Soc. Edinb. 89B, 89–101.

12. <http://www.wildflower.org/plants/>
13. <http://oak.ppws.vt.edu/~fleesner/weedguide/>
14. <http://plants.usda.gov/>
15. <https://www.nrcs.usda.gov/wps/portal/nrcs/detail/plantmaterial/technical/toolsdata/plants/?cid=stelprdb1045110/>
16. <http://www.flora.parc.gov.pk>
17. Syed AwaisHussain Shah, An Overview of PartheniumHysterophorus, With Reference to Kotli AJ&K , *International Journal of Scientific Research and Engineering Development – Volume3 Issue 1, Jan-Feb 2020* URL: [www.ijred.com/volume 3/issue1/IJSRED-V3I1P40.pdf](http://www.ijred.com/volume%203/issue1/IJSRED-V3I1P40.pdf)