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STUDY OF WHEAT FIELD WEEDS IN BIRATNAGAR, EASTERN NEPAL

Pramod Sen Oli¹, Usha Adhikari², Raju Bhattarai³

¹Department of Botany, Post Graduate Campus, Tribhuvan University, Biratnagar, Nepal

²Central Department of Botany, Tribhuvan University, Kirtipur, Kathmandu, Nepal

³Department of Chemistry, Tri-Chandra Multiple Campus, Ghantaghar, Kathmandu, Nepal

ABSTRACT

Triticum aestivum L. (Bread Wheat) is a graminoid species of plant in the family true grasses, with a self-supporting growth habit. It is second staple food for the people living in Nepal. Total 45 weed species were collected from wheat field belonging to 19 families and 39 genera. *Triticum aestivum* L. is greatly affected by different weeds. Most of the weeds can be used as fodder.

Keywords: Wheat Field, Weed Flora, Herbarium, Fodder

*Correspondence to Author:

Pramod Sen Oli
Department of Botany, Post Graduate Campus, Tribhuvan University, Biratnagar, Nepal

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INTRODUCTION:

Wheat, maize and rice contribute about 80% of the global cereal production. Weeds are undesirable plants, which infest different crops and inflict negative effect on crop yield either competition for water or nutrients or space or light (Reddy and Reddi, 2011). There are innumerable reports on the inhibitory effects of weeds on crop plants (Javaid et al., 2007). Weeds are notorious yield reducers that are, in many situations, economically more important than insects, fungi or other pest organisms. Poor weed control is one of the major factors for yield reduction of wheat depending on the type of weed flora and their intensity (Amarjit et al., 1994). Wheat (*Triticum aestivum* L. Poaceae) is the second staple food for the people living in Nepal. It is widely grown in the low land of the country from east to west. Favorable climate for its better growth is winter season i.e. December/January and harvested during March/April. Wide variety of wheat is cultivated during winter season throughout the country. The yield of wheat is affected by the factors like soil type, irrigation facilities, variety, use of fertilizers and manure and weeds. Different types of weed interference are a severe constrain in the productivity of wheat (Rajbhandari and Joshi 1998).

Weed flora of wheat field in Nepal have been studied by Chaudhary 1979, Devkota 1983, Ranjit 1983, Rajbhandari and Joshi 1998, Rajbhandari and Ojha 1998 and Dangol 2000-2002. Present study intend to communicate the species composition, abundance and enumeration of the weed species in wheat field of Biratnagar. The study area is located in Biratnagar sub-metropolitan city (Latitude 26°22' North Longitude 87°16' East) to the south-east of Nepal at an altitude of 72 masl. The location comprises of weeds present in the wheat field. The climate of Biratnagar is tropical and monsoon. There are three distinct seasons viz. summer (March-June), rainy (July-October) and winter (November-February). Soil is alluvial and loamy in texture (sand 40%, silt

40% and clay 20%). The average pH of the soil (0-10 cm depth) is 6.5 which is slightly acidic in nature (Niraula 2013).

MATERIALS AND METHODS:

During the course of floristic survey in the wheat field of Biratnagar, the weed vegetation was thoroughly studied on the month of February 2013, towards Northern and Southern part of Science Block, Post Graduated Campus, Biratnagar. Species were collected by random sampling method. The collected weed species were carefully pressed in the wooden press board along with blotting paper for about ten days until completely dry. Finally weeds were mounted on herbarium sheet having 28cm x 42 cm size and identified with the help of stranded literature (Hooker 1872-1997, Biosciences 2011) and other bulletin. Nomenclature of the plants is based on Hara et al. (1978-1982). Those unidentified specimen were sent to National Herbarium Centre for identification. Herbarium specimens have been deposited in Tribhuvan University Regional Herbarium, Department of Botany, Post Graduate Campus, Biratnagar.

ENUMERATION

In the following enumeration, the families and species are arranged in alphabetical order and the occurrence of weeds were recorded as abundant (++++), frequent (+++), occasional (++) , and scarce (+).

RESULTS AND DISCUSSION:

Weed was major production constraint in wheat. Farmer were unknown about weed and their negative effect in grain yield of wheat. Very few farmers used herbicide to control the weeds on wheat. (Subedi 2013).

In the present study, forty five weed species belonging to 19 families and 39 genera were collected and identified (Table 1). Dicots dominated the weed flora (35 species, 30 genera and 17 families). Based on prevalence, the dominant families were in the order: Poaceae (8 species) > Asteraceae (7 Species) > Fabaceae (5 species) > Amaranthaceae (4

species). The dominance of these families in the wheat field agrees with the earlier reports (Manandhar, 1978; Dangol, 1987; 2000- 2002) Among identified of them were abundant e.g. *Grangea maderaspatana*, *Paspalum distichum*, *Polygonum plebeium* and *Anagallis arvensis*

and eleven species were frequent such as *Alternanthera philoxeroides*, *Ageratum conyzoides*, *Crepis japonica*, and others shown in Table 1. Occasional weed species were 22 in number and that of scarce were 8.

Table 1. Occurrence of weeds in the wheat field of Biratnagar

S.N.	Family/Speices	Local Name	Occurance
1	Amaranthaceae <i>Alternanthera paronychioides</i> St.Hil. <i>Alternanthera philoxeroides</i> (Mart.) Griseb. <i>Alternanthera sessilis</i> (L.) R. Br. ex Dc. <i>Amaranthus tricolor</i> L.	- Jaljambo Biringi jhaar Genari	+ +++ ++ +
2	Apiaceae i) <i>Centella asiatica</i> (L.) Urb.	Ghodtapre	+
3	Asteraceae <i>Ageratum conyzoides</i> L. <i>Centipeda minima</i> (L.) A. Br. & Asch. <i>Cotula hemisphaerica</i> (Roxb.) Wall. ex C.B. Clarke <i>Crepis japonica</i> (L.) Benth. <i>Gnaphalium polycaulon</i> Pers. <i>Grangea maderaspatana</i> (L.) Poir. <i>Ixeris polycephala</i> Cass.	Gandhe jhaar Hachhiu jhaar - - Buki jhaar Gobre jhaar Dudhe jhaar	+++ ++ ++ +++ +++ ++++ ++
4	Boraginaceae i) <i>Heliotropium strigosum</i> Willd.	Hatisunde	++
5	Chenopodiaceae <i>Chenopodium album</i> L. <i>Chenopodium ambrosioides</i> L.	Bethe Gandhe jhaar	++ ++
6	Cyperaceae <i>Cyperus rotundus</i> L. <i>Kyllinga brevifolia</i> Rottb.	Mothe -	+++ ++
7	Euphorbiaceae i) <i>Croton bonplandianus</i> Baill.	Khursane jhaar	+++
8	Fabaceae <i>Cassia occidentalis</i> L. <i>Lathyrus aphaca</i> L. <i>Vicia angustifolia</i> L. <i>Vicia hirsuta</i> (L.) Gray <i>Vicia tetrasperma</i> (L.) Moench	Tapre Bankerau Narkat Kutli kosha Kutli Kosha	++ + ++ +++ ++
9	Labiataeae i) <i>Leucas indica</i> (L.) Sm.	Drona puspi	+++
10	Meliaceae <i>Mellilotus alba</i> Medik. ex Desr.	-	++
11	Oxalidaceae <i>Oxalis corniculata</i> L.	Chariamilo	++
12	Poaceae <i>Cynodon dactylon</i> (L.) Pers. <i>Digitaria ciliaris</i> (Retz.) Koeler <i>Hemarthria compressa</i> (L.f.) R.Br. <i>Lolium temulentum</i> L. <i>Oryza sativa</i> L. <i>Paspalum distichum</i> L. <i>Setaria</i> sp. <i>Setaria pumila</i> (Poir.) Roem & Schult.	Dubo Banso Ghode dubo Ghode jai Dhaan Banso - -	+++ ++ +++ ++ + ++++ + ++
13	Polygonaceae <i>Polygonum plebeium</i> R.Br. <i>Rumex dentatus</i> L.	Sukul Jhaar Banpalungo	++++ +++
14	Primulaceae <i>Anagallis arvensis</i> L.	Armale	++++
15	Rubiaceae <i>Hedyotis diffusa</i> Willd.	Majithe Jhaar	++
16	Salicaceae i) <i>Salvia plebeia</i> R.Br.	-	+
17	Scrophulariaceae <i>Mazus pumilus</i> (Brum.f.) Steenis <i>Mecardonia procumbens</i> (Mill.) Small <i>Scoparia dulcis</i> L.	Malati Jhaar - Baghe Jhaar	++ ++ +
18.	Solanaceae <i>Nicotiana plumbaginifolia</i> Viv. <i>Solanum nigrum</i> L.	Baan Surti Jangali bihi	++ ++
19.	Verbenaceae <i>Lippia nodiflora</i> (L.) Rich.	Kurkure Jhaar	++

++++ = Abundant, +++ = Frequent, ++ = Occasional, + = Scarce

Table: 2 Weeds of wheat field used as fodder:

S.N	Species	Family
1.	<i>Lathyrus aphaca</i> L. <i>Vicia angustifolia</i> L. <i>Vicia hirsuta</i> (L.) Gray <i>Vicia tetrasperma</i> (L.) Moench	Fabaceae
2.	<i>Oxalis corniculata</i> L.	Oxalidaceae
3.	<i>Cynodon dactylon</i> (L.) Pers. <i>Digittaria ciliaris</i> (Retz.) Koeler <i>Hemarthria compressa</i> (L.f.) R.Br. <i>Lolium temulentum</i> L. <i>Oryza sativa</i> <i>Paspalum distichum</i> L. <i>Setaria</i> sp. <i>Setaria pumila</i> (Poir.) Roem. &Schult.	Poaceae
4.	<i>Polygonum plebeium</i> R.Br.	Polygonaceae
5.	i) <i>Centella asiatica</i> (L.) Urb.	Apiaceae
6.	<i>Chenopodium album</i> L. <i>Chenopodium ambrosioides</i> L.	Chenopodiaceae
7.	<i>Cyperus rotundus</i> L. <i>Kyllinga brevifolia</i> Rottb.	Cyperaceae

The study was carried out during late winter season and the weeds had been extracted by the farmers for fodder. Farmer uses most of the species of family Fabaceae and Poaceae for the fodder.

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