

Studies on Weed Diversity of Different Maize Crop Fields from Nanded District

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ABSTRACT

The present study focuses on the weed diversity of different maize crop fields of Nanded district, via survey conducted during 2007-10 to identify the major weed species associated with kharif maize fields. A total of 53 weed species belonging to 23 families and 47 genera were identified in Maize fields. Of these 20 were common, 27 occasional and 06 were found to be rare. Out of 45 weed species only 09 prostrate, 06 were climbing and remaining were erect weeds. *Cleome viscosa* L., *C. gynandra* L. and *C. chelidonii* L. (Cleomaceae), *Eranthemum roseum* (Vahl.) R. Br. and *Haplanthodes verticillata* (Roxb.) R. B. Majumdar (Acanthaceae) and *Cajanus platicarpus* (Benth.) van der Maesen. (Fabaceae) were specific only in the Maize fields and not in other fields.

Keywords: weed diversity, Maize, Specificity, Common, Occasional, rare, Nanded District.

INTRODUCTION

India is rich in plant diversity and one of the mega biodiversity centers of the world. Indian plant diversity exhibited about 4900 endemic plant species of flowering plants. Jethro in 1731, defined first time a term "Weed" as 'a plant growing where it is not desired' in his much esteemed book 'Horse Hoeing Husbandry'. The weeds are common dominant, unwanted, undesirable and plant that compete with cultivated crop for water, nutrient and sunlight and another several reasons such as, high growth rate, high reproductive rate and produce harmful or beneficial allelopathical effect of cultivated crops. (Qasem and Foy 2001). There are approximately 250,000 species of plants worldwide, of those about 3 % or 8,000 species, behave as weeds and 200 to 250 weeds found to cause major problems in worldwide cropping systems (Holm *et al.* 1979 ; Thakur, 1984). They spread like wild fire and grow abundantly in the crop fields and harm to the main crops.

Valverde *et al.* (1995) reported that 16-40 % yield losses in the maize fields were due to the weeds. Weeds differ from other plants in being more aggressive, having peculiar characteristics that make them more competitive. They suppress the activity of all other weed communities around them and establish a kingdom of their own within a short period of time. These weeds are generally

associated with commercially important crops of export potential. They not only lower the quality but also the quantity of the crop produce resulting in heavy economic losses to the farmer. Maize fields are infested with many weed species and their management needs proper identification of weeds which could make the management easier. Lot of study is done in worldwide on weed diversity (Sit *et al.*, 2007). Keeping in view the importance of survey, collection and identification of weed species, the present study was carried out to provide the baseline information about the weeds of the study area.

MATERIALS AND METHODS

Studies on weeds diversity of different Maize crop fields of Nanded District

The weed diversity of crop fields in the Nanded district was studied as per the methods described by Rahman *et al.* (2007). Accordingly, the weed survey of Nanded district was made during December, 2007 to December, 2010. For convenience the Nanded district was divided into six agricultural zone such as Nanded (including tahasils of Nanded and Ardhapur), Bhokar (including tahasils of Bhokar, Umri, Dharmabad and Naigaon), Mahur (including tahasil of Mahur), Kinwat (including tahasil of Kinwat), Kandhar (including tahasils of Kandhar), Loha (Mukhed, Degloor and Biloli) and Hadgaon (including tahasils of Hadgaon and Himayatnagar). All

the six agricultural zones were surveyed and weeds were collected from different maize crop fields. For this regular excursions were arranged to different maize crop fields of each and every agricultural zone in the Kharif (June, July, August, and September) seasons at least twice in a month and later on once in a month. The excursions were arranged in such a way that it covered the entire study regions. As a result of this most of the weeds could be collected in different growth stages. The identified weeds were categorized as herbs and climbers as per the methods described by Bisht et al, 2004 and also separated into common, occasional and rare weeds

described methods by IUCN Red Data Book, 2006; Siddique et al., 2005, Dalvi, 2010.

Identification

The collected weed were identified on the spot and in the laboratory on the basis of their natural characters with the help of identification keys, flora of Marathwada (Naik, 1998), internet photographs and other relevant literature.

Herbarium

Herbarium was prepared from identified weeds and stored in Herbarium Section of Department of Botany, Yeshwant Mahavidyalaya, Nanded (M.S.).

Table: Studies on weed diversity in the field of Maize crop of kharif season

S. No.	Name of the weeds	Family	Habit	Category
1.	<i>Abelmoschus ficulneus</i> (L.) Wt. & Arn. ex Wt.	Malvaceae	Erect	Occasional
2.	<i>Ageratum conyzoids</i> L.	Asteraceae	Erect	Common
3.	<i>Alternanthera sessilis</i> (L.) R.Br,ex DC	Amaranthaceae	Prostrate	Common
4.	<i>Alysicarpus rogosus</i> L.	Fabaceae	Erect	Occasional
5.	<i>Amaranthus spinosus</i> L.	Amaranthaceae	Erect	occasional
6.	<i>Amaranthus tricolor</i> L.	Amaranthaceae	Erect	Common
7.	<i>Antiganon leptopus</i> Hook. & Arn.	Polygonaceae	Climber	Rare
8.	<i>Cajanus platicarpus</i> (Benth.)van der Maesen.	Fabaceae	Prostrate	occasional
9.	<i>Cardiospermum helicacabum</i> L.	Sapindaceae	Climber	Occasional
10.	<i>Cassia tora</i> L.	Caesalpiniaeeae	Erect	Occasional
11.	<i>Centella asiatica</i> (L.) Urb.	Apiaceae	Prostrate	Occasional
12.	<i>Cleome chelidonii</i> L.	Cleomaceae	Erect	Rare
13.	<i>Cleome gynandra</i> L.	Cleomaceae	Erect	Rare
14.	<i>Cleome viscosa</i> L.	Cleomaceae	Erect	Occasional
15.	<i>Clitoria ternatea</i> L.	Fabaceae	Climber	Occasional
16.	<i>Commelina benghalensis</i> L.	Commelinaceae	Erect	Common
17.	<i>Convolvulus arvensis</i> L.	Convolvulaceae	Climber	common
18.	<i>Corchorus olitorius</i> L.	Tiliaceae	Erect	Occasional
19.	<i>Croton bonplandianum</i> Baill.	Euphobiaceae	Erect	Occasional
20.	<i>Cynodon dactylon</i> (L.) Pers.	Poaceae	Prostrate	Common
21.	<i>Cyperus rotundus</i> L.	Cyperaceae	Erect	Common
22.	<i>Datura metal</i> L.	Solanaceae	Erect	Rare
23.	<i>Desmodium dichotomum</i> (Willd.)DC.	Fabaceae	Erect	Occasional
24.	<i>Eragrotis tenella</i> Roem. & Schult.	Poaceae	Erect	Common
25.	<i>Eranthemum roseum</i> (Vahl.)R.Br.	Acanthaceae	Erect	Occasional
26.	<i>Euphorbia heterophylla</i> L.	Euphorbiaceae	Erect	Common
27.	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Erect	Common
28.	<i>Euphorbia indica</i> Lamk.	Euphorbiaceae	Erect	Common
29.	<i>Euphorbia prostrata</i> Ait.	Euphorbiaceae	Prostrate	Common
30.	<i>Haplanthodes verticillata</i> (Roxb.)R. B. Majumdar	Acanthaceae	Erect	Rare
31.	<i>Kyllinga nemoralis</i> (J.R. & G.Forst) Dandy ex. Hutchings & Dalziel	Cyperaceae	Erect	Occasional
32.	<i>Lagascea mollis</i> Cav.	Asteraceae	Erect	Occasional
33.	<i>Leucas biflora</i> (Vahl) R.Br	Lamiaceae	Erect	Occasional
34.	<i>Malachra capitata</i> L.	Malvaceae	Erect	Occasional

35.	<i>Malvastrum coromandelianum</i> (L.) Garcke	Malvaceae	Erect	Occasional
36.	<i>Merremia emarginata</i> (Burm.f.) Hall.f.	Convolvulaceae	Prostrate	Common
37.	<i>Mollugo nudicaulis</i> Lamk.	Molluginaceae	Erect	Occasional
38.	<i>Pergularia daemia</i> (Forsk.) Choiv.	Asclepiadaceae	Climber	Occasional
39.	<i>Phyllanthus amarus</i> Schumach. & Thonn.	Euphorbiaceae	Erect	Common
40.	<i>Physalis angulata</i> L.	Solanaceae	Erect	Occasional
41.	<i>Portulaca oleracea</i> L.	Portulacaceae	Prostrate	Common
42.	<i>Psoralea corylifolia</i> L.	Fabaceae	Erect	Occasional
43.	<i>Ruellia tuberosa</i> L.	Acanthaceae	Erect	Common
44.	<i>Sida acuta</i> Burm.f.	Malvaceae	Erect	Common
45.	<i>Solanum nigrum</i> auct.	Solanaceae	Erect	Common
46.	<i>Sphaeranthus indicus</i> auct.	Asteraceae	Erect	occasional
47.	<i>Tephrosia purpurea</i> (L.) Pers	Fabaceae	Erect	Occasional
48.	<i>Tinospora cordifolia</i> (Willd.) Miers.	Menispermaceae	Climber	Occasional
49.	<i>Trianthema portulastrum</i> L.	Aizoaceae	Prostrate	Common
50.	<i>Tridax procumbens</i> L.	Asteraceae	Erect	Occasional
51.	<i>Vigna triloba</i> L.	Fabaceae	Prostrate	Common
52.	<i>Withania somnifera</i> (L.) Dunal	Solanaceae	Erect	Rare
53.	<i>Xanthium strumarium</i> L.	Asteraceae	Erect	Occasional

RESULT AND DISCUSSION

From the results presented in table, it is clear that, the total fifty three weeds belonging to the twenty three families and forty seven genera were identified from the kharif season in Maize fields. The six weeds were found to be climbers, nine weeds were prostrate and remaining weeds were erect herbs. From the total identified weeds, twenty seven were found to be occasional, twenty were found to be common and six were found to be rare weeds in maize fields.

The weeds such as *Cleome viscosa* L., *C. gynandra* L. and *C. chelidonii* L. belonging to the family Cleomaceae, *Eranthemum roseum* (Vahl.) R. Br. and *Haplathodes verticillata* (Roxb.) R. B. Majumdar belonging to Acanthaceae and *Cajanus platicarpus* (Benth.) van der Maesen. belonging to family Fabaceae were found to be only in the Maize fields and not in other fields.

Similarly Gupta et al., (2008) studied the dynamics of cereal crop weeds of Doon valley with special reference to rice maize and wheat fields. Total 18 weed species have been recorded in pulses crop fields from the Patan district, of which 15 species belong to dicot and 3 species belong to monocot (Dabgar et al., 2010). Similar work has been carried out by different workers such as Haseler (1976), Pulschen (1990), Tursun, (2002), Tingle et al., (2003), Rabia et al., (2007), Elvyra and Zofija, (2011). In india similar work has been carried out by different workers such as Rice, (1986), Kushwaha and Singh (2000), Patil D.A (2010), Kunja et al., (2012).

CONCLUSION

This study is based on diversity of weeds of kharif maize crop fields, which provides a preliminary data of the different categories of weeds in maize crop fields. It will be helpful to farmers, students and researchers related to these fields for identification of weeds and their weed specificity. Further studies may also be done to check their allelopathic effects on same agricultural crops.

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