



Survey of Weed Flora in Zero Till Sown Maize in Krishna Zone of Andhra Pradesh

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ABSTRACT

Weed survey was conducted during rabi 2009-10 to 2011-12 to find out weed flora in zero till sown maize in Krishna Agro climatic zone of Andhra Pradesh. The survey indicated that a total of twenty one weed species, of which 7 grasses, 3 sedges and 11 broadleaf weeds distributed among ten families were infested in zero till sown maize. Among these, *Echinochloa colona* is the most dominating weed with Importance Value Index (IVI) of 37.64 followed by *Panicum repens*, *Trianthema portulacastrum*, *Digera arvensis* etc

Key words : Importance Value Index, Weed flora, Zero till sown maize.

In Krishna zone (comprising Krishna, Guntur and Prakasam districts) of Andhra Pradesh, due to late release of water in canals, timely sowing of subsequent blackgram as relay crop is getting delayed. In addition to this, severe YMV problem in blackgram also forced the farmers to switch over to non traditional crop like maize in rice fallows as an alternative to blackgram. Thus rice – maize cropping system became very popular in this zone due to its low cost of cultivation, low incidence of pest and diseases and higher net returns. In this system, maize seeds are dibbled immediately after removal of paddy sheaves and weed problem is also severe due to lack of field preparation, excess moisture in the initial stages, carry over weeds from rice crop, which severely competes with maize crop and reduces yield up to 41 percent (Rao *et al*, 2009). Though information pertaining to weed flora in normal till sown maize is available (Sivakumar and Sundari, 2006; Walia *et al.*, 2007) but information is lacking in zero till sown maize, which is essential for successful weed management planning in the zone. Keeping this in view, the present investigation was conducted to find out the composition of weed flora in zero till sown maize.

MATERIAL AND METHODS

Survey of weed flora of zero till sown maize of Krishna Agro climatic zone comprising of Krishna, Guntur and Prakasam districts of Andhra

Pradesh was conducted during rabi seasons of 2009-10 to 2011-12. The Krishna zone of Andhra Pradesh is geographically situated between 14° 57' to 17° 9' N latitude and 78° 45' to 81° 33' E longitude. The climate of the zone is sub tropical with an annual average rainfall of 888 mm with bimodel distribution. For recording observations on the weed flora, a stop was made after every 10 km on the selected route in different districts of the Zone. The location for recording composition and density of various weed species was selected about 200 meters away from the road. Species wise weed counts were made from five spots in the crop field using a quadrat of 50x50 cm size. Data were analyzed to determine density (D), frequency (F), Relative density (Re.D), Relative frequency (Re.F) and Importance Value Index (IVI) as per the method used by Kim and Moody, (1980), Raju *et al.* (1995), and Behera *et al.* (1999). The three years data obtained from all the three districts were pooled and the mean was calculated.

RESULTS AND DISCUSSION

Weed survey revealed that zero till sown maize crop was infested with a total of 21 weed species, of which 7 grasses, 3 sedges and 11 broad leaf weeds. A complete list of weeds along with density, frequency and important value index was given in Table 1. Among the weeds, *Echinochloa colona* was the most dominant weed

Table 1. Dominating weed flora in zero till sown maize crop of Krishna zone (Pooled data of 3 years).

S.No.	Name of the plant	Family	Density	Re.D	Frequency	Re.F	IVI
1	<i>Echinochloa colona</i> (L.) Link	Poaceae	1.35	38.31	0.65	36.96	37.64
2	<i>Panicum repens</i> L.	Poaceae	1.47	36.60	0.45	27.97	32.29
3	<i>Trianthema portulacastrum</i> L.	Aizoaceae	4.05	20.26	0.35	12.39	16.33
4	<i>Digera arvensis</i> Forsk.	Amaranthaceae	3.80	17.92	0.30	8.82	13.37
5	<i>Cyperus rotundus</i> L.	Cyperaceae	0.28	10.40	0.24	15.18	12.79
6	<i>Cyperus haspan</i> L.	Cyperaceae	0.84	8.70	0.42	16.62	12.66
7	<i>Dinebra retroflexa</i> (Vahl) Panzer	Poaceae	0.45	10.89	0.23	13.19	12.04
8	<i>Chrozophora rotleri</i> (Geisel) A. Juss.	Euphorbiaceae	0.15	4.79	0.15	9.23	7.01
9	<i>Grangea maderaspatana</i> (L.) Poir.	Asteraceae	0.25	4.92	0.20	8.85	6.88
10	<i>Xanthium strumarium</i> L.	Asteraceae	0.15	4.08	0.15	7.42	5.75
11	<i>Cleome viscosa</i> L.	Capparaceae	1.00	4.72	0.20	5.88	5.30
12	<i>Fimbristylis miliacea</i> (L.) Vahl	Cyperaceae	0.20	4.76	0.10	5.00	4.88
13	<i>Nicotiana plumbaginifolia</i> Viv.	Solanaceae	0.15	3.32	0.15	5.93	4.62
14	<i>Dactyloctenium aegyptium</i> (L.) Beauv	Poaceae	0.25	5.00	0.10	3.85	4.42
15	<i>Leptochloa chinensis</i> (L.) Nees	Poaceae	0.25	3.68	0.10	4.17	3.92
16	<i>Nasturtium indicum</i> (L.) Hiern	Brassicaceae	0.10	2.38	0.10	5.00	3.69
17	<i>Phyllanthus niruri</i> Linn.	Euphorbiaceae	0.30	1.42	0.20	5.88	3.65
18	<i>Parthenium hysterophorus</i> L.	Asteraceae	0.60	2.83	0.10	2.94	2.89
19	<i>Paspalum conjugatum</i> Berg.	Poaceae	0.10	1.92	0.08	3.49	2.70
20	<i>Cynodon dactylon</i> (L.) Pers.	Poaceae	0.10	2.63	0.05	2.08	2.36
21	<i>Ammannia baccifera</i> L.	Lythraceae	0.05	0.40	0.05	2.27	1.34

Note: Re.D = Relative Density, Re.F = Relative Frequency, IVI = Importance Value Index

with IVI of 37.64 followed by *Panicum repens* (32.29), *Trianthema portulacastrum* (16.33), *Digera arvensis* (13.37) etc. Though, the density of *Echinochloa colona* is lower compared to *Panicum repens*, but its relative density (Re.D) and frequency (F) is higher and ultimately higher IVI. Among the broad leaf weeds, *Trianthema portulacastrum* is the most dominating weed followed by *Digera arvensis*, *Chrozophora rotleri* etc. Among sedges, *Cyperus rotundus* is the most dominating weed followed by *Cyperus haspan* and *Fimbristylis miliacea*. Data further revealed that 21 weed species were distributed among the 10 families. Among the 10 families, Poaceae is the largest family representing 7 species, Cyperaceae and Asteraceae each with 3 species, Euphorbiaceae with 2 species and one

each to Aizoaceae, Amaranthaceae, Brassicaceae, Capparaceae, Lythraceae, Solanaceae families.

The weed survey also revealed that though 11 broad leaf weeds were associated with crop, but their density was less compared to grassy weed species like *Echinochloa colona*, *Panicum repens* in the zone. This indicates the importance of weed management of grassy weeds for which suitable selective post emergence herbicide is to be recommended as the currently recommended post emergence herbicides control only broad leaf weeds and sedges.

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