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DOMINANT WEED FLORA OF SOYBEAN AND COTTON IN VIDHARBHA REGION OF M.S.

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Abstract: A survey of weed flora of soybean and cotton in South-East districts of Vidharbha region of M.S. revealed that a total of 13,12 and 9 weed species were dominant in soybean, cotton and non cropped area. Among grasses C*ynadon dectalon* and *Euphorbhia geneculata* among broad leaved was dominant in soybean and cotton, where as in non cropped area C*assia tora* was dominant. In soybean 2 grasses, 1 sedge and 10 broad leaved weed and cotton 2 grasses, 1 sedge and 12 BL weeds and in non cropped areas 9 weeds were found dominant.
Keywords: Soybean, cotton, weed, dominant.

Introduction

Soybean and cotton are main cash crops grown in South East districts of Vidharbha region of M.S. These crops are grown in *kharif* on assured rainfall received during this season. Yield reduction due to uncontrolled weeds in soybean has been recorded to the tune of 30-80 % depending upon type of weeds and duration of infestation (Yaduraju and Sreekumar, 2002). Cotton is grown at wider row spacing and with slow initial plant growth faces heavy competition with weed leads to drastic yield reduction in unweeded fields. Yield losses due to weed competition in cotton are estimated to 70 -75 % (Shelke, 1995).

The weed intensity and infestation varies with environmental factors in addition to soil type, crop grown and season (Saavedra et. al. 1980). As weed species changes with place to place and crop grown, it's very effective to control weeds by adopting proper management practices based on information available on crop weed association and location specific weed infestation. The present survey was made to collect most accurate information on weed infestation in soybean and cotton grown on large area in these districts.

Materials and methods

Weed survey of soybean and cotton was conducted in three districts of Vidharbha region of M.S. viz. Nagpur, Wardha and Yoetmal during July- Aug 2010, as this period gives most appropriate representation of weed species of the region. Survey route was followed with

easy approach and can cover representative area of the region. During survey at every 10 km distance a site was selected for weed count by using a quadrate of 0.5 X 0.5 m^2 size and each spot 100 meter deep inside the fields, as suggested by Raju (1977). The values of Relative density (%), Relative frequency were calculated and these values were used to calculated IVI values for each weed species with formula as follow.

Relative density (%) = a / b where a = Number of individual of a species in all quadrate

$$\text{Relative frequency (\%)} = \frac{\text{Frequency of species A}}{\text{Sum frequency of all species}} \times 100$$

IVI (Importance value index) = RD + RF

Results and discussion

Weed flora of soybean

Total thirteen weed species were found to infest soybean fields, among these two species were grasses, one sedge and ten belonged to broadleaved weeds. In all districts C*ynadon dectyalon*, C*yperus rotundus*, P*arthenium hysterophorus, Euphorbia geneculata* and E*rgotis minor* were most dominant weeds. The relative density of these weeds varied from 8.32 to 28.05, 3.56 to 12.79, 12.88 to 25.22, 13.78 to 24.25 and 1.40 to 6.20 (Table 1) respectively. *Euphorbia geneculata* alone having IVI value of 26.31 in Wardha to 51.00 in Nagpur.

On the basis of IVI values in all the districts, *Euphorbia geneculata, Parthenium hysterophorus and Cynadon dectyalon* were most dominant weeds in soybean which needs to be controlled at proper time with priority. *Cyperus rotundus* and C*elocia argentia* were observed in all these districts. Abitulon indicum and Dignera arvensis were important weed with higher IVI value in Yoetmal and Bracheria eruciformis in Nagpur respectively.

Weed flora of cotton

In all the sites surveyed, cotton was infested with 12 weed species including 2 grasses, one sedge and 9 broadleaf weeds. *Cynadon dectalon* was the dominant grassy weed, in sedges *Cyperus rotundus* where as in broad leaf *Dignera arvensis, Euphorbhia geneculata* and *Parthenium hysterophorus* was dominant in cotton in all districts.

In Nagpur *Cynadon dectalon* (53.32 IVI), in Wardha *Amaranthus polygamous (*30. 36 IVI) and in Yoetmal *Celocia argentia* (33.80 IVI) were dominant weed species may be due to medium to light textured soil type commonly observed in these districts. (Table 2).

Commelina benghalensis was dominant in Nagpur as well as Wardha. Similar weed species in cotton were also reported by Shelke and Bhosale (1990) from Parbhani.

Cynadon dectalon was the dominant grassy weed in all districts followed by C*yperus rotundus* the other weed species commonly observed in all districts were *Parthenium hysterophorus, Dignera arvensis* and *commelina benghalensis.*

Non cropped area

In non cropped area from these districts, nine weed species were observed among which *Parthenium hysterophorus, Althernethra sessilis, Cassia tora, Tridex procumbens* and *Euphorbia hirta* were dominant.(Table 3). In Nagpur, P*arthenium hysterophorus* (54.82 IVI) was most dominant weed species, where as *Cassia tora* in Wardha (48.36 IVI) and Yoetmal (51.97 IVI) districts. Other weed species important in Nagpur, Wardha and Yoetmal were *Cassia tora, Althernethra sessilis* and *Lantana camera* respectively. *Achyrantus aspera* was observed in Wardha and yoetmal where as *Abitulon indicum* was observed in Nagpur and Wardha district.

With the information generated through an extensive weed survey, it becomes easier to adopt proper weed management techniques in each crop and district based on dominant weeds observed so that, the yields of these crops can be maintained to a desired level.

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Table 1. Dominant weed flora of soybean in S-E districts of Vidharbha region of M.S.

Name of weed	Nagpur			Wardha			Yoetmal		
	RD %	RF %	IVI	RD %	RF %	IVI	RD %	RF %	IVI
Grassy weeds									
Cynadon dectalon	28.05	18.22	46.27	18.56	12.77	31.33	8.32	10.80	19.12
Bracheria eruciformis	22.15	18.57	40.72	-	-	-	6.81	10.31	17.12
Sedge									
Cyperus rotundus	3.56	8.79	12.35	12.79	12.43	25.22	7.82	9.68	17.50
Broad leaved weeds									
Parthenium hysterophorus	25.22	18.17	43.39	18.34	12.71	31.05	12.8	10.02	22.90
Dignera arvensis	2.29	2.23	4.67	-	-	-	16.8	10.81	27.62
Euphorbhia geneculata	24.25	26.75	51.00	13.18	12.53	26.3	16.6	10.66	27.26
Abitulon indicum	6.22	8.17	14.39	-	-	-	14.2	10.81	24.92
Commilina benghalensis	2.78	4.52	7.30	16.80	14.62	31.42	-	-	-
Celocia argentia	1.23	5.17	6.40	8.41	7.12	15.53	18.4	14.40	3.28
Ergotis minor	1.40	7.46	8.86	4.70	7.63	12.33	6.20	8.45	14.65
Phyllanthus niruri	5.60	12.80	18.40	3.12	6.48	9.60	-	-	-
Solanum nigrum	7.14	4.32	11.46	-	-	-	3.68	8.14	11.42
Amaranthus polygamous	-	-	-	4.16	10.11	14.27	8.26	6.24	14.50

Table 2. Dominant weed flora of cotton in S-E districts of Vidharbha region of M.S.

Name of weed	Nagpur			Wardha			Yoetmal		
	RD	RF %	IVI	RD	RF	IVI	RD	RF	IVI
Grassy weeds									
Cynadon dectalon	26.75	26.57	53.32	9.63	19.10	28.73	24.8	18.40	43.26
Bracheria eruciformis	-	-	-	14.89	11.61	26.50	12.3	12.20	24.23
Sedge									
Cyperus rotundus	1.72	12.60	29.83	8.53	8.74	17.27	18.8	14.41	33.29
Broad leaved weeds									
Parthenium hysterophorus	8.10	16.34	23.35	10.78	15.16	25.94	8.60	5.86	14.46
Dignera arvensis	18.73	10.77	29.50	6.16	6.74	12.93	9.80	10.48	20.29
Euphorbhia geneculata	19.70	19.31	38.84	13.18	13.81	27.05	6.88	8.22	15.09
Commelina benghalensis	20.13	10.34	30.40	17.52	18.41	30.94	8.90	8.84	17.74
Argimone mexicana	-	-	-	5.93	7.41	13.41	-	-	-
Amaranthus	-	-	-	17.46	12.94	30.36	-	-	-

polygamous									
Phyllanthus medrapetensis	-	-	-	-	-	-	9.08	10.38	19.96
Celocia argentia	-	-	-	-	-	-	15.6	18.12	33.80
Convolvulus arvensis	-	-	-	-	-	-	4.06	6.18	10.24

Table 3. Dominant weed flora of Non cropped area in of Vidharbha region of M.S.

	Nagpur			**Wardha**			**Yoetmal**		
Name of weed	**RD**	**RF**	**IVI**	**RD**	**RF**	**IVI**	**RD**	**RF**	**IVI**
Parthenium hysterophorus	33.62	22.20	54.82	22.40	16.88	39.28	12.4	22.80	35.61
Althernethra sessilis	22.46	24.33	46.69	25.95	20.81	46.76	20.8	18.72	39.52
Cynadon dectalon	20.93	20.16	40.58	-	-	-	-	-	-
Cassia tora	23.78	18.81	42.54	25.80	22.56	48.36	30.8	18.30	51.97
Abitulon indicum	12.29	14.44	26.73	5.88	8.26	14.14	-	-	-
Achyaranthus aspara	-	-	-	18.12	19.78	37.90	8.85	5.41	14.26
Lantana camera	-	-	-	-	-	-	18.0	25.81	43.81
Tridex procumbens	3.34	7.64	10.98	10.18	8.68	18.46	4.64	5.52	10.16
Euphorbia hirta	2.82	4.13	6.95	3.65	8.98	10.63	7.32	8.12	5.44

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