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THE WEED FLORA IN SURGARCANE FIELDS OF PALGHAT DISTRICT

Weeds constitute one of the biggest coponents that limits the realisable yield of any crop. In sugarcane, the loss in yield due to weeds is reported to be as high as 63% (Singh and Singh, 1978). Effective and timely weed control can, therefore, be the best tool in increasing sugarcane productivity in Kerala (Anon., 1989). Superiority of chemical weed control in respect of effectiveness, timeliness and cost has been established beyond doubt through previous trials (Anon., 1985). Selectiveness and specificity of weedicide necessitates basic information on the nature and types of weed flora to ensure success in their use. Such information is presently not available for the semi-arid situation which produces maximum tonnage of cane for crushing in the State. Preliminary information collected for the area from representative sugarcane fields is presented in this note.

The study was conducted in he command area of Chittur Co-operative Sugars, Palghat. Sugarcane crop in the area is spread out almost equally in red and black soils. Eighty representative fields, 15 each from each soil group were selected for the study during the main season of 1989-90.

Four plots of 1 m^2 each were selected at random in each selected field for recording observations. All the weeds in the observational plots were pulled out and classified. The entire data were pooled and frequency percentage, average density and frequency density index were calculated.

$$\text{Frequency \%} = \frac{\text{No. of sites where a species occures} \times 100}{\text{Total number of sites}}$$

This serves as an index of extensiveness of the weed. Average density is obtained by dividing total count of the species from all the sites by number of sites where the weed is present and serves as the index of intensity of weed occurrence. Frequency density index is got by multiplying the above two and then dividing by 100. Frequency density index is an expression of intensity and extensiveness of the weed.

The crops had been raised purely as per farmer's practice. The observations were recorded at 6 months stage of the sugarcane crop. The details of observations are presented in Table 1.

The data show that *Ageratum conyzoides* is the most extensive weed in the area and found in 87% of the locations followed by *Tridax procumbens* (62.50%) and *Eclipta prostrata* (62.50%). This was followed by *Commelina jacobi* (50%), *Cynodon dactylon* (43.75%) and *Corchorus capsularis* (37.50%).

Cynotis axillaris, Cyperus rotundus, Digitaria ciliaris, Leucas aspera, Physalis minima, Emilia sonchifolia and *Cleome viscosa* were found only in seven locations and all other weeds were more or less localised.

The data show that there is wide variability in both extensiveness and intensity of weed flora in the area. *Cyperus rotundus*, though had a frequency percentage of 18.75 had. the maximum intensity of 11.00 and was followed by *Oldenlandia affinis* (6.50), *Commelina benghalensis* (4.00), *Ageratum conyzoides* (3.64) and *Echinochloa colona* (3.40). This

Table 1. Frequency percentage, average density and frequency density index of the weed flora

Sl. No.	Name of weed	Frequency %	Average density	Frequency density index
(1)	(2)	(3)	(4)	(5)
1	*Ageratum conyzoides* L.	87.50	3.64	3.190
2	*Amaranthus viridis* L.	12.50	2.00	0.250
3	*Borreria articularis* (L.f.)	1150	1.00	0.125
4	*Celosia argentea* L.	12.50	2.00	0.250
5	*Cleome monophylla* L.	12.50	1.00	0.125
6	*Cleome viscosa* L.	18.75	1.00	0.187
7	*Corchorus capsularis* L.	37.50	1.33	0.500
8	*Ecliptaprostrata* (L.) L.	62.50	1.80	1.130
9	*Emilia sonchifolia* (L) DC.	18.75	1.00	0.187
10	*Euphorbia heterophylla* L.	12.50	1.00	0.125
11	*Euphorbia hirta* L.	12.50	1.00	0.125
12	*Euphorbia hypercifolia* L.	6.25	2.00	0.125
13	*Hemidesmus indicus* (L.) Schult.	12.50	1.00	0.125
14	*Heteropogon contortus* L. P. Beauv. R.S.	6.25	2.00	0.125
15	*Ipomœpes-tigridis* L.	12.50	1.50	0.188
16	*Knoxia mollis*	1150	3.50	0.440
17	*Leucas aspera* (Willd.) Spreng.	18.75	1.33	0.250
18	*Mimosapudica* L.	25.00	1.00	0.250
19	*Oldenlandia affinis* (Roem. and Schult.) DC	25.00	6.50	0.630
20	*Parthenium hysterophorus* L.	6.25	1.00	0.063
21	*Phyllanthus madraspatensis* L.	1150	1.00	0.125
22	*Phyllanthus niruri* Hook.f	1150	1.00	0.125
23	*Physalis minima* L.	18.75	1.00	1.188
24	*Rhyncosia minima (L.)* dc.	6.25	3.00	0.188
25	*Sida acuta* (Burm. f.)	6.25	1.00	0.062
26	*Trianthemaportulacastrum* L.	1150	2.50	0.313
27	*Trichodesma indicum* (L.) Lehm.	25.00	1.00	0.250
28	*Tridasprocumbens* L.	62.50	2.90	1.813
29	*Vernoniacinerea* (L.)	25.00	1.50	0.375
	Grasses			
30	*Apluda mutica* L.	1150	2.50	0.313
31	*Aristida setacea* Retz.	1150	2.50	0.313
32	*Brachiaria distichophylla* (L.) Stapf	25.00	1.86	0.813
33	*Cynodon dactylon* Pers.	43.75	1.86	0.813
34	*Dactyloctenium aegyptium* (L.) P. Beauv.	1150	3.50	0.438
35	*Digitaria bicornis* Willd.	16.25	1.00	0.625
36	*Digitaria ciliaris* (Retz.)	18.75	1.67	0.313
37	*Echinochloa colonum* (L.)	31.25	3.40	1.063
38	*Eragrost tenella* P.Beauv.	1150	1.50	0.188
39	*Panicum repens* L.	6.25	1.00	0.625
40	*Paspalidiumflavidum (Retz)*	6.25	7.00	0.625
41	*Rottboellia exaltata* L.	6.25	1.00	0.625

Table 1 continued

(1)	(2)	(3)	(4)	(5)
	Sedges			
42	*Cyperus iria* L.	1Z50	1.00	0.125
43	*Cyperusdistans* L.f.	6.25	1.00	0.625
44	*Cyperus rotundus* L.	18.75	11.00	2.060
	Other monocots			
45	*Commelina benghalensis L.*	31.25	4.00	1.250
46	*Commelinajacobi* Fisher	50.00	2.50	1.250
47	*Commelinasubulata* Roth.	12.50	1.50	0.188
48	*Cynotis axillaris* (L.)]. Don	18.80	1.67	0.313

would mean that these weeds wherever are present will pose serious problem to crop production and are likely to limit the yield considerably.

Frequency density index is a measure of average seriousness of the weed in the area and the data revealed that among the weeds *Ageratum conyzoides* and *Cyperus rotundus* are the regional, most widespread and serious weed in the area. No other weed can be designated as affecting the entire area. It would mean that general recommendation should be based on the effectiveness of the herbicide against *Ageratum conyzoides*. However, the data further showed that chemical weed control measure, exclusively considering this particular weed alone, is likely to be ineffective as there is a wide variability of weeds as well as their intensity in different locations within the region. The results show that every zone represented by each location or sub-region with identical weed flora, requires specifically defined herbicide combinations different from other locations or sub-groups for effective and objective weed control.

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