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Quantitative Distribution of Road Side Weeds in Bilha Block of Bilaspur District

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ABSTRACT: Bilha block is located in Bilaspur district of Chhattisgarh state. The geographical situation of the district is 21˚37'-23˚7 North latitude and 81˚12'-81˚40' East longitude. Phytosociological survey done in the month of October-November 2016.The climatic and edephic conditions are favorable in vegetational growth. The total rainfall in year 2016 are1259 mm. The maximum and minimum temperature of district is 44 ˚c and 24 ˚c. Weeds are unwanted plants which grow automatically in vary widely in variable environmental condition to form vegetation. Growth parameter indicate the weeds have decreased the soil moisture and nutrients, But weeds are most important factor of plant biodiversity. Phytosociological analysis of weeds is essential to establish any ecological conclusion. Standard ecological parameters such as % frequency, density, abundance, basal cover, relative frequency, relative density, relative dominance and Important value indicates (IVI) are calculated by formulae given by Mishra et. All (1968), by using 50 x 50 sq.cm quadrat general survey indicate more than 50 species are obtained in different families obtained 10 species are found in potential weed. Identified weeds species are:
Cynodon dactylon ,Acanthospermum hispidium , Portulaca oleracea , Achyranthes aspera , Sida acuta , Sida rhombifolia , Parthenium hysterophorus , Cassia tora , Andropogon virginicus , Xanthium strumarium
IVI ranges of potential weeds are 8.157 to 18.190
Keywords: Potential weed, road side weed, phytosociological analysis, ecological parameter, IVI

I. INTRODUCTION

Bilaspur is a district of chhattisgarh state, which is situated in 21˚37"-23˚7" North latitude and 81˚12"-83˚45" East longitude. Bilha is a block of bilaspur district.This district is very rich for there floristic biodiversity. The climatic and edaphic conditions are favorable for vegetational growth. Weeds are unwanted plants which grow automatically. Many workers such as Shukla, R.V. Dubey, V. Sharma R.P.etc. has been obtained many weed species in different cropland field .Road side weeds are important for the floristic diversity of weeds and many weeds are ethenomedicinal.Weeds cause over crowding and depletion of the soil nutrients and moisture. They interface with agricultural operations,increase labour cost and reduce crop yields. They compete with crop plant for water,light,nutrients and space. They reduce farm and forest productivity.Many weed species have moved out of their natural geographic ranges and spread around the world in tendom with human migration and commerce.Human are a vector of transport as well as a producer of the disturbed environment.Weed species are well adapted, resulting in many weeds having a close association with human activities.

II. MATERIAL AND METHOD

A. Study areas

For this investigation three study site are selected . These sites are situated approximately 25km distance from each other and the centre of bilaspur city (old bus stand).The sites are Khamtari village,Ghuru Ameri village and Sakri village and they are seperate gram panchayat

III. METHODOLOGY

Weed plants were collected and there herbarium prepared by the help of standard flora. For general survey and phytosociological analysis the size of quadret used in 50 x 50 cm. sq. phytosociological parameters such as- % Frequency, Density, Abundance, Basal cover, Relative frequency, Relative density, Relative dominance and Importance value index (IVI) are calculated by formulae, given by mishra et all 1968.

$$\% \text{ Frequency} = \frac{Total number of occurrences of a species}{Total number of quadret studies} x100$$

Density $= \frac{Totalnumberofindividualofaspecies}{Totalnumberofquadretstudies}$

Abundance $= \frac{Totalnumberofindividualsofaspecies}{Totalnumberofoccurrencesofaspecies}$

Basal cover $= \pi r^2$ (r = radius) $\pi = \frac{22}{7}$

Relative frequency $= \frac{Totalnumberofoccurencesofaspecies}{Totalnumberofoccurencesofallspecies} x100$

Relative density $= \frac{Totalnumberofindividualsofspecies}{Totalnumberofindividualofallspecies} x100$

Relative dominance $= \frac{Totalbaselcoverofaspecies}{Totalbaselcoverofallspecies} x100$

Importance value index (IVI)=Relative frequency +Relative density+Relative dominance

Approvision- R.F.=Relative frequency

R.D.=Relative density and R.Dom=Relative dominance

A. climatic condition

The climatic conditions of the district is favourable for weed growth. Summer is very hot but winter is cold. Average rainfall of the district is 1259mm. During summer season the temperature varies from 40-42.5˚c. The edephic condition is favourable of vegetational growth

IV. OBSERVATION AND RESULT

The phytotosociological analysis of 50 weeds were recorded from Khamtrai village, Ghuru-Ameri village and Sakri area of Bilaspur district state Chhattisgarh by quadrate method calculating various parameters %Frequency , Density, Abundance, Basal cover, Relative frequency, Relative density, Relative dominance, IVI were noted and found that maximum % frequency was found in *Cynodon dactylon* (60%) and minimum was found in *Ficus neriifolia*(5%) and *Senna alata*(5%). Maximum Abundance was found in *Cynodon dactylon(*6.750) and minimum abundance found in *Ficus urostigma*(1.000*), Ficus religiosa*(1.000*), Ludwigia octovalvis*(1.000*), citrullus lavatus*(1.000), *Ficus neriifolia*(1.000) and *Solanum nigrum*(1.000). Maximum density was found for *Cynodon dactylon*(4.050) and minimum was found in *Ficus neriifolia* with 0.050 density. Maximum Basal cover was recorded in *Acanthospermum hispidium* (78.571) and minimum were noted for *Anethum graveolens, Cynodon infestante, Phyllanthus niruriall, Acacia tortilis, Ziziphus zuzuba, Tridax procumbers , Euphorbia hirta , Acorus calamus, Mirabilis jalapa , P hyllanthus emblica, Gmelina arborea, Comelina suffruticosa, Cyperus cyperoides, Moringa oleifera , Ricinus commnis, Argemone albiflora, Hyptis verticillata, Ludwiga octovalvis, Solanum viarum* and *Ficus religiosa* al l with Basal cover of 3.142. Maximum Relative frequency found in *cynodon dactylon* (4.301) and minimum found in *Ficus neriifolia*(0.358) and *Senna alata*(0.358). Maximum relative density seen in *Cynodon dactylon*(12.180) and minimum in *Ficus neriifolia*(0.150). Maximum Relative Dominance was recorded in *Acanthospermum hispidium*(10.684) and minimum in *Ficus religiosa*(0.013). Maximum IVI found in *Cynodon dactylon*(18.190) and minimum IVI found in *Ficus religiosa*(1.029).

Table – 1 : Percentage frequency , Density, Abundance and Basal cover of Roadside weeds

SN	Name of Weed species	% frequency	Abundance	Density	Basal Cover
1	*Cynodon dactylon*	60	6.750	4.050	12.570
2	*Amaranthus spinosus*	40	1.750	0.700	12.570
3	*Anethum graveolens*	25	3.200	0.800	3.142
4	*Portulaca oleracea*	45	4.770	2.150	28.285

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5	*Ocimum sanctum*	20	1.250	0.250	12.571
6	*Cynodon infestante*	35	2.850	1.000	3.142
7	*Phyllanthus niruriall*	35	4.000	1.400	3.142
8	*Cassia tora*	25	5.800	1.450	28.285
9	*Acacia tortilis*	25	1.400	0.350	3.142
10	*Sida acuta*	35	2.000	0.700	50.285
11	*Ziziphus zuzuba*	25	1.800	0.450	3.142
12	*Geranium dissectum*	30	1.500	0.450	12.571
13	*Xanthium strumarium*	35	1.700	0.600	28.280
14	*Tridax procumbers*	30	4.330	1.300	3.142
15	*Euphorbia hirta*	40	3.125	1.250	3.142
16	*Parthenium hysterophorus*	35	3.850	1.350	28.285
17	*Lentana camara*	25	1.200	0.300	12.570
18	*Achyranthes aspera*	30	2.830	0.850	50.280
19	*Vinca rosea*	35	1.570	0.550	12.571
20	*Solanum nigrum*	20	1.000	0.200	28.285
21	*Acorus calamus*	35	1.420	0.500	3.142
22	*Mirabilis Jalapa*	25	2.200	0.550	3.142
23	*Phyllanthus emblica*	30	2.500	0.750	3.142
24	*Butea monosperma*	30	1.330	0.400	12.570
25	*Gmelina arborea*	40	2.375	0.950	3.142
26	*Solanumameri canum*	30	1.500	0.450	28.285
27	*Ficus neriifolia*	5	1.000	0.050	12.571
28	*Comelina suffruticosa*	20	1.250	0.250	3.142
29	*Cyperus Cyperoides*	20	1.250	0.250	3.142
30	*Artimesia Siversiana*	25	1.400	0.350	12.571
31	*Foeniculum vulgare*	20	1.750	0.350	12.571
32	*Moringa oleifera*	25	1.600	0.400	3.142
33	*Sida rhombifolia*	35	1.714	0.600	50.285
34	*Ricinus commnis*	25	1.400	0.350	3.142
35	*Senna alata*	5	1.000	0.050	12.571
36	*Argemone albiflora*	30	1.833	0.550	3.142
37	*Urena lobata*	25	1.600	0.400	12.571
38	*Hyptis verticillata*	25	1.200	0.300	3.142
39	*Andropogon virginicius*	30	3.333	1.000	28.285
40	*Acanthospermum hispidium*	40	3.250	1.300	78.571
41	*Chenopodium album*	30	1.500	0.450	12.571
42	*Citrullus lanatus*	10	1.000	0.100	12.571
43	*Sida cordifolia*	30	1.666	0.500	28.280
44	*Ludwigia octovalvis*	10	1.000	0.100	3.142
45	*Alysicarpus*	25	1.800	0.450	12.571
46	*Zephyranthes simpsonii*	25	1.200	0.300	3.142

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47	*Cassia obtusifolia*	45	1.777	0.800	12.570
48	*Solanum viarum*	25	1.400	0.350	3.142
49	*Ficus religiosa*	10	1.000	0.100	3.142
50	*Ficus urostigma*	15	1.000	0.150	12.570

TABLE-2 :Relative frequency , Relative density, Relative dominance and IVI of roadside weeds

SN	Name of Weed species	Relative frequency	Relative Density	Relative Dominance	IVI
1	*Cynodon dactylon*	4.301	12.180	1.709	18.190
2	*Amaranthus spinosus*	2.867	2.105	1.709	6.681
3	*Anethum graveolens*	1.792	2.406	0.427	4.625
4	*Portulaca oleracea*	3.225	6.466	3.846	13.537
5	*Ocimum sanctum*	1.433	0.751	1.709	3.893
6	*Cynodon infestante*	2.508	3.007	o.427	5.942
7	*Phyllanthus niruriall*	2.508	4.210	0.427	7.145
8	*Cassia tora*	1.792	4.360	3.846	9.998
9	*Acacia tortilis*	1.792	1.052	0.427	3.427
10	*Sida acuta*	2.508	2.105	6.838	11.451
11	*Ziziphus zuzuba*	1.792	1.353	0.427	3.572
12	*Geranium dissectum*	2.150	1.353	1.709	5.212
13	*Xanthium strumarium*	2.508	1.804	3.845	8.157
14	*Tridax procumbers*	2.150	3.909	0.427	6.486
15	*Euphorbia hirta*	2.867	3.759	0.427	7.053
16	*Parthenium hysterophorus*	2.508	4.060	3.846	10.414
17	*Lentana camara*	1.792	0.902	1.709	4.403
18	*Achyranthes aspera*	2.150	2.556	6.837	11.543
19	*Vinca rosea*	2.508	1.654	1.709	5.871
20	*Solanum nigrum*	1.433	0.601	3.846	5.880
21	*Acorus calamus*	2.508	1.503	0.427	4.438
22	*Mirabilis Jalapa*	1.792	1.654	0.427	3.871
23	*Phyllanthus emblica*	2.150	2.255	0.427	4.832
24	*Butea monosperma*	2.150	1.203	1.709	5.062
25	*Gmelina arborea*	2.867	2.857	0.427	6.151
26	*Solanumameri canum*	2.150	1.353	3.846	7.349
27	*Ficus neriifolia*	0.358	0.150	1.709	2.217
28	*Comelina suffruticosa*	1.433	0.751	0.427	2.611
29	*Cyperus Cyperoides*	1.433	0.751	0.427	2.611
30	*Artimesia Siversiana*	1.792	1.052	1.709	4.553

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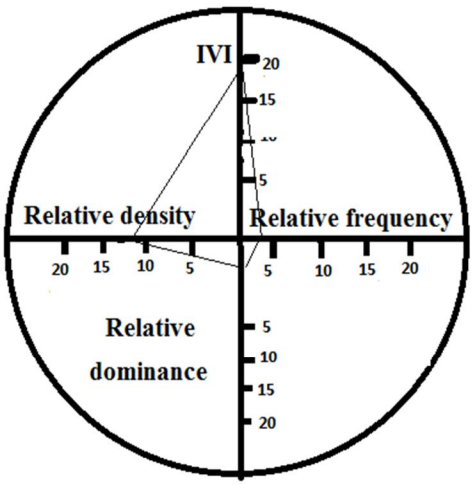
31	*Foeniculum vulgare*	1.433	1.052	1.709	4.194
32	*Moringa oleifera*	1.792	1.202	0.427	3.422
33	*Sida rhombifolia*	2.508	1.804	6.838	11.150
34	*Ricinus commnis*	1.792	1.052	0.427	3.271
35	*Senna alata*	0.358	0.150	1.709	2.217
36	*Argemone albiflora*	2.150	1.654	0.427	4.231
37	*Urena lobata*	1.792	1.203	1.709	4.704
38	*Hyptis verticillata*	1.792	0.902	0.427	3.121
39	*Andropogon virginicius*	2.150	3.007	3.846	9.003
40	*Acanthospermum hispidium*	2.867	3.909	10.684	17.460
41	*Chenopodium album*	2.150	1.353	1.709	5.212
42	*Citrullus lanatus*	0.716	0.300	1.709	2.725
43	*Sida cordifolia*	2.150	1.503	3.845	7.498
44	*Ludwigia octovalvis*	0.716	0.300	0.427	1.443
45	*Alysicarpus*	1.792	1.353	1.709	4.845
46	*Zephyranthes simpsonii*	1.792	0.900	0.427	3.119
47	*Cassia obtusifolia*	3.225	2.406	1.709	7.340
48	*Solanum viarum*	1.792	1.052	0.427	3.271
49	*Ficus religiosa*	0.716	0.300	0.013	1.029
50	*Ficus urostigma*	1.075	0.451	1.709	3.235

From the above recorded weed species the most dominating weed with highest IVI are given below in the form of phytograph:

A. Cynadon dactylon



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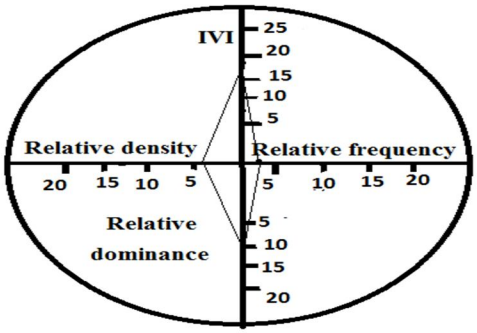
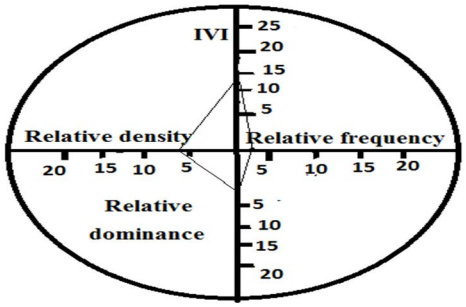
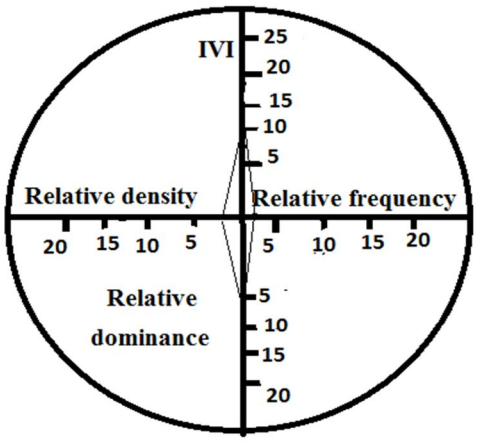
B. Acanthospermum hispidium



C. Portulaca oleracea



D. ***Achyrane aspera***



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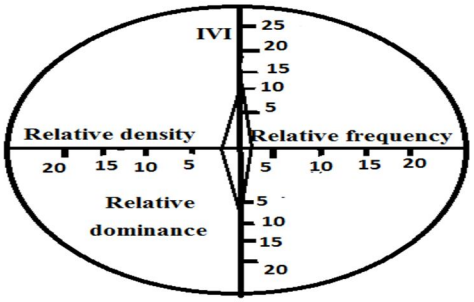
E. Sida acuta



V. DISCUSSION

According to Dr. Sangeeta Mishra , Dr. Sanjeev Dubey and Dr. Arpita Awasthi(Department of Botany, Govt. T. R. S. College, Rewa Department of Botany, Govt. Science college, Rewa). In their combined study on Phytosociological Study of Sida cordifolia L. in District Rewa (M.P.), India. A field survey was conducted at four different sites viz Kothi Compounds, Civil Lines, A.G. College and Kuthuliya (Bichhiya) in Rewa district M.P.During years 2005-07. The phytosociological studies made during the course of the present investigation that there were 48 associates of Sida cordifolia in the Kothi Compound Campus , 41 associates each in the Civil Lines Area and A. G . College Campus and 42 in Kuthuliya (Bichhiya) rewa were recorded. The highest Important Value Index (IVI) calculated in case of Sida cordifolia was 47.354 , 45.857 , 45.121 and 42.397 in Kothi Compound, Civil Lines , A. G . College Campus and Kuthuliya (Bichhiya) respectively.Comparing to above given data it has been found that sida cordifolia found in the khamtarai, ghuru ameri village and sakri regions of bilaspur District Chhattisgarh (2016).it has been found that the Relative Frequency, Relative Density and IVI are 2.150 , 1.503 and 7.498 respectively whereas research done by Sangeeta Mishra , Dr. Sanjeev Dubey and Dr. Arpita Awasthi it was found 6.184 , 10.354 and 47.354 in the year (2005-2007).

There fore the difference in IVI of sida cordifolia has been 39.856(in 9 years) indicating a great difference in their diversity

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