

# VEGETATIONAL ANALYSIS OF MAINPANI FOREST

Pratima Khare

Professor of Botany

Govt. Autonomous Girls P.G. College of Excellence, Sagar (M.P.)

## Abstract :

This present deals with the measurement of the different phytosociological attributes like frequency, density, abundance, importance value index (IVI) at Mainpani. As per values of IVI, the site was dominated by *Tectona grandis* other co-dominant species of the site were *Anogeissus latifolia*, *Buchanania lanzan*, (Table 1). Dominant species showed maximum distribution throughout the site and also possessed greater density. Other common species are *Achyranthes aspera*, *Euphorbia hirta*, *Sida veronicaefolia* and *Alysicarpus monilifer*. Other species are *Xanthium strumarium*, *Bryonopsis laciniosa* and *Biophytum sensitivum*. Herb layer showed contagious distribution and homogenous composition (Fig. 1).

**Keywords :** Vegetation, Topography, Herb Layer.

The forest of Sagar district can be classified under the "Tropical dry deciduous" after Champion (1936) and Champion and Seth (1968). Study of vegetation composition is fundamentally essential for understanding the structural aspects of community, as Brain-Blanquet (1932) has long back conceived the idea of existence of social relations between various species. Oosting (1956) has suggested the importance of a few phytosociological parameters for expressing sociologic behavior of plants.

Vegetation ecology is the both the structure of vegetation and vegetation systematic existing composition of this paper is aimed to study the forest vegetation of tropical dry deciduous forest at Mainpani.

This present deals with the measurement of the different phytosociological attributes like frequency, density, abundance, importance value index (IVI) at Mainpani.

## MATERIAL AND METHODS

The present study was carried out in tropical dry deciduous forest of Sagar district. The climate of the area is typically monsoonic with clearly defined summer, winter and rainy season. Mean annual rainfall is 1230 mm of which about 80-90% is received during

rainy season maximum (45°C) and minimum (6°C) temperature have been recorded during the month of June and December respectively.

### Vegetation

After surveying the study area representative site, Mainpani was selected. At study site quadrates of 0-10 m size were randomly placed for the analysis of tree layer. Shrub layer was analysed laying quadrates of 55 m and herb-layer by 1m-1m number of seedling and sapling of tree species were also recorded.

### Data Analysis

The data were quantitatively analysed for frequency, density, abundance and basal area (Curtis and McIntosh, 1950). The sum of all above relative values index was summed up at importance value index (IVI). On the basis of IVI, dominant, co-dominant and main associate species were recognized (Mueller-Dombois and Ellenberg, 1974). Standard formulae were used for the above analysis.

### STUDY AREA

Present study was carried out in forest occurring in Sagar district. Total geographical area of the district is approximately 10,25,259 km, which lies in the center of north-mid region of India.

### Site - Mainpani

This site is situated 9 kilometers from Sagar on Jaisinagar road at 23°47'N latitude and 78°46'E longitude.

Topography is very much undulation with rounded basalt boulders on surface. Hills rising to an average height of 560 meters. Teak forests are thick due to less biotic interferences. Shrubs are mostly consisting of *Lantana camara* while *Bidens biternata* and *Cassia tora* cover the most part of the ground flora. Main geological formation of the site is basalt that supports loam soil.

### RESULT AND DISCUSSION

As per values of IVI, the site was dominated by *Tectona grandis* other co-dominant species of the site were *Anogeissus latifolia*, *Buchanania lanzan*, (Table 1). Out of 15 species found at this site, most of the tree species showed random distribution while the total composition of vegetation appears to be heterogeneous (Fig. 1). Basal area of different forest trees varied from 0.012 to 0.782 m<sup>2</sup>. Maximum basal area was showed by *Tectona grandis* (0.782 m<sup>2</sup>).

The dominant tree species showing good regeneration as indicated by presence of 180 seedlings and 270 saplings per hectare.

Shrub layer showed the dominance of *Lantana camara* and it is very clear from the data that, *Lantana camara* is the only dominant shrub species over rest of the other shrubby plants (Table 2).

Shrub species showed both regular and random distribution with heterogeneous nature of vegetation (Fig. 1).

In the herb layer, dominant species were *Eragrostis tenella*. Co-dominant species were *Cassia tora*, *Mitreola oldenlandioidea* and *Bidens biternata* showing more or less equal values of IVI (Table 3). Total 11 species of herbs were recorded including grasses, climbers etc.

Dominant species showed maximum distribution throughout the site and also possessed greater density. Other common species are *Achyranthes aspera*, *Euphorbia hirta*, *Sida veronicaefolia* and *Alysicarpus monilifer*. Other species are *Xanthium strumarium*, *Bryonopsis laciniosa* and *Biophytum sensitivum*. Herb layer showed contagious distribution and homogenous composition (Fig. 1).

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Table 1: Composition of forest tree vegetation at Mainpani

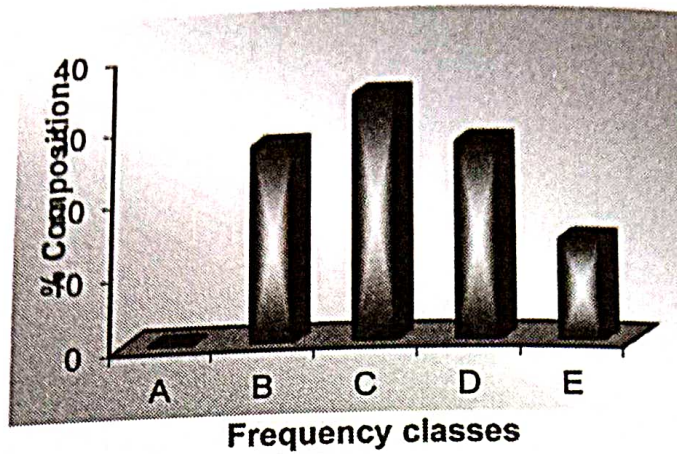
S. No.	Name of plant species	Frequency %	Density (plants ha <sup>-1</sup> )	Abundance	A/F Ratio	Basal area (m <sup>2</sup> )	Relative Dominance	Relative Density	Relative frequency	Importance Value Index (IVI)
1.	<i>Tectona grandis</i>	100	450	4.5	.045	0.78211	29.11	18	11.76	58.87
2.	<i>Anogeissus latifolia</i>	75	300	4	.053	0.45892	17.08	12	8.82	37.9
3.	<i>Buchanania lanzan</i>	100	200	2	.02	0.32424	12.07	8	11.76	31.83
4.	<i>Logerstromia parviflora</i>	75	225	3	.04	0.28186	10.49	9	8.82	28.31
5.	<i>Diospyros melanoxylon</i>	75	350	4.66	.062	0.07455	2.77	14	8.82	25.59
6.	<i>Lannea coromandelica</i>	75	175	2.33	.031	0.22773	8.47	07	8.82	24.29
7.	<i>Holoptelea integrifolia</i>	50	275	5.5	.11	0.02434	9.064	11	5.88	17.78
8.	<i>Terminalia tomentosa</i>	50	125	2.5	.05	0.03443	1.28	5	5.88	12.16
9.	<i>Butea monosperma</i>	50	100	2	.04	0.03766	1.40	4	5.88	11.28
10.	<i>Bauhinia retusa</i>	25	25	1	.04	0.17587	6.54	01	2.94	10.48
11.	<i>Embllica officinalis</i>	50	50	1	.02	0.04876	1.81	02	5.88	9.69
12.	<i>Sterculia urens</i>	25	25	1	.04	0.15414	5.73	01	2.94	9.67
13.	<i>Aegle marmelos</i>	50	50	1	.02	0.02198	.8183	02	5.88	8.69
14.	<i>Acacia catechu</i>	25	75	3	.12	0.02717	1.01	03	2.94	6.95
15.	<i>Cassia fistula</i>	25	75	3	.12	0.01226	.4567	3	2.94	6.39

**Table 2: Composition of forest shrub vegetation at Mainpani**

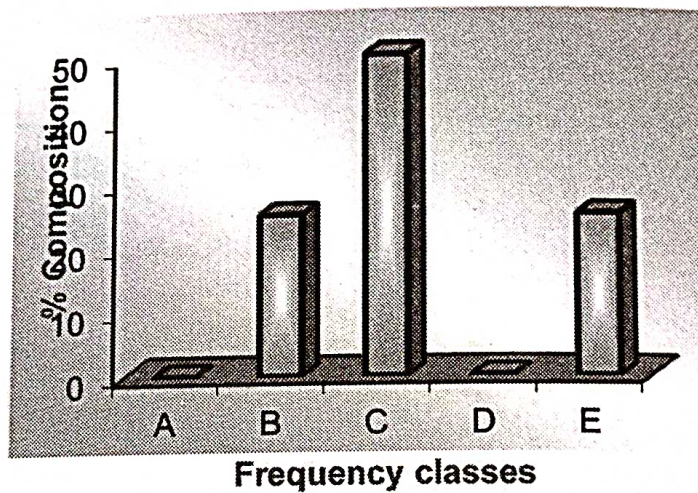
S. No.	Name of plant species	Frequency %	Density (plants ha <sup>-1</sup> )	Abundance	A/F Ratio	Relative Dominance	Relative Density	Relative frequency	Importance Value Index (IVI)
1.	<i>Lantana camara</i>	100	1200	3	.03	85.76	70.58	44.44	200.78
2.	<i>Zizyphus oenoplia</i>	50	200	1	.02	12.64	11.76	22.22	46.62
3.	<i>Randia spinosa</i>	50	200	1	.02	1.35	11.76	22.22	35.33
4.	<i>Carissa spinarum</i>	25	100	1	.04	.2429	5.88	11.11	17.23

**Table 3: Composition of herb layer at Mainpani**

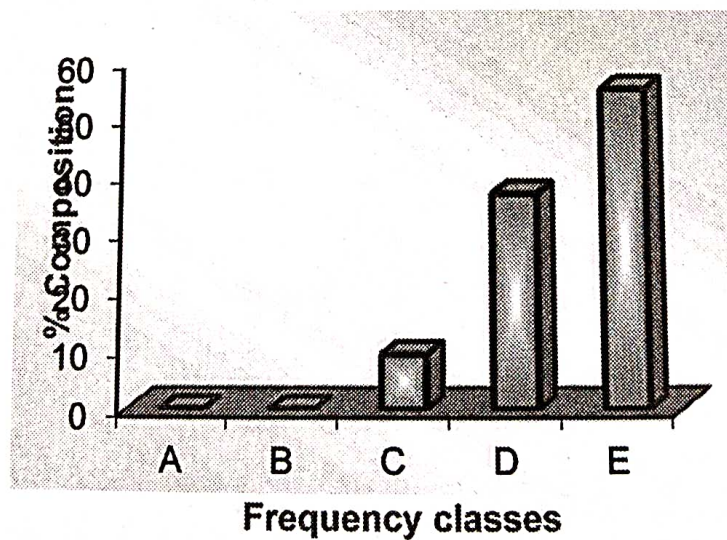
S. No.	Name of plant species	Frequency %	Density (plants m <sup>-2</sup> )	Abundance	A/F Ratio	Relative Dominance	Relative Density	Relative frequency	Importance Value Index (IVI)
1.	<i>Eragrostis tenella</i>	100	15.25	15.25	0.152	10.48	28.77	10.52	49.77
2.	<i>Cassia tora</i>	100	6.75	6.75	0.067	13.98	12.73	10.52	37.23
3.	<i>Mitreola oldenlandioidea</i>	100	4.5	4.5	0.045	11.88	8.49	10.52	30.89
4.	<i>Bridens biternata</i>	100	5	5	0.05	10.13	9.43	10.52	30.08
5.	<i>Achyranthes aspera</i>	100	3.5	3.5	0.035	10.83	6.60	10.52	27.95
6.	<i>Euphorbia hirta</i>	75	6.5	8.66	0.115	6.29	12.26	7.89	26.44
7.	<i>Sida veroni cacfolia</i>	100	3	3	0.03	9.79	5.66	10.52	25.97
8.	<i>Alvscarpus monilifer</i>	75	3.25	4.33	0.05	11.18	6.13	7.89	25.2
9.	<i>Xanthium strumarium</i>	75	2.25	3	0.04	8.04	4.24	7.89	20.17
10.	<i>Bryonopsis laciniosa</i>	75	1.5	2	0.026	4.19	2.83	7.89	14.91
11.	<i>Biophytum sensitivum</i>	50	1.5	3	0.06	3.14	2.83	5.26	11.23



Tree



Shrub



Herb

Fig. 1: Frequency diagram of different communities at Mainpani