

## ECOLOGICAL INVESTIGATION OF SOME SELECTED MEDICINAL PLANTS WITH SPECIAL REFERENCE TO PHYTOSOCIOLOGICAL ASPECT IN ANPARA REGION OF SONEBHADRA DISTRICT

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### ABSTRACT

This paper deals with the ecological investigation of some selected medicinal plants of Anpara region of Sonebhadra district. In this study 15 medicinal plants has been extensively studied during rainy season from June to August 2015 with special reference to their phytosociological aspects viz Relative Frequency, Relative Density, Relative Dominance as well as Importance Value Index (IVI).

**KEYWORDS :** Phytosociology, Medicinal Plants, Anpara, Sonebhadra

Plant sociology or Phytosociology is defined as the discipline which concerns itself with the study of vegetation as such, with its floristic composition, structure, development and distribution. The key component of vegetation study is phytosociological analysis, with the aid of sampling techniques. Phytosociological information serves as prerequisite for understanding the structure and function of the vegetation. Some region of India have been quantitatively explored in terms of phytosociological investigation (Negi and Nautiyal; 2005, Khare et.al; 1985, Singh and Yadav; 2006, Ahmed et.al.; 2009.

Sonebhadra district was carved out from the district Mirzapur on 4th March 1989. It is the 2nd largest district of Uttar Pradesh. The district has an area of 6788km<sup>2</sup> and a population of 1,463,468(2001 census), with a population density of 216 person per sq. km. the district has historic, cultural and ecological affinities with the Bundelkhand region. Obra, Anpara, Renusagar and NTPC Rihand & NTPC Shaktinagar are the power project located in this district. Robertsganj is the district head quarter. Sonebhadra district lies in the extreme southeast of the state and is bounded by Mirzapur District to the northwest, Chandauli District to the north, Kaimur and Rohtas districts of Bihar state to the northeast, Garhwa district of Jharkhand state to the east, Koriya and Surguja districts of Chhattisgarh state to the south, and Singrauli district of Madhya Pradesh state to the west. The district headquarters is in the town of Robertsganj. It is the only district in India which borders four states namely Madhya

Pradesh, Chhattisgarh, Jharkhand, and Bihar. It is currently a part of the Red Corridor. Almost 100 km from Varanasi, the cultural centre of Indian epitome of Vedic civilisation, holds a prime importance as the district headquarter. Geographically the district is located between 82°72' to 83°33' East longitude and 23°52' to 25°32' North latitude. Sonebhadra has a relatively subtropical climate with high variation between summer and winter temperatures. The average temperature is 32°C-42°C in the summer and 2°C-15°C in the winter. The weather is pleasant in rainy season from July to October. The district is at an average height of 285 feet from sea level. The district has 6,78,800 hectares reported area. The forest coverage is 3,25,741 hectares (55.73% of the total land area). Annual rainfall in this area ranges from 150 cm to 160 cm.

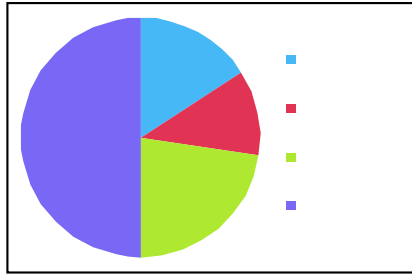
The plant material for investigation was collected randomly during rainy season from June to August 2015.

### MATERIALS AND METHODS

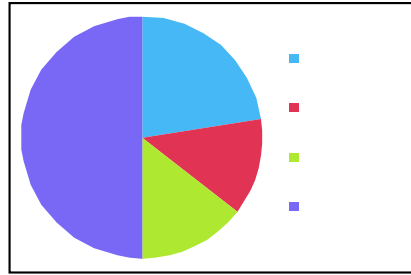
An extensive survey has been conducted to study the area. The plants were identified and recorded for the phytosociological studies which includes frequency, density, abundance and basal cover area of individual species. Quadrat method was used (50x50cm sized) to study the medicinal plants of Anpara Region during rainy season laying 25 quadrates randomly at different sites. Number of species and number of individual in each quadrats were recorded. These observations were used to calculate

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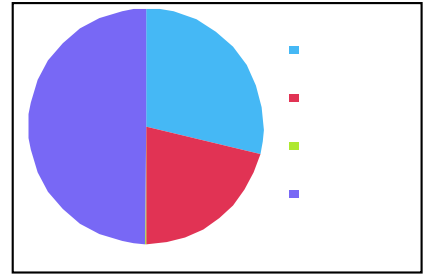
<sup>1</sup>Corresponding author



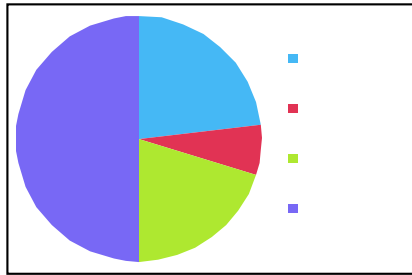
Graph 1 : *Abrus precatorius*



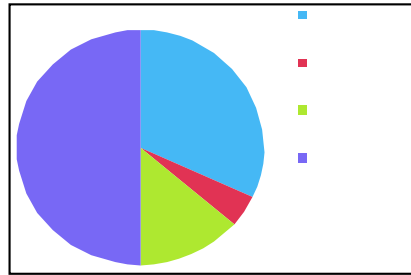
Graph 2 : *Achyranthus aspera*



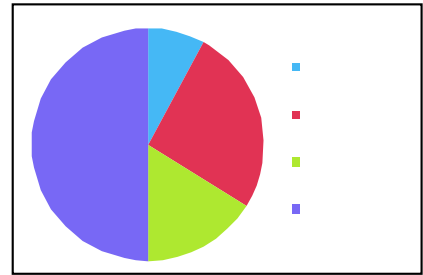
Graph 3 : *Ageratum conyzoides*



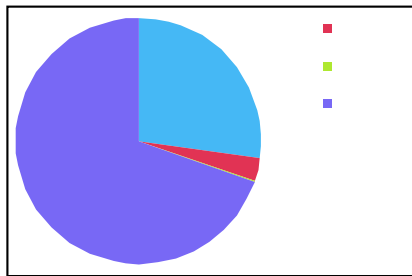
Graph 4 : *Argemon mexicana*



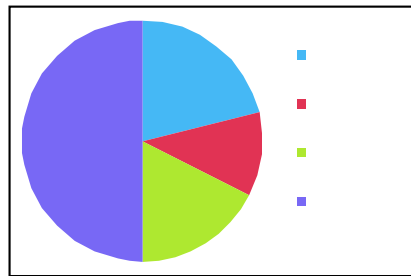
Graph 5 : *Boerhaavia diffusa*



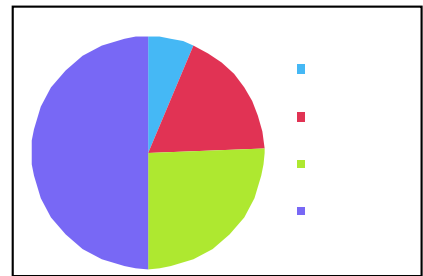
Graph 6 : *Bambusa arundinacea*



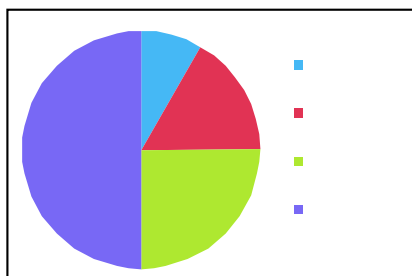
Graph 7 : *Calotropis procera*



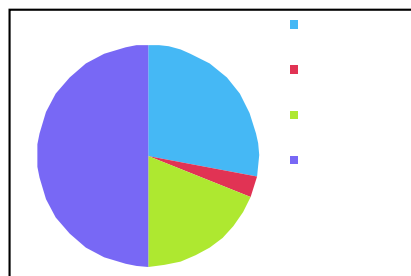
Graph 8 : *Commelina benghalensis*



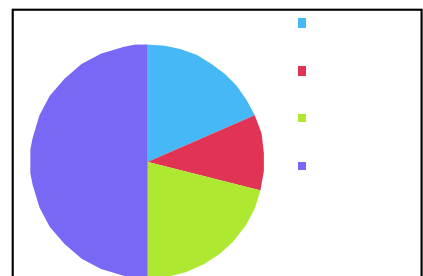
Graph 9 : *Cynodon dactylon*



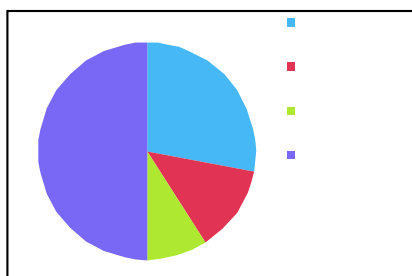
Graph 10 : *Datura stramonium*



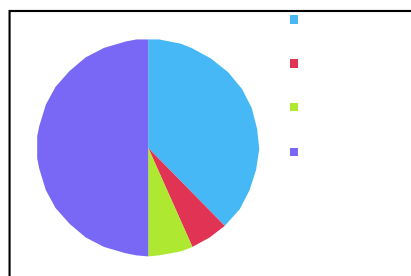
Graph 11 : *Eclipta alba*



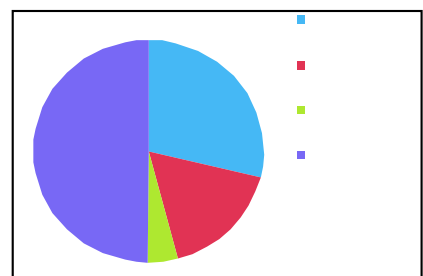
Graph 12 : *Euphorbia hirta*



Graph 13 : *Phyllanthus nirurii*



Graph 14 : *Scoparia dulcis*



Graph 15 : *Vernonia cinerea*

Table 1 : Phytosociology of Medicinal Plant Species During Rainy Season From June to August 2015

S.No.	Name of Species	Frequency (%)	Density	Abundance	Relative Frequency R.F.	Relative Density R.D.	Relative Dominance R.M.	IVI
1	<i>Abrus precatorius</i>	20	48.5	48	6.5	4.65	9.25	20.40
2.	<i>Achyranthus aspera</i>	60	3.31	4.48	8.360	4.840	5.340	18.54
3.	<i>Ageratum conyzoides</i>	60	1.76	2.93	5.00	3.66	0.028	8.680
4.	<i>Argemon mexicana</i>	30	2.40	8.00	2.06	0.58	1.79	4.43
5.	<i>Boerhaavia diffusa</i>	18	0.60	4.00	1.030	0.140	0.440	1.610
6.	<i>Bambusa arundinacea</i>	60	50.00	83.33	3.130	10.180	6.32	19.63
7.	<i>Calotropis procera</i>	20	0.3	1.50	4.167	0.453	0.016	10.63
8.	<i>Commelina benghalensis</i>	44	0.68	1.55	4.33	2.290	3.58	10.20
9.	<i>Cynodon dactylon</i>	90	28.730	28.38	12.900	35.810	50.810	99.52
10.	<i>Datura stramonium</i>	80	30.40	30.40	13.69	27.118	40.70	81.85
11.	<i>Eclipta alba</i>	40	0.6	1.50	8.330	0.909	5.59	14.83
12.	<i>Euphorbia hirta</i>	10	1.60	16.00	0.680	0.380	0.770	1.830
13.	<i>Phyllanthus niruri</i>	36	00.48	1.33	3.54	1.62	1.14	6.300
14.	<i>Scoparia dulcis</i>	10	0.42	4.00	0.680	0.100	0.120	0.900
15.	<i>Vermonia cinerea</i>	80	3.10	16.375	16.66	9.848	2.389	28.88

frequency, relative frequency, density, relative density, abundance, relative dominance, basal cover and IVI of each species by methods obtained.

## OBSERVATION

In the survey conducted during rainy season from June to August 2015 in Anpara region of Sonebhadra district total 15 medicinal plants were observed whose phytosociology is tabulated in the table 1 and graphically (graph 1 - 15) represented in phytophath.

## RESULTS AND DISCUSSION

It is clear from the above observations that out of 15 selected medicinal plants *Cynodon dactylon* maximum value of RF, RD, RM, IVI followed by *Datura Stramonium*, *Vernonia cinerea*, *Abrus precatorius*. Plant *Scoparia dulcis* has minimum value of RF, RD, RM, IVI.

## REFERENCES

- Ahmed S. A., Kadam J. A., Patil S. S. and Baig M. M. V., 2009. Biological efficiency and nutritional contents of *Pleurotus florida* Singer cultivated on different agro-wastes. *Nature and Science* 7(1):44-48.
- Braun-Blanquet J., 1932. *Plant Sociology : The study of plant communities*, Mc Graw Hill Book Co. & Inc., New York.
- Khare P. K., Yadav V. K. and Mishra G. P., 1985. Phytosociological structure of some forest communities in Central India *J. Trop. For.* 1(4):321-326.
- Negi C. S. and Nautiyal S., 2005. Phytosociological studies of A Traditional Reserve Forest Thal Ke Dhar, Pithoragarh, Central Himalaya, India, *Indian Forestry*: 519-534.
- Raunkiaer C., 1934. *The life forms of plants and statical plant geography*, Oxford Clarendon Press 632.
- Singh J. S., Singh S. P. and Gupta S. R., 2006. *Ecology, Environmental and Resource Conservation*, Anamaya Publishers, New Delhi, 668.