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Biodiversical Characterization of Some Herbal Plants at Wasteland nearby Agra Region

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Abstract –

Objective: The present investigation to study the diversity and uses of medicinal plants self-growing at wasteland of nearby Agra region.

Methods: Quadrate method was applied each site for-know the diversity richness of self-growing plants. After quadrate put at different sites, biodiversity evaluation of naturalized plants with the help of following formulas.

Results: Argemone maxicana have maximum biodiversity at natural 04 sites and Sida Spinosa showed minimum biodiversity. As per our result, Sida Spinosa has a minimum Biodiversity Index, so we can conserve at the botanical garden in ex-situ conservation and Argemone maxicana has maximum biodiversity, so we use this plant in treatments of human diseases in Ayurveda.

Keywords: Biodiversity, Herbal plants, Evaluation, Medicinal Properties.

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INTRODUCTION

India is one of the significant biodiversity focal points of the earth and enriched closely 45,000 plant species. Away from these, almost 2500 species are defined in Ayurveda including around 10,000 conceptions. The floristic influence of North- Eastern area of India is almost 43% of the nation's whole vegetation. All our medication systems similar Ayurveda, Unani, Homoeopathy, and Tibetan system, aside from the folk custom, apply the plants effectively.

To appreciate and assess the richness of biodiversity, a taxonomic evaluation of the flora and forests is very much essential. Floristic surveys are the only means by which we can achieve this goal. The taxonomy research is knowing as the pillar of the appraisal of Phyto-diversity conservancy conduct and sustainability utilisation (Jayanthi and Rajendran, 2013).

Keeping in view the above problems in conserving biodiversity the present work has been under-taken in special reference to Agra, which is established in Uttar Pradesh and surrounding by states, Rajasthan and Madhya Pradesh with many types of soil via, alkali, ravenous, and fertile, soils, harboring a place of diversified plant species. The herbal plants species growing in these types of soils needed a detested study for their potential utility.

REVIEW OF LITERATURE

Biodiversity is continually transformed by a changing climate. Conditions change across the face of the globe at variable pace commanding to rehabilitation of biological associations. The carbon cycle and the water cycle, arguably the two most vital large-scale processes for life on Earth; depend on biodiversity at genetic, species, and ecosystem levels and can yield feedbacks to climate change. India is no less impressed through this feedback mechanism of climate variation and had shown its cause and impact association in several studies. In this exclusive issue we present 25 papers contributed by ca 90 authors from India and elsewhere those dissert wide-ranging facet of biodiversity and climate change. These contributions are based on presentations made at the 2nd International Workshop on Biodiversity and Climate Change (BDCC-2018) held on 24–27-February 2018 at the

Indian Institute of Technology Kharagpur, India. (Mukunda Dev Behera et al., 2019)

MATERIAL & METHOD

OBJECTIVE NO.1:-Survey and Identification of Wild Herbal Plants for Biodiversity Evaluation at the Wasteland of Agra Region

- For survey and identification of naturalized herbal plants at different four sites of the Agra region have selected (low human biotic pressure area), which is given below: -
- Bharatpur site (West direction)
- Dholpur site (North direction)
- Hathras site (East direction)
- Farah site (South direction)

Figure 1: Map showing the study Area

- For Biodiversity characterization, putted random quadrates at 04 different sites and evaluated biodiversity of naturalized herbal plants with the help of following formula.

(1) **Shannon-Wiener's Index (1949)**

$$H' = -\sum \left[\left(\frac{n_i}{N}\right) \log n \left(\frac{n_i}{N}\right)\right]$$

Where, H' = Index Value

n_i= Number of individuals of i^{th} species

N = Total number of individuals of all species

OBSERVATIONS

Table-1

After putted quadrates at natural site, the following plant species were selected for studied biodiversity characterization found at 04 selected different sites (In-situ) of Agra Region, the following table showed the number of plants (Table-1).

S. No.	Species Name	Different	Site of	Agra	Region
		Bharatpur	Dholpur	Hathras	Farah
1	*Argemone maxicana*	26	20	27	20
2	*Barleria prionitis*	0	19	0	19
3	*Cassia occidentalis*	17	24	15	17
4	*Coccinia indica*	4	0	3	4
5	*Calotropis gigantea*	13	10	11	10
6	*Calotropis procera (Ait)*	11	13	15	11
7	*Datura metel*	19	21	17	19
8	*Indigofera tinctoria*	13	17	10	10
9	*Melitotus indica*	8	10	0	0
10	*Sida spinosa*	2	4	3	2

Total number of Plant species at four different sites of Agra Region

Table-2

According to Shannon Winner's Index, at Bharatpur site, *Argemone maxicana* (-0.1391) showed maximum diversity and *Sida spinosa* (-0.0195) showed minimum biodiversity (Table-2)

S. No.	Species Name	Value
1	*Argemone maxicana*	-0.1391
2	*Calotropis procera (Ait)*	-0.0749
3	*Cassia occidentalis*	-0.1031
4	*Coccinia indica*	-0.0342
5	*Calotropis gigantea*	-0.0732
6	*Datura metel*	-0.1076
7	*Indigofera tinctoria*	-0.0850
8	*Melitotus indica*	-0.0586
9	*Sida Spinosa*	-0.0195

The Shannon Wienner's Index value at Bharatpur site

Table-3

According to Shannon Winner's Index, at Dholpur site, *Argemone maxicana* (-0.1273) showed maximum diversity and *Sida Spinosa* (-0.0291) showed minimum biodiversity (Table-3)

S. No.	Species Name	Value
1	*Argemone maxicana*	-0.1273
2	*Barleria prionitis*	-0.0813
3	*Calotropis procera (Ait)*	-0.0732
4	*Cassia occidentalis*	-0.1194
5	*Calotropis gigantea*	-0.0475
6	*Datura metel*	-0.1038
7	*Indigofera tinctoria*	-0.0891
8	*Melitotus indica*	-0.0600
9	*Sida Spinosa*	-0.0291

The Shannon Wienner's Index value at Dholpur site

Table-4

According to Shannon Winner's Index, at Hathras site, *Argemone maxicana* (-0.1761) showed maximum diversity. *Coccinia indica* and (-0.0352) and *Sida Spinosa* (-0.0352) showed minimum biodiversity (Table-4)

S. No.	Species Name	Value
1	*Argemone maxicana*	-0.1761
2	*Calotropis procera (Ait)*	-0.1189
3	*Cassia occidentalis*	-0.1189
4	*Coccinia indica*	-0.0352
5	*Calotropis gigantea*	-0.1391
6	*Datura metel*	-0.1295
7	*Indigofera tinctoria*	-0.0889
8	*Sida Spinosa*	-0.0352

The Shannon Wienner's Index value at Hathras site

Table- 5

According to Shannon Winner's Index, at Hathras site, *Argemone maxicana* (-0.1273) showed maximum diversity sida spinosa (0.0195) showed minimum biodiversity (Table-5)

S. No.	Species Name	Value
1	*Argemone maxicana*	-0.1273
2	*Barleria prionitis*	-0.0813
3	*Calotropis procera (Ait)*	-0.0749
4	*Cassia occidentalis*	-0.1031
5	*Coccinia indica*	-0.0342
6	*Calotropis gigantea*	-0.0475
7	*Datura metel*	-0.1076
8	*Indigofera tinctoria*	-0.0889
9	*Sida Spinosa*	-0.0195

The Shannon Wienner's Index value at Farah site

RESULT & DISCUSSION

According to our observation *Argemone maxicana* have maximum biodiversity at natural 04 sites and *Sida Spinosa* showed minimum biodiversity.

Its shows in graph, which is given below: -

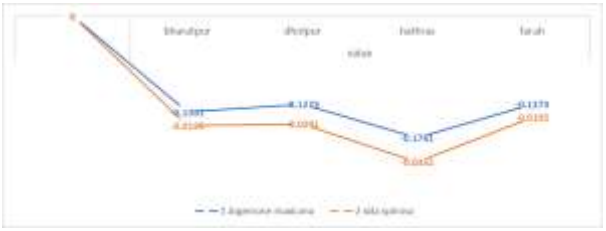

Figure 1: Compare between four site showed maximum biodiversity and minimum biodiversity at wasteland nearby Agra region

As per our result, *Sida Spinosa* has a minimum Biodiversity Index, so we can conserve at the botanical garden in ex-situ conservation and *Argemone maxicana* has maximum biodiversity, so we use this plant in treatments of human diseases in Ayurveda.

Biodiversity of naturalized herbal plants

Plant species, which are used in traditional medicine, are enumerated alphabetically according to their binomial name, followed by plants at four different sites. (Figure 2)

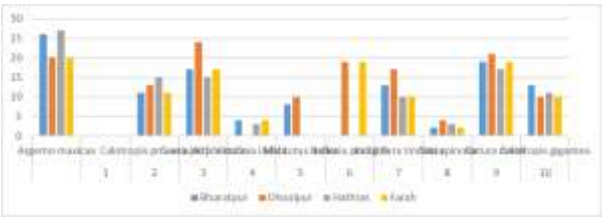

Figure 2: Total number of species at four different sites of Agra Region

Ethnomedicinal Importance of the Plant Species

The herbal plants of the study area have been used to treat 54 illnesses. Theailments such as scabies, eczema, leukoderma, skin tumours, skin inflammation, skin wounds, black dots, heel cracks, itching, boils, measles, rheumatic pain, stomach- ache, joint swelling, headache, joint pain, piles, liver disorders, fever, eye diseases, blood pressure, anemia, cancer, dandruff, hair falling etc.

The 54 various ailments against which ethnomedicinal treatment have been recorded in the study area.

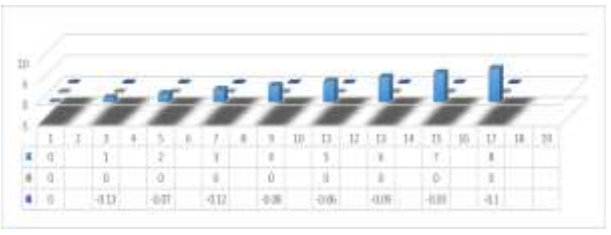

Figure 3: The plants diversity of Bharatpur site

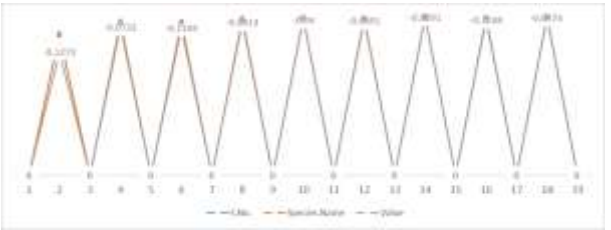

Figure 4: the plants diversity of Dholpur site

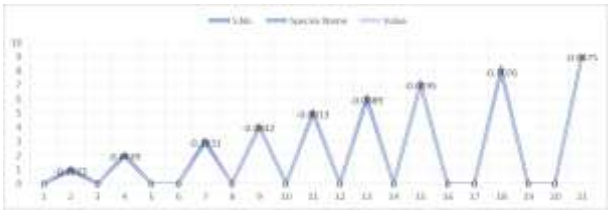

Figure 5: the plants diversity of Hathras site

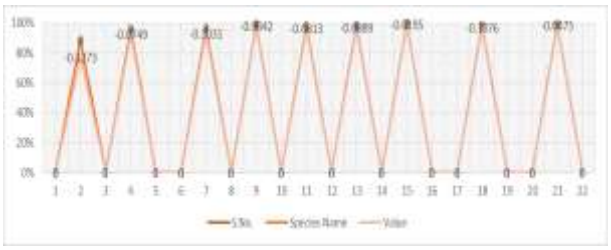

Figure 6: the plants diversity of Farah site

REFRENCES

P. Jayanthi, and A. Rajendran, (2013). Life- forms of Madukkarai Hills of Southern western Ghats, Tamil Nadu, India *life science leaflets,* 9 (1): pp. 57-61

Behera, M. D., Behera, S. K., Sharma, S., (2019). Recent advances in biodiversity and climate change studies in India, Biodiversity and Conservation, 28: pp. 1943–1951

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