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A field survey of wild herbs in rose garden at Bhopal City, Madhya Pradesh (INDIA)

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ABSTRUCT

A field survey of wild herbs of Rose Garden of Bhopal City was conducted during October 2008 to October 2009 to find out the presence of wild herbs in gardens of the Bhopal city. The study revealed that the garden was infested with thirty two wild herbs belonging to twelve families. The most dominant families were Asteraceae and Amaranthaceae. The most prominent wild herbs were Parthenium hysterophorus Linn. and Cyanadon dactylon (Linn.) Pers. in winter season. In rainy season Vernonia cinerea (Linn.) Less. and Trianthema portulacastrum Linn. and in summer season Cyanadon dactylon (Linn.) Pers. and Oxalis corniculata Linn. found most frequently, densely and abundantly available wild herb.

Keywords: Wild herbs, Frequency, Density, Abundance.

INTRODUCTION

Bhopal is the capital of Madhya Pradesh. It is a Tropical region with moderate climate which provides suitable atmosphere for growth of various plants. The city has black cotton soil and laterite soil. Very little ecological information exists on the Bhopal region. Such information is important to understand the ecology of the region. So it is necessary to work on ecological investigations as well as find out the medicinal value of wild herbs. The uses of wild plants are common among many people of the world. The World Health Organization (WHO) has estimated that up to 80 per cent of the world's populations rely on plants for their primary healthcare [1][2].

Oudhia, [3] worked on Medicinal Weeds in Groundnut Fields of Chhattisgarh, Madhya Pradesh, India and the detailed ethno-botanical survey was conducted in the Chhattisgarh region.

Njoroge et al., [4] worked on Utilization of Weed Species as Sources of Traditional Medicines in Central Kenya and find out that weed control measures and policies often view weedy plants as problem species that interfere with agricultural productivity. Veerle, [5] worked on Regional and ecological variations of wild edible plants in southern Ecuador and 354 species of wild edible plants were recorded in 42 villages, sampled throughout the different ecological areas. Tahira et al., [6] reported fourteen weed species belonging to 8 angiospermic families found in *Curcuma longa* fields of District Kasur, Pakistan.

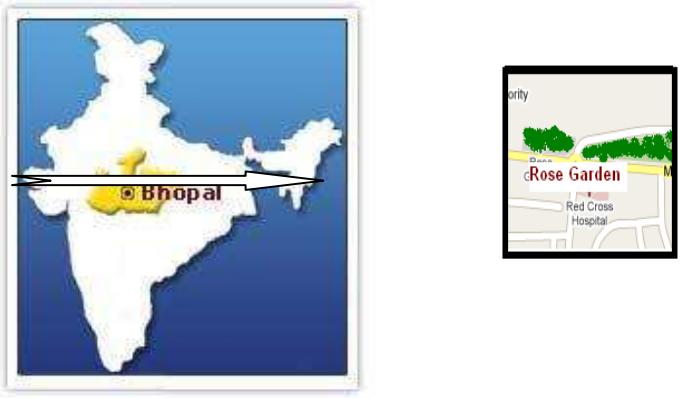

Fig.1: Location of the study site

MATERIALS AND METHODS

Present study was conducted in ten selected sites of Rose Garden at Bhopal city were conducted during winter season, rainy season and summer season during October 2008 to October 2009 .

Observations were recorded from 10 quadrates of size 10 cm. × 10 cm. The wild herbs were identified taking the help of Weed seed atlas (Naidu and Varshney, [7]

To determine the presence of wild herbs, the quantitative ecological characters viz., relative frequency, relative density and relative abundance were calculated by using the following formulas suggested by Mishra [8].

The following formula was used for calculating relative frequency of a plants species:

$$\text{Relative Frequency of a species (\%)} = \frac{\text{Frequency of particular species}}{\text{Sum total of the frequency of all species}} \times 100$$

$$\text{Relative Density of a species (\%)} = \frac{\text{Density of particular species}}{\text{Sum total of the density of all species}} \times 100$$

$$\text{Relative Abundance of a species (\%)} = \frac{\text{Abundance of particular species}}{\text{Sum total of the abundance of all species}} \times 100$$

RESULTS AND DISCUSSION

The survey revealed the presence of 32 wild herbs belonging to 12 families in Rose garden of Bhopal city. Out of these, 10 families consisting of 26 generas and 27 species were dicotyledons and 2 families with 5 generas and 5 species were monocotyledons. Most of wild herbs were represented by Asteraceae, Amaranthaceae, Malvaceae and Euphorbiaceae families. In winter season, 22 wild herbs were present. In rainy season, 13 wild herbs were present. In summer season, 10 wild herbs were present.

Parthenium hysterophorus Linn. was found to be frequent with the highest relative frequency of 8.4, relative density of 4.8, and relative abundance of 2.8. *Cyanadon dactylon* (Linn.) Pers. was found to be next in order with a relative frequency of 7.4, relative density of 17.5 and relative abundance of 11.9 in winter season.(Table 1)

Table 1: Relative Frequency, Relative Density and Relative Abundance of wild herbs in Rose Garden of Bhopal City (Winter Season)

So. no.	Name of Wild herb	Family	Relative Frequency	Relative Density	Relative Abundance
1.	*Oxalis corniculata* Linn.	Oxalidaceae	7.4	21.1	13.8
2.	*Vernonia cinerea* (Linn.) Less.	Asteraceae	2.8	1.5	2.7
3.	*Cyanadon dactylon* (Linn.) Pers.	Poaceae	7.4	17.5	11.9
4.	*Cyperus rotundus* Linn.	cyperaceae	3.7	3.6	4.7
5.	*Digitaria sanguinalis* (Linn.) Scop.	Poaceae	5.6	3.8	3.3
6.	*Alternanthera sessilis* (Linn.)DC.	Amaranthaceae	3.7	4.1	5.4
7.	*Eclipta prostrata* Linn.	Asteraceae	6.5	3	2.3
8.	*Sonchus oleraceus* Linn.	Asteraceae	0.9	0.2	1.3
9.	*Ageratum conyzoides* Linn.	Astercaeae	1.8	0.2	1.3
10.	*Sida acuta* Burm. F	Malvaceae	0.9	2	10.8
11.	*Euphorbia prostrata* Berq.	Euphorbiaceae	6.5	3	2.3
12.	*Amaranthus viridis* Linn.	Amaranthaceae	4.6	2.3	2.4
13.	*Mazus pumilus* (Burm.F.)	Scrophulariaceae	4.6	5.1	5.4
14.	*Euphorbia heterophylla* Linn.	Euphorbiaceae	0.9	0.2	1.3
15.	*Medicago polymorpha* Linn.	Papilionaceae	6.5	3.8	2.8
16.	*Parthenium hysterophorus* Linn.	Astercaeae	8.4	4.8	2.8
17.	*Euphorbia hirta* Linn.	Euphorbiaceae	0.9	0.5	2.7
18.	*Gomphrena celosioides* Mart.	Amaranthaceae	0.9	1	5.4
19.	*Kyllinga brevifolia* (Rottb.) Hassk	Cyperaceae	6.5	7.9	5.9
20.	*Malvastrum coromandelianum* (Linn.) Garcke.	Malvaceae	7.4	3.6	2.3
21.	*Sonchus arvensis* Linn.	Asteraceae	5.6	2.8	2.4
22.	*Cardamine hirsuta* Linn	Brassicaceae	5.6	6.9	6.1

Vernonia cinerea (Linn.) Less. was found to be frequent with the highest relative frequency of 8.9, relative density of 10, and relative abundance of 7.5. *Trianthema portulacastrum* Linn. was found to be next in order with a relative frequency of 8.9, relative density of 13 and relative abundance of 9.7 in rainy season.(Table 2)

Table 2: Relative Frequency, Relative Density and Relative Abundance of wild herbs in Rose Garden of Bhopal City (Rainy Season)

So. no.	Name of Wild herb	Family	Relative Frequency	Relative Density	Relative Abundance
1.	*Vernonia cinerea* (Linn.) Less.	Asteraceae	8.9	10	7.5
2.	*Cyanadon dactylon* (Linn.) Pers.	Poaceae	8.9	8.1	5.9
3.	*Euphorbia prostrata* Berq.	Euphorbiaceae	3.8	2.2	3.9
4.	*Euphorbia heterophylla* Linn.	Euphorbiaceae	2.5	3.2	8.5
5.	*Euphorbia hirta* Linn.	Euphorbiaceae	7.6	9.7	8.5
6.	*Kyllinga brevifolia* (Rottb.) Hassk	Cyperaceae	2.5	1.9	5.1
7.	*Euphorbia thymifolia* Linn.	Euphorbiaceae	8.9	6.5	4.7
8.	*Oldenlandia corymbosa* Linn.	Rubiaceae	5.1	2.6	3.4
9.	*Sida rhombifolia* Linn.	Malvaceae	5.1	2.9	3.8
10.	*Alternanthera ficoides* Linn.	Amaranthaceae	7.6	7.1	6.1
11.	*Trianthema portulacastrum* Linn.	Aizoacea	8.9	13	9.7
12.	*Rorippa indica* (Linn.) Hiern	Brassicaceae	3.8	4.5	7.8
13.	*Euphorbia hypercifolia* Linn.	Euphorbiaceae	3.8	1.6	2.7

Table 3: Relative Frequency, Relative Density and Relative Abundance of wild herbs in Rose Garden of Bhopal City (Summer Season)

So. no.	Name of Wild herb	Family	Relative Frequency	Relative Density	Relative Abundance
1.	*Oxalis corniculata* Linn.	Oxalidaceae	11.7	11.7	13.3
2.	*Cyanadon dactylon* (Linn.) Pers.	Poaceae	29.4	29.4	31.5
3.	*Alternanthera sessilis* (Linn.)DC.	Amaranthaceae	8.8	8.8	9.8
4.	*Sida acuta* Burm. F.	Malvaceae	8.8	8.8	4.9
5.	*Amaranthus viridis* Linn.	Amaranthaceae	5.8	5.8	3.8
6.	*Cardamine hirsuta* Linn.	Brassicaceae	8.8	8.8	6
7.	*Abutilon indicum* (Linn.) Sweat.	Malvaceae	5.8	5.8	0.3
8.	*Sonchus asper* (Linn.) Hill	Asteraceae	5.8	5.8	11.4
9.	*Dichanthium annulatum* Forsk.	Poaceae	8.8	8.8	3.8
10.	*Tridax procumbens* Linn.	Asteraceae	5.8	5.8	11.4

Cyanadon dactylon (Linn.) Pers.was found to be frequent with the highest relative frequency of 29.4, relative density of 29.4, and relative abundance of 31.5. *Oxalis corniculata* Linn. was found to be next in order with a

relative frequency of 11.7, relative density of 11.7 and relative abundance of 13.3 in summer season. These results are in confirmatory with findings of Murugan and Kathiresan [9]. (Table 3)

CONCLUSION

Rose Garden of Bhopal city has rich wild herb diversity. These wild herbs have a wide medicinal value. Indian council of agriculture has recommended that proper utilization of weeds itself can contribute significantly to enhance the income of poor farmers. Weeds are tremendously grown in open areas and people are not aware for medicinal value of weeds. On the other hand India is a leading exporter of the medicinal plants in the world trade .So one should understand the importance of weeds.

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