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Herbaceous medicinal & aromatic plants diversity and introduction in herbal garden for ex-situ conservation

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Abstract

Herbs are major components of plant diversity and are an important segment of global biodiversity. These are also remarkable for their presence in wide range and for a major source of medicine and aroma for human beings. Herbs are variable in their presence as well as presence of certain chemical compounds in their body system. Among a mega diversity of the plants some herbs are of significant medicinal as well as a source of aromatic values. In present study 61 species of the herbaceous Medicinal and Aromatic Plants were collected and propagated through their varied parts like by Seeds, Stem cutting, Rhizome, Bulb, Corm, Tuber etc. Most of studied herb plants were shown their efficient propagation by the seeds.

Keywords: Ex-situ conservation, Herbs, Herbal Garden, Medicinal and Aromatic plants.

1. Introduction

Around 80% of the peoples over the world utilizing the herbal medicines as their traditional methods for treatment of various disorders [2]. India is one of the mega biodiversity regions over the world. It also includes much plant diversity in different ecological areas followed by their environmental condition as well as adaptability of the plants in changeable climatic conditions. Plants are registered as efficient capability to regenerates as well as adjust in their variable localities. Plants diversity also supports the richness of other species diversity in particular ecological areas and is remarkable for their significant participation on environmental cleanup and supporting components for the presence and growth of variable life forms. Plants are marked for their multifold utility in nature. On the basis of their importance for human beings are categorized as for food, fodder, fuel etc. plants. Some plants also showing their efficiency to treat certain disorders these are referred as Medicinal and Aromatic plants. Their utilized parts and mode of preparation are found to be variables among the different plants species.

A phenology/plant life calendar is affected by their local environmental condition and is vary among the different plant species. Phenology of some Medicinal plants was studied by [1]. Floristic diversity and uses of the medicinal plants sold by street vendor in Gaborone, Botswana was made by [14]. Ethno-botanical studies on the plants were done by the researchers such as [4, 5, 7, 9, 10]. Medical Ethno-botany of plants used as antidotes by Yanadi tribes in South India [15]. Study on some plants used as veterinary medicine made by [13]. Bhils. Folk herbal medicines from tribal areas of Rajasthan recorded by [8].

Medicinal plants of Paderu forest division in the Eastern Ghats of Visakhapatnam studied by [11]. Conservation related studies on various medicinal plants were carried out by [3, 6, 12].

2. Materials and Methods

The Plant propagules used for further their propagation and for ex-situ conservation were collected from different parts of the Chhattisgarh. These are grown in Herbal Garden following suitable techniques and by providing necessary facilities to the developing new individuals or this of the Medicinal and Aromatic plants. Medicinal and Aromatic plants different parts used for this purpose were initiated to develop new buds for their fast regeneration. After development of new plantlets in poly bags or in the beds of the Herbal Garden were managed/protected for their successful growth.

3. Results & Discussion

Results of the herb Medicinal and Aromatic plants introduced in Herbal Garden for their propagation as well as for ex-situ conservation is tabulated in Table - 1 following their

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Botanical name, Common name, Family and Propagation. Table - 2 showing diversity of MAPs on the basis of their family. A maximum number 6 – 6 of the MAPs were propagated which belongs to the family Fabaceae and Asteraceae. In Table - 3 MAPs propagation/Multiplication mode is given. In which 41 Plant species were propagated using their seeds. Rest of the plants propagated using their different plant parts. Most of the MAPs are showing annual

life cycle so their plant propagules collection is an important step in their propagation and conservation. Collected propagules were stored and grown during of favorable environmental condition. MAPs showing different capacity for their germination or propagation. In this study environmental condition and propagules maturity etc were found key factors for their regeneration.

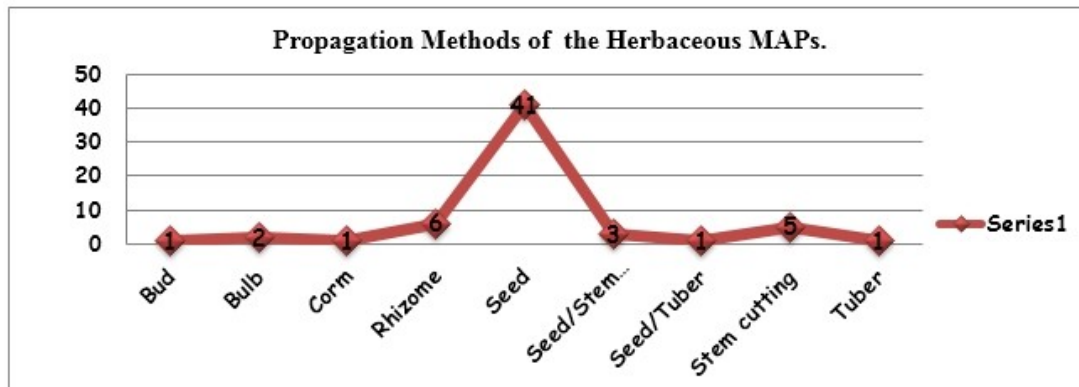


Fig 1: Propagation methods of the Herbaceous maps.

Table 1: Herbaceous Medicinal & Aromatic Plants Diversity and Propagation for their ex-situ conservation

S. No.	Botanical Names	Common Name	Family	Propagation
1.	<i>Abrus precatorius</i> Linn.	Crabs eye,	Fabaceae	Seed
2.	<i>Abutilon theophrasti</i> Medik.	Kanghi	Malvaceae	Seed
3.	<i>Achyranthes aspera</i> Linn.	Latjira	Amaranthaceae	Seed
4.	<i>Acorus calamus</i> Linn.	Vach	Araceae	Rhizome
5.	<i>Allium canadense</i> Linn.	Wild Onion	Liliaceae	Bulb
6.	<i>Allium cepa</i> Linn.	Lahsun	Liliaceae	Bulb
7.	<i>Aloe barbadensis</i> Mill	Ghritkumari	Liliaceae	Bud
8.	<i>Anacyclus pyrethrum</i> Linn.	Akarkara	Asteraceae	Seed
9.	<i>Angelonia angustifolia</i> Humb and Bonpl	Summer snapdragon	Scrophulariaceae	Stem cutting
10.	<i>Areva lanata</i> (Linn.) Juss. Ex Schult.	Gorakhbuti	Amaranthaceae	Seed
11.	<i>Bacopa monnieri</i> Linn.	Brahmi	Scrophulariaceae	Stem cutting
12.	<i>Barleria prionitis</i> Linn.	Barleria	Acanthaceae	Seed
13.	<i>Basella alba</i> Linn.	Poi	Basellaceae	Seed/Stem cutting
14.	<i>Biophytum sensitivum</i> (L.) DC.	Lajalu	Oxalidaceae	Seed
15.	<i>Boerhavia diffusa</i> L. L. nom. cons.	Punarnava	Nyctaginaceae	Seed
16.	<i>Cajanus cajan</i> (L.) Millsp.	Gunga pea	Fabaceae	Seed
17.	<i>Canna indica</i> Linn.	Bajdranti	Cannaceae	Rhizome
18.	<i>Cardiospermum halicacabum</i> L.	Balloon plant	Sapindaceae	Seed
19.	<i>Carica papaya</i> Linn.	Papita	Caracaceae	Seed
20.	<i>Catharanthus roseus</i> (L.) G. Don.	Sadabahr	Apocynaceae	Seed
21.	<i>Centratherum punctatum</i> Cassini.	Lark daisy	Asteraceae	Seed/Stem cutting
22.	<i>Chlorophytum borivilianum</i> San. & Fer.	Safed musli	Liliaceae	Tuber
23.	<i>Cissus quadrangularis</i>	Hathzode	Vitaceae	Seed
24.	<i>Clerodendrum serratum</i> (L.) Moon.	Bleeding-heart	Verbenaceae	Seed
25.	<i>Clitoria ternatea</i> Linn.	Butterfly pea	Fabaceae	Seed
26.	<i>Colocasia esculenta</i> (L) Schott	Arbi	Araceae	Corm
27.	<i>Cosmos sulphureus</i> Cav.	Yellow Cosmos	Asteraceae	Seed
28.	<i>Costus speciosus</i> (J. Konig) Sm.	Keu kand	Zingiberaceae	Seed
29.	<i>Curculigo orchioides</i> Gaerth.	Kali Musli	Hypoxidaceae	Rhizome
30.	<i>Cymbopogon flexuosus</i> (Nees ex Steu) Wat.	Lemongrass	Poaceae	Seed
31.	<i>Cyperus rotundus</i> Linn.	Nagarmotha	Cyperaceae	Rhizome
32.	<i>Datura stramonium</i> Linn.	Datura	Solanaceae	Seed
33.	<i>Desmodium motorium</i> (Houtt.)H. Ohashi.	Telegraph plant	Fabaceae	Seed
34.	<i>Eryngium foetidum</i> L.	Wild Coriander	Apiaceae	Seed
35.	<i>Euphorbia serpyllifolia</i> Pers.	Thymeleaf sandmat	Euphorbiaceae	Seed
36.	<i>Ficus pumila</i> L.	Climbing fig	Moraceae	Stem cutting

37.	<i>Foeniculum vulgare</i>	Sauf	Apiaceae	Seed
38.	<i>Heliconia wagneriana</i> Peterson	False bird-of-paradise	Heliconiaceae	Rhizome
39.	<i>Hygrophila spinosa</i> T.	Kule khara	Acanthaceae	Seed
40.	<i>Ipomoea aquatica</i> Forssk.	Water morning glory	Convolvulaceae	Stem cutting
41.	<i>Linum usitatissimum</i> L.	Atasi	Linaceae	Seed
42.	<i>Martynia annua</i> L.	Cat's claw,	Martyniaceae	Seed
43.	<i>Mentha arvensis</i> Linn.	Mint	Lamiaceae	Stem cutting
44.	<i>Mimosa pudica</i> Linn.	Touch me not	Fabaceae	Seed
45.	<i>Mirabilis jalapa</i> Linn.	Four o'clock plant	Nyctaginaceae	Seed/Tuber
46.	<i>Nerium indicum</i> F. Le. Makino	Kaner	Apocynaceae	Seed/Stem cutting
47.	<i>Ocimum basilicum</i> Linn.	Devna	Lamiaceae	Seed
48.	<i>Ocimum sanctum</i> Linn.	Tulsi	Lamiaceae	Seed
49.	<i>Physalis minima</i> Linn.	Native gooseberry	Solanaceae	Seed
50.	<i>Piper longum</i> Linn.	Pipli	Piperaceae	Seed
51.	<i>Ricinus communis</i> Linn.	Arand	Euphorbiaceae	Seed
52.	<i>Rouffia serpentina</i> Benth. ex Kurz.	Sarpagandha	Apocynaceae	Seed
53.	<i>Scoparia dulcis</i> Linn.	Goat weed	Scrophulariaceae	Seed
54.	<i>Sesamum indicum</i>	Till	Pedaliaceae	Seed
55.	<i>Sida acuta</i> Burm. F.	Broom weed	Malvaceae	Seed
56.	<i>Sphaeranthus indicus</i> Linn.	Gorkhmundi	Asteraceae	Seed
57.	<i>Tagetes patula</i> Linn.	Chandeni genda	Asteraceae	Seed
58.	<i>Tephrosia purpurea</i> (L.) Pers.	Sarphonk	Fabaceae	Seed
59.	<i>Tridax procumbans</i> Linn.	Coat buttons	Asteraceae	Seed
60.	<i>Withania somnifera</i> Dunal.	Ashwagandha	Solanaceae	Seed
61.	<i>Zingiber officinale</i> Rose.	Adrak	Zinzaberaceae	Rhizome

Table 2: Diversity of Herbaceous MAPs Families

S. No.	Family	Total no. of the Herbaceous MAPs
1.	Acanthaceae	2
2.	Amaranthaceae	2
3.	Apiaceae	2
4.	Apocynaceae	3
5.	Araceae	2
6.	Asteraceae	6
7.	Basellaceae	1
8.	Cannaceae	1
9.	Caricaceae	1
10.	Convolvulaceae	1
11.	Cyperaceae	1
12.	Euphorbiaceae	2
13.	Fabaceae	6
14.	Heliconiaceae	1
15.	Hypoxidaceae	1
16.	Lamiaceae	3
17.	Liliaceae	4
18.	Linaceae	1
19.	Malvaceae	2
20.	Martyniaceae	1
21.	Moraceae	1
22.	Nyctaginaceae	2
23.	Oxalidaceae	1
24.	Pedaliaceae	1
25.	Piperaceae	1
26.	Poaceae	1
27.	Sapindaceae	1
28.	Scrophulariaceae	3
29.	Solanaceae	3
30.	Verbenaceae	1
31.	Vitaceae	1
32.	Zingiberaceae	2
	Total	61

Table 3: Propagation Methods of the Herbaceous MAPs.

S. No.	Mode of Multiplication	Number
1.	Bud	1
2.	Bulb	2
3.	Corm	1
4.	Rhizome	6
5.	Seed	41
6.	Seed/Stem cutting	3
7.	Seed/Tuber	1
8.	Stem cutting	5
9.	Tuber	1
	Total	61

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