



Importance of Seed Banking in Biodiversity Conservation and Research

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ABSTRACT

Today, global climatic changes have increased the focus on collection and utilization of potential biodiversity. Collection and preservation of plant genetic resources has gained tremendous importance in the present international scenario. Taking this into consideration, the present study was undertaken to study seed diversity of some native wild plant species of the study region and their conservation through seed bank. For this regular excursions were arranged in the study area to collect seeds of wild plant species. In all 15 different types of seeds were collected, identified with the help of floras and their economic importance was studied. The collected seeds were processed and preserved in seed bank of Department of Botany, B. Raghunath Arts, Commerce & Science College, Parbhani for further studies.

Key words: Biodiversity, Conservation, Seed Bank, Flora

INTRODUCTION

A seed bank is a type of gene bank where seeds of different plants are stored for future use. It is created mainly to maintain and protect biodiversity because due to over exploitation most of the indigenous seeds are likely to be extinct (Arora, 1993). Increasing popularity of the seed bank as a tool for the conservation of wild plant species is due to number of factors such as-

- Seed banks provide easy and immediate access to plant samples and allow researchers and conservation biologists to discover new source of medicines, nutrition and genes.
- Availability of plant germ plasm in seed bank helps for scientific studies which provide information for conservation of other natural populations of the species.
- Plants conserved in seed bank are immune to habitat destruction, diseases and predators and thus they can be used to reinstate species into existing (Schoen and Brown, 2001).

Seed banking has considerable advantages over the methods of *ex situ* conservation such as ease of storage, economy of space, relatively low labour demands and the capacity to maintain large samples at an economically viable cost. Taking this into consideration present study was undertaken with following objectives-

- To conserve genetic resources for research and applied use.
- To provide and control access to seed material for research.
- To increase knowledge on the importance of saving seeds.
- To set up seed bank to contribute to diversifying and sustainably improving livelihoods

MATERIALS AND METHODS

I) Study area

Parbhani is a district place in Maharashtra, India, located at 19.27°N 76.78°E. It has an average elevation of 347 meters. In the northeast of district on the boundary of Hingoli district and Parbhani district there is extension of Ajanta ranges called Nirmal Hills.

II) Collection methods

In general, dry fruits are harvested into paper envelopes or bags while moist fruits are collected in plastic bags. Cloth bags of various sizes are placed around ripening fruits to catch the seed during their natural dispersal period. This method is helpful for those species that are dehiscent.

III) Identification of plants/seeds

A flowering twig along with fruits and seeds were brought to laboratory and identified on the basis of their natural characters with the help of identification keys and floras (Naik, 1998; Yadav & Sardesai, 2002).

IV) Processing

To improve seed purity and decrease the percent of empty or less viable seed, weed seeds, the seeds of other plants and empty seeds were removed. Dirt, leaves, stems and chaff from the seeds was removed to reduce the bulk for handling and storage. To remove moisture seeds were sun dried or oven dried in order to prevent mold formation in storage (Vallentine, 1971). Many insects attack stored seeds and spoil seed collection. For this, a 20% solution of Malathion in water followed by a drying period was done (Dumroese *et al.*, 1988).

V) Storage

Seed storage is a critical process and it is important to maintain seed viability over an extended period of

time. Collected and processed seeds were stored in air tight plastic containers with detailed label information about the seed. Such seeds are kept in Seed Bank of Department of Botany, B. Raghunath Arts, Commerce & Science College, Parbhani.

RESULTS AND DISCUSSION

During the present research work field visits during June 2016 to June 2017 were done and in all, seeds of 15 different plants were collected, identified and preserved in laboratory. The details of collected seeds are mentioned in this part.

I) Collection of seeds from different localities

For this regular excursions were arranged in study area to collect seeds of different wild plant species. For this various methods were used such as-

i) Collection from natural seed fall: It is the simplest way to collect seeds and do not require skilled labour. This method is suitable for trees with large fruits, pods and seeds.

ii) Shaking the tree: Manual shaking of trees is useful to get seeds to get to fall on the ground which makes collection easier.

iii) Cutting of seed bearing branches: When seeds cannot be picked up and are out of reach then by using pruning equipments branches can be cut off and seeds can be collected.

iv) Using rope with weighted end: This method is useful to collect seeds from tall plants which cannot be climbed. It requires skill of throwing rope over the selected branch.

v) Climbing trees to collect seeds: It requires skill of climbing and is quite difficult task.

II) Identification of seed plants

A flowering twig along with fruits and seeds were brought to laboratory and identified on the basis of their natural characters with the help of identification keys and floras (Naik, 1998; Yadav & Sardesai, 2002). The identified plants are mentioned in Table: 1.

Table 1: List of Collected Seeds of Wild Plants.

Sr. No.	Name of Plant source	Common Name	Family
1	<i>Caesalpinia pulcherrima</i> (L.)	Shankasur	Fabaceae
2	<i>Leucena leucocephala</i> (Lam.)	Hawaijant	Fabaceae
3	<i>Delonix regia</i> (Boj. ex Hook)	Gulmohor	Fabaceae
4	<i>Datura stramonium</i> (L.)	Dhotra	Solanaceae
5	<i>Tactona grandis</i> (L.)	Sagwan	Lamiaceae
6	<i>Cassia tora</i> (L.)	Tarota	Caesalpinaceae
7	<i>Meliaazedarch</i> (L.)	Bakan limb	Meliaceae
8	<i>Albizia lebbeck</i> (L.)	Shiras	Fabaceae
9	<i>Martynia annua</i> (L.)	Wagnakhya	Martyniaceae
10	<i>Lantana camara</i> (L.)	Ghaneri	Verbenaceae
11	<i>Abelmoschus ficelneus</i> (L.)	Ranbhendi	Malvaceae
12	<i>Mimosa farnesia</i> (L.)	Gukikar	Fabaceae
13	<i>Abutilon indicum</i> (Link)	Petari	Malvaceae
14	<i>Xanthium strumarium</i> (L.)	Landga	Asteraceae
15	<i>Sesbania sesban</i> (L) merr.	Shevari	Fabaceae



Photo Plate 1: Collected Seeds of Wild Plants.

CONCLUSION

Seeds are living creatures and keeping them viable over the long period is a challenge. Seed collection is one of the most practical and effective ways for the preservation of wild populations of native plants. It is evident that plant species are already endangered by habitat loss, and the additional threats posed by climate make plant conservation even more challenging.

Suggestions For further studies

- Seed collections from different localities is a hard task so upcoming students should contribute to collect and conserve seeds through seed bank.
- Identification of collected plants/seeds is one of the important factors, for this one should have knowledge of morphology.
- This activity will increase the knowledge of students about seed saving.
- Thus seed bank contribute to diversifying and sustainably improving livelihoods.

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Conflict of Interest

The author declares that there is no conflict of interest.

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