



Taxonomic Resources Part 2 (Herbaria)

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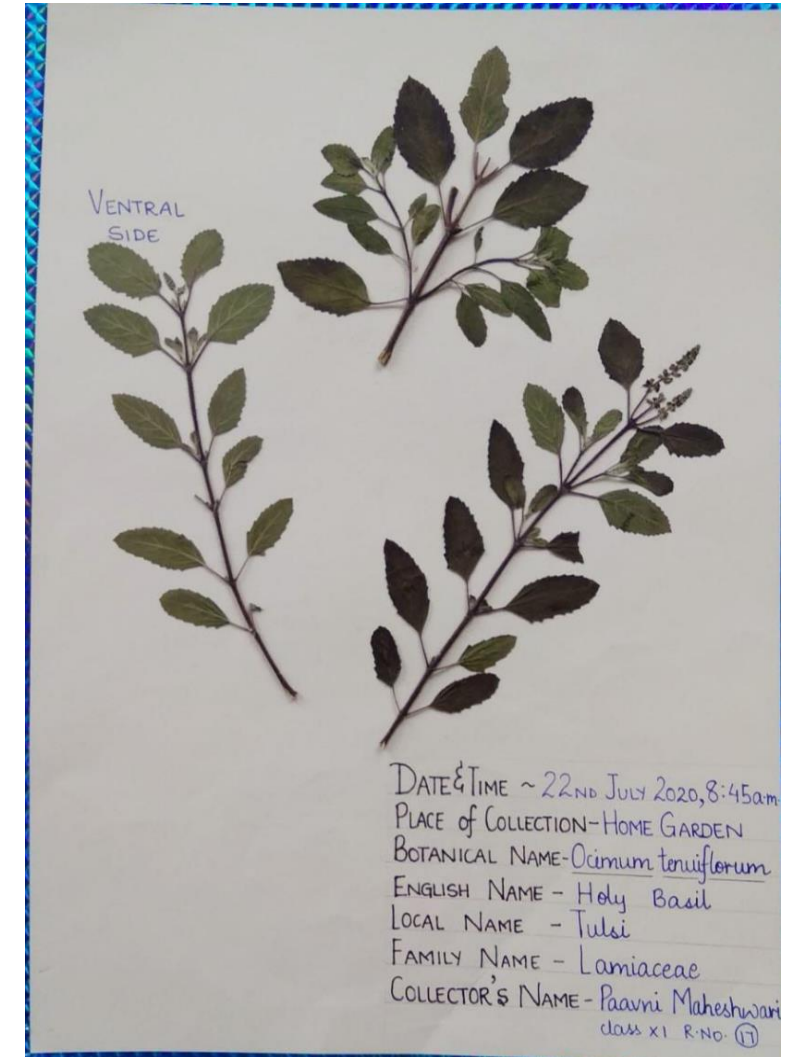
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Herbaria

- Herbarium is a collection of preserved plant specimens that have been dried and pressed, mounted on sheets of hard white paper and arranged according to recognised system of classification.
- The term is also used for a place that has a rich collection of such herbarium sheets.
- It is quick source of information for taxonomic studies.
- They also provide information on local flora.



History of Herbaria

- **Luca Ghini** (1490-1556), an Italian teacher first developed the concept of Herbarium.
- He had collection of 300 species.
- The term in its current sense was used by **Pitton de Tournefort** in his book '*Elements*'.
- During 17th century several herbaria were developed including the '*Museum National d'histoire Naturelle*' in Paris.
- Now, there are several herbaria located in different parts of the world.

Herbarium Techniques

Herbarium techniques involve:

1. Collection
2. Drying
3. Poisoning
4. Mounting
5. Stitching
6. Labelling
7. Deposition

Field Equipments

While planning for a field trip for the purpose of study of local flora and vegetation of an area, the following items are needed for plant collection:

- Plant Press
- Field Notebook
- Vasculum
- Digger
- Secateur and pruning shears



We will need these tools for plant collection.

PLANT PRESS

- Used for drying and preserving flat, fresh specimens.
- It has a pair of metal, wood or strong plyboard sheets of 30x45 cm.
- Between the frames are kept sheets of blotting papers or old newspapers which absorb moisture of plants easily.
- Corrugated sheets are used in between the sheets for ventilation.



FIELD NOTEBOOK

For recording of field data at the time of collection.

DIGGER

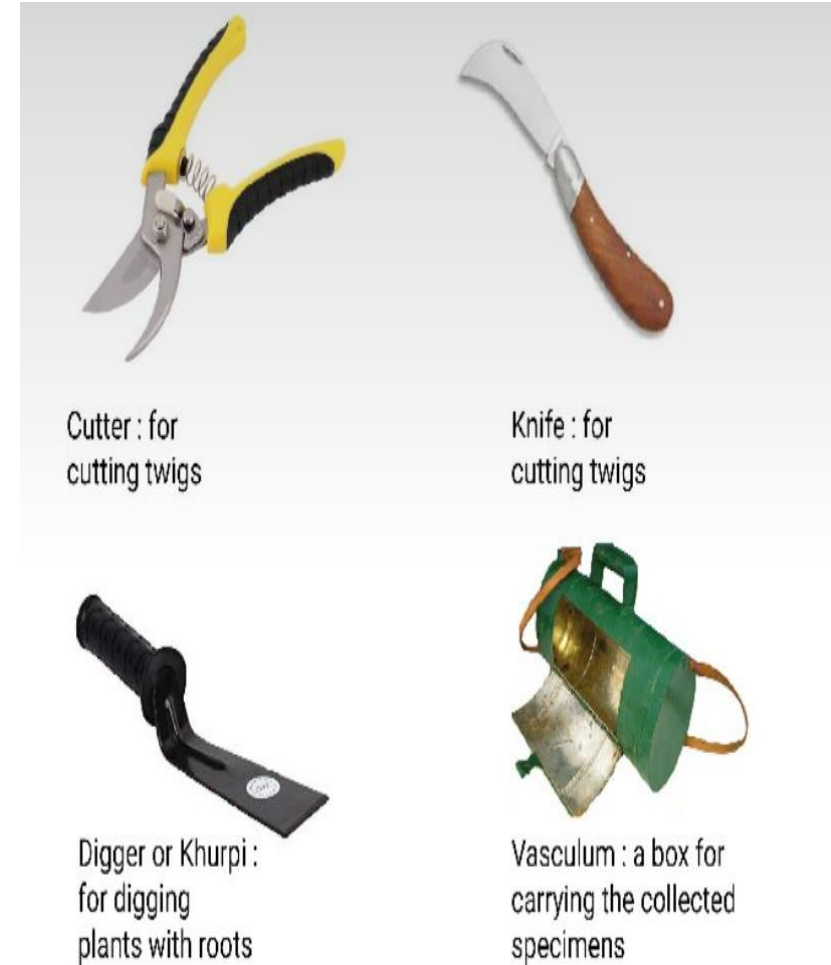
A suitable digger (khurpi) is required to take out the underground parts of herbaceous plants.

SECATEUR AND PRUNING SHEARS

Secateur is required for cutting twigs of trees and shrubs.

Pruning shear is used for cutting twigs from tall trees.

POCKET MAGNIFYING LENS AND FIELD MICROSCOPE.



VASCULUM

Vasculum is a container made of tin or aluminium with a hinged tight lid.

It is used to preserve the freshness of plants until they are pressed.



STEPS OF HERBARIUM PREPARATION

Collection of Plant specimens

- Either in flowering or fruiting stage.
- Herbaceous plants should be collected with underground parts.
- Twigs of approx. 25 cm for woody plant specimen.
- At least 4 specimens of each plant.
- Each specimen should be numbered and details of which noted down in field notebook. Notes should include information on habit, habitat, flower colour, locality, altitude and other interesting features.
- Specimens either pressed in field or collected in vasculum.

Pressing of specimen

- Specimen should be carefully displayed on pressing sheet.
- Folding or hiding of parts should be avoided.
- Extra leaves or branches can be cut.
- Specimens along with pressing sheets should be placed one above the other and tightly bound.

Drying of specimens

- Press containing specimens should be placed in sun.
- Press opened after 24 hours, specimens rearranged, placed in fresh sheets.
- Drying can be accelerated by artificial heat.

Mounting of specimens

- Dried specimens are ready for mounting.
- Specimens mounted on herbarium sheets of standard size (28.7x 41.25 cm).
- Usually one specimen on each sheet.
- Before mounting specimens should be treated with solution of mercuric chloride in ethyl alcohol to kill insects.

Herbarium Labels

- Label (printed or glued) on right hand corner of the sheet.
- Label should have information such as 1. Name of institution and region of collection 2. Family name 3. Botanical name of plant 4. Locality of collection 5. Date 6. Habitat 7. Field notes 8. Collector's name 8. Vernacular or local name.

Filing of herbarium sheets

- Mounted sheets are systematically placed in wooden or steel cabinets with pigeon holes.
- In most Indian Herbaria, specimens are arranged according to Bentham and Hooker's system of classification.
- Specimens need proper care and protected against damages by fungi and insects by fumigation with chemicals such as mercuric chloride or lauryl pentachlorophenate. Moth balls and naphthalene flakes are kept in each cabinet to check insects. DDT may also be used.

Role of Herbaria

- Repositories to safeguard plant samples of a given area.
- As reference and study material to improve knowledge about biodiversity.
- Wealth for research and education.
- Provide knowledge about a given species.
- Help in identification of other species.
- As a source of plant DNA for use in molecular systematics.

Major Herbaria of India

Central National Herbarium, Sibpur, Howrah (W.B.)

- Oldest herbarium founded in 1793.
- Belongs to Botanical Survey of India (BSI).
- 1,500,000 specimens from India and South East Asia.

Herbarium of NBRI, Lucknow (U.P.)

- 150,000 specimens.
- Properly identified and classified.

Indian Virtual Herbarium

- Biggest database of country's flora.
- Developed by scientists of BSI.
- Inaugurated by Union Minister of Environment, forest and Climate change on July 1, 2022.
- Portal link <https://ivh.bsi.gov.in>.
- Each record in the digital herbarium includes an image of the preserved plant specimen, scientific name, collection locality, collection date, collector's name and barcode number.
- It has features to extract the data state-wise and users can search plants of their own state which will help them to identify regional plants and building regional checklist.
- The portal has recorded two lakh hits from 55 countries since one month of its launch.

References:

- B.Sc. Semester III Botany by Singh, Pande and Jain
- B.Sc. Semester III Botany by B.P.Pande
- B.Sc. Semester III Botany - Krishna Publication