

# *E-CONTENT*

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## UDAI PRATAP COLLEGE, VARANASI

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**Programme/Class:** Diploma in Plant Identification, Utilization & Ethnomedicine

**UG, Year: II, Semester: IV, Paper: I**

**Subject: Botany; Course Code:** B040401T;

**Course Title:** Economic Botany, Ethnomedicine and Phytochemistry

**Credits: 4, Course compulsory; Max Marks: 25+75**

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**Class:** B.Sc. –Botany

**Year:** II, 3<sup>rd</sup> Semester, Paper: I, UNIT: I

**Topic:** Methodologies of Ethnobotanical Research: **Field work, Literature, Herbaria and Musea**

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➤ Sources of information depicting past and present relationship of plants and human beings are the major tools of study of ETHNOBOTANY. The techniques employed for data collection were semi structured interviews, group discussion, guided field work and observation with participants.

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- The different sources may vary and depending upon the interests, training and objective of investigator.

## OBSOLETE LITERATURE AND TRAVELOGUES

- ❖ A number of published or handwritten documents lie in the holdings of libraries, museums and individuals and actually remains neglected for a long time. Such literature is sometimes called as **GREY LITERATURE**.
- ❖ Sometimes information in such documents is very vague. Mostly local names are mentioned, spellings are wrong and often lack phonetics indications.
- ❖ They provide valuable information as to how some plant species influenced the social and cultural lifestyle of tribes. If proper studies are initiated on ancient literature, vast data on plants and their different uses can be known.
- ❖ Travellers mentioned local uses of plants in their writings or travel accounts.
- ❖ Although travelogues don't use exhaustive list of plants, but they use sometimes names of dominant plants, medicinal plants species and other economically important species.

## SANSKRIT LITERATURES

- Sanskrit literature can be said to present tradition of Indian culture through ages.
- Preliminary studies on some floras on Sanskrit literature have recently been made by some workers. They have listed more than 1000 plant names are mentioned in Ramayana, Rigveda, Mahabharata and various Puranas and Sastras etc.
- But the identification of various species is not easy because sometimes only names are given without mentioning even a single character.

## GAZETTEERS

- ❖ Important plants of a particular region are usually highlighted sometimes comparison of the data in very old and the recent gazetteers provides interesting information on change in uses and occurrence of a plant.

## HERBARIUM AND MUSEUM

- Herbarium is collection or preservation of pressed, labeled and dried plant specimens arranged specimens by a classification scheme.
- Museum is preservation of dead and decaying plant and animals.
- The plant collectors notes on labels of herbarium sheets and museum specimens are understood to be one of the best sources for collection of valuable ethnobotanical information.
- Both these sources contain plant collections from various parts of the world. These collections provide useful data on the place (locality) of collection along with date, Flowering & Fruiting time.
- This information has more value than from other sources. It is the first hand information, the data concerning locality, people and time are also noted along collectors notes on the herbarium sheets or museum specimens and the botanical identity of the plant is fixed.
- The biggest and oldest herbarium of India is Central National Herbarium of Botanical Survey of India.

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Ethnobotany simply means investigating plant relationship with different societies. This Science extracts knowledge from traditional communities about the utilization of plants. Using this knowledge new medicines can be developed for the benefit of the society at large. This type of scientific study also helps in conservation and sustainable use of the natural resources.

### **METHODOLOGIES:**

#### **1. Field Work:**

Ethnobotanical field work has great significance in Ethnobotanical observations. Apart from collection of data Ethnobotanists have to collect and record the relationship of the plants in the surrounding to the human beings such as medicinal use, food, religious beliefs etc. These type of observations involve long term observations.

a. The first step is to identify the tribe whose traditional knowledge associated with the plants one wants to study and the region where the tribes resides is the field area for study.

b. In the second step require to increase knowledge about the tribes, their culture, language, plant wealth and plant diversity in the vicinity along with timings and suitable seasons.

c. To make successful field work closeness with any local people is must, since tribal people are very reserve mostly and suspicious of outsiders. Ethnobotanist have to identify knowledgeable tribal for good and quick observation. This needs living among tribals for longer duration, mixing freely with them, showing respect to their rituals and ceremonies. Recoding local name of plants is useful so that it can be verified later with other locals. Collection of voucher specimen is also must. The ethnobotanical field work methods may be accomplished as below:

- VISIT THE FIELD ALONG WITH KNOWLEDGE LOCAL PEOPLE;
- IDENTIFY THE PLANT AND RECORD THE INFORMATION;
- PRESERVE THE SPECIMEN



- IN SECOND OPTION MAY VISIT THE FIELD ALONE, COLLECT DATA AND PLANT SPECIMEN



- COLLECTION OF DATA THROUGH QUESTIONNAIRE METHOD, WHERE THE LOCAL KNOWLEDGEABLE PERSON MAY BE INTERVIEWED FOR THE INFORMATION

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## **2. Literature:**

Very old and ancient literatures of ethnic groups (Tribes/indigenous people) in different parts of the world are of great value from ethnobotanical point of view and authentic source of traditional knowledge about plant and other important natural resources. Indian civilizations have great literatures in many native languages having detail information about different types of disease treatments with the help of plants. Indian Traditional Medical System AYURVEDA is based on ancient knowledge, e.g. CHARAKA SAMHITA and SUSHURATA SAMHITA. Charaka Samhita is the most

authentic codified document in Ayurveda. Ethnobotanists can extract traditional knowledge data from these literature.

Some of the reported in Ayurveda are as below:

- a. **Ashwagandha:** Used as an anti-ageing agent and it enhances vitality.
- b. **Amla:** Antioxodent, remove stress and constipation.
- c. **Brahmi:** Well known memory enhancer and reduces anxiety.
- d. **Babool:** Used for oral care and bleeding gu.
- e. **Lahsun:** Beneficial for ringworm treatment.
- f. **Tulsi:** Useful for respiratory system and heart.
- g. **Neem:** Useful for opral care, leprosy, eye disorders and intestinal worms.
- h. **Haldi:** Anti-inflammatory, antioxidant and anti cancerous.

There are thousands of plants having medicinal value. More than 90% medicines are plant based. Ethnobotanists may study the literature extensively to learn about uses of these plants.

Similarly ancient literatures are very rich in China and Africa also. Anybody interested in ethnobotanical study may first choose the region of his ethnobotanical investigations, then start the study of literature to extract traditional data.

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### **3. Herbaria and Musea:**

Herbaria is plural of Herbarium.

The herbarium—a collection of pressed plants mounted on paper –is central to the practice of ethnobotany, and to the use of all the other plant collections. Herbarium specimens both vouch for the identity of the plants being studied, and are themselves documents of plant use by people.

The accumulation of 500 years of plant collection by botanists and travelers, herbaria are rich and underexploited source of data about useful plants (useful in broadest sense) and the human societies that use them. Not only do useful plants form a substantial proportion of plant species (even greater if crop if crop wild relatives are taken into account; but they are also likely to be overrepresented as specimen in herbaria, as many are widely used and thus abundant in local vegetation. Useful plants were also of particular interest to many collectors. It is likely that half or more of the specimens housed in large herbaria are of plants of useful or symbolic value to humans; ethnobotany should therefore be central to the use and development of herbarium collections.

*The current climate is one in which ethnobotanists and herbaria have much to offer each other, well beyond the important field of voucher specimens.*

## **IMPORTANCE OF VOUCHER SPECIMENS**

### **Why voucher?**

To properly document an ethnobotanical study, it is essential to collect quality vouchers in the form of herbarium specimens and to deposit them in a permanent collection where they will be available indefinitely to confirm the identity of the plant(s) under discussion. In some cases, the herbarium specimen itself is the only specimen collected, and it acts as a voucher for the associated ethnobotanical data contained in the field notes; in other cases, the herbarium specimen also acts as a voucher for associated specimens such as woods, DNA or artefacts. In both cases, the herbarium specimen is the specimen that enables verifiable identification.

Voucher specimens perform three vital functions:

- a. They allow identifications to be made in the first instance;**
- b. They allow identifications to be checked by subsequent researchers; and**
- c. They allow work to be updated in the light of new taxonomic concepts.**

### **Why are these functions so important ?**

**Collection of voucher herbarium specimens is standard practice in ethnobotany, particularly for Natural product specimens.**

In Genetics and DNA, regular pleas from geneticists for vouchering of plants used for chromosome counts and genetic experiments suggest that this is a long standing problem. Voucher specimens heavily needed in molecular studies.

With respect to Genetic resources the importance of herbarium voucher specimens for documenting and assuring the identity of germplasm has clearly been well-understood since the early 20<sup>th</sup> century.

The N I Vavilov Institute of Plant Industry, established in 1923, has a herbarium of voucher specimens for its gene bank holdings. Such herbaria are very rich in cultivated plants, which are often neglected in other herbaria.

## **HERBARIUM SPECIMENS AS ETHNOBOTANICAL DATA**

The earliest herbaria were formed in Italy in 16<sup>th</sup> century, and were in the form of pressed plants mounted on sheets of paper, which were bound into books. This practice of herbarium in book form remained until the 18<sup>th</sup> century. From the mid-18<sup>th</sup> century onwards, perhaps reflecting the influence of Linnaeus's new classifications, herbarium sheets were kept loose that they could be shelved in taxonomic order.

As with all museum collections, understanding the history of herbaria is crucial to their effective use. A herbarium is, on the one hand, an accumulation of collection created by individuals in specific times and places for particular purposes, and on the other hand, an aggregate of these collections. Its specimens thus encompass a far greater geographical and chronological range than any one researcher can achieve.

The historical links between herbaria and ethno- or economic botany that weakened in the 20th century have been reforged. Herbarium specimens are now widely recognized as the ideal voucher specimen for most ethnobotanical research, and it is likely that the new fields (such as nutrition) that do yet fully implement best practice will soon do so. Herbarium specimens act as records of use through their labels and associated data, and as biological specimen that can be measured and sampled. As herbaria are gradually data based, their usefulness will increase further. It will be easier to find voucher specimens, regardless of changes in botanical name or in location of deposition, and it will be easier to find specimens that embody ethnobotanical data. These are encouraging times for the symbiotic relationship between herbaria and ethnobotany.

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