

Ethnobotany in Human Welfare



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Ethnobotany :

- The study of total Natural and Traditional interrelationships between man and plants.
- The study of Traditional Knowledge and Customs of the people concerning to plants and its uses.
- The study of plants of a region and its practical use through Traditional Knowledge of local culture and people.
- A systematic study of the relationships between plants and people with the cultural context of a society.
- The study of total and direct interrelationships between man and plants and his domesticated animals.

Relationships of Man with Plants :

- Gathering jungle fruits and tubers (or hunting animals) for Food by the earliest man on this earth was the birth of Ethnobotany.
- Man must have observed on birds and other animals feeding on certain plant materials (Edibles) and avoiding some others (Non-edibles).
- Man must have followed trial and error methods to discover Edible, Medicinal (starting with pain or injury healing) and Poisonous plants.
- Paddy (*Oryza sativa*), Maize (*Zea mays*), Wheat (*Triticum aestivum*) emerged from this trial were stabilized as staple food of man and were cultivated in large scales for consumption.
- Edible Oilseeds (*Arachis, Brassica, Glycine, Helianthus* etc.) as well as edible palm oil and various Common spices (*Curcuma, Capsicum, Piper* etc.); Pulses (*Cajanus, Lens, Macrotyloma* etc.) and Vegetables ,Tubers as well as Fruits are now commercialised for human consumption are found to be a derivative of Traditional Knowledge by trial.
- Cotton plant (*Gossypium arboreum*)for cloth material and Jute (*Corchorus capsularis*) as Fibre-yielding are cultivated along with utilisation of various Timber-yielding tree species (*Cassia, Dalbergia, Shorea, Tectona* etc.) for house building including Bamboos.
- The journey of Ethnobotany from those early beginnings through ages has been long with an output of food, cloth, shelter, medicine, agriculture, household domestication and socio-religious aspects.

History of Ethnobotany on Record :

- 1895 J. W. Harshberger, an American Botanist (Univ. of Pennsylvania, USA) delivered a lecture entitled "*The Purpose of Ethnobotany*" (publ. in Bot. Gazette 21:146-154.1896). His research areas were: North Africa, Mexico, Scandinavia.



J. W. Harshberger

- 1896.J.W.Fewkes: “A contribution to Ethnobotany”. American Anthropologist 9:14-21. stimulated researchers on Anthropology and Botany in USA for further studies.
- 1940 .R.E.Schultes: from USA reached at Amazons (S.America) for extensive field studies of the subject amongst various ethnic groups and stayed with the community for more than twelve years and published several research articles for an academic Ethnobotany. R.E.Schultes was called as “Father of modern Ethnobotany” since 1960's. Schultes defines Ethnobotany as “....investigating plants used by primitive societies in various parts of the world”.



R. E. Schultes (1940)



R. E. Schultes (1980)

- 1334 AD. P.Dioscorides:a Greek surgeon published the book “De Materia Medica” in Roman and Arabic. This was a catalogue and illustration of ca 600 useful plants used as herbal medicine found in Mediterranean region. This published book was used as a hand book to be aware about the appearances, medicinal properties, recipe etc. on herbal medicine.
- 16th Century. J.Cartier : an explorer from France discovered cure of scurvy (from the boiling of a bark) and discovery of useful plants continued from USA to Europe (New World) and the entire West was stimulated for such studies.
- 2000 BC.Shen Nung: the Chinese emperor helped in compilation of useful plants in East.

History on Studies of Useful Plants in India :

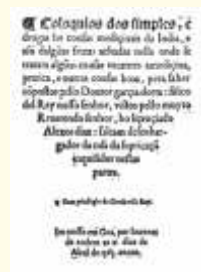
- 600-3000 BC.Ancient Veda(Atharva),Ramayan,Mahabharat, Charak-Samhita , Sushruta-Samhita, Ram charit Manas, Artha-sastra, Puranas ,Lok-katha etc. describes plants in service of man.
- 1578 & 1563.Garcia d'Orta: *Coloquis Dos Simples* & *E.Drogas da India* (PORTUGUESE, also translated in LATIN) published in Goa as the first documetation of Indian medicinal plants.



Garcia d'Orta (1560)



Publication in Botany in LATIN at Goa, India



A page from the First book on medicinal uses in India in 1578

- 1578.Acosta: *Tractado de las Drogas* (SPANISH) also published in Goa.
- 1680-1703.H.van Rheedee: *Hortus Malabaricus* (12 vol. in LATIN) on medicinal plant properties of Western Ghats (now Kerala, Karnataka, Goa) published in Amsterdam.
- 1787.Robert Kyd: Established 'Company Bagan' (Royal Botanic Garden) to grow useful

plants, viz. teak tree (for ship building and timber yielding material), sago-palm (alternative food during cereal scarcity) and edibles like bread-fruit (*Artocarpus*), Chinese mulberry (*Morus*), papaya, cloves (*Syzygium aromaticum*) as well as other useful plants like asafetida (*Ferula*), copal (*Protium*), camphor (*Cinnamomum*), etc. in a 500 acre land of Shalimar, Howrah.



H.van Rheedee's
Hortus Malabaricus



Hortus Malabaricus :
page sample



H.van Rheedee's Hortus Malabaricus
(vol.1 in LATIN)

- 1820-24. W.Roxbough: The Father of Indian Botany 's *Flora Indica* (2 vols.in LATIN) published by W.Carey and N.Wallich at Serampore.
- 1867. V.Ball: published...*Jungle fruits as food...Hazaribagh*. J.Asiat.Soc. 11.43. Calcutta
- 1869. G.King: published*Foods of Marwar*. *Proced. Asiat.Soc.Bengal*.38:116-122. Calcutta
- 1873.H.Drury: *The Useful Plants of India*.London
- 1877.U.C.Dutt : *The Materia Medica of Hindus*.Calcutta
- 1888.K.R.Kirtikar: J.Bombay Nat.Hist.Soc.38:116-122, Bombay
- 1890-93.W.Dymock,CJH Warden & D.Hooper. *Pharmacographica India*.Pakistan
- 1900. R. G. Chowbe. *On Hindu belief about trees*. J. Anthrop. Soc.Bombay
- 1889-96.G.Watt: *A Dictionary of Economic products of India*(six volumes).London



Sir George Watt (1890)



A cover page of 'A Dictionary
of Economic products of India'



A cover page of
'The Commercial Products of India'

- 1908. G.Watt: *The Commercial Products of India*. London
- 1925,1927,1940.P.O.Bodding :published*Santal medicine and connected folklore*. Mem.Asiat.Soc.Bengal.Kolkata
- 1933: K.R.Kirtikar & B.D.Basu. *Indian Medicinal Plants* (4 vols.). Allhabad

Ethnobotany : A New Discipline Introduced in India :

- 1940,1954,1956,1960,1962,1963,1967.R.E.Schultes: published*therapeutic uses...;...narcotic snuffs... ;narcotic mushrooms...;heritage of Ethnobotanical...;...search of new medicinal...; ...medical Botany...;...pharmacologic search....* Washington, USA.

- 1945.E.Gunther: *Ethnobotany of western Washington*. Seattle, Washington.
- 1958.P.J.Faulkes : *An introduction to Ethnobotany*.London

Foundation of Ethnobotanical Studies in India :

- 1954-1960. E.K.Janaki Ammal: Founder and the Director ,Central Botanical Laboratory (CBL) of Botanical Survey of India (BSI) started with four new departments includes the Economic Botany wing and it was exclusively devoted for studies on Ethnobotany in India.



E. K. Janaki Ammal (1897-1984)



E. K. Janaki Ammal (1950)

- "...search of new economical plants and adopted the methodology for ethnobotanical studies amongst primitive tribes of India. The plants collected or grown by the aboriginals will indicate the ancestral types from which the cultivated forms are derived."
- Dr. Janaki Ammal as a field botanist undertook several field studies on visiting tribal and rural areas of Wyannad, Coimbatore (Tamil Nadu) to collect Yam(*Dioscorea*), Colocasia, Curcuma samples for ethnobotanical studies and also grown it in CBL, Allahabad garden campus.
- 1956. E.K. Janaki Ammal: published "*Introduction to the subsistence economy of India*",p.324-335 in *Man's role in changing the face of the Earth*.Chicago, USA. "...crops of India, i.e. rice, wheat, maize, pearl millet, barley, sugarcane, sorghum, cotton, jute, oilseeds, tobacco,etc.....wild flowering plants (*Caryota*, *Borassus*, *Phoenix*, *Madhuca*, *Cycas*) by primitive tribes, viz. Gond, Ho, Munda for edible, thatching, basket making..." as subsistence economy of India needs introspection .
- 1956-84. S.K.Jain: as Economic Botanist at BSI (Indian Museum, Calcutta; CBL,Howrah) undertook field studies amongst Gond tribal community in Mandla, Bastar regions of Madhya Pradesh that further stimulated to the foundation of Ethnobotanical studies in India . He published a series of research papers (nearly 80 nos.) and popular articles on Ethnobotany including Hindi during his tenure of Govt. job at Botanical Survey of India. The methodology of Ethnobotanical studies in Indian context was also devised by him.



Dr. S. K. Jain :
Father of Indian Ethnobotany



A-Z in Ethnobotany (2013)



Ethnobotany Journal

- Some of the land mark books authored (or co-authored) by S.K.Jain on the subject are: *Bibliography of Ethnobotany (1984)*; *Manual of Ethnobotany (1987)*; *Methods and Approaches in Ethnobotany (1989)*; *Dictionary of Indian Folkmedicine and Ethnobotany (1991)*; *Contributions to Indian Ethnobotany (1997)*; *A Handbook of Ethnobotany (1999)*; *Dictionary of Ethnoveterinary plants of India (1999)* ; *An Introduction to Ethnobotany (2013)*; *A-Z in Ethnobotany (2013)*.
- S.K.Jain is also the founder member of :
 - The “Society of Ethnobotanists” in India since 1980
 - Publication of an International Journal named “Ethnobotany” since 1989;
 - Establishment of Institute of Ethnobiology in 1995 at Lucknow (now at Gwalior) for academic research.
- Dr. Jain is the first Asian and recipient of *Distinguished Economic Botanist Award* of USA (1999). He was regarded as the '*Father of Indian Ethnobotany*' by his followers since 1990's.

Academic and Research Activity of Ethnobotany in India :

- Methods of Ethnobotanical research were adopted in broad two ways, i.e. Field research and Literature Research since 1960's. However Ethnobotanical field studies have been preferred over the other one by various researchers in India.
- India, a South-East Asian subcontinent is an abode of nearly 2000 ethnic groups including 550 tribal community. Tribal population is 10,42,81,034 (Census 2011) and some 8.2% of country population. Tribal community identified amongst 30 States & UTs are : Lakshadweep UT (94.8%), Mizoram(94.4%), Nagaland (86.5%), Meghalaya (86.1%).....Tamil nadu(1.1%) and UP (0.6%).
- Ethnobotanical field studies in India (since 1962) resulted the publication of some 1500 no. research papers in various botanical journals of the country (40% in J.Ethnobotany) with the documentation ca 5000 useful plants as Ethnobotanical databank of India .
- Research publications made on State and Region-wise; Theme wise ; Disease-wise; as well as Plant species-wise. A wide range of Ethnobotanical documentation of various useful aspects includes: 'Ayurveda' preparation ,Drug developments, Dye-yielding plants; Beverages ; Cosmetics; Fish stupefying; Food preservatives; Ecosystem conservation; Kitchen garden; Musical therapy, Psycho-active plants; Tribal artifacts; Socio and Magico-Religious belief, Sacred groves, etc. including Food, Medicine and Veterinary medicine.
- *Dictionary of Indian Folkmedicine and Ethnobotany* (S.K.JAIN.1991): The Dictionary (p.311) deals with alphabetical presentation of 2532 plant Taxa (1174 genera,259 families) covering all State & UT of India;Glossary of Uses;List of selected 200 Ethnic groups of India; Botanical Family Index; Compilation of 4500 index of Local names and its Botanical name.

Ethnobotanical Inventory in Service of Man :

- *Ephedra gerardiana* (EPHEDRACEAE); *Somlata* : A gymnosperm shrub in north America, southern Europe, northern Africa, central China and W.Himalayas, Ladakh. Plant contain Ephedrin and Pseudoephedrin that stimulates brain, heart and bronchial tubes.



- *Panax ginseng* (ARALIACEAE), *Asian ginseng*, *American ginseng* : A herb in north America, eastern Asia, E.Himalayas. Root contain Ginsenosides that stimulate immune system, boosting mental performance.



- *Commiphora wightii* (BURSERACEAE); *Guggul* : A small tree upto 4m high and pappery bark in north Africa, central Asia and central-northern India. The fragrant gum extract contain Guggulsterone used in family planning, asthma cure.



- *Erythroxylon coca* (ERYTHOXYLACEAE), *Cocaine plant* : A shrub upto 3m high origin of S.America ,now usually cultivated throghout including S. India .Leaf yield Cocaine, a psychoactive alkaloid used as local anasthesia.



Ethnobotanical Perspectives of India :

- *Atalantia malabarica* (RUTACEAE); *Wild Lime* : A woody climber in tropical forest, uncommon; Leaf used in Lumbago cure (Odisha)



- *Cardiospermum halicacabum* (SAPINDACEAE); *Kan-phuti* : A herbaceous climber found throughout India; Whole plant used in Rheumatism (Gujarat)



- *Cycas pectinata* (CYCADACEAE); *Thaljimura* : A gymnospermous tree found wild or planted as decorative; Cone used for remedy of Asthma (Assam)



- *Mimusops elengi* (SAPOTACEAE); *Bakul* : An evergreen tall tree up to 10m long ; Stem Bark is Anti-microbial (Odisha)



- *Plectranthus mollis* (LAMIACEAE) : A common aromatic shrub; Leaf and twig yield essential oil used as Mosquito repellent (Jharkhand)



- *Thespesia populnea* (MALVACEAE); *Paras-peepal* : A large ornamental shrub , planted in garden; Leaf is effective in Jaundice cure(Purulia,WB)



Ethnobotany for Plant Conservation :

- Attention have been given by Ethnobotanical researchers to document Less known useful plants during field studies .
- Comparative studies for use of same plants for same purpose in different localities also confirms about the prevalent ethnic and Traditional Knowledge efficacy in support of popular beneficiary of Plant.
- The Traditional plant folklores and rural Sacred groves too support in the in-situ Plant conservation , species-wise.

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Gadaba woman-1-Plant-taboo practitioners at Koraput-Odisha



Funded by :

Art & Humanities Research Council, United Kingdom

Organised by :

Centre for World Environmental History, University of Sussex

Royal Botanic Gardens, KEW

Ministry of Environment, Forest & Climate Change

Botanical Survey of India

Indian Museum, Kolkata