

# A Study of Some Plants of Economic Importance and their Values in JIET Campus

Dr. Akleshwar Mathur

*Assistant Professor, Department of Chemistry JIET, Jodhpur, Rajasthan, India*

**Abstract**—The development of an area of Biosphere is dependent on its vegetation. The term biodiversity is commonly applied to study the variety and variation of biotic components of the ecosystem. The variety and variation in plant species also called as flora of ecosystem is termed as plant diversity.

One can study the biodiversity in different patterns like Alpha, beta and gamma biodiversity. Human activities play an important role in the development as well as destruction of biodiversity. Environmental factors also play an important role in this aspect.

The present paper is based on our working project running since last 3 years on the survey of plants in JIET college campus, Jodhpur, Rajasthan through identification, characterization and studies of their importance. The plant species were identified and their importance were studied with their category of economic importance.

More than 150 plant species are found in the campus with medicinal, industrial, ethical, economical as well as environmental values. The present paper deals some plants of industrial values.

It should be the moral duty of all concern persons to protect this diversity for the environmental conservation.

**Keywords**— Plant diversity, ecological balance, economic significance, JIET campus, environmental factors.

## I. INTRODUCTION

Plants serve many functions in our life. The most common is as a reliable provision of food through agriculture. Ethnobotany is the study of plant uses by native peoples, Economic botany focuses on cultivated plants in modern era. Plants are used in medicine and provide a number of drugs. This practice is common from the earliest times to the present, and serve as the feedstock for many drugs. Industrial products like timber, a wide range of chemicals and paper are some examples. In addition to above economics plants give pleasure through gardening to us.

Not only in industrial and economic concern plants also play important role in art, mythology, religion, literature and film, issues related to fertility, growth, purity, and rebirth.

A number of valuable products have being extracted from plants as well as animals from ancient time. The knowledge about distribution and presence of valuable products are necessary things which one should know to exploit it. For this aspect the study of variety and variation are required. It also

motivate to the person to protect them from adverse effects including natural as well as men made.

Biodiversity also termed as biological diversity, is the systematic studies of variety of plants and animals from a unicellular to well-developed multicellular organism. The common definition is given in terms of the variability within species, between species, and between ecosystems called as genetic, species and ecosystem diversity respectively.

Generally, wasteland plants are called as weeds and a layman considered them as unwanted and undesirable. On the other hand 'Ayurveda' has said, "No plant of this world is useless". So the knowledge about the useful properties of these plants should be known by each of us. Generally the folk people are well acquainted with the ethical as well as the medicinal properties of their surrounding vegetation particularly for their wellbeing.<sup>1-5</sup>

In our state about 80 percent of people live in the rural areas and cannot afford to the costly modern medicine so they depend on the vegetation surrounding them and make perfect uses of them for their medicinal needs. The present investigations were undertaken for collection of important medicinal plants from different regions of Rajasthan.

**Jodhpur** is the second largest city in the Indian state Rajasthan and the second metro city of the state. Formerly the capital of the kingdom was known as Marwar. It is famous as a tourist destination, for palaces, forts and temples, the city is named as the "Sun City" for the bright and sunny weather it enjoys all the year round and "Blue City" because of blue coloured houses in old city.

The city is located on the strategic road linking Delhi to Gujarat. Important trades are in opium, copper, silk, sandalwood, date palm and other tradable goods.

Climatic conditions and area of the Jodhpur are some of the important parameters to affect the biodiversity. Each species plays important role in maintaining a productive ecosystem, even for a long time horizon.<sup>7-8</sup>

The above mentioned significance of flora and their threats are kept in mind to implement the project on biodiversity. The present paper describes some of the plants found naturally or grown manually in JIET Campus, Mogra, Jodhpur, Rajasthan with special attention towards their economical values. Mogra Khurd has geographical location in Jodhpur, Rajasthan, India, and Asia with geographical coordinates: 26° 8' 0" North, 73° 3' 0" East.

## II. MATERIAL AND METHODOLOGY

### A. Survey of the Literature

A project plan was formed on the theme biodiversity of college campus and adjoining areas. The literature on arid and semi-arid zones were studied from available resources. Local communication was an important part of this study.

### B. Survey of the Campus

After the literature survey the campus was divided in different zones, and various plant species were identified with the help of gardeners and subordinates and confirmed through the available resources.

### C. Identification of the plants

The plants parts identified by experts and some samples were collected for references. The values were searched using different media as well as with the help of local community.<sup>9,13</sup>

### D. Botanical description of the plants

The botanical details of the plants is given in the table.1.

S.NO.	COMMON NAME	BOTANICAL NAME	Family
1.	<i>Ber</i>	<i>Ziziphus mauritiana</i> Linn	<i>Rhamnaceae</i>
2.	<i>Indian Senna, Tinnervelly Senna,</i>	<i>Cassia angustifolia</i>	<i>Caeslpinaceae</i>
3.	<i>Amla</i>	<i>Emblic Myrobalan</i>	<i>Phyllanthaceae</i>
4.	<i>Ratanjot</i>	<i>Jatropha curcas</i>	<i>Euphorbiaceae</i>
5.	<i>Babool</i>	<i>Acacia nilotica sub-species indica</i>	<i>Mimosaceae</i>
6.	<i>mulvery</i>	<i>Broussonetia papyrifera</i>	<i>Moraceae</i>
7.	<i>Jamun/black cumin</i>	<i>Scyzium cumin</i>	<i>Myrteceae</i>
8.	<i>chamomile/camomile</i>	<i>Matricaria chamomilla</i>	composite
9.	<i>Rohida</i>	<i>Tecomella unduluta</i>	<i>Bignoniaceae</i>

### E. Economical Values of the plants

The economic importance of selected plants are studied as follows:<sup>11-21</sup>

***Ziziphus mauritiana*** commonly called as *ber* is a small deciduous tree or shrub of height of 5–12 metres with thorny branches. The leaves are green, ovate-acute and 2–7 centimetres long and 1–3 centimetres wide. The fruit is oval drupe 1.5–3 centimetres deep and edible with the taste of an apple and looking like a small date.<sup>14-15</sup>

It tolerates fairly cold winters, about  $-15^{\circ}\text{C}$  so capable to grow in mountain as well as in the desert habitats. Plants can be grown as a hedge. The wood is dense, hard, compact, and tough so widely used for turnery, agricultural implements and also used as an excellent fuel and a good charcoal.

The fruits are being used in Traditional Chinese Medicine for gastrointestinal health and digestion and as sedative, anxiolytic and pain-killer.<sup>16</sup>

***Cassia angustifolia*** is known as *shimbi kul* in Ayurveda is a small erect shrub with pale green smooth and erect stem. It has branches that spread and possess about 4 to 5 pairs of spear shaped pointed apex leaves. Flowers are small, yellow colored developed in a pod of dimensions 1.4-2.8 X 0.8 inch. This pod contains 5 to 7 dark brown colored seeds.

Leaves of this plant contains flavenols like isorhamnetin and kaempfeol and anrathquinones like rhein and emodin with glucosides sennoside A and B. Menitol, sodium potassium tartarte, salisilic acid, crisophenic acid, volatile oils, resins and calcium oxalate are other compounds. In the flowers crisofenic acid is found. It decrease pita in the body and allows free movement of vata in the body. It also stimulates liver for proper secretion of the enzymes and increases the peristaltic movement of the intestines as well as also purifies blood. Tablets of calcium sennosides are common in constipation.<sup>17</sup>

***Emblica myrobalan*** named as the “gooseberry” in English and Amla or amlakai or amlakai in Hindi. It has been reported the best source of vitamin C and antioxidants.

The economic importance of this plant reflects in edible as well as non edible products. Pickles, murabba, chutneys, hair oils, face packs are some of them.<sup>18</sup>

***Jatropha curcas*** or Ratanjot is found wild in the study area. This plant is toxic and has been reported to contain non edible oil. The importance of this plant would be clarified in the field of bio diesels.<sup>19</sup>

***Acacia nilotica sub-species indica*** is a Small tree with spreading branches forming flat or rounded crown; bark thin, rough, fissured, and deep red-brown; spines gray-pubescent, slightly recurved, up to 3 cm long; leaves often with 1–2 petiolar glands. Flowers are bright yellow in colour and pods especially variable, linear, indehiscent. Gum Arabic and gum acacia are some of the vernacular names of the gum obtained from this plant. *Babool* tooth pastes are very commonly applied tooth pastes for cleaning of teeth.<sup>20-21</sup>

***Broussonetia papyrifera*** or *Morus* an edible sweet fruit obtained from tree is also reported in our campus, commonly known as **mulberries**. Mulberries are fast-growing when young, but soon become slow-growing and rarely exceed 10–15 metres tall. The mulberry fruit is a multiple fruit, approximately 2–3 cm long. Immature fruits are white, green, or pale yellow. The fruits turn pink and then red while ripening, then dark purple or black, and have a sweet flavour when fully ripe. Fruits are cultivated for consumption and making juices and other products.<sup>22</sup>

***Scyzium cumin /Jamun*** is a well-known fruit of medicinal as well as industrial applications. The tree is large in size. The fruits are berries and sweetish sour to taste. The ripe fruits are used for health drinks, squashes, jellies and wine. All parts of the tree are used in industries as well as a medicine in home to treat a range of diseases.<sup>23-24</sup>

*Tecomella undulata*, a tree species, locally known as rohida is found in Thar Desert regions of India as well as in Pakistan. It is a medium-sized tree and commonly called as Marwar teak because it produces quality timber and main source of timber amongst the indigenous tree species of desert regions of Shekhawati and Marwar in Rajasthan. The wood of this tree is strong, tough and durable and takes a fine finish. The wood is excellent for firewood and charcoal. Cattle and goats eat leaves of the tree. Camels, goats and sheep consume flowers and pods. This plant species plays an important role in ecology. It is considered as the home of birds and provides shelter for the cattle, goats and sheep during summer days.<sup>25</sup>

### III. RESULTS AND DISCUSSIONS

The present paper reflects the ancient as well as recent applications of plants and their products in the economic manner. We found that the campus is rich in the plants of economic importance. A variety of valuable products sourced by them. It is necessary to know the importance so that the multiplication and conservation would be emphasized.

The seasonal plants also have the economic values as described and found in the current studies. Although the number of selected species is limited yet the diversity is present in the study area. It is very controversial to tell the botanical details to engineering students but for conservation of our mother earth, plantation is an essential step.

In a nutshell this type of studies might be helpful to those fields where the plants or their products are applicable in economic aspect. More plants should be identified and analyzed to reach the goal.

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### REFERENCES

- [1]. Biodiversity Wikipedia the Free Encyclopedia
- [2]. Conservation of Plant Biodiversity in Temple Yards of Luni Sub District, Jodhpur, Rajasthan, India, Shubha Dadhich, Dr. N. K. Dwivedi, IOSR Journal of Pharmacy and Biological Sciences, Volume 12, Issue 5 Ver. I (Sep. – Oct. 2017), PP 31-39.

- [3]. Intrinsic and Anthropocentric Values of Biodiversity Dr.M.P.Mishra, <http://www.ecosensorium.org/2009/12/intrinsic-and-anthropocentric-values-of.html>
- [4]. REVIEW: Biodiversity loss and its impacts on humanity, Bradley J. Cardinale and coworkers, 7 JUNE 2012, VOL 486, NATURE, 59
- [5]. The Wealth of India Series, CSIR, New Delhi.
- [6]. <https://www.mapsofindia.com/maps/rajasthan/geography-history>.
- [7]. Jodhpur: Wikipedia
- [8]. Bhandari M.M., Flora of Indian Desert, MPS Publications, 1985.
- [9]. Microbes and Sustainable Plant Productivity, Jamaluddin, Singh, Anuj Kumar, Indian Journal of Traditional Knowledge, Vol. 2(1), January 2003, pp. 27-39
- [10]. Indian Medicinal Plants, KIRTIKAR, K. R.; BASU, B. D. 918 pp.72 pp.ref.1,033 plates
- [11]. P. Warriar, V. Nambir and C. Ramankutty, "Indian Medicinal Plants," vol.5, Orient Longman Ltd. Hyderabad, 1996, pp-225-228
- [12]. Indigenous Drugs of India, R.N. Chopra and I. C. Chopra, Academic Publishers, 1993. [Indiahttp://www.ecoindia.com/flora/trees/tulsi-plant.html](http://www.ecoindia.com/flora/trees/tulsi-plant.html)
- [13]. Local communications of Campus and nearby persons.
- [14]. W. Kennard and H. Winters, "Some Fruits and Nuts for the Tropics," Misc. Pub. 801, Agricultural Research Service, US Dept. Agriculture, Washington, 1960.
- [15]. Use of Seeds of Malay Apple (*Ziziphus mauritiana*) and Related Species in Health and Disease, Tulika Mishra, Alistair G. Paice, Aruna Bhatia. Nuts and Seeds in Health and Disease Prevention, 2011, Pages 733–739.
- [16]. Use of seeds of Malay apple and related species in Health and disease. Mishra, Alistair G. Paice, Arun Banthia. Nuts and seeds in health and diseases prevention, 2011, pp-733-739.
- [17]. Senna (sennosides; Senokot): Side Effects and Dosage – MedicineNet, [https://www.medicinenet.com/sennosides\\_aandb-oral\\_tablet/article.htm](https://www.medicinenet.com/sennosides_aandb-oral_tablet/article.htm)
- [18]. 8 Amazing Benefits of Amla Juice: When Bitter is Better Sparshita Saxena , NDTV | Updated: October 23, 2017
- [19]. Production and Characterization of Bio based Transformer Oil from *Jatropha Curcas* Seed, Journal of Physical Science, Vol. 24(2), 49–61, 2013; Zaharaddeen Nasiru Garba, Casimir Emmanuel Gimba and Paul Emmanue.
- [20]. Duke, J.A. 1981a. Handbook of legumes of world economic importance. Plenum Press. New York.
- [21]. Economic assessment and conservation priorities of the Indian Thar desert medicinal plants, Mathur and Sundarmoorthy ,IJNPR vol.4(3) , Sept.2013,pp-283-294.
- [22]. Burkill, "A Dictionary of the Economic Products of the Malay Peninsula," Vol. 1, Crown Agents for the Colonies, London, 1935.
- [23]. H. Sagrawat, A. Mann and M. Kharya, " Pharmacological Potential of *Eugenia Jambolan*: A Review, " Pharm cogenesis Magazine, vol.2, 2006, pp.96-104.
- [24]. K. Lock, D. Stuckler, K. Charles worth and M. McKee, Potential uses and health effects of Indian Raspberry. "British Homeopathic Journal, vol.339, 2009, pp-449-452.
- [25]. ROHIDA (*Tecomella undulata*), Indian Council of Forestry Research and Education, Dehradun



Species 1 Ziziphus sp. Plant and fruits



Species 5 Acacia and gum acacia



Species 2 Senna and sennosides tablets



Species 6. Mulberry and jam of fruit



Species 3 Amla plant and pickle



Species 7. Jamun and seed oils



Species 4 Ratanjot plant herbarium



Species 8. Chamomilla plants and garland made by flowers



A school bus run by Jatropha Biodiesel



Species 9. Rohida Plant and handicraft from the wood