

## TRIBALS ARE INTEGRAL PART OF FOREST ECOSYSTEMS : A REFERENCE TO JHARKHAND TRIBES

SUSHMA DAS GURU

Department of Botany, Ranchi women's College, Ranchi  
sushmadasguru@yahoo.com

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### ABSTRACT

The human populations from the time immemorial have evolved amidst the large populations of plants. Even now, and all the time ahead we shall need plants for our different uses, for food, fodder and medicines .

**Keywords :** Ethnic community- Tribal settlement in Jharkhand, Jharkhand, Forests

### Introduction

Ethnic communities are engaged in grim battle for survival in most states in India and Jharkhand is no exception. Jharkhand is a state of India which derives its name as 'land of forests'. The state is located on the eastern corner of Vindhya Mountain Range and has rich plants and ethnic diversity. Lush green forest spreads on 29% of the total area of the state. About 27% of the population of this state is ethnic and more than 30 communities namely Oraon, Kharia, Mahli, Lohra, Santhali, Karmali, Birhor are its inhabitants. Their population in the state is scattered but mostly concentrated in Kolhan, Gumla, Khunti, Simdega etc. The life of these ethnic communities is closely woven around the forest from the pre-historic days. These communities depend entirely on plant resources which grow wildly and abundantly in the ambience. Due to their semi nomadic life and shifting of natural resources the traditional agricultural practices are absent in their life. They are solely dependent on

forest for their survival. The plant products like roots, leaves, fruits etc constitute their food. Like other tribal groups found in various parts of India the interaction of these ethnic people/ tribals with surrounding vegetation is greatly evident as they extensively use them for construction of their houses, as fodder for their cattle; many plants are used to prepare local beverages. Interestingly, some of the plants are considered as sacred by them and their religious rituals revolve around them, even the names of the many trees are used as symbols by various tribal communities. The most interesting aspect of life of ethnic people is the utilization of plant products in their health care systems.

This is intriguing that many botanically lower group-plants (such as mosses, lichens and ferns) and lot many angiospermous (flowering) plants used as medicines for centuries in ancient literatures in different countries (China, Korea, India; Goswami, 2009) have been known to tribal communities

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\* The paper is dedicated to the memory of my Father who had always encouraged me for research and teaching.

found in various parts of India (Keshri and Mukhopadyay, 2012; Joshi et al, 2013) Infact, there have been several dozen publications on these lines which obviously indicate that this knowledge regarding the importance of many such plants as medicine is being socially inherited for hundreds of generations.

### INTERACTION IN HEALTH CARE SYSTEM

W.H.O. has recognized about 20,000 medicinal therapeutic plants in the world of which 15 to 25% are available in India (Chopra,1980). Jharkhand has plenty of such medicinal plants in forest and are used by these ethnic communities. But as in past the exact nature of effective component has yet to be identified and standardized. The immediate task before us is to explore the valuable time-tested medicinal plants (Kurian, 2003; Tomar et. al, 2012)) of Jharkhand. Secondly, actions like conservation of germplasm, cultivation of medicinal plants will not only generate income for them but also improve the health care system of the ethnic people. Each ethnic community maintains a traditional health care system based on local flora. Despite the modern civilization the tribal still depend on the ancient method of treatment and herb of ethnic value which they find easily and think most effective and convenient. Some plants, commonly used for the treatment of joint inflammation are *Adhatoda vasica* (Basak), *Tinospora cordifolia* (Giloy), *Vitex negundo* (Sindhwar). Medicines are prepared in the form of paste, powder, extract of plant parts and oil.

In almost all parts of the world tribal use native plants for treating common ailments, several of these eg., *Cincona*, *Rouwolfia*, *Epicac* have been brought in to modern system of medicine. Almost all tribal of Jharkhand have been using only many local

plants for treating common diseases. For example, Leaf powder of *Tamarindus indica* (ginger) and *Ocimum sanctum* (Tulsi) for cough. *Vitex negundo* (Sindhwar) for common cold, *Cassia tora* for skin infection. In case of insect bite, snake bite and scorpion bite pest of *Rouwolfia* is used. In gastric disorders *Amaranthes spinosus* (cooked leaves) is commonly used. To treat malarial fever they commonly use *Andrographis paniculata* (Kalmegh) Powder with black paper in equal amount for malaria. For intermittent fever *Swertia chirata* (Chiraita) is used.

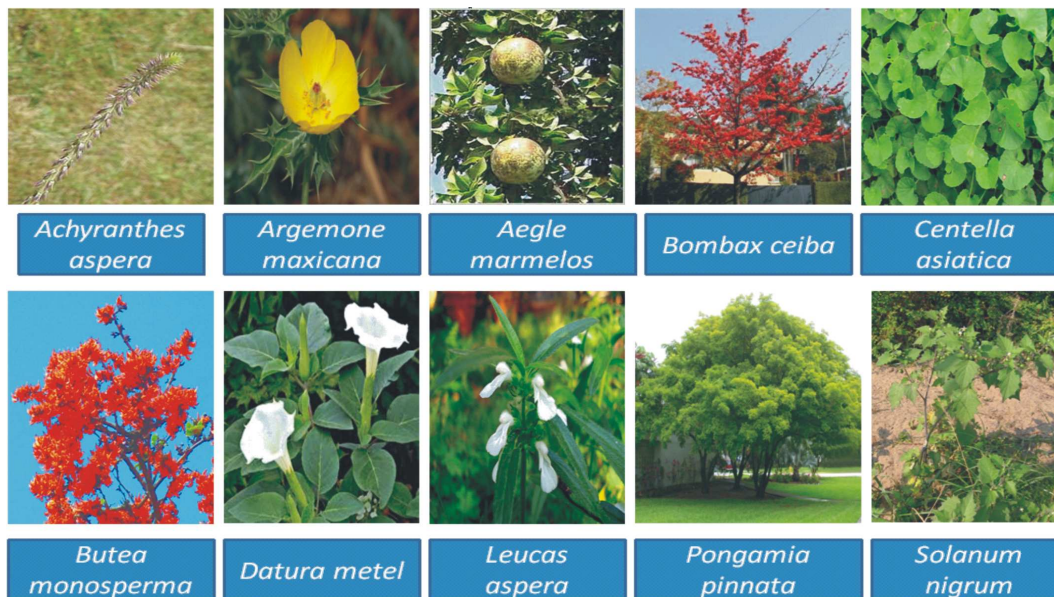
They have sound knowledge of medicinal plants and have identified several species which effectively treat rheumatoid arthritis. These include *Amorphophallus paeniifolius* (corms), *Calotropis gigantea* (root bark), *Cardiospermum helicacabum* (balloon vine), *Cymbopogon citrates* (lemon grass) etc. Several plants used for setting bone fracture and in orthopedic treatment of tribal Herbal healers. The roots, stem and leaves of plant like *Cissus quadrangularis* (Harjora), *Vanda tessala*, *Alternanthera sessilis* and of roots of *Cassia adnate*, *Sida cordata*, *Bauhinia purpuria* etc, are used for healing of wounds for 10-15 days on broken bones. They conserved these plants in natural forest for orthopedic treatment. Dried powder in form of paste of *Argimone Mexicana* is dried powdered and paste and then applied on infected portions of skin and wounds. Plants like *Albizia lebeck*, bark decoction used in leprosy and leaf and seed used for eye troubles and *Bauhinia purpuriya* is used in muscular pain, fever, headache and body swelling. Decoction prepare from roots of *Bombax ceiba* to cure white discharge in urine in tribal women is also conserved by the ethnic people.

Some of the most common wild medicinal plants used by the ethnic community of Jharkhand state are listed in the following table:

### Common Wild Medicinal Plants Used by the Ethnic People of Jharkhand

S.N	Botanical Name,Family Local /Trade/Vern Name	Medicinal uses
1	<i>Achyranthes aspera</i> L. Amaranthaceae,Chirchiri, Apamarga	<b>Fever</b> - Roots are tied around the neck <b>Asthma</b> - Whole plant (50-100g) is ground into a fine powder. 5g of this powder is taken with water till the ailment cures <b>Poisonous bites</b> - Roots (25g) are ground into a fine paste, and juice is extracted. The Juice is taken orally and the remaining paste is applied on the bite site Abscess Root paste is applied on the abscess
2	<i>Aegle marmelos</i> (L.) Corr. Rutaceae Bel	<b>Eye ailments</b> - Two drops of juice extracted from the green leaves are put in the eye <b>Sunstroke</b> - Juice extracted from the fresh leaves is taken orally <b>Dysentery</b> - One fruit is soaked in a litre of water, seeds are removed and juice is extracted from the pulp, sugar (20g) is added and the juice is administered orally <b>Diabetes</b> -Juice is extracted from fresh leaves (25g) and administered orally on an empty stomach
3	<i>Argemone mexicana</i> L. Papaveraceae Satyanasi	<b>Fever</b> - One teaspoon of root decoction is taken with a glass of water twice a day for 2 to 3 4days <b>Itching</b> - Seeds (50g) are ground, mixed in coconut oil and applied on the infected body part <b>Eczeema</b> — Whole plant (25g) is crushed along with black pepper (2 nos) and the paste is applied topically <b>Poisonous bites</b> - Juice extracted from roots is administered orally
4	<i>Bombax ceiba</i> L. Bombacaceae Semal	<b>Gynaecological disorder</b> - Gum (5g) is ground, mixed with water and administered for 5 days
5	<i>Butea monosperma</i> (Lamk.) Taub.Fabaceae Palash	<b>Cuts &amp; wounds</b> - Juice extracted from bark is applied <b>Intestinal worms</b> - Seeds (3-4 nos.) are ground in water and given orally
6	<i>Centella asiatica</i> (L.) Urban Fabaceae Brahmi, Mandukparni	<b>Jaundice</b> - Plant (10g) is ground, mixed with water, filtered and the extract is taken <b>Anorexia</b> - Juice from leaves (25g) is extracted and administered orally <b>Skin disease</b> -Plant is taken as a vegetable regularly
7	<i>Datura metel</i> L.Solanaceae Dhatura	<b>Asthma</b> -A seed soaked in water is taken orally initially, gradually a seed is increased every week for five weeks Stomachache Warm leaves are put on the belly <b>Arthritis</b> -Paste of the leaves is applied on the aching part <b>Backache</b> -Roots (20g) are boiled in mustard oil (250g), filtered and the oil is massaged
8	<i>Pongamia pinnata</i> (L.) Pierre Fabaceae Karanj	<b>Toothache</b> - Teeth are brushed with its stem <b>Fever</b> - Seeds (10g) and black pepper (2nos) are ground together, pellets of gram size are prepared and taken orally <b>Inflammation</b> - Paste of the seeds of karanj (few), ginger (4g) and asafetida (1g) is prepared and administered orally with water
9	<i>Leucas aspera</i> Spr. Lamiaceae Guma	<b>Migraine</b> - 2 drops of the juice extracted from freshly plucked leaves is put in the nose
10	<i>Solanum nigrum</i> L. Solanaceae Makoi	<b>Nasal bleeding</b> -Dry fruit (25g) is boiled in mustard oil (100g). The oil is filtered and applied on the forehead

### Common Wild Medicinal Plants Used By The Ethnic communities of Jharkhand



**Fig.1.** Medicinal plants

Tribal of Jharkhand have firm believe that some plants possess magical properties or have good omen characters. It is said if a patient is allowed to touch plant parts in form of such amulets by ojhas (traditional medicine practicing man) Or by experienced persons, he/she gets total relief from a particular diseases. For example, to treat snake bite, root of *Acacia nilotica* is tied on left hand with the help of scared thread. Root of *Achirathes aspera* if tied to hair hair of pregnant lady at the time of labor pains, the delivery is painless. They keep onion bulb (*Allium cepa*) in their pocket which is believed to protect them from the hot summer winds.

#### **RELIGIOUS INTERACTION**

Tribal and other cultures have been very careful in conserving the forest resources. They imposed taboos and social religious restrictions on cutting and plucking the whole plants. Some plants have also been named after gotras. It is responsibility of

the people to protect the plants of their gotra and they worship them as God and Goddess.

In India several plants like *Cynodon dactylon*(Doob grass), *Desmostachys bipinnata* (kush), *Ficus religiosa* (Peepal), *Ocimum sactum* (tulsi), *Cocos nucifera* (Coconut), *Shorea robusta* (sal), *Adina cordifolia* (Karam) etc, are considered as sacred. They are either worshiped or are used in rituals. In almost all religious ceremonies of Hindus, arica nut (*Areca catechu*), Betel (*Piper betel*), Barley (*Hordeum vulgare*), Paddu (*Oryza sativa*), Mustard seeds (*Brassica juncea*) etc. are used. Many plants are conserved in their natural habitat by tribels due to magico-religious belief that they are habitat of God and Goddess. The survey study reveals that plants and flowers have a profound influence on them. The ethnic people worship trees and flowers as they believe that God and Goddess reside in them. A list of such plants is presented in table below:

**Plants worshiped and conserved by the tribal on account of magico-religious belief**

S. N.	Botanical name	Local Name	Venacular Name	Family	Name of God and Goddess residing in plants
1	<i>Mangifera indica</i> L.	AAm	Amra	Anacardiaceae	Lord Vidyadhara
2	<i>Terminalia Arjuna</i> W & A	Arjun	Arjun	Combretaceae	Lord Brahma
3	<i>Citrus medica</i> L.	Lemboo	Nimbu	Rutaceae	Lord Brihaspati
4	<i>Aegle marmelos</i> Corr.	Bel	Bilwa	Rutaceae	Lord Shiva
5	<i>Ocimum Sanctum</i> L.	Tulsi	Basil	Lamiaceae	Goddess Lakshmi
6	<i>Sebsania grandiflora</i> L. (Pers.)	Agast	Agast	Fabaceae	Lord Narayana
7	<i>Nerium indicum</i> Mill.	Kaner		Apocynaceae	Lord Ganesha
8	<i>Nelubi nucifera</i> Gaertn.	Kamal	Nilampada	Nymphaeaceae	Goddess Ambika
9	<i>Calotropis gigantea</i> (L.) R. Br.	Madar	Swetpadma	Asclepidaceae	Lord Shiva

**Fig.2.** Plants of religious importance

## NUTRITIONAL INTERACTION

The ethnic and indigenous people have to depend up on several wild species for fruits, seeds, bulbs, roots and tubers which are used for edible purposes (Singh and Arora,1978; Vishwakarma and Dube, 2012; Nasheez and Pan,2012; Jain and Tiwari, 2013).

Sorghum (Jwar), Pennisetum (Bajra) and finger millet (Ragi) were perhaps known to the earliest Indian tribes. In addition, grains of paddy (*Oriza sativa*) are the main staple food for the tribal of Jharkhand. Grains with husk are referred to as paddy and when husk is removed they are known as rice. Boiled rice is locally known as 'Bhat', it is a rich source of carbohydrates. It is also use for making local alcoholic beverage known as "Handia". It is known to keep body warm in cold and cool in summer. It is an essential drink of tribal men and women ceremonials.

Munda tribe is one of the, major tribal community of the region depend considerably on the wild edible products of forest and they have accrued considerable knowledge in this field of potential interest. The people of Munda tribe follow agriculturist life style and they are logistically as well as economically dependent on plant resources for the fulfillment of their daily needs.

Some of the wild leafy vegetables are *Centella asiatica*, *Cassia tora*, *Madhuka longifolia*, *Madhuka latifolia*, *Alternanthera sessilis*, *bacopa monniera*, *Leukas aspera*, *Polygonum plebium*, *Sphaeranthus indicus*, *Olox scandens*, *Celocia argentia*, *Cleom terrestris* etc. In addition to having high nutritional values are used against different kinds of ailments ranging from cough and cold, asthma, skin disease to jaundice, anemia, blood pressure, heart disease, kidney problems etc. A list of such plants is presented in the following tables:

### Wild Plants consumed and conserved by tribal of Jharkhand for nutritional purposes.

S.N.	Botanical Name	Local/Trade/ Vernacular Name	Family	Habit/Parts used
1	<i>Amorphophallus paeoniifolius</i> L. (Corr.)	Ol, Suran	Rutaceae	Corm/Petioli/Bulbs
2	<i>Amarathus Spinousus</i> L.	Kanta sag, Kataili Chauli	Amaranthaceae	Herb/tender stem and leaves
3	<i>Bauhinia Purpurea</i> Linn.	<i>Koena</i> sag	<i>Caesalpinaceae</i>	<i>Tree/ leaves are eaten</i>
4	<i>Boerhaavia diffusa</i> L.	Khapra sag, Punarnava L.	Nyctaginaceae	Herb/Leaves and stems
5	<i>Begonia picta</i> Sm.	Pakhna sag	Bignoniaceae	Herb/Leaves and tender shoots
6	<i>Cassia tora</i> L.	Chakod,Chakwad	Fabaceae	Herbs/ Leaves
7	<i>Commelina bengalensis</i> (Forst.) Diels.	Kana sag, Bukana	Commelinaceae	Herb/Whole plant
8	<i>Euphorbia hirta</i> L.	Dudhi sag	Euphorbiaceae	Herb/Whole plant
9	<i>Ipomea reptans</i> (L.)Poir.	Kalmi sag,Karmi	Convolvulaceae	Herb/Tenderstem and Leaves
10	<i>Leucas cephalotus</i> Spreng.	Dhruw sag	Lamiaceae	Herb/Whole plant excluding root
11	<i>Melochia chochorifolia</i> L.	Dela sag	Sterculaceae	Herb/Tender shoots and leaves
12	<i>Oxalis corniculata</i> L.	Amtisag, amrul Sag, Khatti-buti	Oxalidaceae	Herb/Whole plant
13	<i>Portulaca quadrifida</i> L.	Noni sag, Lunkhi	Portulacaceae	Herb/Whole plant
14	<i>Portulaca oleratia</i> L.	Golgola sag, Lunkha	Portulacaceae	Herb/Whole plant except root
15	<i>Polygonum plebium</i>	Chimti sag	Polygonaceae	Herb/Leaves and tender stem
16	<i>Spinacea oleratia</i> L.	Palak sag	Chenopodiaceae	Herb/Whole plant except root.
17	<i>Trianthema decandra</i> L.	Purni sag	Aizoaceae	Herb/Leaves and tender stems
18	<i>Tridex procumbens</i> L.	Manya arkha	Asteraceae	Herb/tender plant parts

**Wild Plants Consumed By Ethnic Communities Of Jharkhand**



**Fig.3.**

**MULTIPURPOSE INTERACTION**

Apart from the above interactions the ethnic people depend on various plants

for the fulfillment of their requirements in day to day life. The following is the chart depicting various plants used for different purposes.

**Plants for Multipurpose interaction**

SN.	Botanical Name/Family Local/Trade/Vernacular Name	Habit	Purposes
1	<i>Diospyros melanoxylon</i> EbenaceaeKend, kendu	Medium sized tree	The tree has got big commercial value. Its importance lies in <b>fruits and leaves</b> . The <b>fruits</b> and powdered seeds are eaten. The seeds can be intoxicating. They have been prescribed as a cure for mental disorders, nervous breakdown and palpitation of the heart. The <b>fruits</b> have a cooling and an astringent effect. <b>Dried flowers</b> are used in urinary, skin and blood diseases. The <b>bark</b> is astringent; its decoction is used in diarrhea. <b>Wood</b> is hard, fairly durable and used for building, solder poles, mine props and shafts of carriages.
2	<i>Madhuka longifolia</i> Sapotaceae Mahuwa	Tree	<b>Flower</b> is edible and a food items for tribal. They are used to make syrup for medicinal purposes. The <b>flowers</b> are used to

- |   |  |       |  |
|---|--|-------|--|
| 3 | <b><i>Ficus benghalensis</i></b><br><i>Moraceae</i> Bar, Bargad            | Tree  | produce an alcoholic drink. It is an essential drink for tribal men and women during celebrations. <b>Mahua oil</b> has emollient properties and is used in skin disease, rheumatism and headache, It is also a laxative and considered useful in habitual constipation, piles and hemorrhoids as an emetic. <b>Logs</b> are used as firewood and doors, cots etc. <b>Leaves</b> are use as fodder and making the platter. Frits are eaten and used to prepare sharbat traditionally. The <b>wood</b> is used in making door panels, boxes, well curbs, furniture and other items. Wood of aerial root is stronger and is used for the tent poles and cart yokes. <b>Leaves, barks, seeds and figs</b> are used for the variety of disorders, like diarrhea, dental, diabetes and urine disorders.   |
| 4 | <b><i>Shorea robusta</i></b><br><i>Dipterocarpaceae</i><br><br>Sal. Sakhua | Tree  | <b>Leaves</b> are used to make platter, bowls, small baskets etc. distilled leaves produce an oil which is used in perfuming, flavoring chewing gums and tobacco. <b>Dried and fallen leaves</b> are used as fertilizer. Tribal people give marriage invitation in the form of folded leaves, with a little bit of turmeric and rice inside. <b>Seed oil</b> is edible, used in cooking and for the burning in the oil lamps. <b>Resin</b> is used in medicine as an astringent, given in diarrhea, dysentery, skin diseases and ear troubles, in the foot care system and detergent. <b>Seeds</b> have insecticidal properties and are used to treat dental problems, for cleaning the skin of oily secretion, as the cleanser for washing hair. Its <b>logs</b> are used for the purpose of making doors, windows, foundation and furniture. |
| 5 | <b><i>Pongamia pinnata</i></b><br><i>Fabaceae</i> Karanj                   | Tree  | <b>Seeds</b> are used for extracting oils. <b>Wood</b> is used in the construction of houses and other mundane works' <b>Seeds, leaves and barks</b> are used for making medicine for skin diseases. Its most popular use is as teeth cleaner called datun. It's <b>sticks</b> are supposed to be carrying high therapeutic value for the better upkeep of the teeth.  |
| 6 | <b><i>Schleichera oleosa</i></b> <i>lour</i><br><i>Sapindaceae</i> Kusum   | Tree  | Powdered <b>seeds</b> are applied to wounds and ulcers of cattle to remove maggots. <b>Wood</b> is used as fire wood and to make pestles, cart wheels, axles, ploughs, tool handles etc. The tree is used as host for lac-insect. Seed cakes used for cattle feed.   |
| 7 | <b><i>Azadirachta indica</i></b><br><i>meliaceae</i> Neem                  | Tree  | It is a multi-pulpous tree possessing anti-diabetic, anti-bacterial anti anti-viral properties. <b>Leaves</b> are consumed mixed with other vegetables. It is very useful in cases of worms, ulcers and malarial fever. <b>Flowers</b> are used to make poultice for skin problems and ulcers. <b>Oil</b> extracted from <b>seeds</b> is very lubricating and penetrating and is considered a supplementary 'healing oil' useful for painful joints and muscles. It has a very beneficial effect on cleaning up scalp conditions and dandruff and is also used to promote healing of wounds.   |
| 8 | <b><i>Syzygium cumini</i></b><br><i>myrtaceae</i>                          | Jamun | <b>Leaves and barks</b> are used for controlling blood pressure and gingivitis. <b>Leaves</b> are also used as food for live stock, as they have good nutritional value. <b>Ripe fruit</b> is eaten. It is a high source of vitamin A and C. Vine and vinegar are also prepared from fruits. The <b>fruits</b> have been used for a wide variety of ailments, including cough, diabetes, dysentery, and inflammation and ring worm. The <b>unripe frits</b> are often used for making prickles. The <b>wood</b> is strong and water resistant. Because of this it is used in railway slippers. Sometimes they use it to make cheap furniture and village dwellings though it is relatively hard.   |



- 9 *Moringa oleifera* Lam. Sanjhna, Moringaceae Sahjan  
**Leaves, flowers and fruits** are used as vegetables and prickles. **Leaves** are also used as fodder. **Edible oil** is extracted from **seeds**. Powder from **seed kernel** works as coagulant to clarify turbid water. **Roots, leaves and seeds** are used in medicine for curing asthma, gout, rheumatism, eye diseases, enlargement of liver and scurvy (Kurian, 1998). **Unripe Fruit** is used as vegetables, salads, and to prepare jams, jelly and squash. Almost all parts like **roots, latex, leaves, flowers, fruits and seeds** are used as medicines for treating ulcers, eczema, wounds, cough, and bronchitis and for expelling worms. **Seeds** are said to be antidote for cancer and remedy against tuberculosis.
- 10 *Carica papaya* Linn. Caricaceae

### Plants for multi purpose interaction

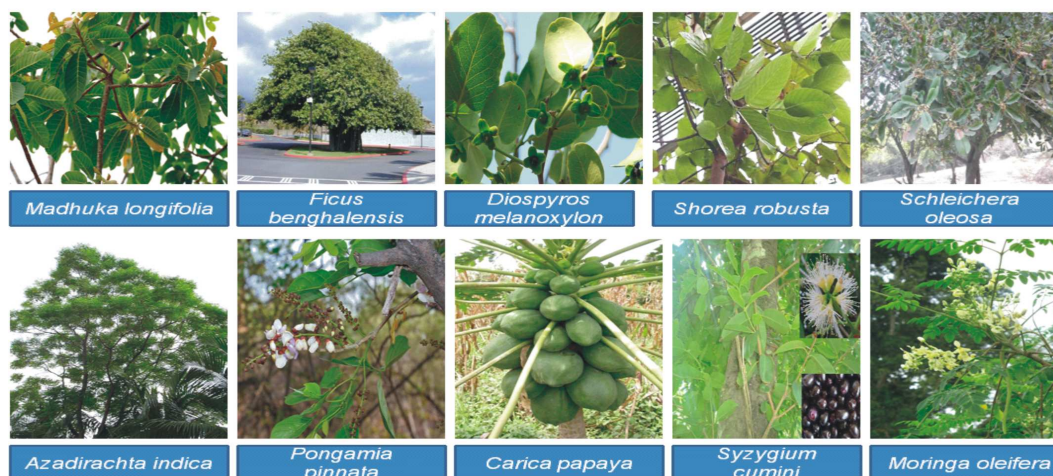


Fig.4. Plants of Common use

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