Journal Homepage: - www.journalijar.com
INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)
Article DOI: 10.21474/IJAR01/2855
DOI URL: http://dx.doi.org/10.21474/IJAR01/2855
ISSN NO. 2320-5407

*RESEARCH ARTICLE*

# SURVEY OF MINOR FOREST PRODUCTS AND THEIR VALUES IN SIRSI TALUK

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*Manuscript Info*

***Manuscript History***

Received: xxxxxxxxxxxxxxx
Final Accepted: xxxxxxxxxxx
Published: xxxxxxxxxxxxxxx

***Key words:-***
Non-timber forest products, Medicinal values, Sirsi taluk, Karnataka.

*Abstract*

Minor forest products or Non-timber forest products (NTFPs) have an important role in forest social life from different aspect. The knowledge related to forest and forest products have developed among forest com-munities for generations. Non-timber forest products (NTFPs) are any product or service other than timber that is produced in forests. NTFPs are used and managed in complex socioeconomic and ecological environments. In traditional forest communities, many NTFPs may be used for subsistence while others are the main or only source of income. Some NTFPs have significant cultural value, as totems, incense, and other ritual items.



## Introduction:-

Non-timber forest products (NTFPs) are wild plants and fungi that people gather and use for food, medicine, crafts, spiritual, aesthetic, and utilitarian purposes. The NTFPs includes plants that can be found in a variety of habitats across the forested landscape. Therefore, in this sense, we will find plants that make their home in old fields and wetlands as well as the woods. The many species commonly used today were first introduced to the area by settlers because of their medicinal or edible properties.

A NTFPs is literally any and every natural resource from the forest except timber. This is illustrated in the definition of Wickens (1991) that NTFPs are 'all the biological material (other than industrial roundwood and derived sawn timber, wood chips, wood-based panels and pulp) that may be extracted from natural ecosystems, managed plantations, etc. and beautilized within the household, be marketed, or have social, cultural or religious significance'.

They cover a wide range of products including bamboo, thatching materials, fruits, seeds, nuts, tubers and medicinal plants. In India there are about 15,000 plant species out of which nearly 300 species (20%) yield NTFPs. However, only about 126 species (0.8%) have been commercially developed (Murthy *et al.*, 2005). Non-timber forest products (NTFPs) contribute significantly to a rural household's livelihood in the African semi-arid tropics. On average, income from NTFPs accounted for 39% of total household income and had a strong equalizing effect on it. However, the economic relevance of NTFPs differs between households: Poorer households are relatively more dependent on NTFPs in order to full fill basic needs than wealthier households. This is mainly due to a significant greater land holding. Moreover, the study revealed that net income from NTFPs reflects traditional sources of livelihoods of different ethnic groups (Heubach *et al.*, 2011).

## Materials and Methods:-

The present study is the outcome of exhaustive field survey undertaken during year of 2014.

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**Study area.**
Sirsi taluk is located in Western Ghats of Uttar Kannada district, Karnataka state, India. It lies in 14°70' N latitude and 74°80' E longitude. Mean annual rainfall ranges from 2,000 mm to 6000mm. About 95% of the rainfall is received during the month of June to September, when the southwest monsoon is at its climax. Temperature range from 22°C to 36°C with relative humidity of dry month and monsoon month were less than 35% and 75% respectively. (Fig.1)

**Collection of plant material:-**
Some of the important non-timber forest products were collected from the forest of Sirsi taluk, Uttar Kannada District, Central Western Ghats of Karnataka.

**Identification of Plants:-**
Diagnostic features of all the specimens were studied and relevant field notes were made on fresh plant materials. Photographs were also taken for each species. Specimens were identified with the help some of the tribal community. Authentications of species were done with the help of Panduranga Hegde, Prakruthi Institution.

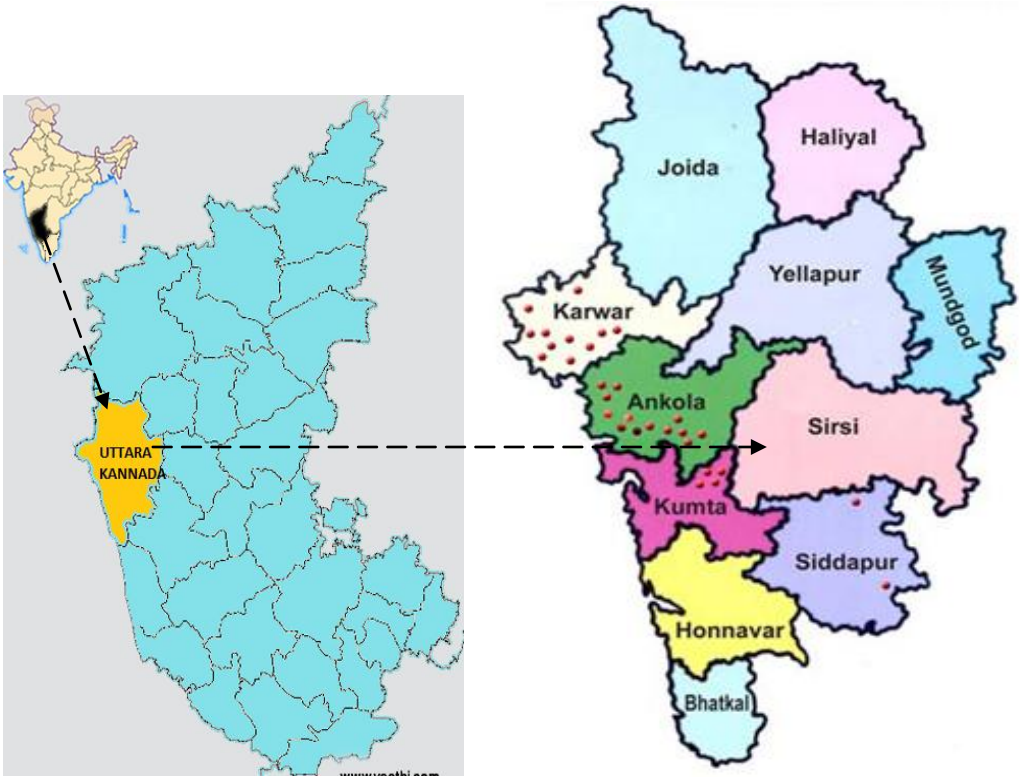



**Fig. 1:-** Location map of Sirsi Taluk, Uttar Kannada District.

## Results and Discussion:-

***Acacia concinna* Willd:-**
**Family:-** Fabaceae
**Parts used:-** Leaves, Fruits
**Harvesting:-** April to May
**Collection and Processing:-**
The fruit pods, leaves were collected and dried in direct sun light these dried were ground into a powder. Made a pack it should be free from moisture.
**Medicinal uses:-**
*Acacia concinna* Willd. has been used traditionally for hair care since long time in India. Fruits are used for washing hair, for promoting hair growth, expectorant, emetic and pungitive. Aqueous extract of this fruit has been used as detergent and natural shampoo preparations. It had antimicrobial activity and also it contains secondary metabolites

such as alkaloids, flavonoids, phytosterols, saponin, tannins, phenolic compounds, gums (Todkar *et al*.,2010). Leaves were used as anti-dandruff, pods were used for some skin diseases. It acts as anti-dermatophytic (Natarajan and Natarajan 2009).

***Ailanthus triphysa* (Dennst.) Alston:-**
**Family:-** Simaroubaceae
**Parts used:-** Gum or Resin.
**Processing:-** In mature plant, cut or hole made on the stem portion up to 2-3inches in depth. Polythene cover or plastic bowls attached below the cut portion to collect the gum or resin. It is in the form of semi liquid state then it solidifies in 15-20 days at room temperature.
**Medicinal uses:-**
Traditionally used as dhupa or resin to release mental stress. Its pleasant smell gives relaxation to the mind and also used in bronchitis problems, treatment of cough, cold, fever. Bark is used as antibacterial and in chronic rheumatism treatment.
**Other uses:-**
Resin of the plant is mixed with coconut oil and used in candle making in rural areas.

***Artocarpus gomezianus* Wall:-**
**Family:-** Moraceae
**Harvesting:-** April and May varies from region to region.
**Parts used:-** Fruits, Bark.
**Processing:-** The fruits are made into thin half- moon shaped slices and they dried under the direct sunlight for 8-10 days. The seeds are separated and discarded simultaneously. The dried slices treated with common salt. The processed product is known as 'Huli Seppe.'The processed slices are powdered along with2-3% of cooking salt or without salt. The processed product earn up to 70-80 per kg.
**Medicinal uses:-**
*A. gomezianus* Wall. The powder is used in treatment of dysentery, dry cough in local areas. The fruits are edible it contains high nutritive value.
**Other uses:-**
It is used in preparations of sambar, fish curry, papad in Sirsi taluk. It is used replace of tamarind and most important ingredient for the preparation of dishes in Western Ghats (Sarala and Krishnamurthy 2014).

***Calamus rotanga* Linn:-**
**Family:-** Arecaceae
**Parts used:-** Bark
**Processing:-** Mature plant stems are pulled out and the dead leaf sheaths removed using a sharp knife. Then the soft upper most part is dipped or immersed in the lake or river 15-20 days. After fibers became very elastic in nature, brittleness is completely removed.
**Uses:-**
It is one of the most useful forest products next to timber plants. It plays an important role in the rural economy, employing many people in rural areas. Fiber is used to make mat, bucket, flower basket, protecting sheath for small houses.

***Canarium strictum* Roxb:-**
**Family:-** Burseraceae
**Harvesting:-** Rainy season
**Parts used:-** Resin
**Medicinal uses:-**
*C.strictum* Roxb. species producing resin, is a rich source for making fragrance smoke (Sambrani or Blackdammer) and it is given for the treatment of bronchial diseases and orally given resin powder used to cure rheumatism and it is one of the major drug in Siddha medicine. Black dammer resin is also used as an alternate for burgundy pitch in making medical plasters. Extreme usage of resin in industry as well as in traditional medicine (Muthuswamy and Senthamarai., 2014).

***Cinnamomum tamala* (Buch-Ham) T. Nees:-**
**Family:-** Lauraceae
**Parts used:-** Leaves.
**Medicinal uses:-**
Leaves are used as astringent, stimulant, carminative and also used in treatment of rheumatism, colic, diarrhea, nausea and vomiting. The essential oil of leaves used as diuretic, anti-flatulent and cardiac disorders. It is also used in pharmaceutical preparations because of its hypoglycemic and carminative properties (Sharma and Nautiyal 2011). The antimicrobial potentials of essential oil and oleoresins were reduced the growth of food born fungi and bacteria ( Kapoor *et al*., 2008 ). It is also used as anti-gonorrhoeic and antidote for scorpion sting (Shah and Panchal, 2010).
**Other uses:-**
It is commonly called "Bay Leaf" it is used as spices. It is one of the major exporting spice. It also used as food preservatives.

***Cinnamomum zeylanica* J. Presl:-**
**Family:-** Lauraceae
**Parts used:-** Bark.
**Medicinal uses:-**
*Cinnamon* is used in flatulence control and indigestion, bark used in mouth washes. *C. zeylanica* J. Presl. Used in the treatment of dyspeptic conditions such as mild spastic condition of the gastrointestinal tract, loss of appetite, abdominal pain and diarrhoea. Ayurveda and folklore system of medicine in India from the era of Charakasamhita. It is used for the treatment of inflammation of the eye, leukorrhoea, vaginitis and toothache problems (Manosi *et al*., 2013).It is act as antioxidant, anti-parasitic, antimicrobial, it lowers the blood glucose level and blood pressure (Ranasinghe *et al*., 2013).

***Entada rheedii* Spreng:-**
**Family:-** Fabaceae
**Parts used:-** Seed.
**Medicinal uses:-**
The plant is used as a topical ointment against jaundice, toothache, ulcers and to treat muscular-skeletal problems.
**Other uses:-**
The seeds are sought after as pieces of jewelry and as good-luck charms.

***Garcinia cambogia* (L.) Roxb.**
**Family**: Clusiaceae
**Harvesting:** June to July.
**Parts used**: Fruit and seed.
**Processing:** The ripe fruit is halved or sectioned and spread in thin layers, dried in the fire smoke for three to seven days to moisture level of about 15 to 20percent. Commercially available rind is loaded with considerable amounts of common salt, which is added during drying. Seed is completely dried and crushed and then boiled the crushed seeds in water and skimming off the fat from the top. This fat is commonly called *G. cambogia* ghee. It is stored in plastic bottles.
**Medicinal uses:-**
The fruits having sour taste are help to promote digestion. The fruit juice possesses anti-scorbutic, anthelmintic, antibacterial and cardio tonic properties. Also used in the treatment of piles, dysentery, tumors, pains and heart complaints. The decoction of the fruit rind is given in rheumatism and bowel complaints. Rind of the fruit also reduces blood cholesterol level. It is also possess antioxidant, anti-helmintic, anti-cancer and antimicrobial activity (Tharachand *et al.*, 2013).
**Other uses:-**
The fruit rind and extracts of *Garcinia* species are used in many traditional recipes. The dried rind is also used for polishing gold and silver**.** The yellow resin obtained from the fruit is used as varnish. Fat of *G. cambogia* used replace of ghee for making some sweet dishes, like halwa, barffi, banana sweets.

***Garcinia indica* (Thouars) Choisy:-**
**Family:-** Clusiaceae
**Harvesting:-** April-May.
**Parts used:-** Fruit and seed.

**Processing:-** The ripe fruit is halved, fleshy portion containing the seed is removed and spread the skin of the fruit in thin layers, dried in the sun light for three to seven days to moisture level of about 15 to 20 percent. Commercially available rind is loaded with considerable amounts of common salt, which is added during drying. Kokam butter: Seed is completely dried and crushed and then boiled the crushed seeds in water and skimming off the fat from the top. This fat is in the form of flakes. Kokam syrup: Kokum rind by adding cane sugar at the rate of 1:2.Themixture is kept in sun light then syrup is obtained it is filtered with the help of cleaned muslin cloth. Then it is stored in bottles.

**Medicinal uses:-**
The fruit has an agreeable flavour - and a sweetish acid taste. Kokum has been traditionally used as an acidulant. The fruit of *G. indica* is anti-helmintic and cardio tonic and useful for treatment of piles, dysentery, tumors, pains and heart complaints. Kokum butter is considered nutritive, demulcent, astringent and emollient. It is suitable for ointments, suppositories and other pharmaceutical purposes (Braganza *et al*.,2012). It is used for local application to ulcerations and fissures of lips, hands etc. The cake left after extraction of oil is used as manure. Kokum butter is used as a specific remedy for diarrhea and dysentery (Kureel *et al*,.2009).

**Other uses:-**
The traditional fish curry, Sambar Kokum rind is a usual ingredient. The dried rind, strained in water, is boiled into a soup called solkadi. Spiced and sweetened with jaggery it is a must for marriage feasts and functions in Sirsi taluk. Red syrup, extracted from the rind of the ripe fruit with the help of sugar is stored in the households of this region for making cool drinks in summer.

***Mangifera indica* L:-**
**Family:-** Anacardiaceae
**Parts used:-** Fruit, leaves, bark.
**Processing:-** This particular pickle makes use of very tender, small, unripe mangoes. This pickle is known to last for long. You can use the tiniest mangoes too. Take a jar, any kind will do, for instance a 'Bharani' (traditional ceramic jar) would be perfect. Boil and cool some water. When the water is warm, add the rock salt so that it dissolves. Filter the brine. Wash the small, tender mangoes. The tip of the stalk, or the knob should be included and not discarded. Pour the saline solution in the jar. Drop the mangoes in the brine. The salt water level should be an inch or two inches above the level of the tiny mangoes. Close the jar. The lid should not have even a trace of rust, so it is best to avoid using a metal lid and store for two weeks. This lasts for a year to up to three years.
**Medicine uses:-**
The leaves make a plaster to remove warts and also act as a styptic. Seeds are used to treat stubborn colds and coughs, obstinate diarrhoea and bleeding piles. The bark is astringent, homeostatic and anti-rheumatic. Mango kernel decoction and powder (not tannin-free) are used as vermifuges and as astringents in diarrhoea, hemorrhages and bleeding hemorrhoids. The fat is administered in cases of stomatitis. Extracts of unripe fruits and of bark, stems and leaves have shown antibiotic activity (Bharati R.P, 2013). Dried flowers are of medicinal value and used for curing dysentery and cattarah of bladder. It is a cure for wasp sting, rubbed between hands and left to dry.
**Other uses:-**
Unripe ripe and processed (at various stages of maturity, in the form of pickles or chutneys, dried slices, canned slices in syrup, juice and puree or paste). The fruit is surrounded by golden, juicy flesh. The green fruit is also used to flavour fish and meat dishes in the same way as tamarind and other sour fruits. The kernels are important as a famine food, but the astringency has to be removed by boiling, roasting and soaking them for a long time. Young leaves are cooked as a vegetable.

***Mammea suriga* (Buch-Ham. ex Roxb.) Kosterm:-**
**Family:-** Clusiaceae
**Harvesting:-** March-July.
**Parts used:-** Flower and root
**Medicinal uses:-**
Flower buds mild stimulant, carminative, astringent and used in dyspepsia. It is used in many skin diseases like ringworm, intertrigo, eczema, dandruff (Bhat *et al*., 2014). Its root paste is used in the treatment of partial headache. The extract of the plant root contain antibacterial and antifungal activity (Mahesh *et al*., 2015).
**Other uses:-**
Flowers used in Hindu worship and for decorating hair. Manly flower is used to prepare scents.

***Murraya koenigii* L:-**
**Family:-** Rutaceae
**Parts used:-** Leaf.
**Medicinal uses:-**
*Murraya koenigii* leaves is boiled with coconut oil reduced to blanked residue which is then used as natural hair tonic and hair growth promoter. It can be used as anti-helmentics, it also acts as febrifuge, blood purifier, antifungal, depressant, anti-inflammatory, body aches, for kidney pain and vomiting *Murraya koenigii* is used as a stimulant and anti-dysentric. It is also effective against diabetes Mellitus. Leaves are applied externally to bruises and eruption. The leaves and roots are bitter in taste analgesic, cure inflammation and itching. It is also useful in leucoderma and blood disorders and also cures diseases like piles. It can be also used to stop vomiting by infusion of the toasted leaves. If someone is bitten by poisonous animals, local application of the leave paste is effective. In an ancient systems of medicine including Ayurveda, Siddha and Unani, *Murraya koenigii*, a medicinally important herb (Jain *et al*,.2012).
**Other uses:-**
Fresh leaves, dried leaf powder, and essential oil are widely used for flavouring soups, curries, fish and meat dishes, eggs dishes, traditional curry powder blends, seasoning and ready to use other food preparations. The essential oil is also utilized by soap and cosmetic aromatherapy industry (Kumar *et al*.,2013).

***Myristica malabarica* Lam:-**
**Family:-** Myristicaceae
**Parts used:-** Fruit.
**Medicinal uses:-**
Seeds are used in external application for indolaent ulcer, crude fat from seeds analgesic and used in rheumatism, gangrene. It acts as antioxidant. Mainly it is used as spices.

***Myristica dactioloides* Gaertn:-**
**Family:-** Myristicaceae
**Parts used:-** Fruit.
**Medicinal uses:-**
The yellowish mace is used as an adulterant for true mace (*Myristica fragrans* Houtt). Seeds are used in external application for indolaent ulcer, crude fat from seeds analgesic and used in rheumatism, gangrene. It acts as antioxidant. Mainly it is used as spices.
**Parts used:-** Fruit and leaves.
**Uses:** Its fruit is sweet in taste and used as nutritive food. Leaves were dried and used to make preparation of mat, bucket, cap.

***Phyllanthus emblica* Linn:-**
**Family:-** Phyllanthaceae
**Parts used:-** Fruit.
**Medicinal uses:-**
The fruits are sour, astringent, bitter, acrid, sweet, cooling, anodyne, ophthalmic, carminative, digestive, stomachic, laxative, alterant, aphrodisiac, rejuvenative, diuretic, antipyretic and tonic. They are useful in vitiated conditions of tridosha, diabetes, cough, asthma, bronchitis. It acts as anticancer, antitussive, antioxidant (Khan, 2009). Plant reveals its analgesic, antiatherogenic, neuroprotective, chemo modulatory properties (Dasaroja and Gottumukkala, 2014). It also act as immune-modulatory, anti-inflammatory (Singh *et al*,.2011).

***Sapindus emarginatus* Vahl:-**
**Family:-** Sapindaceae
**Parts used:-** Fruit.
**Medicinal uses:-**
The members of genus *Sapindus* are well known or their medicinal values. For thousands of years it has been used for various purposes. The fruits of *Sapindus emarginatus* are commonly used for hair problems and also in preparation of shampoos. Traditionally it used as anti-inflammatory and antipyretic. The plant has antimicrobial, antiulcer, fungicidal, anti-inflammatory activity (Pelegrini *et al*., 2008).

***Strychnous nux-vomica* L:-**
**Family:-** Loganiaceae
**Parts used:-** Fruit and seed.
**Medicinal uses:-**
The properties of *nux-vomica* are substantially those of the alkaloid Strychnine. The motor or sensory ganglia of the spinal cord; during the convulsion there is great rise in blood pressure; in some types of chronic lead poisoning it is of great value. In cases of surgical shock and cardiac failure large. It has hepatoprotective, anti-snake venom, immuno-modulatory effect (Kumar *et al*., 2012). It has antioxidant and anti-diabetic property (Chitra *et al*., 2010).

***Terminalia belerica* Roxb:-**
**Family:-** Combretaceae
**Parts used:** Fruit.
**Medicinal uses:-**
The fruit rind (pericarp) is astringent, laxative, anthelmintic, pungent, germicidal and antipyretic. It is applied in a diverse range of conditions including cough, tuberculosis, eye diseases, anti-HIV-1, dyspepsia, diarrhoea, dysentery, inflammation of the small intestine, biliousness, flatulence, liver disease, leprosy, cleanse the blood and promote hair growth in the Ayurvedic drug. *Terminalia belerica*. Roxb is growing widely throughout the Indian subcontinent, Sri Lanka and SE Asia. In the Traditional system of medicine like Ayurveda, Siddha and Unani, medicinal uses have been described as it is works in disease of every system. It is used as antioxidant, antimicrobial, antidiarrheal, anticancer, antidiabetic, antihypertensive and hepatoprotective agent (Motamarri., 2012).

***Terminalia chebula* Retz:-**
**Family:-** Combretaceae
**Parts used:-** Fruit.
**Medicinal uses:-**
Traditionally used as used this plant in the treatment of asthma, sore throat, vomiting, hiccough, diarrhea, dysentery, bleeding piles, ulcers, gout, heart and bladder diseases. The plant has been demonstrated to possess multiple pharmacological and medicinal activities, such as antioxidant, antimicrobial, anti-diabetic, hepatoprotective, anti-inflammatory, anti-mutagenic, anti-proliferative, radio-protective, cardio-protective, antiarthritic, anticaries, gastrointestinal motility and wound healing activity (Surya Prakash *et al*., 2012).. Bio-active compounds isolated from *T. chebula* has prospective use in alleviating ageing, cancer and various disorders (Sawant *et al*., 2013).

***Zingiber cassumunar* Roxb:-**
**Family:-** Zingiberaceae
**Medicinal uses:-**
The decoction is prescribed for asthma, and as a topical for rheumatism. Pulverized rhizome also used for diarrhea. The fluid squeezed from the swollen ends of club-shaped stems is used for shampoo. Rhizome is used like the common ginger, as a remedy for coughs, asthma, parasitism, and variety of skin diseases. Compressed rhizomes used for bruises and cuts and to treat headaches, toothaches, ringworm, joint sprains.

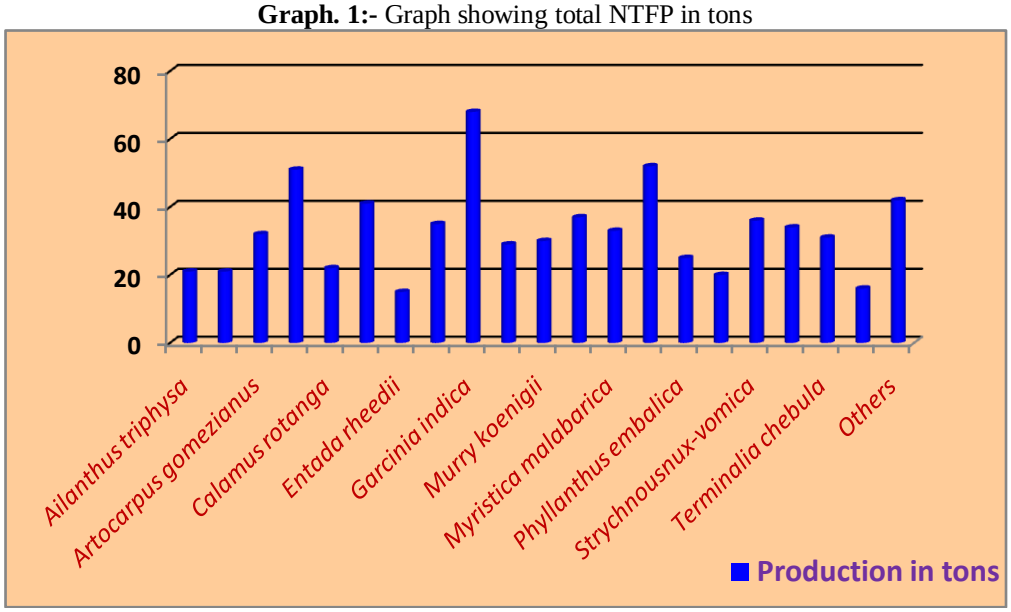
**Other uses:-**
Powdered rhizomes used as perfume.

**Table. 1:-** The production of Minor forest product in Sirsi taluk

| Sl.No. | Plants name | Production in tons |
|---|---|---|
| 1. | *Acacia concinna* | 21 |
| 2. | *Ailanthus triphysa* | 21 |
| 3. | *Artocarpus gomezianus* | 32 |
| 4. | *Canarium strictum* | 51 |
| 5. | *Calamus rotanga* | 22 |
| 6. | *Cinnamomum species* | 41 |
| 7. | *Entada rheedii* | 15 |
| 8. | *Garcinia cambogia* | 35 |
| 9. | *Garcinia indica* | 68 |
| 10. | *Mangifera indica* | 29 |

| | | |
|---|---|---|
| 11. | *Murraya koenigii* | 30 |
| 12. | *Myristica dactiloides* | 37 |
| 13. | *Myristica malabarica* | 33 |
| 14. | *Mammea suriga* | 52 |
| 15. | *Phyllanthus embalica* | 25 |
| 16. | *Sapindus emarginata* | 20 |
| 17. | *Strychnousnux-vomica* | 36 |
| 18. | *Terminalia belerica* | 34 |
| 19. | *Terminalia chebula* | 31 |
| 20. | *Zingiber cassumunar* | 16 |

**Graph. 1:-** Graph showing total NTFP in tons




## Conclusion:-

Minor forest products or Non-timber forest products (NTFPs) have an important role in forest social life from different aspect. Till date, the state Forest Department succeeded to enlist several forest resources from the uses by native villagers. The knowledge related to forest and forest products have developed among forest com-munities for generations. Therefore, for the configuration of states own sustainable forest governance policy, more academic research on such indigenous forest based social life is extremely essential. Non-timber forest products (NTFPs) are any product or service other than timber that is produced in forests. They include fruits and nuts, vegetables, medicinal plants, gums, resins, essences and a range of barks and fibres such as bamboo, rattans, and a host of other palms and grasses. NTFPs are used and managed in complex socioeconomic and ecological environments. In traditional forest communities, many NTFPs may be used for subsistence while others are the main or only source of income. Some NTFPs have significant cultural value, as totems, incense, and other ritual items. Others have important medicinal value and contribute to the community's health and wellbeing. The role of forests in nutrition and health, land tenure change, the increasing move by small communities to monetary based economies and the cultural importance of NTFPs.

## Acknowledgment:-

Authors acknowledge the Co-ordinator, Department of Botany, Davangere University, Davangere for the facilities extended.

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