Role of Non-Timber Forest Products in income generation of the tribal population– A Review

ABSTRACT

Non-Timber Forest Products (NTFPs) encompasses all the biological materials, other than timber, which are extracted from the forest for human use. NTFPs can be of two types. They are tradable and non-tradable. The tradable NTFPs are significant in international trade. NTFPs also constitute a critical component of food security and are a crucial source of income for the poor in many developing countries. Around 58 per cent of the entire income earned by the tribes in Kerala is through NTFP collection. Most of the employment (54.04%) was generated by the wage sector followed by NTFPcollection (33.77%). About 84 speciesof NTFPs were found to be collected and used by the tribals for various purposes such as food, medicines, and raw materials for making implements and also as a source of income.NTFPs are marketed through different marketing channels depending upon several factors such as the nature of the product, demand, the distance to the market etc.If the society and EDC can start the value addition units of the NTFPs with the involvement of indigenous communities, it guarantees effective utilization of their free time and a better livelihood through enhancement of their income from NTFP's.

Keywords: Food security,Harvesting of NTFPs, Marketing channels,Non-Timber Forest Products (NTFPs),Tradable

INTRODUCTION

The forests provide timber and non-timber forest products besides invaluable environmentalservices. Non-Timber Forest Products (NTFPs) refer to all biological materialsother than timber extracted from natural forests for both human and animal use. It hasbothconsumptive and exchange value. Different terms such as secondary forest products, Minor Forest Products (MFP), Non-Wood Forest Products (NWFP) and Non-Timber Forest Products (NTFP) are being used by governments, institutions and academics.

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What are NTFPs?

Globally NTFPs or NWFPs are defined as "forest productsconsisting of goods of biological origin other than wood, derived from the forest, other woodlandand trees outside

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forests" (Chandel*et al.*, 2018).These products include plants or plant products for food, forage, fuel, medicine, fibre, bio-chemicals, as well as animals, birds, reptiles and fishes for food, fur and feathers.It can also be referred to as all the resources/products that may be extracted from forest ecosystem and are utilised within the household or are marketed or have social, cultural or religious significance (FAO, 1990). These products are very important for a society especially tribal community because it helps in diversified economic growth and sustainable rural development. There are a large number of species providing various NTFPs. Unfortunately, many of such species are either presently under threat, endangered or extinct, as a result of overuse, misuse and destructive utilization. Unlike timber-based products, NTFPs come from a wide range of plant parts and are formed into a diverse set of products *ie*, leaves and twigs that may be a component of decorative arrangements, food items such as fruits, fungi and juices, wood carved or woven into pieces of art or utilitarian objects and roots, leaves and bark processed into herbal medicines. Like timber, NTFPs are also processed into consumer-oriented products.

Classification of NTFPs

The United Nations Food & AgriculturalOrganisation claimed that atleast 150 Non-Wood Forest Products are found ininternational markets (Adepojuand Sheu,2007).Classifying these products is an important first stepin understanding the NTFPs industry. NTFPs can be mainly classified intoedibles and non-edibles. The former include edible plants and animals, honey,oils, fish, spices etc. while non-edible products include grasses, ornamentalplants, oils for cosmetic use, medicinal products etc. These two classes can further be divided into four general categories:

1. Edible plant products: Edibles such as mushroom, the most well known and documentededible forest products and many other food products are gathered fromthe forest. Since most of these products are not traded widely andare usually collected and consumed by the harvesters themselves, itis difficult to assess their economic magnitudes. These productsinclude ferns, berries or other fruits, nuts, ramps (wild onions), herbsand spices.

2. Medicinal and dietary supplements: This includes plant-basedproducts that are processed into medicines. Beginning in the lateeighteenth century, over 100 plant species were commonly accepted for their medicinal properties. The majorityare wild harvested and traded as botanical products (Foster, 1995).

3. Floral products: Forest products may appear in floral arrangements, dried flowerdecorations, and ornaments. Common example includes productsmade from pine boughs, grapevines, moss, ferns, flowers, cone,mistletoe and holly (Hammett *et al*., 1998).

4. ~~Speciality~~Specialty wood products: It includes handicrafts, carvings and turnings,musical instrument containers, special furniture pieces aswell as utensils. In general, speciality wood products are considered non-traditional if they are produced directly from trees and not fromtimber purchased from mills. The treesneed not be cut down to produce these items.

Economic value and growth of NTFPs.

Nearly 80 per cent of the population in developing countries is dependent on NTFPs for subsistence, both economically and for nutrition.Suryaprakash and Girish (1999)revealed that NTFPs are important in the employment front too. NTFP sector is important as a major source of employment accounting to half the total employment of household. The tribals seek employment and derive income from other sources like farming and wage employment.Markets for NTFPs adding value at the local level are not well known, but are thought to have a significant impact on rural economies. A few of the edible forest products are prominent enough to generate national economic data. According to Foster (1995), the U.S exported about 77tonnes of wild-harvested American ginseng valued at more than $21m in 1993.NTFPs sector is growingrapidly, perhaps faster than the timber industry and it is expected to grow more in the future. According to Mater (New York Times, 1996), the market for forest products other than trees has mushroomed by nearly 20 per cent annually over the past years. It was also noted that the U.S herbal medicine market grew at an estimated annual rate of 13 to15 per cent with sales of medicinal herbs, a forecast that the US economy would earn $5billion in the year 2000. New York Times (1996) reported that in the Pacific Northwest, mosses, ferns and other plants have sustained the commercial floral products industry and contributed more than $125million to the region's economy.

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Indian Scenario

Out of the 3,000 NTFP species in India, only 126 have developed the marketability (FAO, 2005). These include medicinal plants, edible plants, starches, gums and mucilages, oils & fats, resins and oleo-resins, essential oils, spices, drugs, tannins, insecticides, natural dyes, bamboos and canes, fibres and flosses, grasses, tendu leaves, animal products and edible products. According to FAO (2005), the commercial NTFPs are estimated to generate Rs.3 billion (US$ 100 million) annually in India and also have a 42 per cent share of total removals in the category of other plant products, such as tendu leaves and lac, followed by Brazil and Mexico. Indiaholds the monopoly in world trade over some of the NTFPs such as Karaya gum (*Sterculia urens*), Myrobalans (*Phyllanthus emblica*), *Terminalia chebula*, Sandalwood chips and dust (*Santalum album*) (Yadav and Basera, 2013). The marketing of NTFPs was regulated by different mechanisms in different states. Under the Forest Produce (Control and Trade) Act 1981, trading is largely controlled through public institutions, such as State Development Corporations, Federations, Cooperatives and tribal societies (Prasad *et al.*, 1996).

In Kerala, the NTFPs are marketed through different channels depending upon a variety of factors such as the nature of the product, demand, the distance to the market etc. (Muraleedharan*et al.*, 1999). The Kerala State SC/ST Federation, private traders and tribals are the three main marketing agents dealing with the marketing of NTFPs in the state. About 36 Tribal Service Cooperative Societies (TSCS) are engaged in the NTFP collection, which covers about 398 tribal settlements. There are mainly three marketing channels for the trade of NTFPs in Kerala. In the first channel, the products are marketed through the federation. In the second channel, the products are marketed through private traders. In some part of the State, the Forest Department also undertakes the marketing of some products (Shylajan and

Mythili, 2007). The main activity of the Federation is the marketing of NTFPs. There are two stages in the marketing of NTFPs in Kerala, sale of collected products by the tribes to federation through society and marketing of the collected products by the federation (Sasidharan*et al.*, 2008**)**. The people living around the forest area depend heavily on the forest resources for sustaining their livelihood. The collection of NTFPs is the major occupation of more than 68 per cent of the tribals in Palakkad, Thrissur, Wayanad and Kannur districts of Kerala (Shanker, 1999). The tribes residing in the interior areas depend on the forest resources for food, medicine, construction, religious ceremonies, firewood purpose and commercial collection of NTFPs. Studies have shown that the NTFP collection contributed 58 per cent of the total income of the tribes in Kerala (Thomas, 1996). The tribals of Wayanad make use of 434 flowering plants for various purposes, of which 184 are used for food (Hema *et al.*, 2006), 244 for medicinal use (Silja*et al.*, 2008) and 68 plants are used for other purposes (Pramod *et al.*, 2003). These studies show that there is a greater dependence of the tribal people on NTFP species and also highlights the contribution of the NTFP sector to the livelihood of the tribes. This underlines the need for conserving the forest resources, especially the NTFP species. Through the conservation of NTFP species, we could sustain and enhance the livelihood opportunities of the tribes for a better life. Proper functioning of the various marketing institutions and a vibrant mechanism is needed for ensuring a better livelihood to the indigenous people who are dependent on these forest resources.

Analysis of Non-Timber Forest Products

Value of Non-Timber Forest Product is the worth of a product or service to an individual or a like-minded group in a given context, often involving a complex of relationships (Brown, 1984).Economic values are human-oriented and human assigned. Values are specific to a given context and situation. Forest valuation should, therefore always be situation-specific and the result should be attributed back only to the group studied and to the actual context and situation studied (FAO, 1995).An appropriate method of valuation depends on the objective of the study.

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Murthy *et al.* (2005)surveyed to assess the progression of Non-Timber Forest Products in a region in India where NTFPs were gathered in four diverse forest zones of the locale. The study aimed at preparing an inventory of the NTFPs extractedin the region,to estimate the quantity of NTFP gathered by local people and the forestdepartment and finally to estimate the financial income derived from NTFPsextracted. The households were classified into three i.e. large farmers, gardenowners and landless labourers based on the farm holdings. In each class, ifthe number of the household was under five, 100 per cent sampling was done;otherwise, 25 per cent of the household were arbitrarily taken for the survey.The result indicated that all classes of NTFPs were available in thedistrict forest zones and they were classified dependingupon the kind of speciesextracted. For example, fuelwood measured in kilogram/year i.e. weight of fuelwoodfetched on an annual basis. Fodder, honey, mushrooms, wild mangoes and so forthgathered was measured in kg/household/year.The financial valuation of NTFPs which indicate the income of thefarming household was carried out irrespective of the gathering household.That is, the total population of each forest zone

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was considered as a whole. Thefinancial valuation of the quantities of NTFPs gathered was estimated by utilizingthe current market value and measured in kg/ha/yr. There were variations inthe estimated value realized per household as well as differences in theirfinancial value across the zones considered. It was also reported that acomparison of the annual value of timber with a ten year mean (1985-94) ofRs.239million and NTFPs value of Rs.685million for the year (1995-96)indicates that NTFPs contribute doubly to the economy and benefits flowdirectly to local communities.The authors were able to value NTFPs by directly using the currentmarket price to estimate the income of the communities with the quantities ofNTFPs gathered. However, financial valuation using market prices could notaccount for the elements of the cost involved in the production and distribution ofNTFPs e.g. cost of labour and transportation. Economic analysis would havegiven a clearer picture of the real value.An inconsistencyin the unit of measurement was observed, while some NTFPs were measuredin kg/households/year, some were measured in kg/year without an indication ofthe value of land cultivated. But the financial valuation considered the landvalue utilized.Also, the author didn'tindicate what was responsible for the observed variations in the estimatedvalue of NTFPs realized by the households as well as the differences in thefinancial value per hectare of NTFPs across the four zones considered.

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Alex andKattany (2016)attempted to analyse the significance of different marketing agencies involved in the marketing of NTFPs, to the livelihood of the indigenous communities of Attappady.There are mainly three tribal communitiesnamely Irula, Muduga and Kurumba in Attappady. Three marketing agencies, Kurumba Cooperative society, Eco-Development Committee (EDC) Vanasree Eco shop and Private traders were involved in the marketing of NTFPs used for edible and industrial purposes. Among the 23 NTFPs marketed, nine products were solely marketed through the society and oneproduct exclusively through the private shop, 10 products through society and private shops, one product was marketed through theEco-Development Committee (EDC) and private shop and two products through all the three channels. The price spread was estimated to understand the share of the final price going to the primary collectors. The difference between the price paid by the final consumer and the price received by the primary collector is price spread. It includes the costs and margins of different marketing agencies. The costs of transportation, storage, grading and handling comprise the marketing costs. The returns to the intermediaries for their functions were included in the margin.

Price spread = Price paid by the consumer - Price received by the primary collector

or

Price spread = Marketing costs + Marketing margin

NTFPcollector's share in sale price is the price received by the primary collector expressed as a percentage of the sale price of NTFP (i.e. the retail price paid by the consumer) (Smith, 1992).

Although the procurementprice given by the private shops and EDC for commercially important NTFPs was higher than that by the Kurumba society, theindigenous people were

more benefitted by marketing through the society. It is because the EDC and private shops do not sharetheir profit with the collectors, whereas society gives a certain level of their profit back to the primary collectors in additionto the procurement price. But the financial constraints during the lean seasons are forcing the indigenous communities to selltheir products to the private shops. If the society and EDC can start the value addition units of the NTFPs with the involvementof indigenous communities, it guarantees effective utilization of their free time and a better livelihood through enhancement of theirincome from NTFPs.

Kumar(2014)undertook a study which attempts to assess the contribution of NTFPs to income and employment by ensuring food and livelihood security for the tribal economy in the PeechiVazhani Wildlife Sanctuary, Western Ghats, Kerala. The major tribal communities surveyed were Kadar (66.7 %), Muthuvar (18.5 %), Mannan (8.3 %) and Malayan (6.5 %). These communities are considered as descendants of nomadic primitive tribal groups dwelling in the interior parts of the forests. About 84 species of NTFPs were found to be collected and used by the tribals for various purposes such as food (19), medicines (31), and raw materials for making implements (6) and also as a source of income (18).This indicatesthat more employment (54.04%) was generated by the wage sector followed byNTFP collection (33.77%). This study suggests that NTFP as adevelopment mechanism for poorcommunities may have disadvantages.Firstly, those collectors who needincome support from NTFPs are leastable to benefit from an NTFP-baseddevelopment strategy. It is mainly because they have thepoorest developed skills, lack resourcesto store, process and market theirproduce, and they also face prejudice and unfairtreatment because of their social status.Secondly, it can expose collectors andtheir dependents to widely fluctuatingincomes because of price variations inlocal and global markets (Arnold andPerez, 2001; Rai andUhl, 2004,Gopalakrishnan *et al.*, 2005, Vikas *etal.*, 2013) and extremes in seasonal andbiological production (Mahapatra *et al.*,2005). Thirdly, in the long-term, there isalso the risk that the price for someNTFPs will decline as factory-madealternatives such as plastic containersfor bamboo and reed baskets, and plasticfor rattan furniture, become more widelyavailable and more durable. Fourthly, the institutions andpractices for monitoring harvestingrates and capacity building forcommercial NTFP production requiremore time and resources than otherdevelopment options (Barrett and Arcese,1998, Ballabh *et al.*, 2002, Gubbi, 2006). In conclusion, it suggeststhat NTFP collection is unlikely togenerate positive outcomes forbiodiversity conservation or povertyalleviation. The new laws which give rightsof land andresource use, includingNTFPs collection, to communities livingwithin forests and protected areas aretherefore probably misguided in terms oflivelihoods and harmful to conservationin protected areas. So it suggests that theIndian government consider the provisionof alternative farm-based livelihoodsand investment in improved access toeducation for collectors and theirfamilies. However, further research is required to compare NTFP revenueswithin other protected areas tounderstand further the social, economicand legal factors affecting incomes fromNTFPs.

Suryaprakashand Girish (1999)undertook a study which attempted to analyse the role of NTFPs in the employmentof tribals and their income, consumption pattern and factors that influence NTFP activities of tribals.The study was conducted in Kanara forest circle of Karnataka state. It comprises of five territorial forest divisions. Here NTFPs contribute to

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more than half the household's total income.They account for nearly two-thirds of the non-cash income of tribal households.Five marketing channels existed in the NTFP trade. However, only two channels were prominent in the trade of NTFPs by tribal households. NTFP sector is important as the major source accounting to half the total employment of household. The tribals seek employment and derive income from other sources like farming and wage employment. The tribal households spend more on cosmetics, tea and alcohol than on children's education. Households depend on NTFPs both for meeting their livelihood needs and to seek cash income from the NTFP sale.Larger the number of NTFPs extracted larger is the proportion of the products sold.Fuel wood is the most important NTFP collected for domestic use in the household.Women account for more of the household's time spent in collection and processing of NTFPs than that of men. However, when it comes to the quantity of NTFPs collected, men collect more quantity of the majority of the products than that collected by women of the household.Income from farming, income from allied activities, family size and number of dependents per family have a positive influence on NTFP income of households.The NTFP sector exhibited stronger linkages with the rest of the economy in the region with relatively larger tribal population than in the region with a lesser tribal population.

CONCLUSION

As we knowhistorically,NTFPs have been neglected by governments when compared to timber products. Also, existing expertise and knowledge is not well documented or is inaccessible. Also, lack of appropriate methods and tools to promote sustainable use of NTFPs and successfully regulate trade and to form developmentpolicyis still missing as observed from field experiences. There is a challenge for the coming years to develop proper tools and methods for sustainable extraction of NTFP and regulation of its trade. This can be achieved by efficiently using the existing knowledge and experience of facilitators, entrepreneurs and researchers in the region. This involves steps such as identifying, connecting and engaging such people in a range of networking activities that stimulate the flow of information and learning, and those yield products of immediate interest and utility to the concerned NTFP conservation initiative. When coming to the issues of sustainable production of NTFPs, there are a lot of challenges to be met. Some of which includes the disappearing of forest cover, inequitable market access of marginalized population and monopolization of high-value NTFP by logging and poaching mafia etc.In the articles reviewed, there was an assumption that underestimates possible post-harvest losses and the market cost of perishable NTFPs. The authors also assumed that all the NTFPs are tradable; this may not be always true. For non traded NTFPs, non-market prices are supposed to be used. The future studies will be richer if the authors ~~didnt~~did not separate the NTFPs between traded and non-traded before estimating their financial value. Also, indications must be made about the estimate of the value of NTFPs used for the domestic purpose by households.

REFERENCES

Adepoju, A. A and Sheu, S. A. 2007. Economic Valuation of Non-Timber Forest Products (NTFPs) [online]. Available: https://mpra.ub.uni-muenchen.de/2689/

Alex, A and Kattany, V. 2016.The marketing of non-timber forest products in the western ghats region of Attappady, Kerala. Economic Affair. 61(3): 355-363.

Arnold, J. E. M. & Perez, M. R. 2001. Can non-timber forest products match tropical forest conservation and development 92 objectives? Ecological Economics. 39: 437-447.

Ballaabh, V., Balooni, K. & Dave, S. 2002.Why local resources management institutions decline: a comparative analysis of van (forests) panchayats and forest protection committees in India, World Development. 30: 2153-2167.

Barrett, C. B. &Arcese, P. 1998.Wildlife harvest in integrated conservation and development projects: linking harvest to household demand, agricultural production, and environmental shocks in the Serengeti, Land Economics. 74: 449-465.

Brown, T.C., 1984. The concept of value in resource allocation. Land economics. 60(3), pp.231-246.

Chandel, P.K., Prajapati, R.K. and Dhurwe, R.K., 2018. Documentation of NTFP's and medicinal plants available in Dhamtari forest area. Journal of Pharmacognosy and Phytochemistry. 7(1), pp.1524-1530.

Falconer, J. and Koppell, C.R., 1990. The major significance of'minor'forest products. The local use and value of forests in the West African humid forest zone (No. FAO CFN-6). FAO, Roma (Italia).

Food and Agricultural Organization of the United Nations FAO (1990): TheMajor Significance of "Minor Forest Product. The Local Use and Value ofForest in the West. African Humid Forest Zone. Community Forestry Note 6Rome.

FAO [Food and Agriculture Organisation]. 2005. Global forest resource assessment progress towards sustainable forest management. [Online].Available:www.fao.org/docrep/008/ao400eoo.htm.

Foster, S., 1995. Forest pharmacy: medicinal plants in American forests. Forest History Society.

Goldberg, C., 1996. From necessity, new forest industry rises. New York Times, 24.

Gopalakrishnan, C., Wickramasinghe, W. A. R., Gunatilake, H. M. &Illukpitiya, P. 2005. Estimating the demand for non-timber forest products among rural communities: a case study from the Sinharaja rain forest region, Sri Lanka, Agroforestry Systems. 65: 13-22.

Gubbi, S. 2006. Tiger habitats andIntegrated Conservation andDevelopment Projects: a casestudy from Periyar TigerReserve, India. M.Sc. thesis,University of Kent, Canterbury,UK.

Hammett, A.L. and Chamberlain, J.L., 1998. Sustainable use of non-traditional forest products: Alternative forest-based income opportunities. In Natural Resources Income Opportunities on Private Land Conference. April (pp. 5-7).

Hema, E.S., Sivadasan, M. and Kumar, A.N. 2006. Studies on edible species of Amaranthaceae and Araceae used by Kuruma and Paniya tribes in Wayanad district, Kerala, India. Ethnobot.18(1): 122-126.

Kumar,V. 2014. Impact of Non Timber Forest Produces (NTFPs) on rural tribes economy in peechivazhani wildlife sanctuary, Western ghats, Kerala. Int. J. of Usuf. Mngt. 15 (2): 80-100.

Mahapatra, A. K., Albers, H. J. & Robinson, E. J. Z. 2005. Theimpact of NTFP sales on ruralhouseholds' cash income inIndia's dry deciduous forest, Environmental Management. 35:258-265.

Muraleedharan, P. K., Chandrashekhara, U. M., Seethalakshmi K. K., and Sasidharan, N. 1999. Biodiversity in tropical moist forests: A study of sustainable use of non-wood forest products in the Western Ghats, Kerala: monitoring and evaluation of ecological and socio-economic variables. KFRI Research Report 162, 36p

Murthy, I. K., Bhat P. R., Ravindranah, N. H., and Sukumar, R. 2005.Financial Valuation of Non-Timber Forest Product Flows in Uttara Kannada District, Western Ghats, Karnataka. Curr. Sci., 88(10): 1573-1579.

New York Times, (1996): From Necessity, New Forest Industry rises. Sunday 24th March. National Report Section, Front page.United Nations (1995): Non-wood News. Writer Food & AgriculturalOrganisations Rome Italy.

Pramod, C., Sivadasan, M. and Anilkumar, N. 2003. Ethnobotany of religious and supernatural beliefs of Kurichya of Wayanad district, Kerala, India. Ethnobot. 15: 11-19.

Prasad, R., Sukla, P.K. and Bhatnagar, P. 1996. Leaves from the Forest: a case study of tendu leaves in Madhya Pradesh, Jabalpur, Lucknow, India. Centre for Environment and Sustainable Development, p. 64.

Rai, N. D. &Uhl, C. F. 2004. Forest product use, conservation and livelihoods: the case of Uppage fruit harvest in the Western Ghats, India, Conservation & Society; 2: 289-313.

Sasidharan, N., Sivaram, M. and Muraleedharan, P.K. 2008.Quantitative inventory of non-wood forest products inNorthern Kerala. Kerala Forest Research Institute Research Report No. 306, p. 449.

Shankar, A. and Muraleedharan, P.K. 1996. Marketing of non timber forest products in Kerala. In: Shiva, M.P. and Mathur, R.B. (eds.) Management of Minor Forest Produce for Sustainability.Oxford and IBH Publishing, pp. 307-314.

Shylajan, C.S. and Mythili, G. 2007. Community Dependence on Non-timber Forest Products: A Household Analysis and its Implication for Forest Conservation. WP-2007-005. IGIDR, Mumbai. Available at: file:///C:/Users/agri.economics/Downloads/WP-2007-005.pdf

Silja, V.P., Samitha V. K. and Mohanan, K.V. 2008. Ethnomedicinal plant knowledge of the Mullukuruma tribe of Wayanad district, Kerala. Indian J. Traditional Knowledge, 7(4): 604-612.

Smith, L.D. 1992. Cost, margins and returns in agricultural marketing, FAO marketing and agribusiness development. FAO paper No. 1, p. 34.

Suryaprakash, S. and Girish, M.R. 1999. An economic analysis of NTFP in the tribal economy in the Western Ghats region of Karnataka, UAS, Bangalore, 110p.

Thomas, P. 1996. Dynamics of co-operating marketing in tribal economies - a study of non timber forest produce marketing in Kerala. Ph.D. Thesis. Cochin University of Science and Technology, p. 101.

Vikas kumar, Bimal, S. D. &Ajeesh, R. 2013. Ecology of Rare andEndangered plant species ofDang's Forest, South Gujarat.LAP LAMBERT AcademicPublishing, Germany.

Yadav, M. and Basera, K. 2013. Status of forest products production and trade. Indian Institute of Forest Management working paper series (2013/1), p. 14.