Trans.Inst.Indian Geographers
ISSN 0970-9851

"Patterns of Forest Utilisation by inhabitant of forest in Pune district, Maharashtra, India".

Ranjana S. Ingale, and Sachin Deore Pune

Abstract

Forest plays an important role in maintaining ecological balance as well as contributes to the economy. Forest provides various natural products. Many of them are used in day to-day life. The Forest plant provides valuable items like timber, fuel wood, bamboo, cane, food, fibers, and essential oils. It provides fodder for cattle and other grazing animals. Economic importance of plants is observed to be changing as per the forest products e.g. Timber of sag is useful for furniture which observe in evergreen forest of study area. Economic importance of plants is observed to be changing as per the type of forest e.g. Timber of sag is useful for furniture which observe in evergreen forest of study area. Economical value is less of Kateri Babul but this is best fire wood and fodder found in thorny forest. Forest products are not sufficient for the increasing demands of human population. It necessitates proper planning for forest development and its production by means of forest cultivation and conservation. This research aims to identify the plant species and to understand their economic importance. Sampling is also done on the basis of regions defined by the Department of Forest, Government of Maharashtra viz. Range, round and beat level of Pune forest division. Sampling was done on the basis of soil types and rainfall. Pune forest division is the larger than Junnar and Bhor forest divisions in the district. Seventeen economically important forest plants were observed in this area. Plants provide wood, food, medicine and protection.

Key words: *Forest, ecological balance, plants, economic importance.*

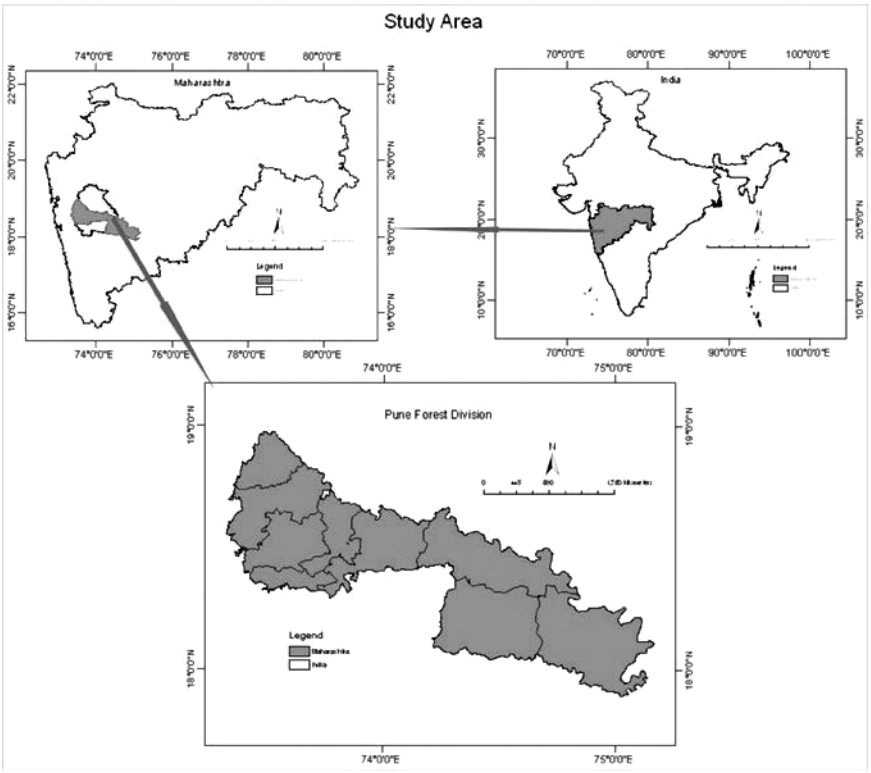
Introduction

From an economic perspective, forests are important to provide goods and services that increase the quality of life for the region's residents and visitors (Ernie Niemi, 2012). The uses of medicinal plants are the maintenances of good health. The use of medicinal plants in the industrialized and urbanized societies has been traced to the several drugs and chemotherapeutic. Traditional medicines have been used in India since long ago. India is rich in medicinal plant having about of 3000 plant species of known medicinal value. India is thus endowed with one of the world's richest biodiversity area and cultural traditions in respect of medicinal plants (Bhadange, 2011). The traditional or tribal societies of diverse regions of the planet have exposed various uses of natural resources around them. The traditionally flawed system is based on their necessities, instinct; observations, trial and error method and generation to generations experience

(Waghchaure et.al. 2011). Medicine utility relationship is between human beings and the nature. In the study area different types of valuable plants are available. Therefore current research aims to identify plants which have economic values and find out the utilization of the plants by inhabitants for various purposes.

Study Area

The forest of Pune division spreads between 73^0 18' and 75^0 07' East longitudes and 17^0 55' and 18^0 50' North latitudes. Junnar, Pune and Bhor divisions are included in Pune district. Pune forest is bounded by Junnar forest division, Ahmednagar and Solapur district in the Northeast, Solapur district on the Southeast, Bhor sub forest division and Satara district on South, Raigad district on the West. Pune division includes 9 ranges (Map. 1), 25 rounds and 90 beats. Forest area covers 90488 hectares and spreads over southern part of Pune district, covering Maval, Mulshi, Haveli, Pune city, Daund, Indapur and Baramati Talukas.



Map: 1

Material and methods

Primary data were collected actual field surveys for plant identification. Topographical maps from Survey of India, Rainfall data was collected from Indian Metrology Department, Plant identification is carried out with the help of Botanical Survey of India, and forest data is collected from Government Forest Department. Forest regions are delineated on the basis of regions defined by the Department of Forest, Government of Maharashtra viz. range, round and beat level of Pune forest. Sample area is selected on the basis of climatic data and soil map. Plant data from Botanical Survey of India is used to study biological diversity. Species identification and its economical importance is studied during the field work.

Results and Discussion

Most of rainfall occurs during southwest monsoon season. There is highest rainfall (more than 1000 m) on the western side. Physiography of this area is hilly with undulating terrain and altitude ranging above 1000 m. Medium rainfall zone (500 to 1000 m) is at the central part of division. The lowest rainfall zone, the dry and semi-arid zone (below 500 mm) is on the east side of division which comes under the rain shadow.

Rainfall distribution has an effect on the type of forest. Evergreen forests are observed in the areas of heavy rainfall. These forests are located on the west side, occupying the higher elevation of the Sahyadri. Sag, Karanj, Pangara plants are found in evergreen forest. Deciduous forest type occurs in a narrow belt along lower slope of Sahyadri. Deciduous forest species are namely, Shiras Neem, Gliricidia. There is a gradational change from deciduous species to scrub as one advance from the central zones towards east. An average rainfall below 500 mm is observed in thorny scrub forest. These types of forest have been found in the eastern part of the district. Kateri babul, Subhabul, plant are located in eastern part of study area.

Eight parts of plant namely are Flowers, Fruits, Seeds, Leaves, Bark, Branches, Stump and Root Among are utilized parts of plants utilized in the study area, proportion as following branches (20%), leaves and fruits (17.5%) followed by stump (15%), seeds (10%), bark flowers and root (5%) (fig.1).

Uses of plants play an important role in day to day human life. Food, grass, and firewood are necessities of human being. As per the observations made in the study area (Table: 1), uses of forest for other benefits are Fodder (22.2%), Medicine (18.51%) construction and firewood (14.81%), Tool handles & Household furniture (7.41), (7.40%), Oil the plants also provide protection to the soil (Fig.2).

Table No: 1

	Plants	Flowers	Fruits	Seeds	Leaves	Bark	Branches	Stump	Root	Whole plant	Places
1	Bamboo							C			Nevase, Sagasi
2	Karvand		E, M						M		Sagasi, Newase, Ahirewadi, Shingad
3	Sag							C			Vadgaon, Paud, Shingad, Bholavade, Khanapur
4	Subabhula				Fo						Ahirwade, Patas, Bhamburda,
5	Karanj			O							Khanapur
6	Pagara				W	M					Khanapur
7	Gliricidia				Fo						Baner, Kesnanda, Roti, Wengali, Gajubavi
8	Neem	M	M	M	M	M	C	C	M		Lonikalbhor, Kasurdi, Bijwadi, Wengali, Bholawade
9	Tantani						H				Sagasi, Lonikalbhor
10	Kateri Babhul	Fo	F0	Fo	Fo		Fi, H	Fi, H			Manjri, Bijwadi, Theur, Tadulwadi
11	Shiras						Fi				Kasurdi
12	Bor		E, M				C	T			Bhadgaon, Patas
13	Ghaypat									P	All places
14	Harali				Fo						All places
15	Tarvad		M	M	M						Patas
16	Chirka				Fo						Sagasi, Vadgaon, Shingad, LoniKalbhor, Bhadgaon
17	Bongarli				Fe						Kasurdi

	Index
E	Eating
C	Construction
M	Medicine
Fo	Fodder
Fi	Firewood.

T	Tool handles.
O	Oil
W	Wrap fermented meat.
H	household furniture
Ti	Timber
P	Protection

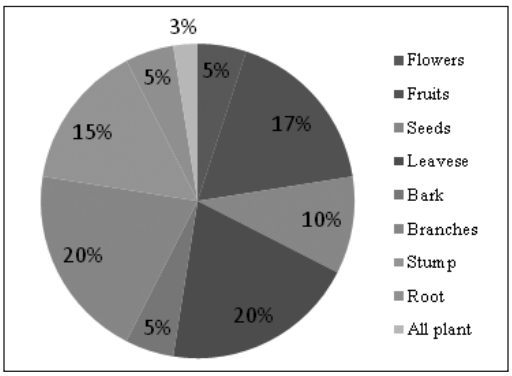


Fig .1Uses of plants as per parts

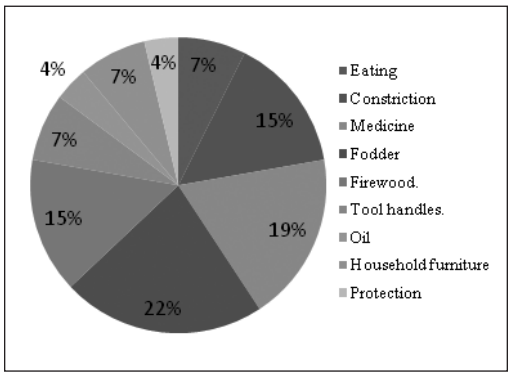


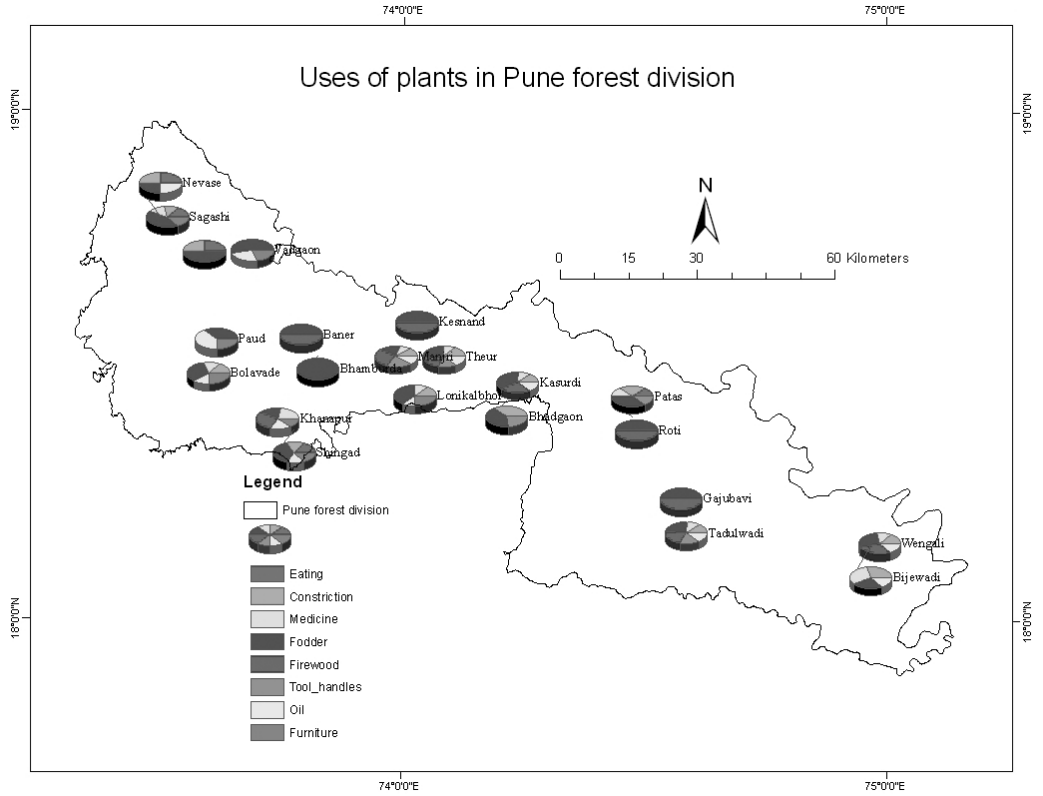
Fig. 2 Uses of plants

Ten types of plants are observed to be used for timber out of which sag, bamboo, Karanj, Pangara plants are found on the western part of division where rainfall is more than 1000 mm. Stump of Sag is basically used in furniture because this tree has high strength and it is economically valuable. It is used for house building, carpentry, wood carvings etc. This plant is observed in western part of division e.g. Shingad, Vadgaon, Paud, Bholavade and Khanapur. This plant is used mostly in Paud and Vadgaon. Stump of Bamboo are use for building construction. Bamboo plants are also found and use in western part study area. Stump and branches of Neem do not decay so it is used in house construction in east part of division. Timber of Babul is used for timber, fuel (Bargali Kiran and Bargali S.S., 2009). Stump and branches of Kateri babul and Bor are used for Tool handles. Neem, Babul and Bor plants are found in east side of division e.g. Patas, Wengali, Loni, Bijwadi, Bhandgaon. Pangara, Karanj and Shisav timber is normally used for firewood. Branches of Tantani used in household furniture. (Table:1 and Map 2)

It is observed that eight types of plants are used for the food for human and fodden for fodder for domestic animals in the study area, which is respectively 7.40% and 22.2%. This purpose is served by the leaves (20%), fruits (17.5%), Seeds (10%) and flowers (5%) of plants (Fig.1)

Leaves of trees like Subhabul, Kateri Bhabul, Bor and Tantani, Bogarli, Harli, Chiarka grass are eaten by domestic animals. Subhabul, Kateri Bhabul, plants are found is center part and Bor plant observed in east part of the division. Leaves of Subhaula (Jacob Babayemi and Musbau Bamikole 2006), are also used as animal fodder. Subhabul, a plant utilized in the highest proportion in Ahirwade. Kateri Bhabul plants are planted in Manjri so out of these 66.66% use for fodder. Gliricidia is used as crop shade, improve fallow, Fuelwood, fodder, and for mulching (Craig R. et.al. 2006). All types of grass are found on large scale in study area. Grass is the main fodder of domestic animals. Harli has been found in whole study area. Chiarka grass was observed in centre and east side of division. Bongarli is found in the center of division. These grasses are observed to be utilized by the people for selling in this division.

Karvand fruits are found on the slopes of Western Ghats. These fruits observed in Nevase and Ahirwade. Bor fruits are found in east part of the division and especially in Bhadgaon and patas. Hot and dry climate is suitable for these fruits. Seeds and flowers of Kateri bhabul are use by domestic animals as fodder (Table: 1 and Map 2)



Map 2 : Local people make use of all trees and shrubs for firewood. The part of tree which is not used as timber is used for firewood.

Medicinal use of the plants available in the study area

Table No: 2 Medicinal use of plants

Name of Plant	Part of plant	Medicinal use as	Reference
Karvand	Fruits Roots	antioxidant Anti-diabetic activity anti-cancer activity	Bhaskar, Hariram V. and Natarajan Balakrishnan, 2009 Motwani et.al. 2012
Pangara	Bark	Anti-Cancer Activity	Baskar et.al.2010
Shisav		treat several inflammatory pathologies such as asthma, arthritis and burns	Prakash Babue et.al.2009
Neem	Whole plant	Skin disease	Jain et.al. 2010
Bor	Fruits Bark	During loose motion Given twice	Jain et.al. 2010
Tarvad		For diabetes	Joy et.al. 2012

Conclusion:

Of the different in the area under study in all seventeen plants have been indentify to have specific economical value. The Authors believe the in the introduction of these plants by way of plantation in the region can in enhance the utility of their forest area can also prove to be beneficial for local people in economical terms. Particular plants like *Sag* having timber value as well as *Neem*, *Pangara* and similar plants having medicinal values and *Karanj* having prospect be used as biodiesel need to be consider as prepare species for plantation in the region.

Reference

Bhaskar Hariram V., and Natarajan Balakrishnan (2009): In Vitro Antioxidant Property of Laticiferous Plant Species from Western Ghats Tamilnadu, India, International Journal of Health Research, 2(2): 163-170 (e228p59-66).

Baskar N., Parimala B., Devi, and Mohan Kumar R. (2010): Anti-Cancer Activity of Methanol Extract of Root Bark of Erythrina variegata linn, International Journal of Toxicological and Pharmacological Research 2(2).

Bhadange D. G. (2011): Harnessing Plant Biodiversity of Forests of Akola And Washim District of Maharashtra For Medicinal Use, International Journal of Advanced Biotechnology And Research, Vol. 2, (3): 350-356, (Http://Www.Bipublication.Com)

Bargali Kiran and Bargali S.S. (2009): Acacia nilotica: a multipurpose leguminous plant Nature and Science; 7(4)

Craig R. Elevitch and John K. Francis (2006): Gliriciia sepium, species profiles for Pacific Island, Agro forestry Ver 2.1.www.traitionaltree.org.

Ernie Niemi (2012): The Economic Importance of Federal Forests to the Pacific Northwest's, Economy ECO Northwest 99 W. 10th

Avenue, Suite 400, Eugene, Oregon 97401n iemi@econw.com 541-687-0051.

Jacob Babayemi, and Musbau Bamikole (2006): supplementary value of tephrosia bracteolata, tephrosia candida, leucaena leucocephala and gliricidia sepium hay for west African dwarf goats kept on range, journal of central European agriculture vol. 7 (2).

Jain D. L., Baheti A.M., Jain S.R. and Khandelwal K.P. (2010): Use of medicinal plants among tribes in Satpuda region of Dhule and Jalgaon district of Maharashtra-An ethnobotanical survey, Indian Journal of Traditional knowledge Vol. 9 (1): 152 – 157.

Joy V., Paul John Peter M., Yesu Raj J. and Ramesh (2012): Medicinal Values of Avaram (Cassia Auriculata Linn.): A Review, International Journal of Current Pharmaceutical Research, Vol 4 (3).

Meher L.C., Naik S.N. and Das L.M. (2004): Methanolysis of Pongamia pinnata (Karanja) oil for production of biodiesel, Journal of Scientific and Industrial Research. Vol. 63: 913- 918.

Motwani S.m. , Pandey E. P., Sonchhatra N. P., Desai T. R., Patel V. I. and Pandya D. J.,(2012): Pharmacognostic And Phytochemical Study of Aerial Parts of Carissa Carandas International Journal of Biological & Pharmaceutical Research. 2012; 3(1): 75-81.

Prakash Babu N., Pandikumar P. and Ignacimuthu S. (2009): Anti-inflammatory activity of Albizia lebbeck Benth., an ethnomedicinal plant, inacute and chronic animal models of inflammation, Journal of Ethnopharmacology 125: 356–360

Waghchaure C. K., Naik S. S. and Abhang A. R. (2011): Ethno-Medico-Botanical Studies On Katei Baba Sacred Grove And Nearby Area of Adhalwadi From Akole Taluka, Ahmednagar District, Maharashtra; International Journal of Pharma and Bio Sciences, Vol. 2 (3).

Ranjana S. Ingale
Ph.D. Research Student

Sachin Deore
Professor
Dept. of Geography,
S.N.D.T. Women's University,
P.G.S.R. Dept. Pune -411038.