PRINT: ISSN 0970-9274 ONLINE: 2456-6608 DOI: 10.31901/24566608.1991/02.02.05

JOURNAL OF HUMAN ECOLOGY J. Hum. Ecol., 2(2): 135-140 (1991)

Dependence of Tribals on Forest Ecosystem— A Case Study of Bhogibandha Village in Orissa

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KEY WORDS Tribals. Village Ecosystem. Forest Produce. Food. Medicine.

ABSTRACT The structure of a tribal village, Bhogibandha (84°20' E, 90°0' N) situated on the eastern Ghats of Orissa is described. The contribution of surrounding forest areas to the tribals of the village are also dealt with. The uses of plants in various forms such as food, medicine, stimulants and economic products are described in detail.

Living in complete harmony with nature, tribal people have gathered adequate knowledge on utilisation of natural resources. This, if fully exploited and utilized in a scientific manner, could help in solving the energy crisis particularly food, fodder and fuel of the developing countries like India. India is predominated by rural and tribal people. Its total population includes 44 millions of tribals (Anonymous, 1985). More than 550 tribal communities belonging to different ethnic groups are distributed in different states like Madhya Pradesh, Assam, Orissa, Meghalaya, Uttar Pradesh, Andhra Pradesh, Himachal Pradesh, West Bengal and Bihar (Anonymous, 1984).

Because of population pressure, energy demand has increased to a great extent. Consequently, studies have been concentrated upon the use of biomass resources. The forest resources of India are the chief sectors of economy in the form of food, fodder, fibre, dyes, medicine, household materials and raw matrials for industries. Orissa has 5.5 million hectare of forest which is 43.6% of its total geographical area. Out of this only 2.8 million hectare (51%) are found to be well stocked (Anonymous, 1982). However, satellite data reveals that the forest cover during 1972 to 1975 was 4.8 million hectare, which was reduced to 3.9 million during 1980-82. Vegetation cover of Orissa is deminated by tropical deciduous forest. There are 5.9 million tribals found mainly in Koraput, Ganjam, Phulbani, Sundargarh, Mayurbhanj and Kalahandi districts belonging to sixty different categories (Das and Misra, 1987). The common tribes are *Kondhas, Sabaras, Gadabas, Munda, Ho, Santal, Paraja* and *Sauras*. The socio-economic and cultural tradition of one differs from the other.

In past, several attempts have been made to study the ethno-medicinal aspects of various regions of Orissa. Haines (1921-25), Saxena and Dutta (1975), Saxena et al. (1981) had reported the useful plants of Cuttack, Puri, Dhenkanal, Sambalpur and Ganjam districts. Remarkable contributions were also made by Jain et al. (1973), Trivedi (1982), Jain (1971), Pattanaik (1956), Panigrahi (1963), Pal (1980), Murty et al. (1986) and Das and Misra (1987, 1988a, 1988b). Southern part of Orissa which is rich in tribal population has not been explored well. Very little studies have been made on the relationship between forest and tribals in India (Venu et al., 1990).

In this paper an attempt has been made to evaluate the contributions of the forest communities, surrounding a tribal village in functioning of the ecosystem.

METHODS

Floristic survey of the area was done twice

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during August and December of 1987. With the help of questionnaire and sample survey, data on minor forest produce (MFP) and ethnobotanical information were collected. Information on medicinal uses of plants were collected from the tribal Ayurvedic practitioner/village headman. Plants having ethnobotanical importance were collected, dried and the herbaria were prepared in different seasons of the year. Plants were labelled, identified and preserved in the herbarium of Botany Department, Berhampur University (BOTB). Details of methods are described by Nayak (1989). The economically important plants are described with their botanical names followed by family (parenthesis) and local Oriya names.

OBSERVATIONS

The Village and Environment

The village Bhogibandha of Ganjam district (Orissa) situated at 84°20' E and 19°O' N, at the foothills of the Mahendragiri (1501 m high) on the Eastern Ghats was selected for the present study. The climate is monsoonic and the total rainfall was 1422 mm during 1987-88. The year, basing on rainfall and temperature could be divided into three seasons; the rainy (June-September), the winter (October-January) and the summer (February-May). Geologically the area represents a metamorphosed sector of Archean Paninsula with charnochites type of rocks (Anonymous, 1980). The village is surrounded by three reserved forests; the Singharaj (2078.06 ha), the Tumba (864.56 ha), and the Parasuram (4987.62 ha).

Total human population in Bhogibandha was 76, distributed in 21 families. They belong to *Saura* tribe. Three cows, nine pairs of bullocks, sixteen goats and fourteen poultry birds were present during 1987. The tribal people usually live in small groups, however, Bhogibandha is larger compared to other nearby villages. All the houses were thatched with paddy straw and the floors as well as walls were made up of mud. Shifting cultivation is the practice of the tribals in the hill slopes and valleys. The cropping period is confined to the rainy season.

Forest and Tribals

There exists an intense relationship between the two entities, the forest and the tribals. Besides providing the basic requirements such as food, fodder, fuel, shelter and medicine the forest plays a significant role in the economic structure of the village. The uses of forest resources in the village in different forms are described below:

I. Plants as Food

Aegle marmelos Correa ex Roxb. (Rutaccae) *Bela*

Ripen fruit pulp is eaten and cool drinks are prepared during summer. The juice is also considered as a digestive agent.

Bauhinia vahlii Wight and Arnon (Caesalpiniaceae) *Siali*

Pods are burnt and tasty cotyledons are eaten.

B. purpurea Linn. (Caesalpiniaceae) *Baradasaga*

Tender leaves are consumed as pot herb, which is a rich source of protein and vitamins.

Buchanania lanzan Spreng. (Anacardiaceae) *Charakoli*

Sweet and tasty ripen fruits are eaten.

Carissa spinarum Linn. (Apocy naceae) *Karandakoli*

Ripen berries are consumed.

Cocculus hirsutus (L.) Diels. (Menispermaceae) *Musakani*

The triturated galatinous juice from tender leaves is collected and allowed to coagulate after adding sugar. Sweet coagulated pieces then eaten.

Dendrocalamus strictus Nees (Poaceae) *Salia baunsa.*

Young sprouting shoots are collected during early rainy season. Kanji (prepared by boiling the shoot pieces with fermented rice water) and curry are prepared out of it.

Dioscorea bulbifora Linn. (Dioscoreaceae) *Khamba alu.*

Tubers are preboiled, decanted and then used in curry as potato tuber.

Diospyros melanoxylon Roxb. (Ebenaceae) *Kendu*

Ripen fruit pericarp is eaten.

Flacourtia jangomas Racusch. (Flacourtiaceae) *Bainchakoli*

Sweet and tasty ripen berries are eaten during summer.

F. sepiaria Roxb. (Flacourtiaceae) *Sanabainchakoli*

The size of berry is comparatively smaller than *F. jangomas*, but taste is similar.

Manilkara hexandra (Roxb.) Dubard (Sapotaceae) *Khirakoli*

The ripen fruit juice is edible.

Mangifera indica Linn. (Anacardiaceae) *Amba*

The fleshy mesocarp of the fruit (drupe) is the edible part. During pre-ripened stage fruits are halved and dried treating with common salt. These are stored for curry preparation and locally known as *Ambula*. Pickles are also prepared from the preripened fruits by applying sugar, chilli, salt, oil and spices. The ripened fruit juice is eaten and used in preparation of cool drinks. The endosperm (Locally, *Koili*) is boiled and then dried. The powder from dried endosperm is used as flour, especially during summer when other foods are not available.

Premna latifolia Roxb. (Verbenaceae) *Gandhana saga*

The tender leaves are used for the preparation of liquid curry alongwith rice granules and tamarind.

Semecarpus anacardium Linn. f. (Anacardiaceae) *Bana Valia, Kala Valia*

The sundried fleshy peduncle (apple) is tasty and thus eaten.

Syzygium cumuni (L.) Skeels (Myrtaceae) *Jamukoli*

The ripen berries during late summer are collected and eaten.

Tamarindus indica Linn. (Caesalpiniaceae) *Tentuli, Konya*

Ripen fruit pulp is used as the souring agent in curries and pickles.

Fried seed flour is used as food during scarcity. Tender leaves are also used as substitute of souring agent.

Ziziphus mauritiana Lam. (Rhamnaceae) *Barakoli*

Ripen fruits (during winter) are collected and consumed.

II. Plants as Stimulants

Caryota urens Linn. (Arecaceae) *Salapa*

Toddy is extracted from the plant and consumed as such or after fermentation as liquor. The tribals can live with this juice for days together without food.

Madhuca indica J.F. Gmel. (Sapotaceae) *Mohula*

Flowers are collected and fermented in the local distillaries. This practice is quite common among tribals. Used as liquor.

Phoenix sylvestris Roxb. (Arecaceae) *Khajuri*

Sap (juice) is collected from the plant below the crown of leaves (young stem). Fresh toddy is sweet. Fermented toddy is taken as liquor.

III. Plants as Medicines

Abrus precatorius Linn. (Fabaceae) *Kaincha*

Diluted extractant of a seed is used as abortifacient. It is poisonous.

Aegle marmelos Correa ex Roxb. (Rutaceae) *Bela*

The tender leaves are ground alongwith cow milk and the paste is applied externally to white spots on the skin (Leucoderma).

Ageratum conyzoides L. (Asteraceae) *Pokasungha*

Fresh root is ground with curd (prepared from cow milk) and 2/3 spoonful are taken to get relief from blenorrhoea.

Andrographis paniculata Wall. ex Nees (Acanthaceae) *Bhuin nimba*

Root decoction is taken once in a week to escape from skin diseases, round worm, and threadworm infection.

Argyreia nervosa (Burm. f.) Boj. (Convolvulaceae) *Bataraj*

An ointment is prepared taking leaves, roots alongwith rape seed and applied externally to itch, swelling areas of filariasis and to rheumatic pains.

Asparagus racemosus Willd. (Liliaceae) *Satamuli*

Juice of fleshy fasciculated root is collected and fresh tonic is taken to relief from headache due to sunstroke or hotness. Consumed as tonic to jundice.

Azadirachta indica A. Juss. (Meliaceae) *Neema*

Five to ten tender leaves are ground with water and filtered through fine cloth. The warmed filterate is taken to recover from skin diseases and roundworm infection.

The leaves and bark are boiled with sesamum or coconut oil and is applied externally before bathing to avoid skin diseases.

Caesalpinia decapetala (Roth) Alston (Caesalpiniaceae) *Gila*

A paste is prepared by grinding the seeds with water and is externally applied to hernia.

Careya arborea Roxb. (Lecythidaceae) *Kumbhi*

The bark juice is decanted and a spoonful is taken twice daily to relieve from dysentery.

Clerodendron infortunatum Linn. (Verbenaceae) *Danti*

Freshly ground root paste is applied externally to tumours.

Cuscuta reflexa Roxb. (Convolvulaceae) *Nirmuli*

Stem ground with rice is applied externally on eczema spots.

Emblica officinalis Gaertn. (Euphorbiaceae) *Anla*

Sundried fruits are powdered alongwith chebulic and belliric myrobalan. About 1/4 of a spoon is taken orally twice a day to clear up indigestion.

Hemidesmus indicus R. Br. (Asclepiadaceae) *Sugandhi*

The sundried roots are powdered alongwith fried seeds of *Foeniculum vulgare* and sugar in equal proportions. About 1/2 spoon is taken twice after meal to avoid indigestion.

Holarrhena antidysenterica (Linn.) Wall. (Apocynaceae) *Kurei*

Two to three layers of leaves are kept over the affected area and fomentation is applied to get relief from rheumatism.

Lagerstroemia speciosa Pers. Syn. *L. flosreginae* Retz. (Lythraceae) *Patali*

After proper setting of fractured bone the area is sheathed with leaves and clamped with sticks.

Rauvolfia serpentina Benth. ex Kurz. (Apocynaceae) *Patala garuda*

Fresh root juice is taken with 4 or 5 drops of honey to relieve high blood pressure.

Semecarpus anacardium Linn.f. (Anacardiaceae) *Kalavalia, Banavalia*

Oil is extracted from dried seeds and applied to affected hoops of the cattle suffered from food and mouth disease.

Soymida febrifuga A. Juss. (Meliaceae) *Soma*

Bark decoction mixed to the bathing water of small babies to avoid skin diseases.

Streblus asper Lour. (Moraceae) *Sahada*

Tender stems are used as tooth brush to protect the caries teeth.

Terminalia bellirica Roxb. (Combretaceae) *Baheda*

Fruit powder alongwith a small quantity of common salt is taken to relief acidity.

T. chebula Retz. (Combretaceae) Harida

The ground paste of fruit is applied as ointment to the infected areas of skin disease, eczema and wounds.

IV. Plants as Economic Sources

Minor forest produces such as mohua flowers and seeds, tamarind fruits, myrobalan fruits, gooseberry, Karanj seeds, siali leaves, and hill brooms were collected during the production season by the villagers, from the surrounding forests. The forest products substantiate the food and liquor requirement of the tribals to some extent, but helps in alleviating their economic status. Table 1 depicts the details of such forest products collected and used by the tribals of Bhogibandha village. Export is generally made through barter system in their weekly market on Wenesday or directly through the traders.

Table 1: Plants used as economic resources

Botanical Name and Family	*Local name*	*Part used*	*Material prepared*
Bauhinia vahlii W.& A. (Caesalpiniaceae)	Siali	Fibrous bark	Manufacture of traditional ropes, tieing fuel wood bundles etc.
		Leaf	Preparation of leafy plates
Emblica officinalis Gaertn. (Euphorbiaceae)	Amla	Fruits	Used as hair shampoo to reduce hair fall and also for medicine.
Madhuca indica J.F. Gmel. (Sapotaceae)	Mahula	Seed	Oil used in soap manufacture and also as lubricator.
Milletia pinnata (L.) Panigr. (Fabaceae)	Karanja	Seed	Source of oil for soap preparation and as lubricator.
Smilax microphylla Roxb. (Liliaceae)	Muturi	Shoot	Tooth brush stick.
Tamarindus indica Linn. (Caesalpiniaceae)	Tentuli	Fruits	Food souring agent.
Thysanolaena maxima (Roxb.) Kuntze. (Poaceae)	Phula jhadu	Inflorescence	Manufacture of brooms

DISCUSSION

The village Bhogibandha is an open and independent ecosystem (Nayak, 1989). The study revealed that there exists an integral relationship between the forest and the people. Now-a-days, religious beliefs and traditional practices followed by the tribals are given less importance due to influence of western culture. In turn, we are deprived of the advantages of such high heritage in the field of ethnobotany. Strong spiritual belief and magical aspects have their own significance in curing the diseases of tribal people (Gelfond, 1970). Marini Bettolo (1980) had emphasized the importance of traditional medicine. Therefore, it is essential to restore these useful practices and cultural traditions, for the greater benefit of human race.

The relation between forest and tribals is vital. Solution to energy demand of rural and tribal people is variously linked with a number of factors such as land use pattern, socio-economic status, political, educational, cultural backround of the people. The degree of influence of these factors is highly site-specific. Therefore, studies at the grassroot level have its significance before implementation of any rural developmental programmes (Nayak, 1989; Nisanka and Misra, 1990).

From the present study it can be concluded that the forest resources play an important role in the survival of tribals. Thus conservation of natural resources particularly forest vegetation is highly essential for the solution of energy demand. Furthermore, the present forest ecosystems warrant conservation and scientific management of sustainable productivity. Moreover, it has become essential to control shifting cultivation—a damaging agricultural practice, which adversely changes the forest cover.

ACKNOWLEDGEMENTS

We are thankful to Prof. B.N. Misra of this department for his help in various ways. We are grateful to the people of Bhogibandha for their cooperation in providing information.

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