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Conservation and management practices followed in forest for the livelihood support of the people in Khurda District of Odisha

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Abstract

India is one of the countries in the world which has both traditional as well as scientific management practices. The management of forest through people's participation is basically a real partnership for the conservation and development of the forest. A study conducted with 189 respondents from fourteen villages of three forests in Khurda district of Odisha revealed that the respondents were going to the forest through out the year. They were mostly collecting fire wood, wild food and fruit along with varieties of products. They were satisfied with the management policy like regular watch and ward, protection against illegal fire, quarrying and destroying of plants, protection of wild animals as well as their involvement in protection and management. But, they were not agreed to summer ploughing, restricted grazing, contour bunding, grassed waterways and digging ditches etc. Through they were favorably opined for pruning, thinning, fertilizer application and soil working at the base of the plants, but not agreed for painting of disinfectants at the basal and cutting portion, live saving irrigation and intermediary felling of matured plants. No initiatives have also been taken for intercropping approaches involving people for their benefit. Education, housing pattern, holding size, communication materials used, social participation and extension contact had influenced the respondents towards better management of the forests. It is therefore suggested that the forest department officials have to analyse all these deficiencies, sensitize the respondents through various extension approaches and take appropriate action involving people for better management of the forests benefitting both the people and Government.

Keywords: Forest management, livelihood, NTFPs collection, Forest Conservation

Introduction

The elemental role played by trees in the lives of rural people appears through many uses of tree products such as construction, fencing, furniture, foods, medicines, fibres, fuels, livestock feed and cultural value of the people. Forests and trees outside the forests have contributed to the livelihood of more than 1.6 billion people worldwide [1]. Forest is one of the major terrestrial ecosystem that need continuous care in terms of conservation and management [2]. India is one of the countries in the world which has traditional as well as scientific conservation and management practices. The management of forest through peoples participation had achieved legal status in 1931. Joint forest management concept is initiated during 1970s by involving different stakeholders [3]. It is basically a real partnership between forest department and villagers towards conservation and development of forests.

The per capita availability of land and water for agriculture is declining due to population increase, degradation and redirection of land and water to domestic as well as industrial uses. Moreover, significant environmental costs have been associated with the past agricultural growth that has brought soil erosion, salinization, decrease in water table and biodiversity loss. Therefore, the land, water, forests and bio-diversity can play a significant role in the socio-economic and ecological development of the region [4]. Unless the forests are managed properly, the households depending on forest for their livelihood subsistence may not get adequate quantity and quality of the produce for their sustainability. The research study is an attempt to analyse the practices followed in conservation and management of forests.

Materials and Methods

The study was undertaken in Khurda district of Odisha during 2016-17. Three forests namely Tamna and Rajin RF, Balugaon; Mala RF, Ranapur and Patia RF, Tangi have been randomly selected for the purpose of study. A sample size of 189 persons from fourteen villages depending on forest for their livelihood were selected randomly as the respondents for the study. The data was collected personally through a semi-structured schedule pre-tested

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earlier. Extent of visit to forest, produce collected and management approaches such as management policy, soil and moisture conservation, tree management and intercropping were selected as the variables. Statistical tools like mean score, gap percentage and multiple regression were employed for analysis of data.

Results and Discussion

The forest fringe communities have collected the forest products both for own consumption and commercial sale. The income earned has been estimated to be around 40 to 60 percent of their total income. The data collected from the respondents on scale point of mostly, sometimes, occasionally and never were analysed with score value of 4, 3 and 2 and 1 respectively. It is observed from Table-1 that the people were mostly going to the forest during summer because of availability of non-timber forest products. But, they were also going to the forest during Rabi and Kharif season. It indicates that the forest fringe communities were largely depending on forest for their livelihood support for which they were going to the forest throughout the year.

Table 1: Period of visit to the forest

Sl. No.	Period	Mean score	Rank
1	Kharif	2.65	III
2.	Rabi	2.99	II
3.	Summer	3.53	I

(Maximum obtainable score-4)

People living in forest fringe villages are depending on forest for a variety of goods and services. The data collected on scale point of mostly occasionally and never regarding collection of forest products were analysed with the score value of 3, 2 and 1 respectively. As observed from the table-2, the respondents were mostly collecting various products fire wood, wild food and fruits. They were also collecting, timber, honey, leafy vegetables, mushroom and leaves for plate making as well as mango, resin, rattan seeds and medicinal plants as per the availability. Hence, the respondents were collecting number of products from the forest for which management approaches are essentially required for their substantial income.

Table 2: Various products collected from the forest

Sl. No.	Product	Mean score	Rank
1	Timber	1.77	IV
2.	Firewood	2.87	I
3.	Leaves for plate making	1.57	VII
4.	Collection of honey	1.61	V
5.	Collection of resin	1.24	IX
6.	Collection of wild food	2.70	II
7.	Collection of wild fruit	2.35	III
8.	Collection of medicinal plants	1.13	XI
9.	Collection of wild mushroom	1.59	VI
10.	Collection of leafy vegetables	1.61	V
11.	Collection of rattan seeds	1.23	X
12.	Mango collection	1.29	VIII

(Maximum obtainable score-3)

The rules and regulations framed by the Government for the management of trees in the forest must be acceptable and benefitting the people. The data collected on same scale point of always, some times and never towards management policy revealed (Table-3) that the respondents had favourably opined

for regular watch and ward, protection against illegal fire, quarrying, wild animal and destroying of plants as well as eviction of encroachments. They had also favorably opined for their participation in protection and management. Hence, the respondents were satisfied with the management policy followed for development of the forests.

Table 3: Management policy followed for management of forest

Sl. No	Policy	Mean score	Rank
1.	Protecting from destroying of plants	2.87	V
2.	Regular watch and ward	3.00	I
3.	Eviction of encroachment	2.94	IV
4.	Protection from quarrying	2.57	VI
5.	Protection of wild animals	2.95	III
6.	Protection against illegal fire	3.00	I
7.	Participation of people in protection and management	2.97	II

Conservation of soil and moisture are very much essential to maintain soil health and moisture availability for better growth of the trees. The data collected on scale point of always, sometimes and never revealed (Table -4) that the respondents had favourably opined for the management approaches such as fire protection, afforestation and rejuvenation of degraded forest. The respondents had also opined satisfactorily for gully and nullah plugging, check dams, trenching and staggered trenching. But, the respondents had reacted for summer ploughing, restricted grazing, and to some extent digging ditches, grassed waterways, terracing and counter bunding which are to be strengthened.

Table 4: Soil and moisture conservation measures

Sl. No.	Measure	Mean score	Rank
1.	Fire protection	2.97	I
2.	Afforestation	2.89	II
3.	Terracing	2.38	V
4.	Digging ditches	2.35	VI
5.	Stone patching	2.41	IV
6.	Gully plugging	2.41	IV
7.	Construction of check dams	2.41	IV
8.	Nullah Plugging	2.41	IV
9.	Trenching	2.41	IV
10	Staggered trenching	2.41	IV
11.	Contour bunding	2.38	V
12.	Restricted grazing	1.43	VII
13.	Grassed waterways	2.35	VI
14.	Rejuvenation of degraded forest	2.76	III
15.	Summer ploughing	1.04	VIII

(Maximum obtainable score-3)

Management of trees particularly pruning, thinning, painting disinfectants etc. are other management approaches required for better growth and productivity of the forest trees. Better management approaches followed (Table-5) were proper soil working to the base of the plant, thinning and pruning of unwanted parts, timely fertiliser application and protecting plants having religious and cultural importance. But, the respondents were not agreed for the painting of disinfectants at the basal and cutting portion, providing live saving irrigation and intermediary felling of matured plants which have to be followed for the better management of trees.

Table 5: Approaches followed for the management of trees

Sl. No.	Management	Mean score	Rank
1.	Pruning of unwanted parts	2.70	III
2.	Thinning for spacing	2.77	II
3.	Timely fertilizer application	2.61	IV
4.	Proper soil working to plant base	2.78	I
5.	Life saving irrigation	1.22	VII
6.	Intermediary felling of matured plants	1.86	V
7.	Painting disinfectants at basal & cutting portion	1.15	VIII
8.	Protecting plants having religious & cultural importance	2.54	V

(Maximum obtainable score-3)

Intercropping with suitable crops are recommended in plantation crops for optimum utilization of space, minimization of weeds and maintaining soil health. Vegetables, root crops spices, oilseeds and pulses could be successfully grown as intercrops in forest plantations. The forest department officials have to involve forest fringe people in participatory mode to earn substantial income through intercropping. But the respondents were not agreed for the various aspects of intercropping covered under the study. It might be apprehended that the forest department

officials had not taken any initiatives to motivate the people to grow intercrops to earn substantial income.

Table 6: Approaches followed for intercropping in forest

Sl. No	Approaches	Mean score	Rank
1.	Growing compatible crops	1.07	III
2.	Not competing much in taking nutrients	1.11	II
3.	Growing shade loving crops	1.15	I
4.	Regular weeding & hoeing	1.0	IV
5.	Incorporating forest plant debris	1.0	IV
6.	Incentives in supply of crop inputs	1.0	IV

(Maximum obtainable score-3)

Multiple regression analysis revealed (Table -7) that the best fitted regression equation could explain 75.50% of the total variance in influencing for the management of the forest. Education, housing pattern, holding size, communication materials used, social participation and extension contact attributes of the respondents could help in influencing for the better management of forest. The forest department officials have to use there attributes in motivating the respondents for their involvement in better management of the forest.

Table 7: Socio-economic variables influencing management.

Sl. No	Variable	Unstandardized coefficient		Unstandardized coefficient		“t” value	Probability
		Beta	SE	Beta	SE		
1.	Age	-1.320	.913	-.076	0.003	-1.446	0.150
2.	Education	-7.381	1.149	-.481	0.012	-6.422	0.000
3.	Family size	-.386	1.365	-.019	0.115	-.282	0.778
4.	Housing pattern	-8.742	1.189	-.392	0.034	-7.355	0.000
5.	Occupation	-.322	.546	-.024	0.001	-.591	0.555
6.	Holding size	8.275	1.547	.384	0.021	5.349	0.000
7.	Communication materials used	1.097	.532	.147	0.005	2.061	0.041
8.	Annual income	-. 873	1.086	-. 050	0.006	-. 804	0.423
9.	Social participation	1.477	.367	.300	0.008	4.021	0.000
10.	Extension contact	.806	.369	.172	0.007	2.185	0.030
		R ² = 0.755		Adj.R ² =0.742			

Conclusion

Forests are one of the major terrestrial ecosystem that play a significant role in the environment and provide livelihood support to the forest fringe communities. Proper management of the forest and forest trees are essential to provide adequate support to the people living in and around forest in collection of non-timber forest products. The study conducted with 189 respondents depending on forest revealed that the respondents were going to the forest throughout the year and more in summer season. They were mostly collecting fire wood, wild food and fruit and to some extent small timber, leafy vegetables, honey as well as leaves for plate making. They were satisfied with the management policy framed by the forest department such as regular watch and ward, protection against illegal fire, quarrying and destroying of plants, protection of wild animals as well as their participation in protection and management. They were not agreed for the soil and moisture conservation measures particularly summer ploughing, restricted grazing, contour bunding, grassed waterways, digging ditches etc. Though, they were satisfied for pruning, thinning, fertiliser application and soil working to the base of the plant, but not agreed for the painting of disinfectants at basal and cutting portion, life saving irrigation and intermediary felling of matured plants. No initiative have been taken by the forest department officials for introducing

intercropping with compatible crops in forest plantations for the benefit of the people. Education, housing pattern, holding size, communication materials used, social participation and extension contact had significantly influenced the respondents in management of the forest.

The forest department officials need to analyse all these deficiencies and take feasible measures and involving people in better management of the forest benefitting both the people and Government.

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