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A Study on Consumption Trends of Fuel Wood & their Impact on Forest in Kanker Forest Division of Chhattisgarh State (India)

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Abstract- The continuous dependency of man on fuel wood and service wood results in serious degradation of the forest in Kanker forest division. A study on the consumption trends of fuel wood & their impact on forest were carried out in Chivranj & Ichchhapur village of Kanker forest division of Chhattisgarh, and its rural environs. Results show that the villagers of Kanker are highly dependent on fuel wood for cooking purpose. In tribal village fuel wood are sold in the form of wood lots which contains about 20-30 kg fuel wood & averagely pricing about Rs. 110/ lots. Price value of these fuel woods varies from Rs. 20-30 according to their traders & fuel wood species. The rural population works under the community forest policy, but illegal harvesting in natural forests is indiscriminate and results in severe environmental degradation. This paper calls for some basic recommendations & guideline on sustainable management of these fuel woods & for reducing pressure on fuel wood consumption.

Index Terms- Fuel wood, Sustainable management, Consumption, Calorific value.

I. INTRODUCTION

Wood is one of the oldest source of energy and the commonest service material known to man & has been used for over 500000 years (Sharpe, 1976). Fuel wood gathered from the forest, either by lopping branches, collecting fallen wood or cutting down dry and diseased trees, is the most common source of domestic energy in the rural areas of many developing countries (Cecelski, Dunkerley and Ramsay, 1979). Demand for fuel wood, which together with animal dung and agricultural waste residue is one of the main cooking fuels, was thought to be leading to widespread forest degradation. There are two ways relationship between fuel wood collection & deforestation. On the one hand, demand for fuel wood from common and forest causes resource degradation to the extent that collection exceeds sustainable yield. Forest degradation, on the other hand, leads to a mounting global 'fuel wood crisis' has been envisaged (Dewees, 1989). In addition, there are a number of other adverse consequences of forest degradation, including loss of biodiversity, deterioration of watershed management function, release of carbon into the atmosphere, soil erosion, etc.

II. STUDY SITE

The study was carried out in Kanker District to find out the consumption trend of fuel wood & their impact on forest. However sampling method was adopted for selecting village and forest compartments. Two villages namely Chivranj & Ichchhapur of Kanker district were surveyed. Village Chivranj & Ichchhapur is in the south of Kanker and is situated at a distance of 09 km & 11 km, respectively.

III. METHODOLOGY

A study has been conducted to record information on the fuel wood collection trend in tribal pockets of villages in Kanker forest division of Chhattisgarh State. The information was collected & recorded from tribal's interview of age group from 16 to 50 years and resided in villages of Kanker. The study revealed socio-economic survey, collection trend of fuel wood, quantity collection per household, time spend during fuel wood collection, collection season, collection rate, etc.

Table No. 01: Consumption of fuel wood in two villages of Kanker district (C.G.)

S.No.	Village	Total consumption in a week (in Kg)	Total Consumption in a year (in Quintal)
1.	Chivranj	79	300.25
2.	Ichchhapur	54	162.56
	Total	**133**	**462.81**

Table No. 02: Calorific value of some important fuel wood tree species

S. No.	Trees species	Botanical name	Family	Calorific value Kcal/Kg	Smoky/ Less Smoky
1.	Amaltas	*Cassia fistula*	Fabaceaae	4200	Smoky
2.	Arjun	*Terminalia arjuna*	Combretaceae	5080	Less Smoky
3.	Babool	*Acacia nilotica*	Fabaceae	4950	Less Smoky
4.	Ber	*Zizyphus mauritiana*	Rhamnaceae	4878	Less Smoky
5.	Casuarina	*Casuarinas equisetifolia*	Casuarinaceae	4950	Less Smoky
6.	Dhawda	*Anogeissus latifolia*	Combretaceae	4900	Less Smoky
7.	Haldu	*Adina cordifolia*	Verbenaceae	3855	Smoky
8.	Imli	*Tamarindus indica*	Fabaceae	4950	Less Smoky
9.	Jamun	*Syzygium cuminii*	Myrtaceae	830	Smoky
10.	Jharberi	*Zizyphus jujube*	Rhamnaceae	4900	Less Smoky
11.	Jharul	*Langerstroemia spp.*	Lytheraceae	4577	Less Smoky
12.	Kachnar	*Bahunia verigeta*	Fabaceae	4800	Less Smoky
13.	Karra	*Cleistanthus collinus*	Euphorbiacea	4592	Less Smoky
14.	Khair	*Acacia catechu*	Fabaceae	4946	Less Smoky
15.	Kullu	*Sterculia urens*	Sterculiaceae	5244	Smoky
16.	Machimudi	*Lantana camara*	Verbenaceae	6500	Less Smoky
17.	Mahua	*Madhuca latifolia*	Sapotaceae	8742	Less Smoky
18.	Mango	*Mangifera indica*	Anacardiaceae	4742	Less Smoky
19.	Mulberry	*Morus alba*	Moraceae	4850	Less Smoky
20.	Neem	*Azadirachta indica*	Myrtaceae	4500	Smoky
21.	Nilgiri	*Eucalyptus spp.*	Myrtaceae	4880	Less Smoky
22.	Palas	*Butea monosperma*	Fabaceae	5030	Less Smoky
23.	Saja	*Terminalia tomentosa*	Combretaceae	4923	Less Smoky
24.	Sal	*Shorea robusta*	Dipterocarpaceae	4400	Less Smoky
25.	Salai	*Boswellia serrata*	Burseraceae	2300	Smoky
26.	Semal	*Bombax ceiba*	Fabaceae	4800	Smoky
27.	Shoe babool	*Leucaena leucocephala*	Fabaceae	4400	Less Smoky
28.	Siris	*Albizia spp.*	Fabaceae	4300	Less smoky
29.	Tendu	*Diospyrus melanoxylon*	Sapotaceae	5030	Smoky
30.	Oak	*Quercus spp.*	Fagaceae	4700	Less smoky

Source: S.S. Negi (1997)

IV. Result & Discussion

Fuel wood from the forests common source of domestic energy in rural area of developing country as India. Where more than 70% population lives in villages and they totally depend on forest for their basic needs as firewood, fodder, timber, fruits and NTFP's produces.

The use of fuel wood with a higher specific gravity reduces the amount of wood used because such woods have higher calorific value. Green fuel wood with about 50% moisture content has 50% available heat energy while air dry fuel wood with about 20% moisture content has 80% available energy (Njiti,1984).

The fuel wood collections are depending on their daily needs for many purposes. Some fuel wood species *Anogeissus latifolia* (Dhawda, 4900 kcal/kg), *Clistenthus collinus* (Karra, 4592 kcal/kg), *Terminalia tomentosa* (Saja, 4923 kcal/kg), *Shorea robusta* (Sal, 4400 kcal/kg), *Lantana camara* (Machhimudi, 6500 kcal/kg), and *Butea monosperma* (Palash, 5030 kcal/kg) are used due to their higher calorific value and less smoky properties. *Madhuca indica* has also higher calorific value (8742 kcal/kg), but it is not used as fuel wood because of its aesthetic value.

An annual consumption of fuel wood at Chivranj & Ichchhapur of Kanker forest division is about 300.25 Quintals & 162.56 Quintals, respectively. Average incomes from fuel wood are @ 110 Rs. per lots (20-25 kg). The tribal peoples collect fuel wood from forest about 90-93 days average in a year and 3 days in a week. They collects firewood under the Indian forest policy and they collect commonly illegal (felling) from forest. This is the major causative factors of forests degradation in natural forest.

V. Conclusion

Firewood has very important value in tribal life, from the ancient time in Kanker district. The consumption trends of fuel woof fuel wood, collection of fuel wood as well as their marketing helps in improving socio-economic status and side by side protection of natural forest by JFM, Agroforestry, Social

forestry to minimize the tough pressure on forest through alternative source of energy gathered with local population.

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