

Measurement of Ethnic Knowledge Associated with *Semecarpus anacardium* L.f. -- A Rare and Endangered Ethnobotanical Plant of Jharkhand, India

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Abstract

During the observation on ethnobotanical wealth used by the tribal people in their day to day needs, healthcare and socio-religious ceremonies of Jharkhand state of India, it was observed that due to the depletion of plants, the ethnic culture and associated knowledge system related with the plant species is also being lost. It has also seriously affected the oral traditions and knowledge of the tribal communities. To assess the above problem several indices like 'Knowledge frequency', 'Plant-lore Index' and percentage of 'Community knowledge loss' were developed to measure the knowledge status of tribes associated with *Semecarpus anacardium* L.f.

Introduction

Semecarpus anacardium L.f. is a moderate sized tree belonging to the family Anacardiaceae and known as 'Marking nut tree'. Its Sanskrit name is 'Bhallatak' and is widely used in Indian system of medicine. Jharkhand (21°58' - 25° 18' N lat. and 83° 22' - 87° 57' E long.) being the land of Lord Baidynath; the state of India known as natural sanctuary of spiritual and cultural heritage since time immemorial. A large number of tribal communities like Santhal, Paharia (Sauria Paharia, Mal Paharia and Kumar Bhag), Oraon, Munda, Kol, Kharwar, Ho, Asur, Baing etc. are residing in the state which constitutes about 10% of the total tribal population of India. In Jharkhand the ripe epicarp of the fruits is eaten, while the seeds have potential ethnomedicinal value among the tribe. It is also utilized for dye extraction, insecticides and pesticides. The seed oil extracted from the plant by the tribal people for ethnomedicinal purpose is known as 'Bhelwa tel'. The Chhotanagpur plateau of Jharkhand is a part of the Deccan peninsula and it has been reported that the plant is rare and endangered in this region (Rao, 1994). Recently, during an extensive field survey, it was found that the plant is fast depleting from the forests due to destruction of their habitats, deforestation, urbanizations, mining operations, over exploitation and a decline of natural regeneration.. The Parasnath Hills, which is a sacred grove of Jharkhand, is the only site in Jharkhand where some individuals of the species survive in the wild (Kumar, 2005). Due to the depletion of plant, the associated indigenous knowledge of this species is also being

lost.

Methodology

Questionnaire based (Table-1) random and rapid interviews have been conducted in the tribal villages among the tribal people in Jharkhand (Fig. 1) like Santhal and Mal Paharia (Dumka), Sauria Paharia (Pakur), Munda and Oraon (Ranchi), Bedia (Hazaribagh) and Ho (Chaibasa). A minimum of one to two individuals of the plant species also occurred in these study sites. The selection of the above study sites was based on the remoteness of the area and the fact that the inhabitants are living in their traditional lifestyles. The studies were conducted on the following tribal communities: Santhal, Sauria Paharia, Mal Paharia, Oraon, Munda, Bedia and Ho. The tribal names for *Semecarpus anacardium* are 'Soso' (Santhal, Munda), 'Kiro' (Sauria Paharia), 'Bhelwa' (Mal Paharia), 'Bhelwa', 'Kiro' (Oraon), 'Bheli', 'Bhela' and 'Bhelawa' (Ho). The plant specimen of *Semecarpus anacardium* was shown to ten tribal people in each community. These individuals are referred to here as 'Targeted People' (TP) for the purpose of this study in the above seven communities. All the tribal people interviewed in the present study were adults in tribal dress, and none had any interest in modern culture. Presently, no statistical index exists to measure the Community knowledge loss in relation to specific plant species. Therefore, the estimation of 'Knowledge frequency', 'Plant-lore Index', and 'Percentage of Community knowledge loss' has great importance to observe the current knowledge status. It was calculated by a formula simplified by the author from a more complicated mathematical model. The total number of identified 'Knowledge question' i.e. K (N) was ten which was asked by the people regarding *Semecarpus anacardium* to assess the current status of ethnic knowledge in comparison with the earlier documented knowledge. The local or native name of plants called in indigenous languages has great importance and it was first question we asked the people in the study. There is a considerable linguistic diversity in local names frequently observed in tribal areas. The local names in indigenous language reveal the clue of forms, properties, and uses and sometimes it works like a key of folk taxonomy of the plant. In extensive and intensive field studies, it has been significantly noted that if the tribal people cannot say the tribal name of a particular plant in their own language it means they may perhaps do not know about the uses of that species. It has also the same meaning that they never used the plant. This matter is of great interest due to the proposed indicators of Convention on biological diversity's 2010 target (Balmford, 2005) is for assessment of status and trends of linguistic diversity and number of speakers of indigenous languages in relation to traditional knowledge, innovation and practices. Therefore, in the above studies the questionnaire asked by the tribal people about the local name of plants in their own languages along with their uses which has overall a complete profile expected to answer by the tribal people

The 'Knowledge frequency' is $K_f (\%)$ and it equals to the percentage of knowledgeable people in the communities. It may calculated as, $K_f (\%) = K_p(n) / TP(N) \times 100$, where $K_p(n)$ denoted for the number of knowledgeable people in each community while $TP(N)$ is the total number of tribal people may called as 'Targeted people' selected for the study, to whom the expected question was asked to answered.

Then a plant -lore Index i.e. PLI was prepared to assess the knowledge abundance and it was calculated by

using the formula, $PLI = \Sigma Ks (n) / Kp (N)$. The $\Sigma Ks (n)$ denotes to the summation of number of knowledge surviving among the community as appeared in the interview or talking with the people in the study site. It was the maximum number of knowledge appeared from the community or answered by each tribal community selected in the present study and not based on average. The $Kp (N)$ is meant for the total number of knowledgeable people who was able to answer in the community. Hence, the 'Plant-lore Index' is the 'Knowledge Index' reveals about the knowledge abundance in the community.

The 'Community knowledge loss' is the deduction of numbers of knowledge at presently survive i.e. $Ks (n)$ among the community from the total number of knowledge question $K (N)$ asked in interviewed in the study and calculated by the percentage i.e. $CKL (\%)$. Hence $CKL (\%) = K (N) - Ks (n) / TP \times 100$.

Results

All the calculated data is presented in Fig. (2), which is self-explanatory. There are many significant interpretations that may be achieved through the above indices but briefly it reveals that there are maximum plant-lore or knowledge abundance in Santhal community while Ho has great community knowledge loss. The above studies will be immensely valuable towards the assessment of survival of community knowledge in relation to depleting plants, their management and preservation of cultural heritage of ethnoherbology (Kumar & Singh, 2001).

In the above study it was observed that the sustainable knowledge of the plant survival in the communities is directly depends on sustainable availability of plant genetic resources and there are no chance to appear the lesser-known uses of that plant which has been disappeared from the region.

Acknowledgements

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Table 1. Knowledge survives among the tribal communities.

Questionnaire	Santhal	Sauria Paharia	Mal Paharia	Oraon	Munda	Bedia	Ho
Knowledge about community names or local names in indigenous languages?	+	+	+	+	+	+	+
Have seen earlier the tree?	+	+	+	+	+	+	+
Knowledge about their localities?	+	+	+	-	+	-	-
Have eaten ripe fruits?	+	+	-	-	-	-	-
Knowledge about ethno medicinal value?	+	+	+	+	+	+	+
Knowledge about dye extraction	-	-	+	-	-	-	-
Knowledge about any other value like insecticides/pesticides etc.	-	+	+	+	-	-	-
Knowledge related with socio– religious, myths and believes	+	-	-	-	+	+	-
Knowledge about traditional ecological knowledge?	+	-	-	-	+	-	-
Are they knows about any cultivation/ domestication/ conservation practices?	-	-	-	+	-	-	-

The signs + and – denotes knowledge survival and knowledge loss respectively.



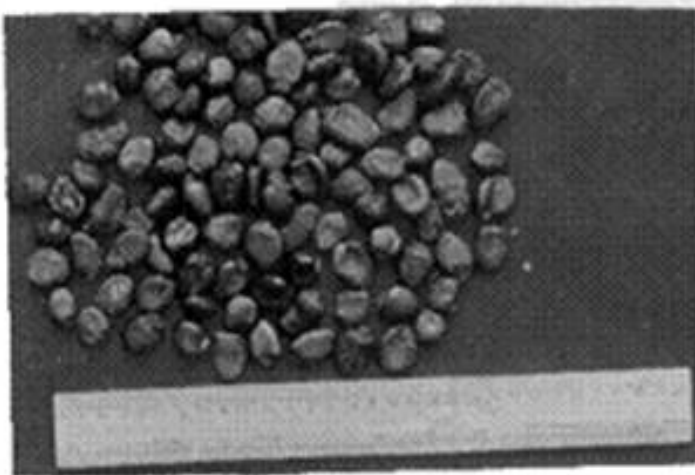
a



b



c



d



e

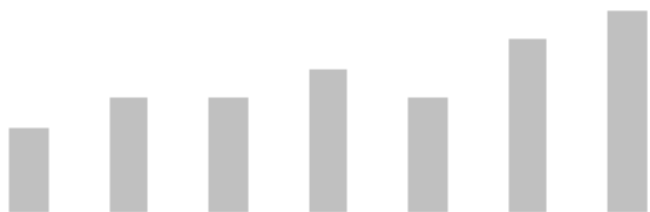
Fig. 1. **a.** Santhal men; **b.** Sauria Paharia women; **c.** Ho people; **d.** Seeds of *Semecarpus anacardium* L.f.;

and, e. individual tree.

Community Knowledge Loss: CKL (%)



Community Knowledge Loss: CKL (%)



Community Knowledge Loss: CKL (%)

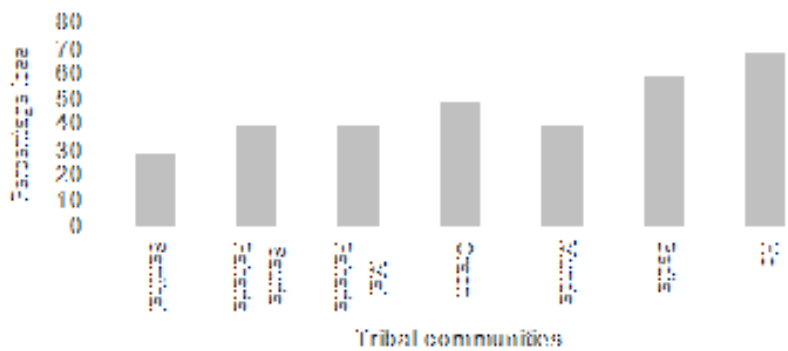


Fig. 2. Knowledge frequency, Community knowledge loss, Plant-lore Index.