International Journal of Multidisciplinary Research and Development
Online ISSN: 2349-4182 Print ISSN: 2349-5979
www.allsubjectjournal.com
Volume 2; Issue 12; December 2015; Page No. 418-419

Wild native oil yielding plants and their utilization by the tribals from the Bastar region (Chhattisgarh)

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Abstract
Based on extensive explorations and observations the diversity and performance studies of native oil yielding important plants were studied. Total of 15 oil yielding natively growing tree species were found which were used by the local tribal's. Oils obtained are either used for edible purposes or are found to be used as medicinal uses and cooking purposes. Based on above findings both the *in situ* and *ex situ* conservation of this oil yielding species are suggested which can be used as the alternative to the traditional oils.

Keywords: Tribals, Adivasis, Oils, Tel, Bastar

1. Introduction
Oils are of great importance in human life, they are used in transport, medicines, cooking, preservations etc. Oils used are generally extracted from plants which contain high oil content in either of their part or as a whole. Tribal's living in and aside the forest depends mainly upon the forest for their food and other requirements other than agriculture. Bastar is a highly biodiverse forest land where many tribal groups lives in harmony depending mainly upon the local plant species for their day to day requirement which are found in the nearby forests. There are many plant species which are used by the native tribal's for the extraction of oils which are used by them in cooking, medicines etc; Some of the species found locally and are used by the tribal's are compiled and the way of usage are documented in this paper. There are many plants which are filed can be proven to be of great importance as the extracted oils usage by the tribal's are from the long past. The sole objective of the paper is to focus the nation about some the plants locally available in the forests of the Bastar region which are used in oil extraction and can used as alternative to traditional oils and can be helpful in uplifting the health standards of the local tribal people.

Materials and Methods
The present study was under taken to assess the naturally occurring and used plants for the extraction of oils from them and the way of utilization by the tribal's in their day to day life in the tribal land of Bastar of the state Chhattisgarh. To achieve the objective, the standard surveys were conducted in forest villages and their adjoining villages of the Bastar District; in the months from January to December of the year 2015.
The study was conducted among the tribal's of the native tribal villages and outside the natural forest area to identify and analyze the vegetation associated with oil trees and plants. The study was divided into three sub-study i.e. identification of the oil yielding flora presence in the wild forests of Bastar District of the Chhattisgarh, assessment of ecological parameters for vegetation survey and the way of their utilization by the native tribal's in their life. Flora analysis on the basis of Habit of identified plant species of the study area were carried out. During the study plant diversity, community structure and specimen collection soil sample collection were done from the study sites.

Results and Discussion
Considerable interest has been generated by the recent studies on the chemical analysis of the fruits, seeds and complete body parts of some wild plants. The resulted analysis had shown that some wild plants are sources of high levels of ascorbic acid and edible oils.
Oils are often divided into three categories according to their qualities, these categories are non-drying, semidrying and drying (Gunstone, 2002) [5]. Non-drying oils are slow to oxidize and so remain liquid for a long time. This quality makes them particularly useful as lubricants and as a fuel for lamps. Drying oils, on the other hand, are quite quick to oxidize and become solid, thus they are often used in paints and varnishes, a good example being linseed oil. Semi-drying oils have qualities intermediate between the above two groups. Since plants synthesize these fats they are the original and obvious source of all essential fatty acids. If animals, such as fish, have significant amounts of essential fatty acids in their tissues, it is because they ate plants, like algae, which originally made the essential fatty acids. Natural oils contain combinations of varying amounts of both w-6 and w-3 fats, as well as several saturated and monounsaturated fats (Blackburn, 1992) [1].
Vegetable oils have heat contents approximately 90% that of diesel fuel and are potential alternate fuel candidates (Schwab *et al*., 1986) [8]. Biodiesel is a fuel derived from plant oil or animal fat. It can be used in pure form but it is often blended with regular diesel. The most common form is B20 - a blend of 20% biodiesel and 80% petroleum diesel. The needs for the alternate fuels also get to force people to find the natural occurring plants for the extraction of the alternate fuels. In view for the need to find alternate sources of raw materials in quality and in viable quantities for the process industries, medicinal and for edible purposes, the present work is a study of some wild plants present in the wilds of the highly biodiverse Bastar region (Chhattisgarh), which are known to contain oils and are used by the tribal's either wholly edible or used for some other

household purposes or medicinal purpose. The results of these studies are discussed in this paper.

S No.	Botanical Name	Local Name	Family	Habit	Oil Source	Nature of Use
1.	*Anacardium occidentale* L.	Kaju Tel	Anacardiaceae	T	Seed	A thick oil rich in proteins that is used wherever a skin beneficial effect is needed.
2.	*Azadirachta indica* Juss.	Neem Oil	Meliaceae	T	Seed	Very aromatic oil, neem oil is used in treatment for almost all the skin problems (itching, wounds, cuts etc.) by the tribal's.
3.	*Cannabis sativa* L.	Hemp Oil	Cannabaceae	H	Leaves	Also known as bhang tel, used as perfect choice for the skin protection against infections in the villages.
4.	*Elaeocarpus floribundus* Blume.	Olive Oil, Banghkri tel, Jalpai	Elaeocarpaceae	T	Seed	This oil is generally used for gentle care and treatment of the skin infections. Now a days by seeing its benefits in cooking, tribal's are also using it as cooking oils in villages near the towns.
5.	*Garcinia indica* L.	Dhokra Kand Tel, Choisy, Kokum tel	Guttiferae	T	Seed	Kokum butter is produced from the fruit kernels. It has been used by the tribals as skin and hair oil. The oil is known as "Dokra Kand Tel in the Bastar region.
6.	*Madhuca indica* Roxb.	Garang, Idukmara, Idum (M); Mahu, Moda, Tora (H); Mahua	Sapotaceae	T	Seed	Mahua tel is extensively used as lamp oil known as "TORA TEL" in Bastar by the Tribals and also used as hair oils. Mahuwa oil has emollient properties and is used in skin disease, rheumatism and headache. It is also a laxative and considered useful in habitual constipation, piles and haemorrhoids and as an emetic.
7.	*Mangifera indica* L.	Aam, Maka, Makamg, Marka (M)	Anacardiaceae	T	Seed	This oil from the tree bole is often used as flammable oil for chullas by the tribals in cooking purposes.
8.	Mesua ferrea	Nagkesar	Guttiferae	T	Seed	The seed oil is considered to be very useful in conditions like skin diseases by the Tribals.
9.	*Pongamia pinnata* L.	Karanji	Fabaceae	T	Seed	Karanji tel is extensively used in treatment of skin diseases. It is used in the treatment of Leprosy by the tribals.
10	*Ricinus communis* L.	Castor Oil	Euphorbiaceae	S	Seed	Being very glossy oil on the skin. Used as skin shiner, Also used in hair grooming by the tribals. Known as Arandi tel used in the treatment of hydrocele didease.
11	*Salvadora persica* L.	Pilu oil, Meswak, Jhak	Salvadoraceae	S	Seed	Seed oils are used in cooking food by the tribals of Bastar region.
12	*Santalum album* L.	Chandan	Santalaceae	T	Wood	Chandan tel is used as fragrant oil used by the tribals of the region. Also the oil is used in the treatment of itching
13	*Schleichera oleosa* Lour.	Kusum	Sapindaceae	T	Seed	Kusmi tel used as hair oil by the tribals.
14	*Semecarpus anacardium* L.	Idumaram (G); Kohka (M); Jidcettu (T); Bhelva	Anacardiaceae	T	Seed	Tribal's apply its seed oil on swollen joints and traumatic wounds, it effectively controls the pain. Single nut is heated in the flame of lamp and oil allowed is used to seal the wounds and major cuts.
15	*Shorea robusta* Gaertn.	Sal, Haramgi (M); Sargi (G)	Dipterocarpaceae	T	Seed	Sal oil is produced from the kernels of sal tree. The butter is used as diya oil or lamp oil by the tribals.

Acknowledgment

We take this momentous opportunity to express our heartiest gratitude, indebtedness and regards to Dr. Sharad Nema, HOD/Associate Professor, School of Studies Forestry & Wild life, Bastar Vishwavidyalaya, Jagdalpur. We owe the opportunity to express our gratefulness to Forest Officers, Bastar Forest Division for their support in the field trips and encouragement throughout the present endeavour.

We would also like to thank the villagers who lended our cooperation during the study work. Our thanks also remain due for those who have helped us knowingly and unknowingly in various ways to complete our research work successfully.

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