



RESEARCH ARTICLE

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## ***Madhuca indica* J.F. Gmel: A multipurpose tree of traditional agroforestry systems of Bundelkhand**

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**ABSTRACT :** *Madhuca indica* J.F. Gmel. (mahua) tree is also known as tree of poor because it fulfills many requirements of poor people of rural landscape. It is also known as reward of nature to poor/tribal communities because the survival of tribal communities still depends on different non-timber forest products (NTFP) obtained from Mahua. It is a multipurpose tree of traditional agroforestry systems of Bundelkhand. It has been one of the major sources of food for poor communities living in rural areas. The Mahua tree produce a variety of NTFP namely flower, seed, seed oil, seed cake, leaves, stem bark etc. The present study was carried out to explore multiple uses of mahua products and its role in rural life of the poor communities of the Mawai Bujurg, Banda Uttar Pradesh. We conducted survey of Mawai Bujurg and collected information related to different products of mahua other than wood. We recorded that the dried flowers are used in preparation of mahuasharvat a local drink for some special occasion. The dried flowers also used after boiling with sattu in rheumatism, to get relieve from the pain; whereas some people also prepare “Mahudi” a local vine by fermenting the dried flowers. The green leaves are also used during worship on festivals and marriage ceremony. The bark is a rich source of protein, therefore, the dried bark is boiled with tea and consumed. Other than providing protein the bark is also cures some diseases viz., diarrhea, tonsillitis, leprosy etc. Seeds are also eaten and edible seed oil called Butter or *Ghee* and used for cooking purposes.

**KEY WORDS :** Multipurpose tree, Traditional agroforestry system, NTFP, Mahua flower

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### INTRODUCTION

People of rural landscape depend upon nature and they have developed symbiotic relationship with natural

ecosystem. Millions of people, particularly rural and communities in many developing countries still collect and consumed a wide variety of wild plant resources to meet their food requirements (Bharucha and Pretty, 2010; Dobriyal *et al.*, 2015 and Kumar *et al.*, 2017). Mahua tree becomes the Kalpvriksha for rural communities as it provides economical support and stability to their lifestyle in the form of money making tree (Jadhav and

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Fatima, 2017). Mahua is a large deciduous fast growing tree usually with a short bole and rounded crown. The bark is thick, grey and vertically cracked. Large numbers of mahua trees are found in states of Madhya Pradesh, Uttar Pradesh, Orissa, Bihar, West Bengal, Chattisgarh, Jharkhand, Gujarat, Rajasthan, Karnataka, Maharashtra and Andhra Pradesh. The flowers of mahua are well recognized for high reducing sugar and nutrient components. The flowers are edible fresh after falling from tree as well as dry and used as a natural sweetener for cooking of many local dishes meethipuri, halwa, kheer and burfi (Patel and Naik, 2008). It is greatly valued for its flowers and its seeds. The tree has religious and aesthetic value in the tribal communities. It can be easily seen in forests, revenue, community and private land.

## EXPERIMENTAL METHODS

The present study was conducted at Mawai Bujurg village of Banda district of Bundelkhand region of Uttar Pradesh. The village Mawai Bujurg lies between 25°44' 16.66"N latitude and 79°48' 43.27"E longitude. This is near about 7 km from Banda district headquarter. The total geographical area of village is 2278.94 hectares and total population is 7286 and about 1307 households. The vegetation in Mawai Bujurg is sparse having many economically important plant species viz., *Acacia nilotica*, *Zizyphus mauritiana*, *Azadirachta indica*, *Feronia lemonia*, *Dalbergia sissoo*, *Syzigium cumini*, *Mitragyna parvifloia* and *Madhuca indica*. But the *Prosopis juliflora* was the dominant tree species in all over the blank spaces of village and along the roads and paths. The survey was conducted during January to June at evening hours on every Saturday in nearby village Mawai Bujurg. The study involved interviews of native

informants and elderly villagers. Interviews were held in whole village and information was collected regarding multiple uses of several non-timber products of Mahua.

## EXPERIMENTAL RESULTS AND ANALYSIS

The results obtained from the present investigation as well as relevant discussion have been summarized under the following heads :

### Flowers:

Mahua flowers are rich source of nutrition and these are easily available in rural areas but these flowers are very less popularize in their diet. In Bundelkhand the dried flowers are mixed with deshigud and wheat flour, cooked as lapsi and given to lactating mother. Sunita and Sarojini (2013) also found the same results and referred as tribal people of Odisha feed flowers of mahua to feeding mother to increase the lactation. Some people also told that dried flowers are also used with honey to treat anemia after roasting on gentle flame. Dry flowers of mahua boiled in water and then mixed *Sattu ata* and consume as nutritive diet. Mahua flowers are also consumed after fried in deshi ghee. A very little quantity of flowers is consumed as a food and most of the quantity is used in preparation 'Mahudi' a distilled liquer. The results of Malavade and Jadhav (2000); Jha *et al.* (2013); Kumari *et al.* (2015) and Behera *et al.* (2016) were found parallel to our study in which they reported most of the quantity of flowers used in preparation of local drink/alcohol. An equal amount of mahua flowers, sesame seeds and Alsi seeds are taken and fried in a pan on medium heat, finally grind all these and taken daily in morning before meal to relieve from *Vaat* diseases. Decoction of dried flowers of mahua is used for treatment of old cough and earache. Sunita

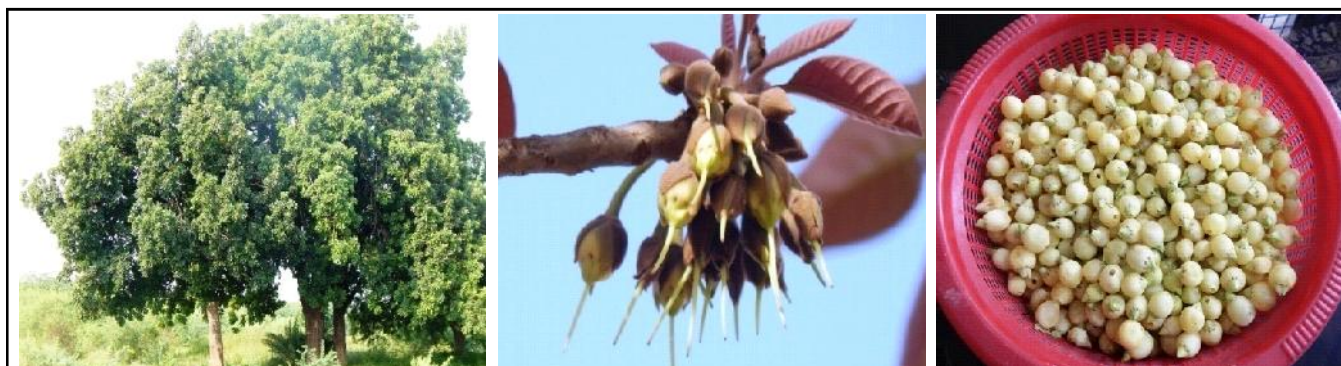


Fig. 1: *Madhuca indica* tree, flowers and shaded corolla

and sarojani, 2013 also reported the use of mahua flowers against chronic bronchitis and cough.

### Seeds:

Mahua seed cake used as cattle feed and some people also use as a good fertilizer in their agriculture fields. Mahua seed oil is edible and used in cooking like *Ghee*. Singh (1998) reported that mahua oil have linoleic and unsaturated fatty acids, therefore, its very useful for heart patients, because it reduces the cholesterol content in blood serum. Puhan *et al.* (2005) found that the mahua oil is used as biodiesel and the mahua cake after oil extraction is used as fertilizer and sometime feed to the cattle.

### Bark:

Bark of mahua tree is very rich source of protein and minerals. The bark of tree is used in hot tee because it is a rich source of protein. The decoction prepared by dry bark of mahua is taken orally for thirty-five days in rheumatism early in the morning before taking meal. The fresh extract of mahua bark is used in gargling to relieve from acute tonsil pain. The dry bark of mahua is used after grinding and making paste for wound healing. Tambekar and Khante (2010) reported the use of mahua bark by Bhumkas in Amravati district of Maharashtra against antibacterial infections e.g. bleeding of spongy gums and rheumatism which is similar to present work. Punjani (2002) reported the paste made by mahua bark mixed with Kher applied externally over wounds or fast healing.

### Leaf:

Leaves after grinding boiled in sesame oil apply to cure phunsi (skin disease). The ash of mahua leaves mixed with deshi *Ghee* relieves from burning. Mahua leaves are expectorant and also used for chronic bronchitis and Cushing's disease (Prajapati *et al.*, 2003). Leaves are used in production of green manure that increases the soil fertility. Khond *et al.* (2009) has been reported the leaves extract of Mahua to be active against fungal infection that causes different kinds of skin disease in human and healing of the wounds. Vaghasiya and Chanda (2009) reported Mahua leaves are used in verminosis, gastropathy, dipsia, bronchitis, consumption, dermatopathy, rheumatism, cephalgia and hemorrhoids which are also parallel to our study.

### Wood:

Mahua wood is used in house construction, wheels of bullock carts, frames of window and door. It is also a good fuel in day to day cooking of rural people. Sikarwar (2002) reported the mahua wood is used for construction of huts as beams, doors and window frames, local furniture, oil and paddy presses. Kumar Ji *et al.* (2007) studied the different uses of mahua by tribal communities of dangs district of Gujarat and found that the mahua wood is used in building constructions. Chaudhary *et al.* (2008) reported the uses of mahua wood as a timber, constructive material and a special use in making agriculture implement called Medvaya, which is a central wooden pole on the threshing floor (Medi) around which the harvested grain with husk is piled and oxen tied to this pole made to move around for threshing. Kala (2011) reported same observations from tribal people of Pachmari Biospher Reserve of M.P. Here Bhomka used the wood of mahua for selecting the right land for construction of building and in making agriculture implements.

### Conclusion:

The study indicate that mahua tree is a truly multipurpose tree of Bundelkhand, which has been protected on bunds of agriculture field for getting number of benefits by indigenous people of this region since generations. Leaves of Mahua used as fodder otherwise enrich the nutritional status of soil. Flowers of mahua directly consume and used in couple of combination for making local dishes and drinks. The seed oil is used for cooking and seed cake has a use as manure. All parts of mahua tree have a medicinal value. The wood/ timber of mahua have multiple use *i.e.* building construction, agriculture implement local furniture etc. The scientific community have to come with the rural people of this region so they have known the importance of this tree as an important component of their agriculture and their different products can be value added according to present market demand.

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**Declaration of interest statement:**

The authors have no conflict in publishing this articles.

**REFERENCES**

- Behera, S., Ray, R.C., Swain, M. R., Mohanty, R. C. and Biswal, A.K. (2016). Traditional and current knowledge on the utilization of Mahua (L.) flowers *Madhuca latifolia* by the santhal tribe in Similipal biosphere reserve, Odisha, India. *Ann. Trop. Res.*, **38** : 94-104.
- Bharucha, Z. and Pretty, J. (2010). The roles and values of wild foods in agricultural systems. *Phil. Trans. Royal Soc. B.* **365**: 2913-2926.
- Chandra, D. (2001). Analgesic effect of aqueous and alcoholic extracts of *Madhuka longifolia* (Koenig), *I. J. Pharma.*, **33** : 108-111.
- Chaudhary, B.L., Katewa, S.S. and Galav, P.K. (2008). Plants in material culture of tribals and rural communities in Rajasmand district of Rajasthan. *I. J. T. K.*, **7** (1) : 11-22.
- Jadhav, R. and Fatima, S. (2017). Ethnobotanical uses of *Madhuca indica* in Thanepada area of Nandurbar district –keynote. *Int. J. Multidis. Res.*, **3** : 2395-6968.
- Jha, S., Vaibhav, V. and Sunitha, V. (2013). A culinary Mahua (*Madhuca indica*) flowers from Bihar, India A potential in production of jam, alcohol for pharmacological benefits with fertilizer value. *Int. J. Drug Dev. Res.*, **5**: 362-367.
- Kala, C.P. (2011). Indigenous uses and sustainable harvesting of trees by local people in Pachmarhi Biosphere Reserve of India. *Int. J. Med. Arom. Plants*, **1**(2):153-161.
- Khond, M., Bhosale, J.D., Arif, T., Mandal, T.K., Padhi, M.M. and Dabur, R. (2009). Screening of some selected medicinal plants extracts for *in-vitro* antimicrobial activity. *Middle-East J. Sci. Res.*, **4** (4): 271-278.
- Kumari, A., Pandey, A., Gupta, A., Raj, A., Sharma, A., Das, A.J., Kumar, A., Chauhan, A., Das, A.J., Ann, A., Neopany, B., Attri, B.L., Panmei, C., Angchok, D., Chye, F.Y., Rapsang, G.F., Vyas, G., Devi, G.A.S., Bareh, I., Kabir, J., Chakrabarty, J., Targais, K., Sim, K.Y., Angmo, K., Palni, L.M.S., Reddy, L.V.A., Swain, M.R., Monika, Devi, M.P., kumar, N., Garg, N., Ningthoujam, S.S., Sharma, N., Yadav, P., Ray, R.C., Deka, S.C., Gautam, S., Thokchom, S., Kumar, S., Khomdram, S., Joshi, S.R., Thorat, S.S., Savitri, Bhalla, T.C., Stobdan, T., Joshi, V.K., Jaiswal, V. and Chauhan, V., (2015). In: Joshi, V.K. (Ed.), *Indigenous alcoholic beverages of South Asia*. CRC Press, pp. 523.
- Kumar Ji, N., Kumar, R.N., Patil, N. and Soni, H. (2007). Studies on plant species used by tribal communities of Saputara and Purna forest, Dang district Gujarat. *I. J. T. K.*, **6**(2):87-92.
- Kumar, Y., Kumar, B., Chandraker, S.K., Padwar, G. K., Dubey, A.K., Thakur, T.K. and Sahu, M.L. (2017). Mahua [*Madhuca indica* (Koenig) J.F. Macbride] A nature, reward to tribal ecosystem of central India. *Int. J. Curr. Microbiol. App. Sci.*, **8** (4) : 1519-1526.
- Malavade, D. M. and Jadhav, B.L. (2000). Alcohol production from *Madhuca indica* flower. *Trends Life Sci.* **15**: 59-65.
- Prajapati, V., Tripathi, A.K., Khanuja, S.P.S. and Kumar, S. (2003). Anti-insect screening of medicinal plants from Kukrail Forest, Lucknow, India. *Pharma. Biol.*, **4**:166-170.
- Puhan, S., Vedaraman, N., Rambrhamam, B. V. and Nagarajan, G. (2005). Mahua (*Madhuca indica*) seed oil: A source of renewable energy in India. *J. Sci. Ind. Res.*, **64**: 890-896.
- Punjani, B.I. (2002). Ethnobotanical aspects of some plants of Aravalli hills in North Gujarat. *Anci. Sci. Life*, **21**(4):268-280.
- Sikarwar, R.L.S. (2002). Mahua [*Madhuca longifolia* (Koen.) Macbride]: A paradise tree for tribals of Madhya Pradesh. *Ind. J. T. K.*, **1**(1) : 87-92.
- Singh, I.S. (1998). Mahua: An oil bearing tree. Narendra Deva University of Agriculture and Technology, Kumarganj, Faizabad, Uttar Pradesh, India. Technical Bulletin, pp. 3-11.
- Sunita, M. and Sarojini P. (2013). *Madhuca lonigfolia* (Sapotaceae): A review of its traditional uses and nutritional properties. *Internat. J. Human Soc. Sci. Invent*, **2** : 30-36.
- Tambekar, D.H. and Khante, B.S. (2010). Antibacterial properties of traditionally used medicinal plants for enteric infections by adivasi s (Bhumka) in melghat forest (Amravati district). *Int. J. Pharm. Sci. Res.*, **1** (9): 120-128.
- Vaghasiya, Y. and Chanda, S. (2009). Screening of some traditionally used Indian plants for antibacterial activity against klebsiella pneumonia. *J. Herb Medi Toxic.*, **3** (2): 161-164.

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