



FLOWER MORPHOMETRY OF MADHUCA INDICA: INTER AND INTRA POPULATION VARIATIONS IN EASTERN MADHYA PRADESH

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Abstract: *Madhuca indica* J.F. Gmel. (Syn. *M. latifolia* Roxb.) belonging to family Sapotaceae, commonly known as 'Mahua', is an important NTFP tree species of central India. Mahua is an economically important multipurpose tree species due to its delicious and nutritive flowers. About 75% of the tribal population of central India collects Mahua flowers to meet their requirement for food and country liquor. Inter and intra population variation in morphology of Mahua flowers was studied among eight populations of eastern Madhya Pradesh sampled from phenotypically superior trees. Significant variation was observed among the selected populations for traits of flowers considered in the study i.e., fresh and dry weight, length and width of flowers; while non-significant variation was observed within the populations. The average fresh and dry weight of Mahua flowers was found to be 19.82 g and 4.43 g respectively. The mean width and length of the flowers was observed as 0.97 cm and 1.37 cm respectively. The study provided valuable input for identification of morphological variability in Mahua flowers, which can be used in further studies on value addition of this important species of central India.

Keywords: *Madhuca indica*, flower morphometry, population variation, NTFP

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Madhuca indica J.F. Gmel. commonly known as *Mahua*, a member of "Sapotaceae" family

(Krishnamurthy, 1993) is an important forestry species of Central India. It is indigenous to India (Troup 1921; Anon 1988) and large numbers of *Mahua* trees are found in tropical and sub-tropical states of Uttar Pradesh, Madhya Pradesh, Orissa, Chhattisgarh, Jharkhand, Gujarat, Andhra Pradesh, Maharashtra, Bihar, West Bengal and Karnataka (Robyn and Singh, 1997; Siddiqui et al., 2010; Behl et al., 2002).

Mahua is a medium to large sized deciduous tree (12 to 15 meter height) (Behl and Sriwastawa, 2002). Flowers are many in number, small, fleshy, dull or pale white in color (Vaidyarathanam, 1995). In central India, flowering period starts in the month of February to March and lasts up to the first week of May. Almost all parts of *Mahua* viz., root, bark, latex-juice, seed and seed oil are known to possess medicinal properties due to presence of different active ingredients (Wyk and Van, 2004). *Mahua* flowers are rich source of sugar, protein, essential minerals like Ca, P, Fe, K and vitamins like carotene, ascorbic acid, thiamine, riboflavin, niacin, folic acid, pantothenic acid, biotin and inositol. They also contain polysaccharide which on hydrolysis give D-galactose, D-glucose, L-arabinose, L-rhamnose,

D-xylose and D-glucuronic acid (Miller, 2005; Brody, 1994; Patel and Naik, 2010). The tree wins in fame due to liquor distilled from the flowers which are used to make local wine and vinegar (Troup, 1921).

The available information in literature does not provide a complete understanding of geographical variation and its influence on flower quality of mahua. The relationship of floral and geographical variation study of phenotypically superior trees provide a basis for planning and conducting future collections and efficient utilization of resources to realize the potentiality for maximizing flower use for various purposes. Keeping in view, the importance of mahua flower in MFP sector, an effort was made to investigate the relationship of the floral traits with geographical variation in highest *Mahua* producing agroclimatic zones of Madhya Pradesh.

MATERIALS AND METHODS

Madhuca indica trees were selected by conducting extensive field survey for selection of phenotypically superior trees. Selections were done from eight districts of three major *Mahua* producing agro climatic zones i.e., Kymore Plateau and Satpura Hills, Northern Hill Zone of Chhattisgarh and Chhattisgarh Plains of eastern Madhya Pradesh. Healthy, mature and phenotypically superior individuals (20 in number), were selected from each eight populations of Annupur, Balaghat, Dindori,