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Research Papers

Peltophorum pterocarpum – An important forage to Apis dorsata Fabr.

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Abstract

The copper pod tree, Peltophorum pterocarpum is an ornamental tree and a dominant species in Ahmednagar city, particularly in and around the Ahmednagar College campus. It is an excellent source of bee forage to social and solitary bees. The flowering period of this tree is from March to July. The flowers have ten anthers, each producing about 9000-9500 pollen grains. The nectary is cup-shaped, situated at the base of corolla. It produces about 5 µl of nectar

The melittopalynological investigation of Apis dorsata honey samples collected during April-June 2011 in Ahmednagar (M.S.) showed that they were unifloral honeys of Peltophorum pterocarpum. The said tree is multipurpose with several economic uses and above all, high bee forage value making it an important species for afforestation programmes.

Keywords: Peltophorum pterocarpum, Bee forage, Unifloral honey.

Introduction:

Apis dorsata Fabr., the Rock bee is distributed in almost all states of India up to 2000m altitude. They inhabit the hilly areas, plains and also in the urban areas. The rock bees construct a large single comb in open places on arboreal or terrestrial support (Soman and Kshirsagar, 1991). Louveaux et al. (1978) has devised the technique of microscopic analysis of honey samples.

In Ahmednagar city and surrounding areas of the taluka, a large number of rock bee colonies are observed from February to May, when the Peltophorum pterocarpum trees flower. In these areas, the bees get forage for about five months, mainly from P. pterocarpum trees. P. pterocarpum is a multipurpose tree species, conspicuous with its bunches of yellow flowers, in contrast with reddish brown medium sized pods, also referred to as 'copper pod'. This species is a native of Sri Lanka and Andaman islands and is commonly planted in avenues and gardens for its attractive yellow inflorescence.

The trees bloom during March-July and while in the bloom, they attract a large variety of insects including Apis dorsata and Apis cerana indica among the honey bees. The flowers provide both pollen and nectar. As a result of the present investigation, we recorded some observations on the bee forage value of this species.

Materials and Methods:

The study on the forage value of Apis dorsata Fabr. in Ahmednagar (M.S.) was undertaken and field observations were made on the foraging activities of the said bee species on Peltophorum pterocarpum during 2010-2011. Pollen stores and honey samples were collected from A. dorsata colonies during the flowering period and subjected to melittopalynological investigations to assess the relative importance of P. pterocarpum as a significant source of bee forage.

Results and Discussion:

The flowering in the trees begins by the middle of March, during April–May it is in the full bloom and the flowering reduces by July. The flowers present in terminal pinnacles are large, bright yellow capped in a coppery red downy calyx. The flowers open early in the morning. The corolla is yellow with wavy obviate petals, ten free stamens, enveloped with dense tufts of hair at the base and crowned with golden yellow anthers (Fig. 1). Each anther produces about 9000-9500 pollen grains. The nectary is cup shaped, concealed by brownish corona of glandular hairs on the stamens and the base of the petals. It produces 5 µl of nectar. A 5 µl capillary gets completely filled when inserted at the base of the androecium. Bhat et. al. (1987) reported that each flower produces 5.4 µl of nectar. The pollen grains are medium, obovate to spheroidal and trizonocolporate. Ornamentation is reticulate and hetero-brochate with lamina irregularly polygonal.

Observations at several locations in Ahmednagar during March 2010 to May 2011 revealed that A. dorsata workers collect pollens and nectar from Peltophorum flowers in large numbers. The foraging begins early in the morning and continues throughout the day albeit less vigorous by noon. Two samples of squeezed honey from natural nests of Apis dorsata were collected during the flowering period of P. pterocarpum.

Fig. 1(b): *P. pterocarpum* inflorescence.

Fig. 1(c): Photomicrograph of *P. pterocarpum* pollen

Microscopic analysis of A. dorsata honey sample (Table 1) collected from different locations in Ahmednagar suggests that Peltophorum pterocarpum is a good nectar source to bees. The honey obtained is thick, dark yellow in colour and has a pleasant flavour. The absolute pollen count (number of pollens in 10 gm of honey) of the honey samples is 98.694 and 128.920, respectively. This is in concurrence with the report of Laxmi et al. (1996). The honey samples show strong unifloral trait with pollens of P. pterocarpum in it.

Table 1: *Peltophorum pterocarpum* honey samples collected from Ahmednagar (M.S.).

Characters	Honey Samples	
Sample No.	HS-1	HS-2
Bee species	*Apis dorsata*	*Apis dorsata*
Period of Collection	April 2010	May 2010
Place of Collection	Ahmednagar College Campus, Ahmednagar City	DSP Chowk (1.5 km from Ahmednagar College Campus)
Absolute pollen Count (No. of pollen grains/10gm of honey)	98.694	128.920

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