

**Genetic diversity of Honey Bee (*Apis mellifera* L.) Populations in Turkey Revealed by
Randomly Amplified Polymorphic DNA (RAPD) Analysis**

Rahsan I. Tunca^{1,2}, Gun Koleoglu,¹ Yusuf Atagan,¹ Meral Kence,^{1*}

¹Department of Biology, Middle East Technical University, 06531 Ankara, Turkey

²Yuzuncu Yil University, Agriculture Faculty, Dept. of Animal Science Van, Turkey

ABSTRACT

The honey bee (*Apis mellifera* L.) is an ecologically and economically important insect species. Five of 26 identified subspecies are distributed in Turkey. It is essential to determine and preserve the genetic variation which is especially a valuable resource at this time of global honey bee losses. RAPD markers were used to assess the genetic diversity in 360 colonies from 25 provinces. In a total of 720 worker bees, ten RAPD primers amplified 105 bands, all of which were polymorphic. Mean gene diversity values (H_e) ranged between 0.035 and 0.175, G_{ST} values 0.060-0.395, and the private band patterns reflected a high level of genetic variation. AMOVA analysis partitioned the genetic variation as 60% within populations, 40% among populations. The Mantel test did not reveal significant correlation between the genetic and geographic distances. Neighbor-joining analysis showed that the bees of Thrace region of Turkey and an island relatively close clustered together. The other two populations that belong to A lineage were separated from the ones of C lineage. The results showed that the RAPD markers successfully discriminated the honey bee populations and provide appropriate information for conservation plans.

Keywords: Genetic diversity; Honey bee; *Apis mellifera*; RAPD; Turkey