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Creation of a pollen database for Mediterranean flowering plants

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One of the consequences of the decline of biodiversity is the reduction in the quantity, quality and diversity of pollen, which is a fundamental food source for bees, dependent on environmental changes. Bees have also been affected with unprecedented worldwide declines. Today we are witnessing a true ‘eco-drama’.

Biodiversity is the whole and the variety of all living things, plant and animal forms, present in the ecosystems of the planet. The concept of biodiversity is closely linked to the life of each living form: greater biodiversity provides a greater chance of survival. Even for pollen, diversity of pollen is key. Such diversity can be studied on three levels: genes, species and ecosystems.

For the purpose of the pollen database, various pollen species were investigated by performing melissopalynological, microscopic and molecular analysis with the aim of creating a pollen database. Morphological measurements and observations of pollen grain found in honey samples were carried out. Molecular investigations were based on species specific PCR targeted to polymorphic DNA traits and sequencing. Following this sequence analysis, a real-time PCR system was set up to produce plant species profiles unique for honey and applicable on a larger scale. The detection of pollen from particular plant species geographically linked to a specific location will allow the identification of the honey type. The genetic database represents a sequence standard matric with which to compare the sequence of plant species that honeybees use for honey production. The ability geo-referencing the honey samples through these DNA investigations will allow us to eventually monitor for introduction of alien species as well as possible cases of species hybridisation.

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