

Sustainable breeding and conservation actions of *Apis mellifera* in Italy

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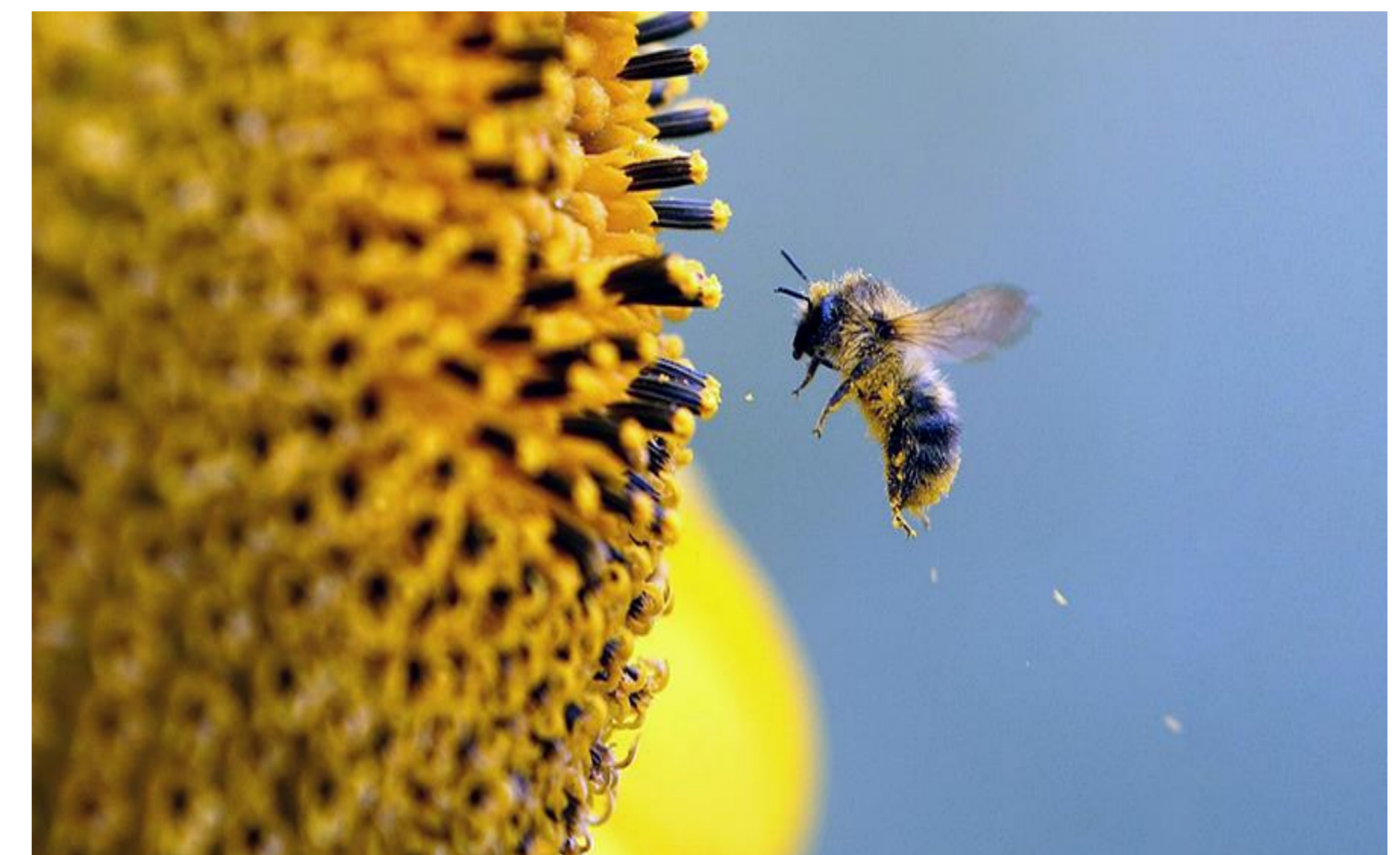
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Introduction

At the end of the last glaciation, numerous subspecies of *Apis mellifera* were established in Europe. The long climate optimum during the last 10 thousand years has consolidated their adaptation to the different geographical environments. In Italy the Ligustica variety of *Apis mellifera* has stabilized and is now well adapted to the mild climate and to the rich floristic biodiversity of the territory

Thanks to its favorable characteristics, this variety has spread since 1800 in many other regions of the world. With the spread of *Varroa destructor* in the 80s and with the increasingly dramatic use of pesticides in agriculture, the Italian bee is increasingly dependent on human action for its conservation, both for the control of the parasites and for the threat posed by pesticides.



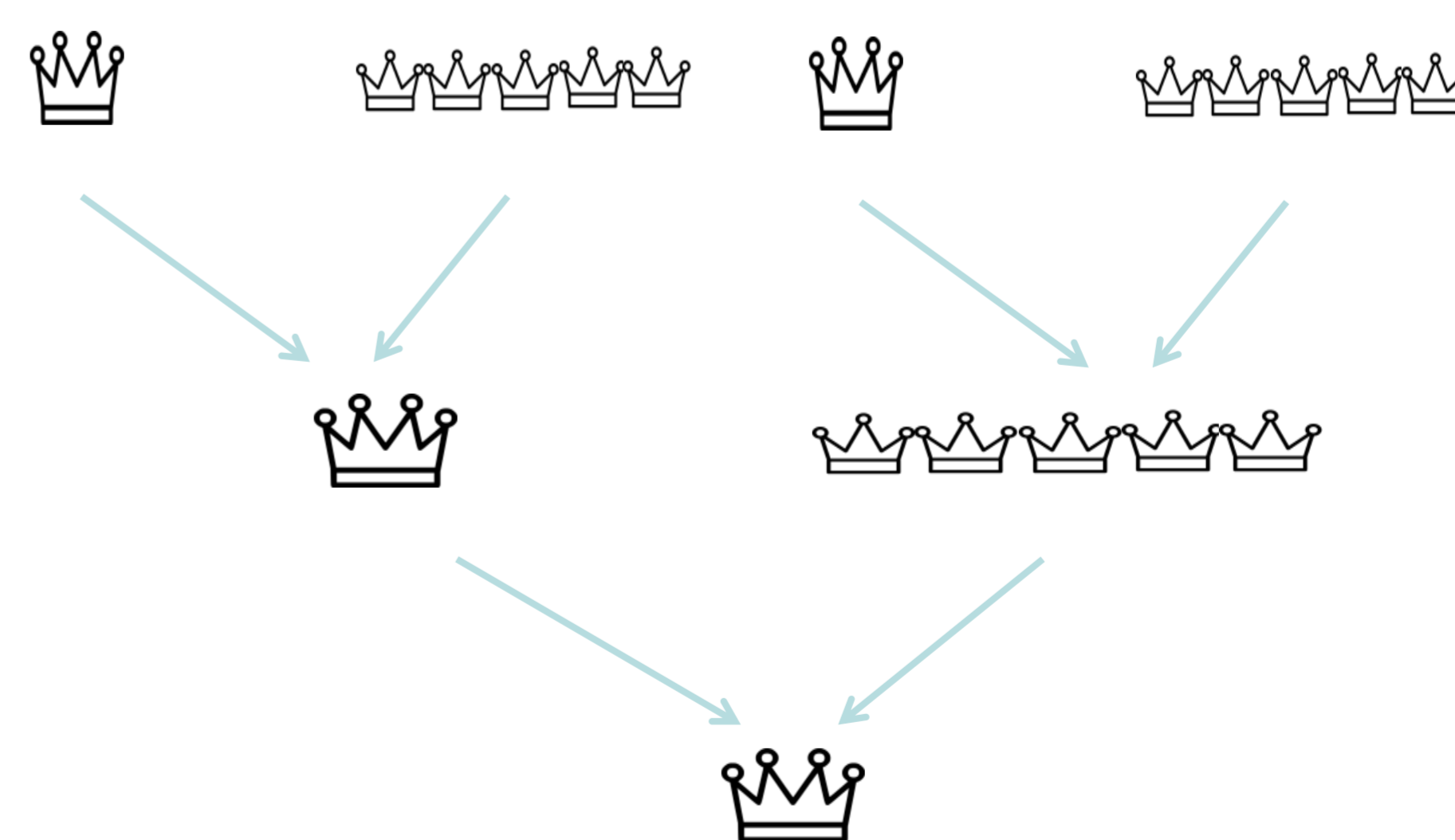
Aim of the work

The effects of the globalization in this setting have favored in the Italian territory other subspecies of *Apis mellifera* more performing in terms of productivity and resistance to pathogens. In this context, there is an urgent need to define strategies for the conservation of local ecotypes and for their valorization on a productive scale.

Results and Discussion

The control of the couplings becomes therefore a focal point, and in this sense the BEENOMIX project has contributed to implement an interesting selective model applicable to any breeder able to carry out a selective activity. The BEENOMIX project introduced a selection model based on productivity in terms of kg of honey and hygienic behavior.

The two characters have been selected with a relative emphasis of 1 and 0.4 respectively. The selection takes place between 108 families per year, in which the 6 best families will be identified and from which the new 108 families of the next cycle will be produced. The cycle is based on two years and two groups alternate in selection.



Every year a new family is individuated from which a group of sister drone-producing queens (DPQ) is raised. The drones produced by the DPQ will fertilize the 108 virgin queens (VQ) in a well-defined and isolated mating site. The fertilization site will be chosen specifically to be isolated and protected from the presence of other drones.

Results of the selective scheme have been proven to be positive for the breeders in terms of honey yield and hygienic behavior. The implementation of the breeding scheme will be conducted for further three years.

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