



PLANT 



The PRIMA programme is supported under Horizon 2020 the European Union's Framework Programme for Research and Innovation.



PLANT-B

**“A SUSTAINABLE MIXED
CROPPING-BEEKEEPING
SYSTEM IN
THE MEDITERRANEAN BASIN”**

PLANT-B IN BRIEF

PLANT-B introduces a farming system combining citrus, aromatic/medicinal plants and beekeeping to increase sustainability of crop and honey production in the Mediterranean agroecosystems. Led by the Athens-based Benaki Phytopathological Institute (BPI), it brings together ten partners from six countries.

PLANT-B is funded by the Partnership for Research and Innovation in the Mediterranean Area (PRIMA).



CHALLENGE & OBJECTIVES

The Mediterranean region is famous for its citrus and honey production. Honeybee hives are distributed throughout citrus orchards in most Mediterranean countries during crop flowering, facilitating the pollination needs of citrus, while also supporting beekeepers' income with the production of citrus blossom honey.

Nevertheless, growers and beekeepers may have conflicting interests. Improper use of pesticides in citrus orchards can be highly detrimental to bees' health and honey quality, for example. One way to reduce the need for chemicals while protecting bees is to transition towards a farming system that integrates pest management practices and technology.

In addition, ramping up efforts to conserve endemic honeybee subspecies that are resistant to pernicious and widespread pests like the Varroa mite is also crucial to ensure the sustainability of honey production across the region.

PLANT-B's combined citrus, aromatic and medicinal plants and beekeeping system could lead to more

efficient land use, optimize pollination services by honeybees and benefit both citrus and beehive products. It will create new habitats for honeybees and other insect pollinators during the off-flowering crop season, increase the sustainability of pollination and biological control services in citrus crop, and enhance the biodiversity in the agroecosystem.

"If a farmer can show that his citrus production is compatible with honey production, it gives his product a marked benefit in terms of perception. He shows that his production safeguards honeybees."

Pier Paolo Danieli, Professor at the Department of Agricultural and Forestry Sciences at University of Tuscia (UNITUS-DAFNE), Italy

"Those aromatic plants are interesting because they could serve as alternative food for natural enemies such as parasitoids, which feed on nectar."

Josep A. Jaques Miret, Professor at the Department of Agricultural and Environmental Sciences at Universitat Jaume I de Castelló, Region of Valencia, Spain.

THE PROJECT'S SPECIFIC OBJECTIVES

1. Development and testing of biological control tools and Integrated Pest Management (IPM) methods to reduce the use of pesticide inputs in the fruit crop and beekeeping.
2. Development and optimization of a mixed-farming system in the Mediterranean region to provide a mutual benefit to the crops and honey in terms of quantity and quality through optimization of pollination and biological control services.
3. Determination of quality, safety specifications and traceability of honey production at the proposed diversified cropping-beekeeping system.

4. Assessment of the environmental and socio-economic sustainability of the mixed cropping-beekeeping system.

5. Dissemination of the new knowledge to the agricultural main actors and to the public, and promotion of the new honey.

"BPI has established analytical methodologies to study the sugars and bioactive compounds content in honey. Sugar contents are crucially important because they can give us information about the general quality of the product."

Konstantinos M. Kasiotis, Associate Researcher at the Benaki Phytopathological Institute (BPI) in Athens, Greece



“It is crucial for us to protect the Saharan bee in its natural habitat. We need to push for the adoption of a new set of legislation that would ban the seasonal transhumance of Tellienne bee colonies from the North to the Eastern border, and only allow beekeepers who have Saharan bee to access the area.”

Nabila Kabli, Researcher at the Algerian National Agronomic Insititute (INRAA) and a bee expert.

“In Europe, where intensive agriculture is expanding, where eachmeter square is increasingly exploited by massive machines and where hedges have been uprooted, less space and food are available for bees.”

Yves Le Conte, Research Director at the French National Institute for Agriculture, Food and Environment (INRAE)



WORK PACKAGES



PLANT-B CASE STUDIES



New IPM tools against pests of honey bees will be developed in Algeria, France, Egypt, Italy and Greece based on the expertise of each partner and by integrating their experience. Experimental apiaries have been established for this purpose.

PLANT-B will be operating case studies in Egypt, Greece, Italy and Spain to assess the benefits of the new sustainable mixed-farming system *in situ*.

EGYPT: 6 case study orchards (4 PLANT-B + 2 control) on the Island of Al-Shaeir in AlQanater el Khareiya, Qalyoubeya governorate (Delta)

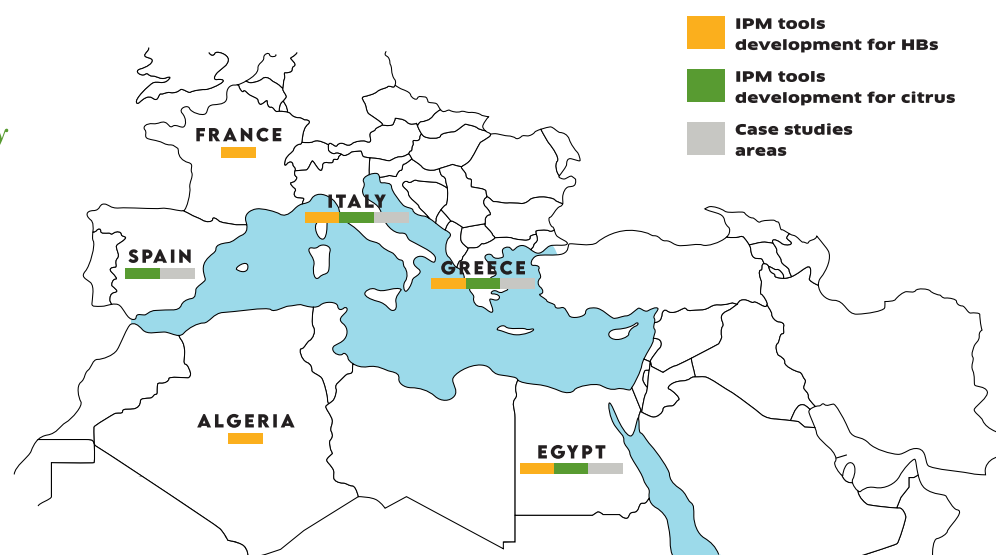
GREECE: 7 case study orchards (5 PLANT-B + 2 control) located in Argolida, in the eastern part of the Peloponnese peninsula

ITALY: 14 case study orchards (9 PLANT-B + 5 control) in Sicily, Campania, Molise

SPAIN: 3 case study orchards with a twin design in close proximity to UJI campus, North West of Valencia

“The work we are currently doing looks at improving the sustainability and compatibility of the citrus-honey agroecosystem.”

Souad A. Shairra, Professor of Biological Control at ARC's Plant Protection Research Institute, Egypt



“As part of PLANT-B, I want to understand what these mechanisms of resistance are. How do the bees survive? Is it a physiological process, or is it a question of behavior?” Mohammadi Arezki, lecturer and researcher at the M'Hamed Bougara University of Boumerdés (UMBB), Algeria

PARTNERS



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