

What is VARROAFORM ?

VARROAFORM is a supra-autonomous Operational Group (covering the regions of Galicia, Castilla y León, Castilla-La Mancha and Canarias) whose purpose is the development, implementation and evaluation of a **controlled-release formulation** as an **alternative to conventional treatments in apiculture for the control and prevention of varroasis** (external parasitosis caused by the Varroa destructor mite) in domestic bee (*Apis mellifera*) based on **natural ingredients** and incorporated into **biodegradable systems/supports**.

For this: i) the **effectiveness and possible toxicity** of the new products in bees will be evaluated, ii) there is also an environmental and health objective, since the **reduction or total absence of residues** in natural honey and other hive products (beeswax, propolis), will be also evaluated, iii) it is also intended to **reduce the costs** which means for beekeepers and producers the current treatments against varroa, mainly associated with the frequency of application.



Apiary in Castilla-La Mancha



Do you want to **know more** about VARROAFORM ?

You can send us an email to lloret@feuga.es or call **(+34)681042375**

Further information in the project website www.varroaform.es



Apiary in Galicia



Apiary in Castilla y León



Varroaform

DEVELOPMENT OF AN EFFECTIVE FORMULATION FOR THE CONTROL AND PREVENTION OF VARROATOSIS IN DOMESTIC BEE

Innovation project 80% co-funded by the European Agricultural Fund for Rural Development (EAFRD) of the European Union and 20% by the Ministry of Agriculture, Fisheries and Food, within the framework of the National Rural Development Programme 2014-2020.

Total project budget: 415.440,3 eur, Total grant: 379.920,3 eur.



What are the Operational Groups ?

The Operational Groups, main actors in the implementation of the EIP-Agri (European Innovation Partnership for Agricultural productivity and sustainability), are one of the key tools for the execution of the National Rural Development Programme 2014-2020 for promoting innovation in the agri-food and forestry sector within the European scope. They gather agents of different profiles with common interests, such as farmers, ranchers, companies, researchers or training and dissemination actors, who are associated to implement and innovation project in order to provide a joint and multi-sectorial response to a problem or need.

Who is VARROAFORM aimed to ?

VARROAFORM project focuses on all the agents of the beekeeping sector:

- Beekeepers, honey and hive products producers.
- Apiculture companies, veterinarians.
- Public Administrations related to agriculture, environment and rural development.
- Research centres, and general public.

With the aim of maximizing the impact of the results and the transfer of the solutions to be developed in the VARROAFORM project, an intense dissemination work will be carried out at regional, national and European levels (articles, events, workshops, web, etc.).

What are VARROAFORM objectives and expected results ?

The main objective of developing and obtaining an effective and innocuous formulation against varroasis is to **reduce the economic losses** that the **apiculture**

sector suffers due to the parasite of the hives by this mite, as well as to **benefit other sectors such as agricultural production and forestry**, in which these pollinators play a relevant role.

A formulation is developed and implemented as an **alternative to conventional treatments** to achieve the following specific objectives:

- To **avoid resistances development** associated with the use of conventional acaricides.
- Application of **non-toxic treatments, easy to apply** and with **low cost and frequency of administration**.
- To **minimize or eliminate the presence of residues** in honey and other products derived from hives.

Moreover, environmentally friendly beekeeping practices, such as those proposed in VARROAFORM: formulations obtained by using biodegradable materials and active substances of natural origin, increase the **added value of hive products** (honey, beeswax, propolis) when accessing a market segment with an increasing demand.

To achieve these objectives/results, the following activities are carried out in the project:

1.- Obtaining formulations: selection of the most suitable excipients and formulation parameters through an experimental design of mixtures, obtaining formulations (microencapsulation, gels, cyclodextrin complexes).

2.- Pharmaco-technical characterization of the formulations.

3.- Detection and initial quantification of residues in natural honey and other products derived from the hive (beeswax and propolis) in the apiaries to be studied.

4.- Toxicity tests on bees: in vitro tests to determine possible toxicity in both bee breeding and adult bees.

5.- Field assays to evaluate the effectiveness of the new formulations: in the four regions (Galicia, Castilla y León, Canarias and Castilla-La Mancha) using controlled field trials. It will be evaluated a range of parameters: concentration and dosage of the active substances, period of application, temperature and evaporation pressure of the substances, distribution capacity in the hive, contact surface with the bees body, severity of infestation in the

hive, type of bee, type of support used for the treatment application, etc.

6.- Analysis of residues after the hives treatment with the new formulations.

7.- Economic study of the new treatments.

Who are the members of VARROFORM ?

Partners: the supra-autonomous operational group, which involves the Spanish regions of Galicia, Castilla y León, Castilla-La-Mancha and Canarias, is coordinated by the Galician University-Enterprise Foundation (FEUGA), and counts with the participation of the University of Santiago de Compostela (USC, Interdisciplinary Group on Pharmaceutical Technology and Release Systems, Parasitic Immunobiology and Hydric Parasitosis) and University of Las Palmas de Gran Canaria (ULPGC, University Institute of Animal Health and Food Safety), as well as with the beekeepers: Agustín Arias, Benigno Basteiro and Urbano González.



Benigno Basteiro
BEEKEEPER

Agustín Arias
BEEKEEPER

Urbano González
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The Spanish Association of Beekeepers (AEA), Beekeepers Association of Gran Canaria (APIGRANCA) and Sanitary Defense Association (ADS) Beekeepers of La Palma act as **collaborators**.

