Press article
Bee health

DECEMBER 2019

Press article long article

Monitoring bee health through beehive sensors

Italian Operational Group supports nomadic beekeepers with digital tool

To improve honey production, nomadic beekeepers move their hives according to the floral blossom. The remoteness of the apiaries can make it harder for them to keep control over the hives and to intervene on time in case of illnesses or other stressors that affect bee health. An Italian Operational Group is now installing sensors on beehives, sending data directly from the hive to a regional network of beekeepers.

Bees may be small, but they play an enormous part in supporting biodiversity and maintaining natural ecosystems. They produce honey and are essential for pollinating fruit trees and crops, contributing to crop yields. Many Italian beekeepers move their hives according to the blooming periods of flowers in the area. For them, keeping track of the remote hives can be a time-consuming and costly venture.

To help nomadic beekeepers monitor the health of their bees from a distance, Italian EIP-AGRI Operational Group 'NOMADI-App' is installing sensors on beehives. The sensors send collected data directly to beekeepers in the area.

"There are many problems that beekeepers have to deal with", says beekeeper Michele Valleri, who is working with the Operational Group to test the sensors. "Aside from diseases, parasites, pesticides and other stressors that affect bee health, we also increasingly have to face the effects of climate change. It is not easy to keep bees in good health. Every technology that can help us can be really helpful."

Michele explains: "A weight sensor tells us when the bees collect nectar and when they stop doing so. Temperature and humidity data give information for a good brood development. And a sensor that tracks weather conditions can signal when high or low temperatures or rain may hinder the bees in their work."

The sensor data are completed with information from meteorological forecasts and info on flowering times and on pesticides that may be used in the area. All information will be fed into a digital network that regional beekeepers can consult remotely on their computers or mobile phones. "Beekeepers can use this information to choose the best areas to bring their bees", says Michele, "with plenty of flowers and nectar but also free of stressors. They can keep their bees in good health and work in a more efficient way."

Michele is making sure that the beekeepers, researchers and software developers involved in the project keep working together. "Beekeepers need to know about plants, animal health, changing weather conditions and many other things. Help from the research world is welcome. I think the value of this project lies in sharing information. For instance, by making the connection between the digital data from the hives and weather information, we can try to predict the development of the seasons. This can be very important for beekeepers. It is not always easy, but I think it is important for us to share knowledge with each other. Because beekeepers are like bees: if they work together, they can work better."

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Press article short article

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The hive sensors collect data on weight, temperature, humidity and weather conditions. These data are completed with information from meteorological forecasts, info on flowering times and on pesticides that may be used in the area. All information will be fed into a digital network that regional beekeepers can consult remotely on their computers or mobile phones. "Beekeepers can use this information to choose the best areas to bring their bees", says Michele. "It saves them time and costs."

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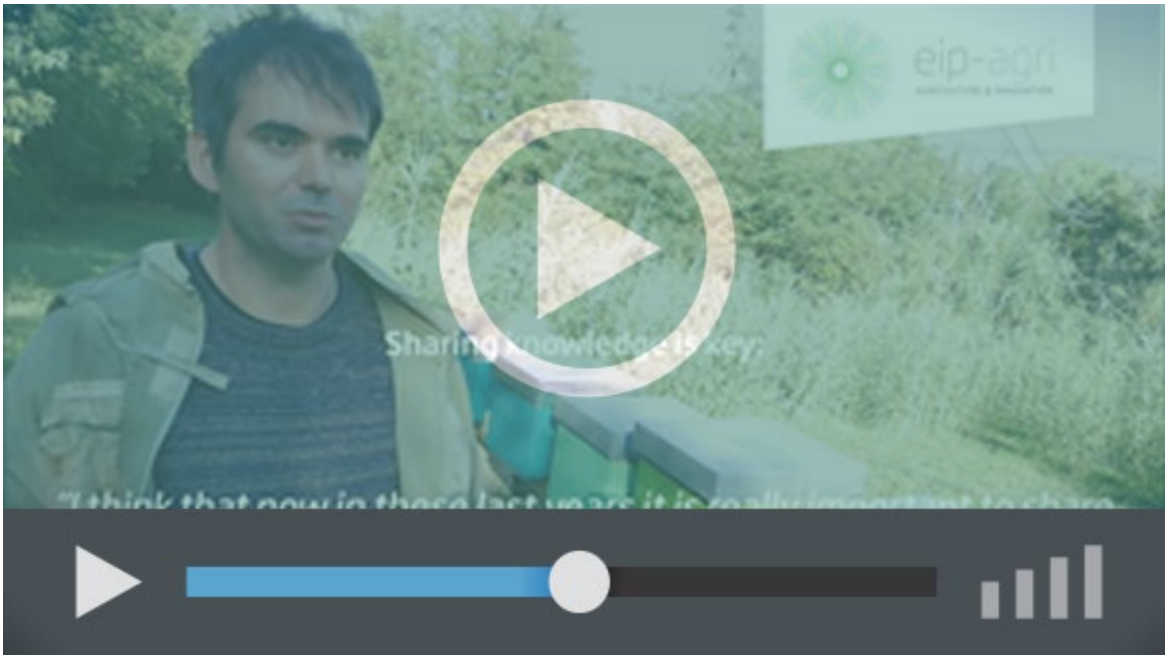
Background information

Watch the press article's movieclip



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Project information

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The 'NOMADI-App' is an Operational Group funded by the Tuscany Rural Development Programme. More information on the Operational Group can be found in the **EIP-AGRI project database**.

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Pictures

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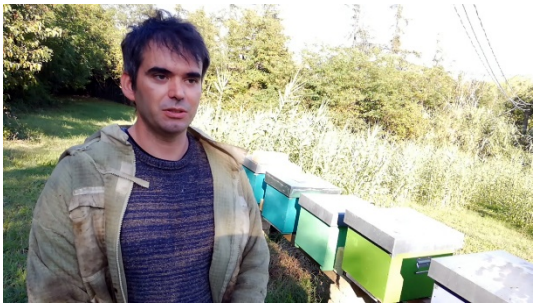
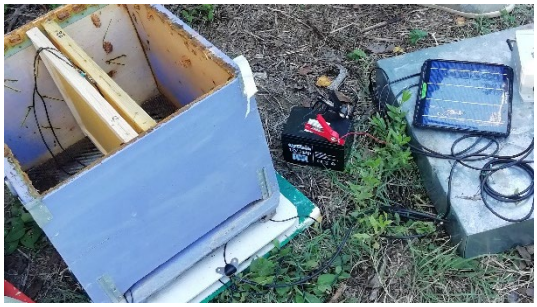


Michele Valeiri: ""I think it is important for us to share knowledge with each other. Because beekeepers are like bees: if they work together, they can work better." – Copyright European Commission



Hive sensors collect data on weight, temperature, humidity and weather conditions. Beekeepers can use this information to choose the best areas to bring their bees. – Copyright European Commission

More information on bee health and sustainable beekeeping

During a field visit of the **EIP-AGRI Focus Group 'Bee health and sustainable beekeeping'** (Bologna, Italy, October 2019), the Focus Group experts visited an apiary where the sensors of Operational Group NOMADI-App were installed. The Focus Group members will now continue to work on the Focus Group report and the minipapers, scheduled to be published by mid 2020.

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Horizon 2020 multi-actor projects working on bee health

- PoshBEE - Pan-european assessment, monitoring, and mitigation of Stressors on the Health of BEEs: **website** - **CORDIS** (06/2018-05/2023)
- B-GOOD - Giving Beekeeping Guidance by cOmputatiOnal-assisted Decision making: **CORDIS** (06/2019-05/2023)

Multi-actor projects are projects in which end users and multipliers of research results such as farmers and farmers' groups, advisers, enterprises and others, are closely cooperating throughout the whole research project period.

Thematic networks are multi-actor projects which collect existing knowledge and best practices on a given theme to make it available in easily understandable formats for end-users such as farmers, foresters, advisers etc.

Other operational Groups working on bee health

10 Operational Groups working on bees are available in the EIP-AGRI Operational Groups database (19 November 2019)

Beekeeping, Agriculture and Environment" - Associate fruit growing and beekeeping for an agro-ecological and innovative management of production syst	France
Selection and Establishment varoatolerant bee collonies VSH / SMR - short SETBie in BW	Germany
Stimulation Pollination mix for climate adaptation	Germany
Remote beehive monitoring, a new opportunity for nomadic beekeeping (NOMADI-App)	Italy
Biodivers Fruit Growing Limburg	Netherlands
Control and minimization of damage by the invasive species Vespa velutina nigrithorax (Vespa velutina) in beekeeping	Portugal
DivInA- Diversification and Innovation in Beekeeping	Portugal
Pollinators for fruit growers and fruit growers for pollinators	Slovenia
Development of natural sweeteners with healthy properties from honey, jelly and propolis.	Spain
Pica: innovative platform for beekeeping	Spain
BeeScanning 2.0 - monitoring a biological system	Sweden
Pasture for pollinators	United Kingdom

EIP-AGRI

The European Innovation Partnership 'Agricultural Productivity and Sustainability' (EIP-AGRI) is one of five EIPs which have been launched by the European Commission in a bid to promote rapid modernisation of the sectors concerned, by stepping up innovation efforts. The EIP-AGRI aims to foster innovation in the agricultural and forestry sectors by bringing research and practice closer together – in research and innovation projects as well as via the EIP-AGRI network.

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EIPs aim to streamline, simplify and better coordinate existing instruments and initiatives, and complement them with actions where necessary. Two specific funding sources are particularly important for the EIP-AGRI: the EU Research and Innovation framework, Horizon 2020, as well as the EU Rural Development Policy.

- **EIP-AGRI Brochure on the EIP-AGRI Network (2015)** (EN – BG – DE – ES – FR – GR – HU – IT – PT – RO)
- **EIP-AGRI Brochure on Funding opportunities under Horizon 2020 – Calls 2020 Calls** (EN)
- **EIP-AGRI Brochure on Horizon 2020 Multi-actor projects** (EN – BG – DE – FR – SI)
- **EIP-AGRI Brochure on Thematic Networks under Horizon 2020** (EN – BG – DE – ES – FR – HU)

EIP-AGRI Operational Groups

- 98 rural development programmes (27 member states) provide support to EIP Operational Groups
- Over 3200 Operational Groups are expected to be established under the approved RDPs (2014 – 2020)
- Over 1000 Operational Groups projects have been selected for funding and are currently ongoing (or already finished)*

* Information officially submitted to the European Commission by RDP managing authorities (September 2019)

EIP-AGRI Operational Groups **are groups of people who work together in an innovation project funded by Rural Development Programmes** (RDPs). They bring together partners with complementary knowledge. The composition of the group can vary according to the theme and specific objectives of each project. Farmers, advisers, scientists, businesses or other relevant partners work together to find practical solutions for specific problems facing people in the European farming and forestry sectors. Farmers and foresters need to be closely involved throughout the project to ensure that the innovative solutions are relevant and likely to be quickly applied in the field.

Find out more in the **EIP-AGRI brochure on Operational Groups**. The brochure on Operational Groups is available in English, Bulgarian, Czech, French, German, Greek, Hungarian, Portuguese, Romanian, Slovak, Slovenian and Spanish

Operational Groups can benefit from networking and collaborating with organisations from outside their partnership and from other regions and countries, such as other Operational Groups, research projects, farmers' organisations or local authorities and European knowledge networks. Read the **EIP-AGRI Brochure 'Operational Groups – Collaborate to innovate'**. It shows some examples of successful collaboration. It provides Operational Groups with inspiration and tools for further knowledge exchange within the EIP-AGRI network. This brochure is available in English, Latvian, Romanian and Slovenian.

Check out the **'Operational Groups'** dedicated section on the EIP-AGRI website, including:

- More than 900 Operational Groups are available in the database
- detailed information on how to set up Operational Groups, on supporting networks and relevant EIP-AGRI seminars and workshops
- links to results and contact details of ongoing Operational Groups in the **EIP-AGRI database**
- a **list of all RDP Managing Authorities**

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