



Istituto Zooprofilattico Sperimentale
del Lazio e della Toscana M. Aleandri



Collaborating Centre for Good Beekeeping
Management Practices and Biosecurity
Measures in the Apiculture Sector

INTERNATIONAL SYMPOSIUM ON BIOSECURITY MEASURES IN BEEKEEPING WEBINAR 10 JUNE 2022

Biosecurity Measures for the honey bee diseases in Europe

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Content

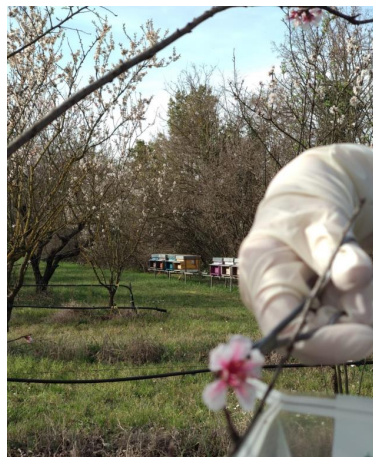
1. Good beekeeping practices



2. Biosecurity measures in beekeeping



3. Case studies (field trials)





1. Good beekeeping practices

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Good Beekeeping Practices (GBPs)

GBPs are "all those integrative activities that beekeepers apply to beekeeping production to achieve optimal health for people, honeybees and the environment"



(FAO, 2020; Rivera-Gomis et al., 2019).





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One Health

Productivity

Biosecurity Measures in Beekeeping (BMBs)

Human health
(HH)

Honey bee health
(HBH)

Environmental
protection
(EP)

Good Beekeeping Practices (GBPs)

The GBPs have a **very generic, universal approach**. They have, indeed, a **broadly common meaning** and are **not specific to a specific bee disease**.

Examples:

- Proper position apiary;
- Proper use of medicines;
- Training;
- Avoid stress to the bees;
- Guarantee feed and water; etc.



GBPs classification according to OIE-FAO approach: 7 headings and a total of 140 practices identified



	N. of GBPs identified
1. General apiary management	63
2. Veterinary medicines	8
3. Disease management (general)	23
4. Hygiene	7
5. Animal feeding and watering	7
6. Record keeping	25
7. Training	7



1. Good beekeeping practices



2. Biosecurity measures in beekeeping



3. Case studies (field trials)



Biosecurity measures in Beekeeping

‘biosecurity’ means **the sum of management and physical measures designed to reduce the risk of the introduction, development and spread of diseases** to, from and within: (a) an animal population, or (b) an establishment, zone, compartment, means of transport or any other facilities, premises or location.

In Regulation (EU) 2016/429



or

"all those operational **activities** that are applied to **reduce the risk of introduction and spread of specific honeybee disease agents.**"

In OIE Scientific and Technical Review (2021), 39 (3)



Biosecurity Measures in Beekeeping

They **refer to each specific disease** (are disease-related: es. prevalence/incidence of the diseases), and may be influenced by several factors like: the *genetic* of the honey bees, the *geographical area in which the bees are kept*, the economic impact, the climatic conditions, the beekeeping technologies, the health legislation, the political decisions.



Biosecurity Measures in Beekeeping (BMBs) in Europe: 56 measures were identified and ranked

BMBs for Varroa

BMBs for nosemosis

BMBs for American Foulbrood

BMBs for aethinosis

BMBs for European Foulbrood



From September 2022...

Thematic network to compile
and share knowledge ready for practice
HORIZON-CL6-2021-GOVERNANCE-01-28

B-THENET

**“BEST PRACTICES AND INNOVATIONS
FOR A SUSTAINABLE BEEKEEPING”**

GBPs and BMBs will be collected, validated and
shared in a Digital Knowledge Platform



With The Support of:



National Beekeeping Association +
Research Organization/Advisory Service



Biosecurity Measures for Varroa



1. use hives with screened bottom boards
2. regularly monitor amount of varroa or check for signs of varroosis (or virosis) - early detection
3. breed honey bee colonies that are more resistant to varroa
4. prefer to use soft acaricides (alone or integrated with biotechnical methods) rather than hard acaricides
5. rotate active ingredients of acaricides to prevent insurging of resistance in varroa
6. treat all colonies in the same apiary and in the same area at the same time, to avoid reinfestations



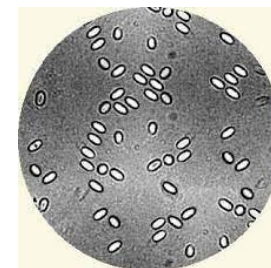


Biosecurity Measures for AFB and EFB

1. **Prefer** do not treat with antibiotics
2. **Renew 30%** of the combs of the brood chamber every year
3. during winter **monitor presence of AFB and EFB** (cultural or biomolecular method) by hive debris – early detection
4. **Have a fast intervention** on positive colonies (shook swarm or destruction)
5. **Keep young queens**
6. Feed and water when needed (above all in rainy/cold spring or splitted colonies)
7. **Do not feed with honey** of uncertain origin



Biosecurity Measures for Nosemosis



1. **Renew 30% of the hive combs every year.**
2. **Do not reuse combs originating from depopulated or collapsed hives,**
3. **Perform good varroa treatment**
4. **Monitor infection levels of Nosema/bee**
5. **Prefer do not treat with antibiotics** but use plant extracts or feed supplements
6. **Keep young queens**
7. **Genetic selection** of Nosema-resistant honey bees



1. Good beekeeping practices

**2. Biosecurity measures in
beekeeping**



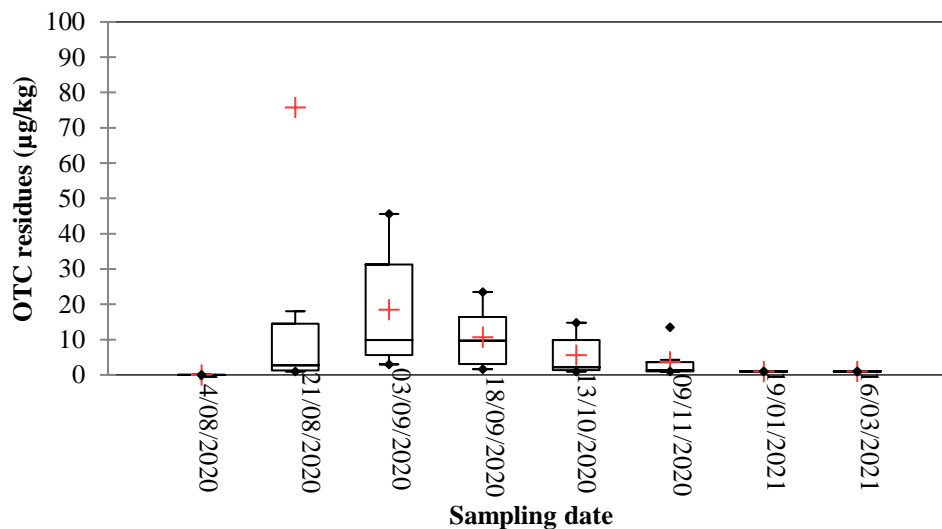
3. Case studies: field trials



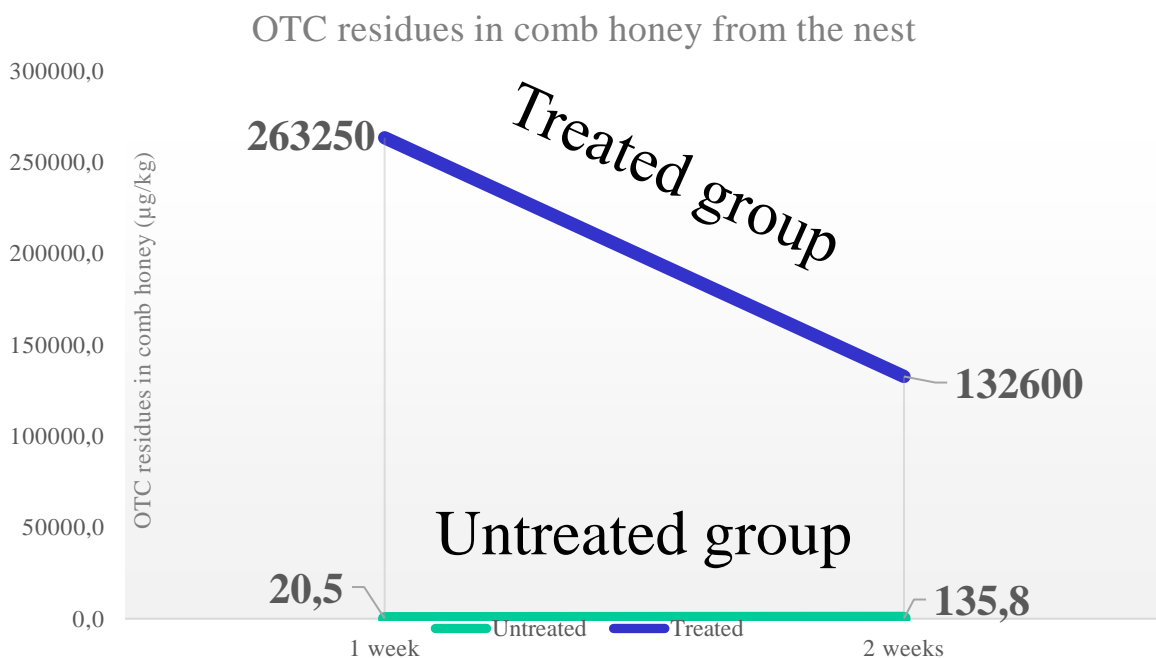
Case study 1 - Field trial in Rome (Central Italy) Summer treatment with OTC

	<u>Post</u> <u>1 week</u>	<u>Post</u> <u>3 weeks</u>	<u>Post</u> <u>1 month</u>	<u>Post</u> <u>2 months</u>	<u>Post</u> <u>3 months</u>	<u>Post</u> <u>5 months</u>	<u>Post</u> <u>7 months</u>
<u>Treated</u> <u>group</u>	<u>2.875</u>	<u>2.837</u>	<u>940</u>	<u>870</u>	<u>305</u>	933	<u>210</u>
<u>Control</u> <u>untreated</u>	75,8	18,5	10,7	5,6	3,7	1	1

Control group: contamination of untreated hives
and long persistence of OTC at low dosages



Case study 2 - Field trial in Rome (Central Italy) OTC treatment during almond blossom - March 2022



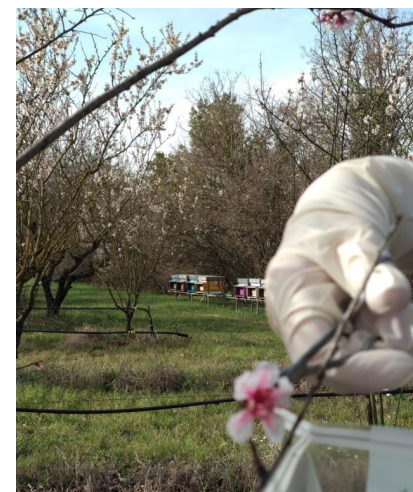
Evaluation of:

- OTC residues in flowers foraged by honeybees
- presence of anti-OTC resistant genes in bacteria on flowers.



Preliminary results:

	1 week post-treatment	2 weeks post-treatment
Flowers near (5 m)	0,69 µg/kg	0,10 µg/kg
Flowers medium distance (25 m)	0,27 µg/kg	0,97 µg/kg
Flowers far (50 m)	Inf LOD	Inf LOD
Control	Inf LOD	Inf LOD



Further readings on GBPs and BMBs...





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Good beekeeping practices

**Practical manual on how to identify and
control the main diseases of the honeybee
(*Apis mellifera*)**

Published on 2020

Available for free:

<http://www.fao.org/3/ca9182en/CA9182EN.pdf>



Food and Agriculture
Organization of the
United Nations

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EN/2020/1518

Good beekeeping practices

Practical manual on how to identify and control
the main diseases of the honeybee (*Apis mellifera*)



TECA

Technologies and practices for
small agricultural producers



Guidelines for GBPs for sustainable apiculture

Published in 2022

Available online:

<https://www.fao.org/3/cb5353en/cb5353en.pdf>





Istituto Zooprofilattico Sperimentale
del Lazio e della Toscana *M. Aleandri*

Guidelines for responsible use of antimicrobials in beekeeping

Published in 2022

Available online:

<https://www.fao.org/3/cb6918en/cb6918en.pdf>



Food and Agriculture
Organization of the
United Nations

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Guidelines for responsible use of antimicrobials in beekeeping

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Many thanks for your kind attention



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