



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



IZSLT International Centers in Apiculture:

**"Animal Health and Food Security Discipline Apiculture, health and biosecurity"
(FAO Reference Centre)**

**"Good Beekeeping Management Practices and Biosecurity Measures in the Apiculture Sector"
(WOAH Collaborating Centre)**



Dr. Giovanni Formato - giovanni.formato@izslt.it

Research and International Cooperation for Sustainable Development in Beekeeping (IZSLT)





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

History of the Apiculture activities in IZSLT



2000: **Foundation** of the Apiculture Unit at IZSLT (DG Brizioli).

2020: **FAO Reference Centre**

“Animal Health and Food Security - Discipline Apiculture”



2021: **WOAH Collaborating Centre for**

“Good Beekeeping Management Practices and Biosecurity Measures in the Apiculture Sector”





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



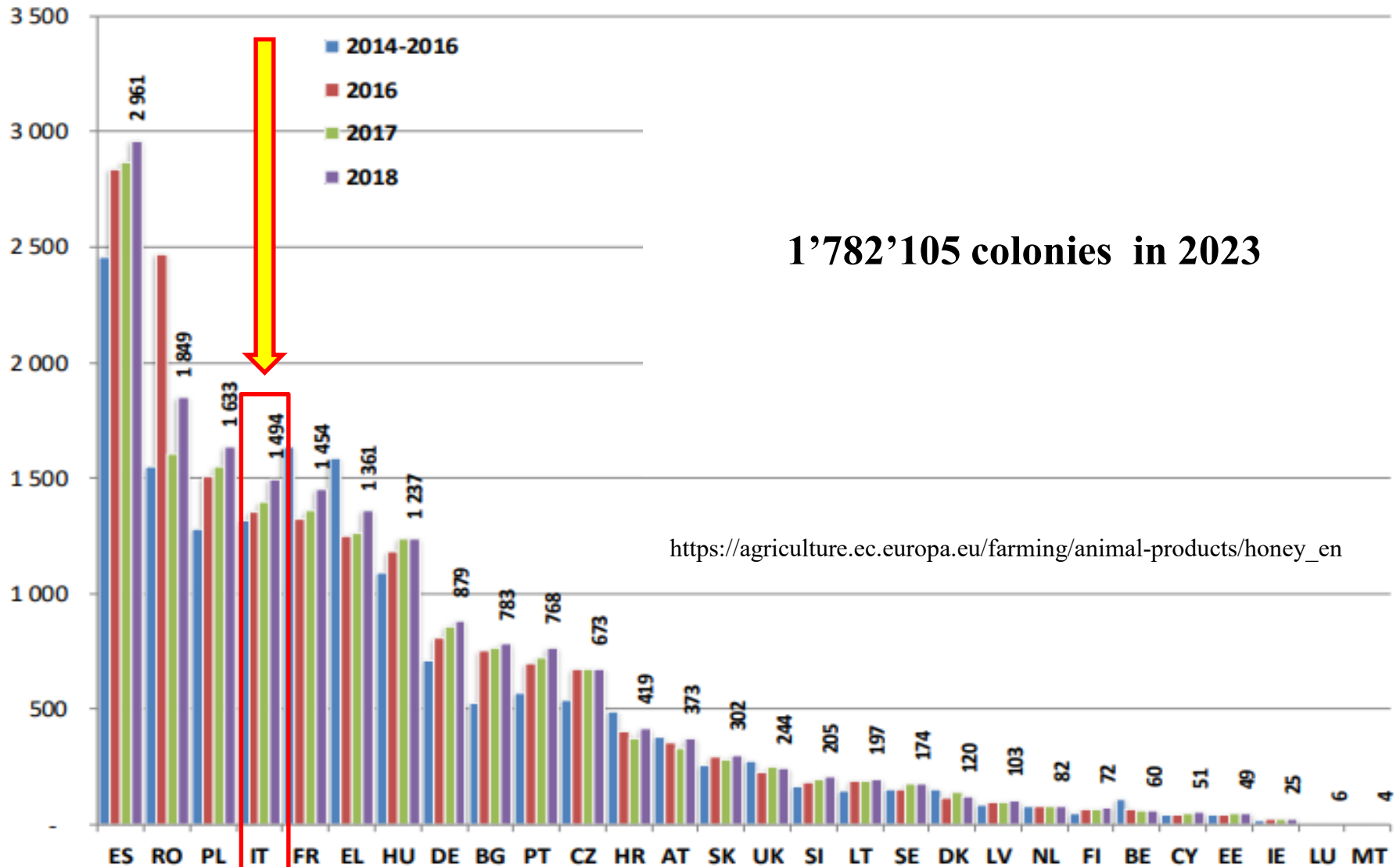
Beekeeping in Italy

73.148 Beekeepers, of which 29% professionals (21.335)

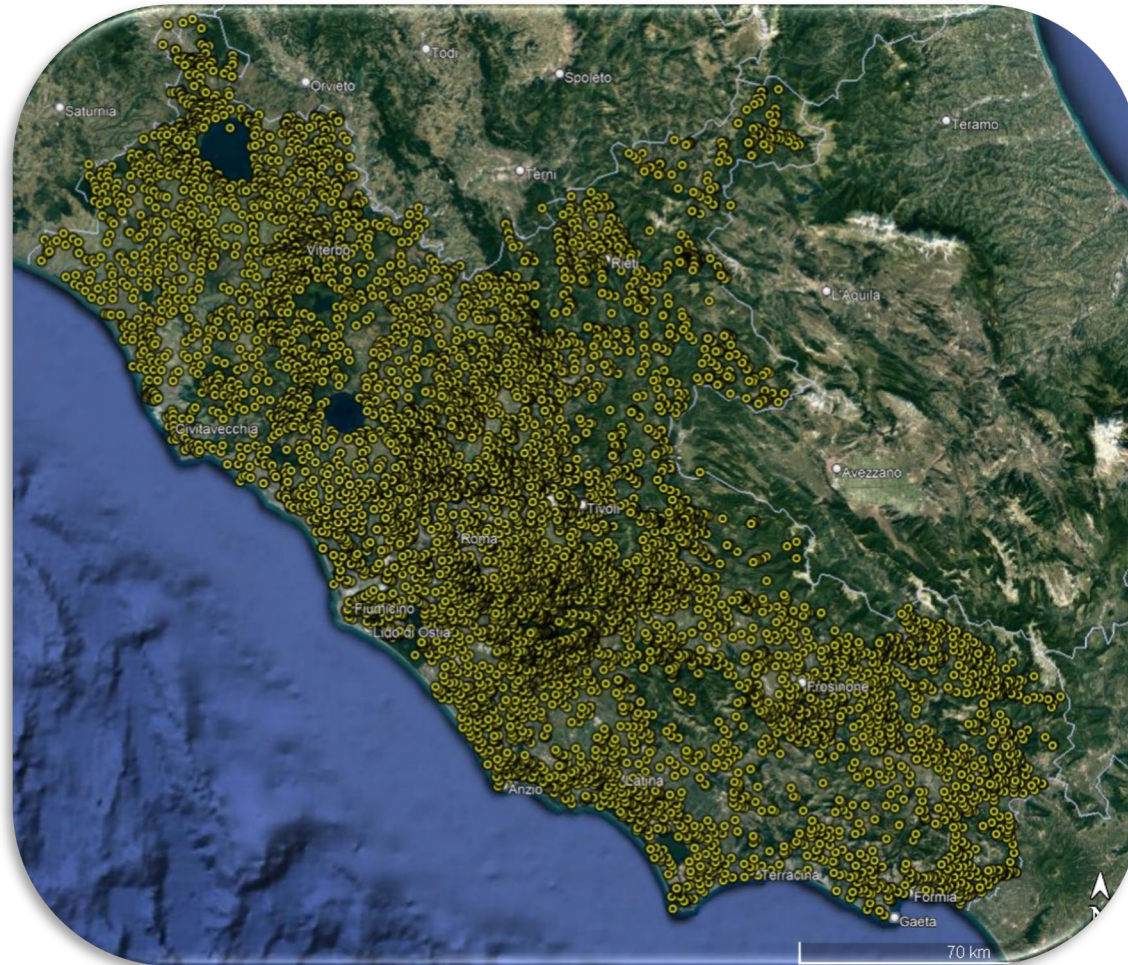




Italy: the 4th EU largest beekeeping community



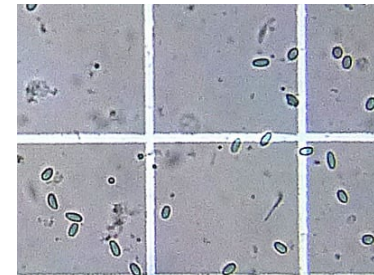
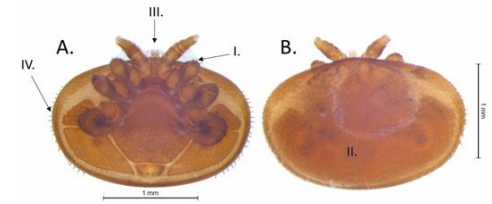
Density of apiaries in Latium Region



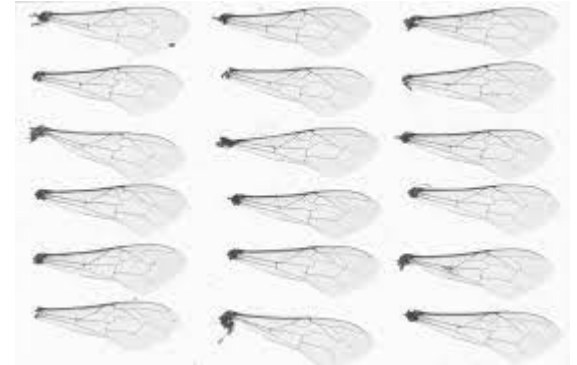
2022 – Diagnostic activities (1/2)

The following laboratory analysis ACCORDING TO WOAAH MANUAL of Diagnostic Tests and Vaccines for Terrestrial Animals have been performed:

- 297 *Varroa destructor* infestation level assessment
- 129 *Nosema* spp. microscopy
- 118 American and European foulbrood cultural method
- 77 American foulbrood PCR end-point analyses
- 73 European foulbrood PCR end-point analyses
- 6 *Aethina tumida* identification
- 1 *Aethina tumida* PCR end-point analyses
- 58 *Nosema apis* PCR end-point analyses
- 58 *Nosema ceranae* PCR end-point analyses.



- 68 inspections of affected colonies
- 79 morphometrical identification of *Apis* species
- 55 *Acarapis woodi* PCR end-point analyses
- 182 *Lotmaria passim* PCR end-point analyses
- 182 *Crithidia* spp. PCR end-point analyses
- 129 Deformed Wing Virus PCR end-point analyses
- 17 Israeli Acute Paralysis Virus PCR end-point analyses
- 17 Kashmir Bee Virus PCR end-point analyses
- 78 Chronic Bee Paralysis Virus PCR end-point analyses
- 78 Acute Bee Paralysis Virus PCR end-point analyses
- 79 Black Queen Cell Virus PCR end-point analyses
- 17 Sac Brood Virus PCR end-point analyses
- 61 Lake Sinai Virus PCR end-point analyses
- 544 Slow Paralysis Virus PCR end-point analyses
- 67 analysis on honey and pollen (melissopalynological, palynological and humidity)



On-going International Research Projects

Research project	Coordinator	Countries	Objectives
<p>Thematic Network: Best practices and innovations for a sustainable Beekeeping. Project acronym: B-THENET</p>	IZSLT	IT, PT, SE, BE, DK, SI, ES, EL, HR, PL, SK, BE, DE, LV, HU, AT	Modernize EU beekeeping sector by establishing a multi actor network with complementary knowledge that connects: beekeepers, researchers, advisors, and the other actors of the apiculture sector
<p>BETTER-B: Improving Bees' Resilience to Stressors by Restoring Harmony and Balance</p>	UGENT	BE, NL, DE, DK, PT, PL, SE, RO, ES, IT, NO, FR, CH, UK	Understand the processes and mechanisms that apply in nature and to adapt modern beekeeping practices and decision making accordingly, and when appropriate using the benefits of advanced technologies
<p>INSIGNIA-EU: Preparatory action for monitoring of environmental pollution using honey bees</p>	ALVEUS AB	NL, AU, GR, UK, PT, IT, ES, DK, LV, BE	A pan-European environmental pollution monitoring study with honey bees that comprises a broad range of contaminants, a balanced distribution of apiaries, non-invasive sampling, high quality laboratories, data analyses, spatial and temporal pesticide risk exposure model- and pollen diversity modelling
<p>SHB_SNSF project “Evolution of polyandry and reproduction underlying success and impact of an invasive beetle pest”</p>	University of Bern	USA, BR, AU, SA, KE, IT, CH	SHB as a model system to better understand the fundamental evolutionary aspects of biological invasions





On-going activities with FAO

FAO LETTER OF AGREEMENT (LOA) TFOM250021071	FAO	OM, IT	Services related to strengthening SME's capacities for sustainable and economic apiculture in the Sultanate of Oman
FAO LETTER OF AGREEMENT (LOA) GF NSAHD RY20300000000	FAO	INT	Support to reduce the need for antimicrobial use in apiculture
FAO LETTER OF AGREEMENT (LOA) CJWZD RA20102000000	FAO	INT	Development and dissemination of progressive Management Pathway for AMR (PMP-AMR) in beekeeping and launching AMR/AMU/GBPS/BMBS survey among beekeepers



On-going National Research Projects

National Research project	Coordinator	Objectives
IZS LT 07/18 RC. Title: “Emerging pathogens in beekeeping: Lotmaria passim and Crithidia mellificae”.	IZSLT	Study on diffusion in the Italian territory and evaluation of the impact on hives mortality
IZS LT 14/16 RC. Title: “Antibiotics in beekeeping: state of the art, use and potential risks”.	IZSLT	Field trial to assess risks related to the use of antibiotics in beekeeping
IZS LT 11/20 RC. Title: “Phagotherapy as an alternative to antibiotics (ATA) in the control of infectious animal diseases: development of operational procedures for specific diseases in livestock models in Italy”.	IZSLT	Samples laboratory analysis and field trials to identify and assess alternatives to the use of antibiotics in beekeeping
“Protection of autochthonous honey bees in Latium region – Apis mellifera ligustica”	IZSLT	Samples laboratory analysis, setup of conservation apiaries
IZS ME 15/20 RC. Title: “Development of innovative diagnostic technologies to support field control activities of Aethina tumida (SHB) in Italy”	IZSMe	Development of new diagnostic tools for SHB detection





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

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

1
© 2020 FAO

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



Good beekeeping practices
for sustainable apiculture

Guidelines for GBPs for sustainable apiculture

Published in 2022

Available online:

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

FAO ANIMAL PRODUCTION AND HEALTH / GUIDELINES 25



中国农业科学院
CHINESE ACADEMY OF AGRICULTURAL SCIENCES



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





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



Food and Agriculture
Organization of the
United Nations

ISBN 978-92-01-07106-6

Guidelines for responsible use of antimicrobials in beekeeping

Guidelines for responsible use of
antimicrobials in beekeeping

Published in 2022

Available online:

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

FAO ANIMAL PRODUCTION AND HEALTH / GUIDELINES 25



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





Istituto Zooprofilattico Sperimentale
del Lazio e della Toscana M. Aleandri

FAO MANUAL

Currently under editing

how to build the “Progressive Management Pathway for Antimicrobial Resistance (PMP-AMR)” in Beekeeping:
Eastern (*Apis cerana* spp.) and Western (*Apis mellifera* spp.) bees

PMP in Sustainable Beekeeping

publication foreseen in spring 2024
(English and Spanish)



G. Formato, J. Kim, V. Manara, J. Song



Organization of events on Biosecurity in beekeeping

IZS Istituto Zooprofilattico Sperimentale
del Lazio e della Toscana M. Aleandri
FAO Reference Centre for Apiculture, Health and Biosecurity
WOAH Collaborating Centre for Good Beekeeping Management
Practices and Biosecurity Measures in the Apiculture Sector

World Organisation for Animal Health
Founded as OIE

INTERNATIONAL SYMPOSIUM ON BIOSECURITY MEASURES IN BEEKEEPING

WEBINAR 10 JUNE 2022

Aim of the webinar is to promote awareness on biosecurity measures adopted in beekeeping in the different part of the world, sharing perspectives and taking into account regional differences.

Registration deadline: 8 June 2022
Confirmation and webinar link will be sent on 9 June by mail

[Registration form](#)

Recipients: official and freelance veterinarians and other figures

Note for Italian veterinarians: Credits SPC will be issued to those who request them and have followed the entire webinar

Organization Secretary
Staff Office "Formazione" IZSLT - Patrizia Gradito
06.79099309/421
e-mail: patrizia.gradito@izslt.it - www.izslt.it

IZS Istituto Zooprofilattico Sperimentale
del Lazio e della Toscana M. Aleandri
FAO Reference Centre for Apiculture, Health and Biosecurity
WOAH Collaborating Centre for Good Beekeeping Management
Practices and Biosecurity Measures in the Apiculture Sector

World Organisation for Animal Health
Founded as OIE

WEBINAR

SECOND INTERNATIONAL SYMPOSIUM ON BIOSECURITY IN BEEKEEPING

18 May 2023

Registration deadline: 16 May 2023
Confirmation and webinar link will be sent on 17 May by mail

Registrazione entro il: 16 Maggio 2023
Conferma e link per il webinar saranno inviati il 17 Maggio per email

Recipients: official and freelance veterinarians, beekeepers and other stakeholders
Destinatari: veterinari ufficiali e libero professionisti, apicoltori

[Click here to register](#)
[Premere qui per registrarsi](#)

Organization Secretary - Segreteria Organizzativa
Staff Office "Formazione" IZSLT - Patrizia Gradito
06.79099309/421
e-mail: patrizia.gradito@izslt.it - www.izslt.it

Cofinanziato dall'Unione europea MINISTERO DELL'AGRICOLTURA DELLA SOVRANITÀ ALIMENTARE E DELLE FORESTE **REGIONE LAZIO**





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



International Technical Working Group on Bee Health towards Sustainable Apiculture





International trainings (2022)

Add: Japan 2021 o2022?

Add: dates of events

CONTENT	COUNTRY OF ORIGIN OF THE EXPERT(S) PROVIDED WITH TRAINING	NO. PARTICIPANTS FROM THE CORRESPONDING COUNTRY
Training on honey bee management, Good Beekeeping Practices and Biosecurity measures in beekeeping	Oman	40
Training on honey bee management, Good Beekeeping Practices and Biosecurity measures in beekeeping	Saudi Arabia	40
Training on honey bee management, Good Beekeeping Practices and Biosecurity measures in beekeeping	Kingdom of Saudi Arabia	50





International meetings (2022-2023)

Title of event	Co-organiser	Date	Location
FAO training on Good Practices and Biosecurity Measures	FAO and GHG OMAN	2022-03-23	Ibra (Sultanate of Oman)
FAO training on Good Practices and Biosecurity Measures	FAO and GHG OMAN	2022-03-30	Nizwa (Sultanate of Oman)
Honeybees' disease prevention and best management practices	WOAH Sub-Regional Representation of Arabian Gulf	2023-08-17	Webinar





Other activities

2019-2023: Knowledge-Awareness-Practice (KAP) survey on HB diseases and AMR

August 7th-11th, 2023: **TAIEX study visit**

Series of Events on
Protection of Bee Hives and
Controlling of Honey Bees Diseases and Pest



2023: foundation of an **International WG on Biosecurity measures in beekeeping** (FAO, WOA, IZSLT and APIMONDIA)

Patenting for SHB trap





Latest Scientific Publications (2022-2023)

- Mosca, M., Bubnic, J., Giannetti, L., Fortugno, L., Pietropaoli, M., Manara, V., ... & Formato, G. (2023). Adoption of Partial Shook Swarm in the Integrated Control of American and European Foulbrood of Honey Bee (*Apis mellifera* L.). *Agriculture*, 13(2), 363.
- De Carolis, A., Newmark, A. J., Kim, J., Cazier, J., Hassler, E., Pietropaoli, M., ... & Song, J. (2022). Results of an International Survey for Risk Assessment of Honey Bee Health Concerning *Varroa* Management. *Applied Sciences*, 13(1), 62.
- Mosca, M., Giannetti, L., Franco, A., Iurescia, M., Milito, M., Pietropaoli, M., ... & Formato, G. (2022). Impact of Oxytetracycline on Colonies: Preliminary Results on Residues and Antibiotic Resistance. *Journal of Apicultural Science*, 66(2), 159-170.
- Pietropaoli, M., Tofani, S., Formato, G., Rubino, R. C., Pietrella, G., Di Ruggiero, C., ... & Cersini, A. (2022). Molecular Detection of *Acarapis woodi* Using Hive Debris as Innovative and Non-Invasive Matrix. *Applied Sciences*, 12(6), 2837.
- Pietropaoli, M., Carpana, E., Milito, M., Palazzetti, M., Guarducci, M., Croppi, S., & Formato, G. (2022). Use of *Lactobacillus plantarum* in preventing clinical cases of American and European foulbrood in central Italy. *Applied Sciences*, 12(3), 1388.
- Rauw, W. M., Gomez-Raya, L., Star, L., Øverland, M., Delezie, E., Grivins, M., ... & Formato, G. (2022). Sustainable development in circular agriculture: An illustrative bee & legume & poultry example. *Sustainable Development*.
- Kleckner, K., De Carolis, A., Jack, C., Stuhl, C., Formato, G., & Ellis, J. D. (2022). A Novel Acute Toxicity Bioassay and Field Trial to Evaluate Compounds for Small Hive Beetle Control. *Applied Sciences*, 12(19), 9905.





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



Thanks for your attention



giovanni.formato@izslt.it

