WELFARE ASSESSMENT OF MANAGED HONEYBEE COLONIES: A PRELIMINARY STUDY

Clara Montagnin[1], _Matteo Frasnelli[2]_, _Francesca Fusi[3]_, _Giovanni Formato[4]_, _Franco Mutinelli[5]_, _Cristina Roncoroni[4]_, _Tiziano Bernardo[3]_, _Sara Gabriele[3]_, _Giulia Valli[3]_, _Luigi Bertocchi[3]_, _Valentina Lorenzi[3]_

[1]_Istituto Zooprofilattico Sperimentale dell'Umbria e delle Marche "Togo Rosati», via Gaetano Salvemini, 1 – 06126, Perugia (PG)_
[2]_Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia-Romagna «Bruno Ubertini» (sede di Lugo-Ravenna), via Antonio Bianchi 9 – 25124, Brescia (BS)_
[3]_Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia-Romagna «Bruno Ubertini», National Reference Centre for Animal Welfare (CReNBA), via Antonio Bianchi 9 – 25124, Brescia (BS)_
[4]_Istituto Zooprofilattico Sperimentale del Lazio e della Toscana «Michele Aleandri», via Appia Nuova, 1411 – 00178, Roma (RO)_
[5]_Istituto Zooprofilattico Sperimentale delle Venezie, National Reference Centre for Beekeeping, Viale dell'Università, 10 – 35020, Legnaro (PD)_

National Reference Centre for Animal Welfare

ISTITUTO ZOOPROFILATTICO SPERIMENTALE DELLA LOMBARDIA E DELL'EMILIA ROMAGNA "BRUNO UBERTINI"

Since 2003
(Ministerial Decree n. 81 13/02/03)

EURCAW Poultry SFA

EURCAW Ruminants & Equines

CReNBA

National Reference Centre for Animal Welfare

Expertise for the Ministry of Health

Research national and international

Training

TRANSPORT

FARM

SLAUGHTER

Italian Network of 10 «Istituti Zooprofilattici Sperimentali»

ISTITUTO ZOOPROFILATTICO SPERIMENTALE DELL'UMBRIA E DELLE MARCHE "TOGO ROSATI"
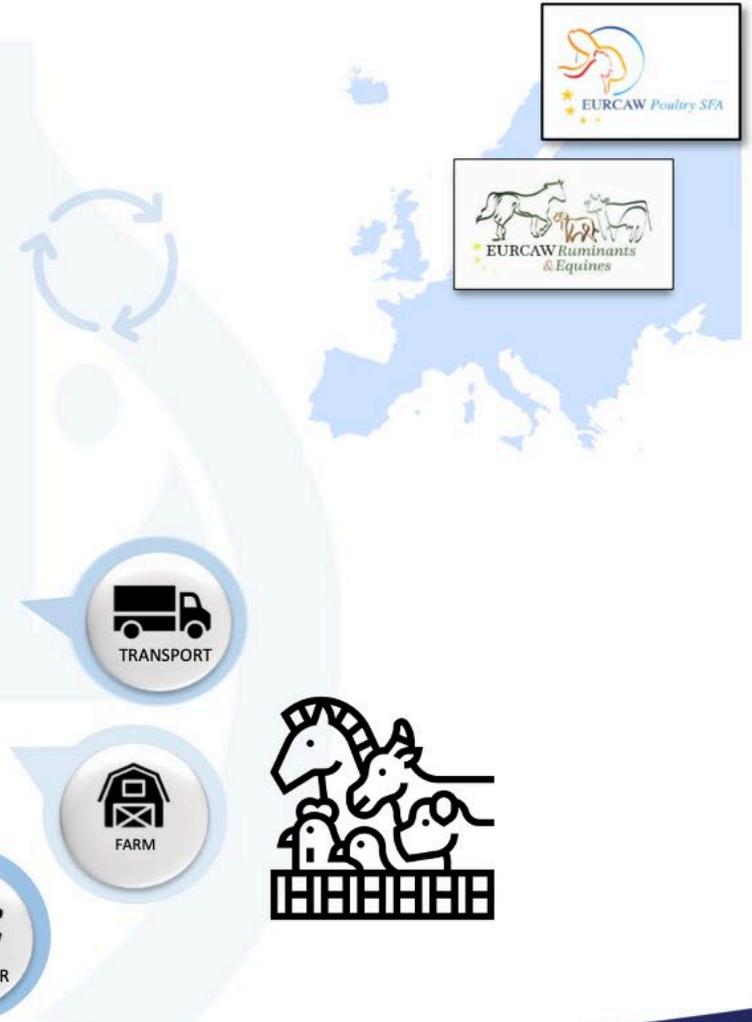
The ClassyFarm IT system

ClassyFarm is an information technology (IT) system of the Italian Ministry of Health for collecting, managing, using and exchanging data on livestock production in Italy
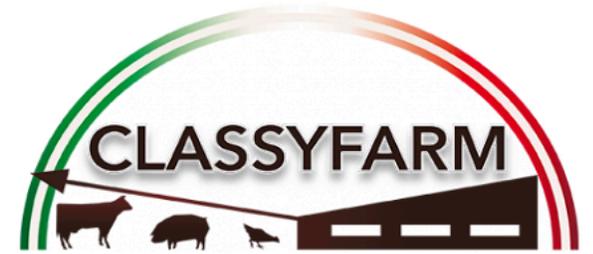
🎯 categorize farms according to their potential risk in terms of:

FOCUS AREAS

Biosecurity

Animal Welfare

Antimicrobial Use

Antimicrobial Resistance

SPECIES

Pigs   Cattle and Buffaloes   Sheep and goats

Poultry   Rabbits
(animal welfare only)

The ClassyFarm IT system: Input

ON THE FIELD (VETs)

PUBLIC OFFICER

PRACTITIONER

FARM: WELFARE, BIOSECURITY, AMS

AVAILABLE FOR ALL

MEASURING

CLASSYFARM APP

CLASSYFARM

CLASSYFARM DB

DATA INTEGRATION

ELECTRONIC PRESCRIPTIONS SYSTEM

NATIONAL VET DB

FROM OTHER DBs
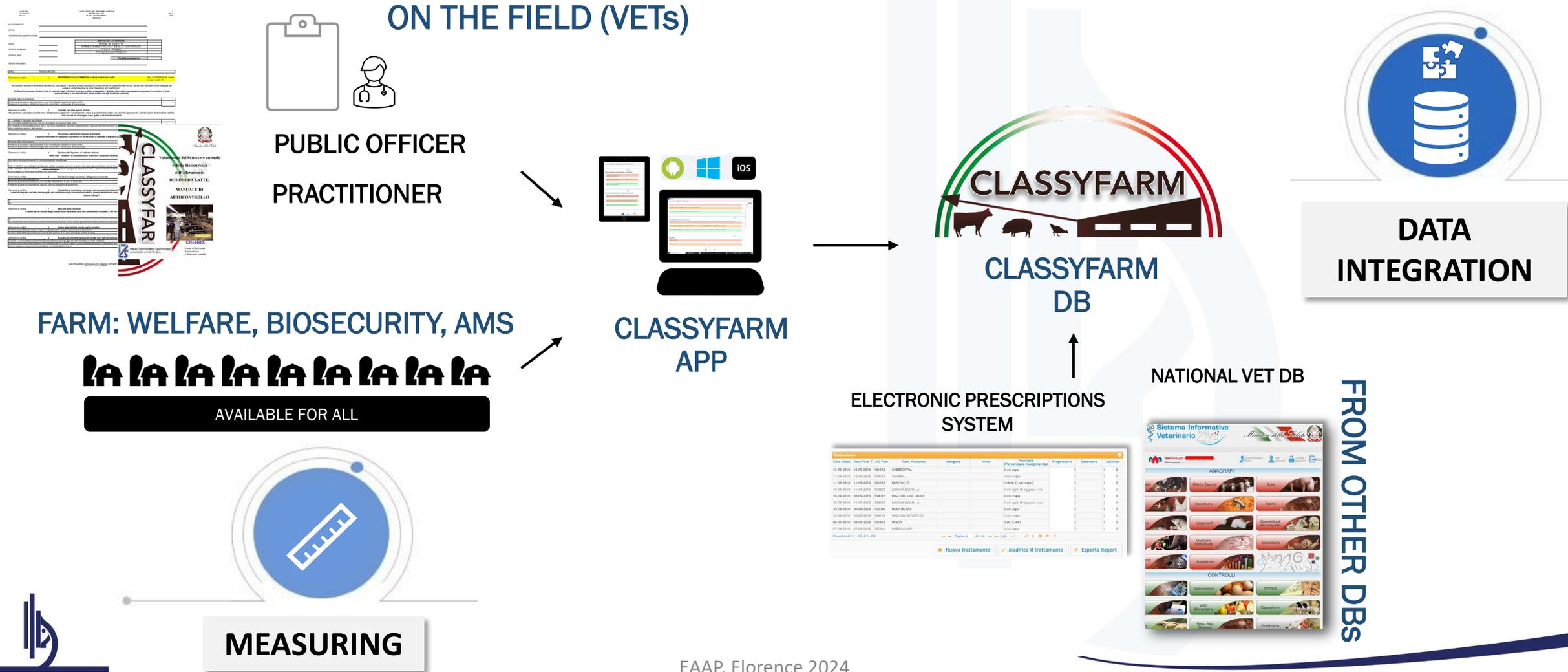
The ClassyFarm IT system: Output

CLASSYFARM

DATA OUTPUT TOOL

INTERACTIVE DASHBOARDS
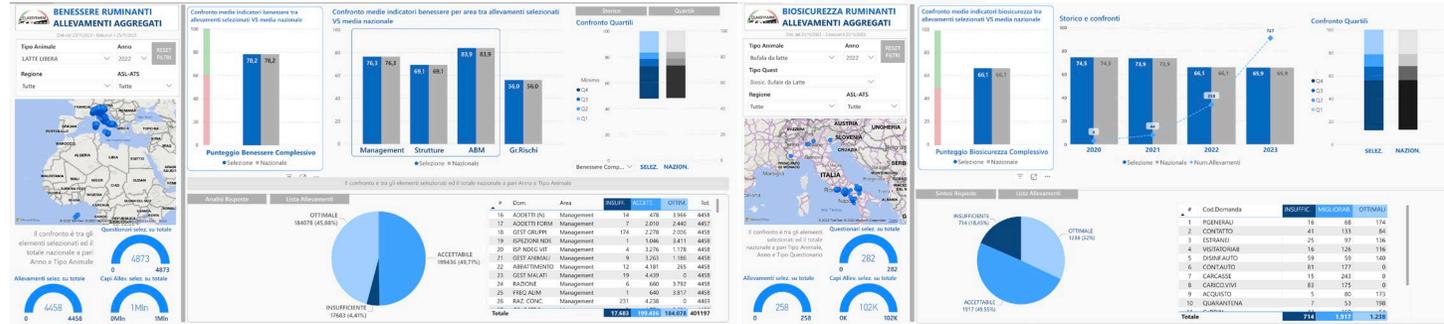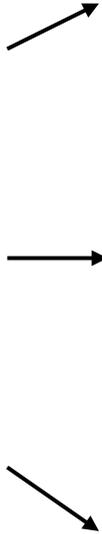
BENCHMARKING

DOWNLOADABLE REPORTS

STEWARDSHIP

EAAP, Florence 2024

www.izsum.it

The ClassyFarm IT system: Users

Improve and simplify the cooperation and dialogue between farmers and the Competent Authority

www.classyfarm.it

Fight against AMR

✓ **Farm improvement by self-monitoring**

PUBLIC SECTOR

Ministry of health

Ministry of agriculture

Supply chain responsables

Regional competent authorities

Farm vets

Local competent authorities

Farmers

✓ **More effective official controls**
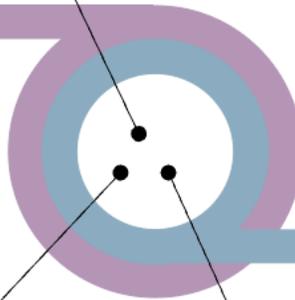
Prevention of animal diseased

Raising food safety and quality

PRIVATE SECTOR

EAAP, Florence 2024

ISTITUTO ZOOPROFILATTICO SPERIMENTALE
DELL'UMBRIA E DELLE MARCHE "TOGO ROSATI"

www.izsum.it

The ClassyFarm IT system: Regulation

**ClassyFarm is mentioned in several national legislations**

- ✓ **Legislative Decree 136/2022**: national legislation on the prevention and control of animal diseases (implementation of the Regulation (EU) 2016/429)

- ✓ **Voluntary labelling** → Interministerial Decree regulating the "National Quality System for Animal Welfare" (SQNBA)

- ✓ **Decree of the Ministry of Health of the 28 June 2022**: Biosecurity requirements for pig farms

- ✓ **Decree of the Ministry of Health of the 30 May 2023**: Biosecurity requirements for poultry farms

- ✓ **Italian CAP Strategic Plan** 2023/2027

ISTITUTO ZOOPROFILATTICO SPERIMENTALE
DELL'UMBRIA E DELLE MARCHE "TOGO ROSATI"

www.izsum.it

The ClassyFarm IT system: what about honey bees?

PHARMACOSURVEILLANCE

PRESENT ←

FUTURE →

WELFARE AND BIOSECURITY

2021:
PROJECT FOUNDED BY THE ITALIAN MINISTRY OF HEALTH

1. ANIMAL WELFARE ASSESSMENT PROTOCOL FOR MANGED HONEY BEES

2. BIOSECURITY ASSESSMENT PROTOCOL FOR THE APIARIE

CLASSYALV

ISTITUTO ZOOPROFILATTICO SPERIMENTALE
DELL'UMBRIA E DELLE MARCHE "TOGO ROSATI"

www.izsum.it

The welfare assessment protocol

CLASSYFARM
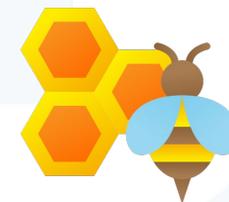
RESOURCE BASED FACTORS
Parameters linked to management and structures that can be associated with some negative welfare consequences

WELFARE CONSEQUENCES
Negative effect on welfare resulting from one or more environmental factors

ANIMAL BASED FACTORS
Able to measure directly or indirectly negative welfare consequences of RBIs

RESOURCE BASED INDICATORS
MANAGEMENT + HOUSING

Focus Group

ANIMAL BASED INDICATORS
DIRECT + INDIRECT

Litterature Rewiew

✓ EASY TO COLLECT IN FIELD

sad

| POOR | FAIR | GOOD |

happy

ISTITUTO ZOOPROFILATTICO SPERIMENTALE DELL'UMBRIA E DELLE MARCHE "TOGO ROSATI"

EAAP, Florence 2024

www.izsum.it
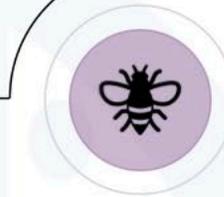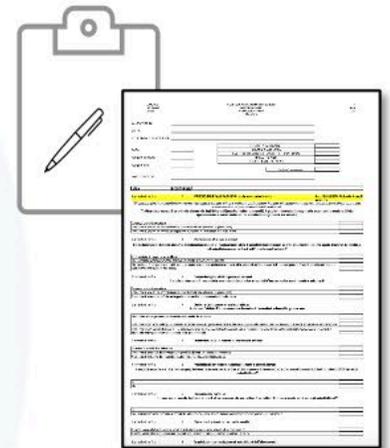
The welfare assessment protocol

RBI

Number of hive inspections	
Hives are inspected less than once a month	**POOR**
Hives are inspected at least once a month during the inactive season and at least once a week during spring (this period may be extended to 15 days during the flowering season or if weather conditions do not permit). The inspection proceeds from strong colonies to weak/suspected diseased colonies.	**FAIR**
In addition to the criteria of the "fair level", the beekeeper records his/her notes	**GOOD**

ABI

Winter mortality	
> 20%	**POOR**
10%-20%	**FAIR**
< 10%	**GOOD**

ISTITUTO ZOOPROFILATTICO SPERIMENTALE
DELL'UMBRIA E DELLE MARCHE "TOGO ROSATI"

www.izsum.it

The welfare assessment protocol

14 RBIs

1. Beekeeper training
2. Number of hive inspections
3. Colony equalization
4. Queen replacement
5. Queen selection
6. Artificial swarming
7. Feeding management
8. Management of hives affected by diseases
9. Anti-varroa treatments
10. Overwintering
11. Transport
12. Culling of the colony

13. Hive type and its level of maintenance
14. Hive position and orientation

RBIs

12 Management

2 Housing

Animal Based Indicators

ABIs

1. Winter mortality
2. Abnormal colony depopulation/mortality
3. Robbing signs
4. Number of drone laying queen colonies
5. Number of queenless colonies
6. Irregular brood pattern
7. Clinical signs of varroosis

7 ABIs
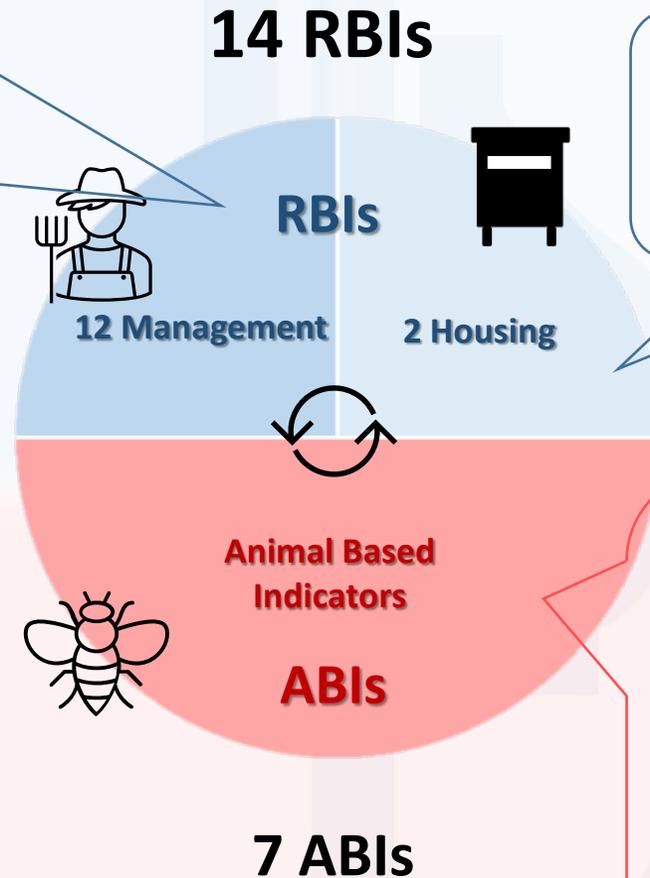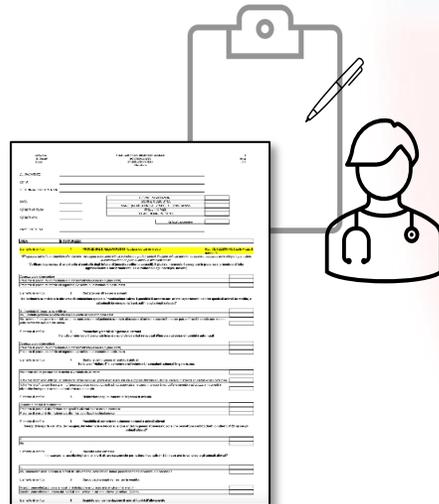
The biosecurity assessment protocol

1. Right apiary identification
2. Identification of the single beehive
3. Apiary access control
4. Provision, control and hygiene of the personal protective equipment available to visitors
5. Control and management of new bees introduced into the apiary
6. Hive cleaning practices
7. Cleaning practices for work tools and personal protective equipment
8. Replacement of brood comb
9. Separate management of sick colonies
10. Origin of beekeeping equipment and wax
11. Waste material management
12. Varroa infestation monitoring
13. Presence of abandoned beehives, apicultural equipment or dead colonies in the apiary
14. Control of insects and rodents

VISITORS
PLEASE RESPECT
HONEY BEE BIOSECURITY
This apiary belongs to:
Beekeeper: Contact:
Call in the event of an emergency
Do not enter this apiary without prior approval
Plant Health AUSTRALIA   EXOTIC PLANT PEST HOTLINE 1800 084 881

POOR   **FAIR**   **GOOD**
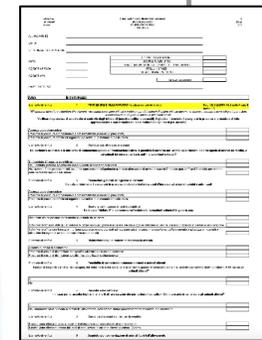
The in-field trial

The welfare assessment protocol: Criticities

Adapting a standardized system to an extremely complex and still unknown species.

Mechanisms governing insects' ability to suffer are still not deeply understood.
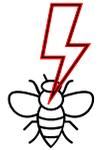
Little knowledge of the ways in which insects communicate their suffering

"Strong interconnection with the environment."

High resilience

Difference from the species the ClassyFarm welfare assessment checklist applies to

BEE

SUPEORGANISM

APIARY

ISTITUTO ZOOPROFILATTICO SPERIMENTALE
DELL'UMBRIA E DELLE MARCHE "TOGO ROSATI"

www.izsum.it
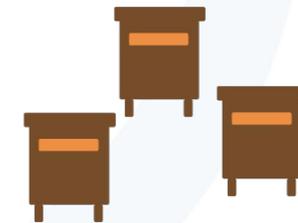
What we learned...

- Animal welfare can be assessed through an integrated approach

IDENTIFICATION OF CRITICAL POINTS → PREVENT, ELIMINATE OR REDUCE THE CRITICAL POINTS → IMPROVE HONEY BEE WELFARE AND HEALTH

- Applying welfare assessment to honeybees has always been (and still is) challenging

- Improve honeybee welfare and biosecurity is crucial to preserve this species and the environment they live in

Thanks to all the experts that took part to the ClassyAlv project

www.izsum.it