Bee health monitoring and reporting system in Italy: main outcomes and perspectives

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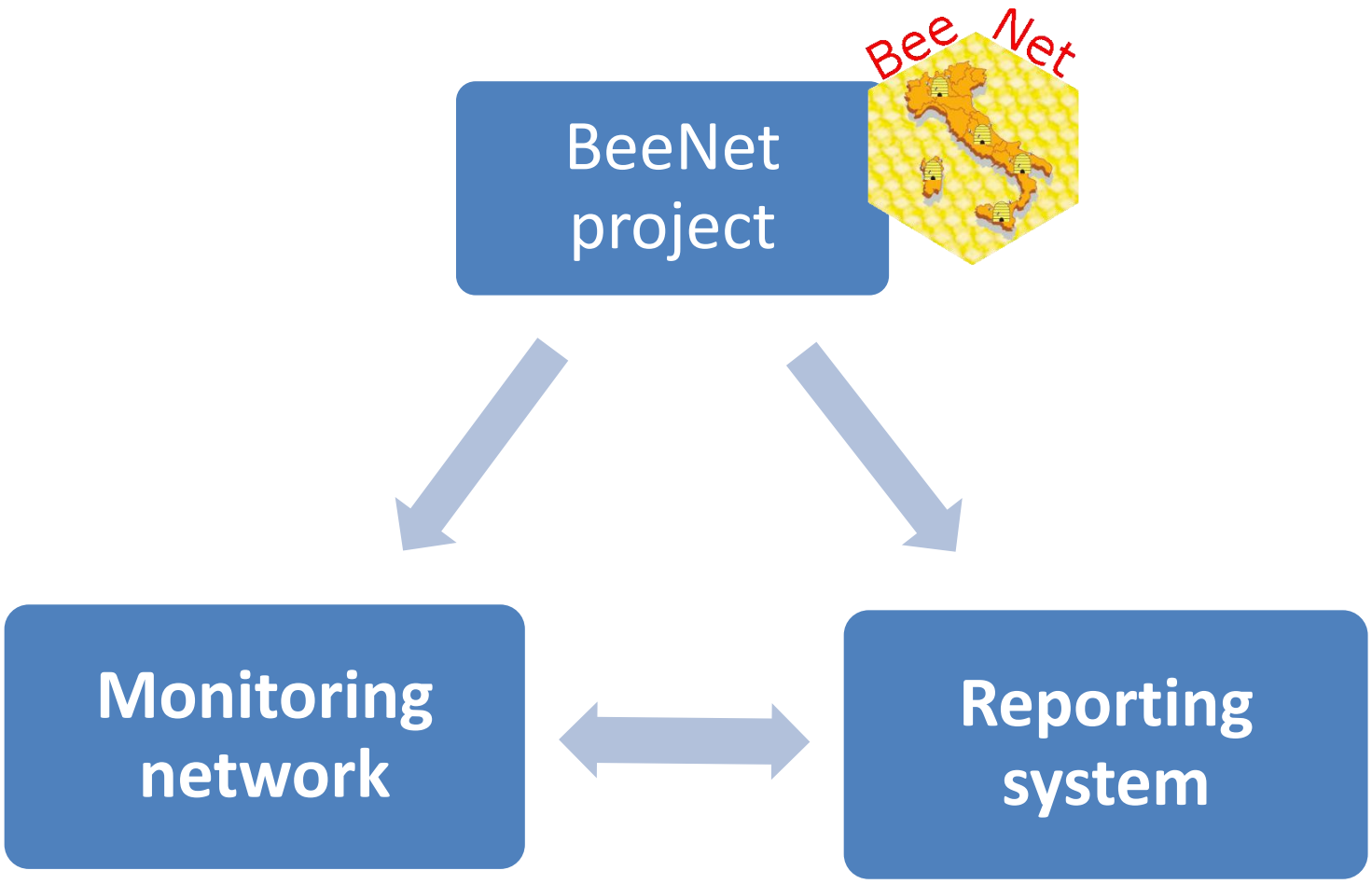
ApiEcoFlora, Roma, November 7th 2014

BeeNet project – honey bees and environment



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA
DIPARTIMENTO DI SCIENZE AGRARIE

CRA
CONSIGLIO PER LA RICERCA
E LA SPERIMENTAZIONE
IN AGRICOLTURA

Istituto Zooprofilattico
Sperimentale delle Venezie

SIN

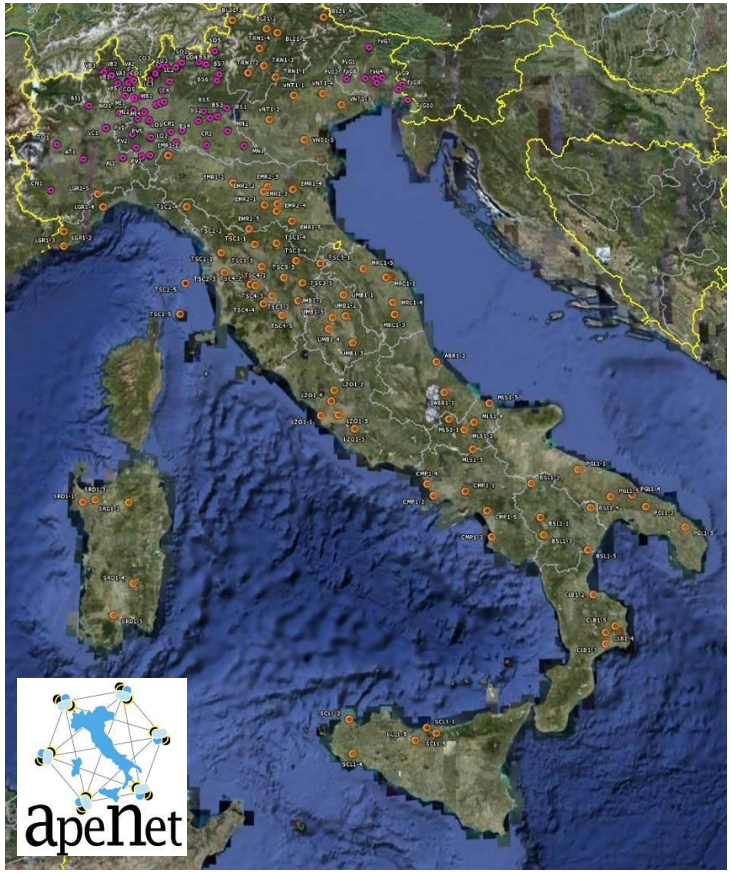
BeeNet Monitoring network

2009-2010
ApeNet monitoring network (first national network for honey bee health in Italy)

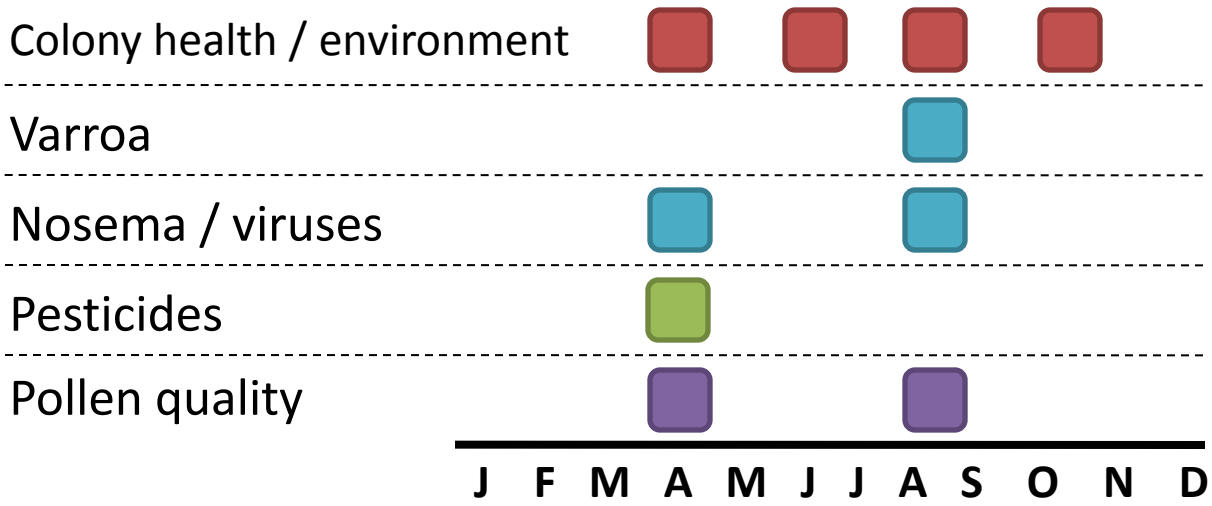
2011-present:
BeeNet monitoring network

Ca. 3000 colonies (organised in 300 apiaries)

1350 colonies



BeeNet Monitoring network

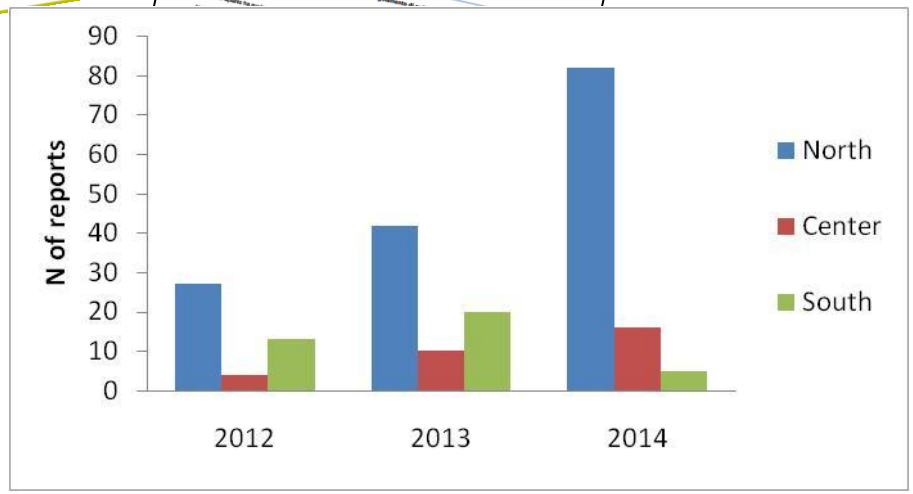


Colony health	• Abundance of bees, brood, honey, pollen /colony losses
Environment	• Environmental data (land use, climate data)
Diseases	• Varroa infestation (Powdered sugar method)
Diseases	• Nosema spp. / DWV, CBPV and ABPV in bees (Real time PCR)
Pesticides	• Pesticide residues in beebread (QuEChERS – LS/MS)
Pollen quality	• Protein content in beebread (Kjeldhal method)

Reporting system (BEST)

BEST : Bee Emergency Service Team

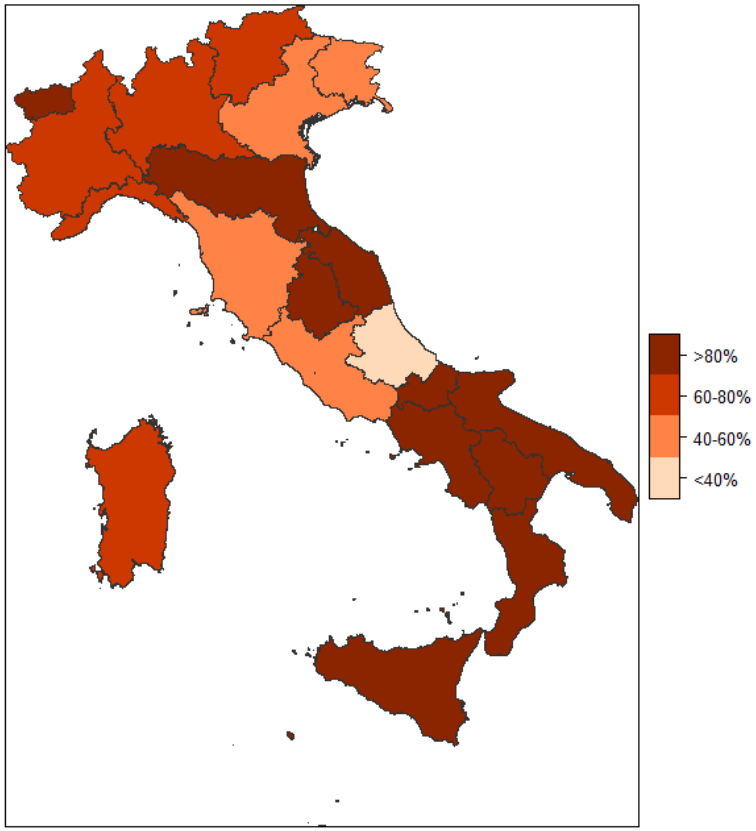
http://www.reterurale.it/api



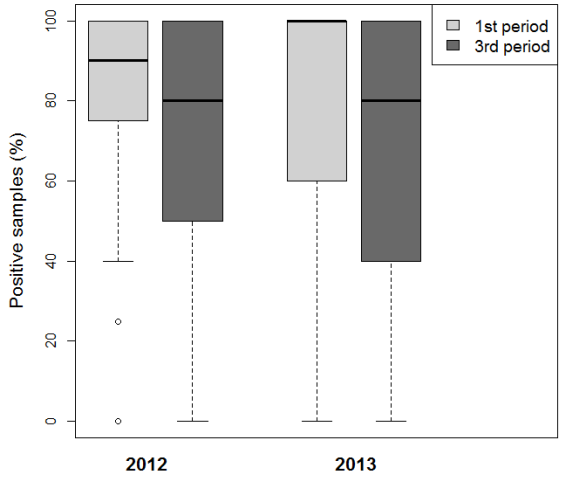
219 reports (2012-2014)

Monitoring network - Nosema

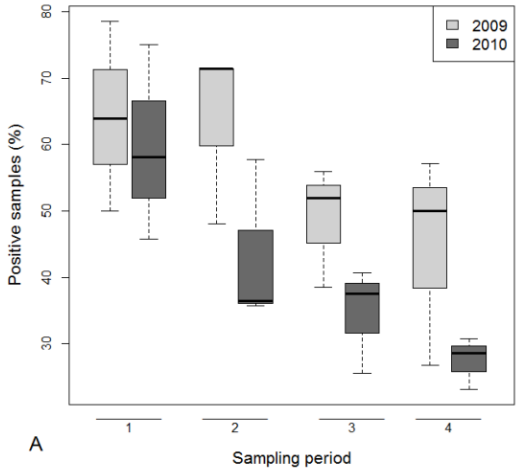
Nosema ceranae **occurence in bee samples (2012-2013)**



N. ceranae **decreasing trend over sampling periods (2012-2013)**



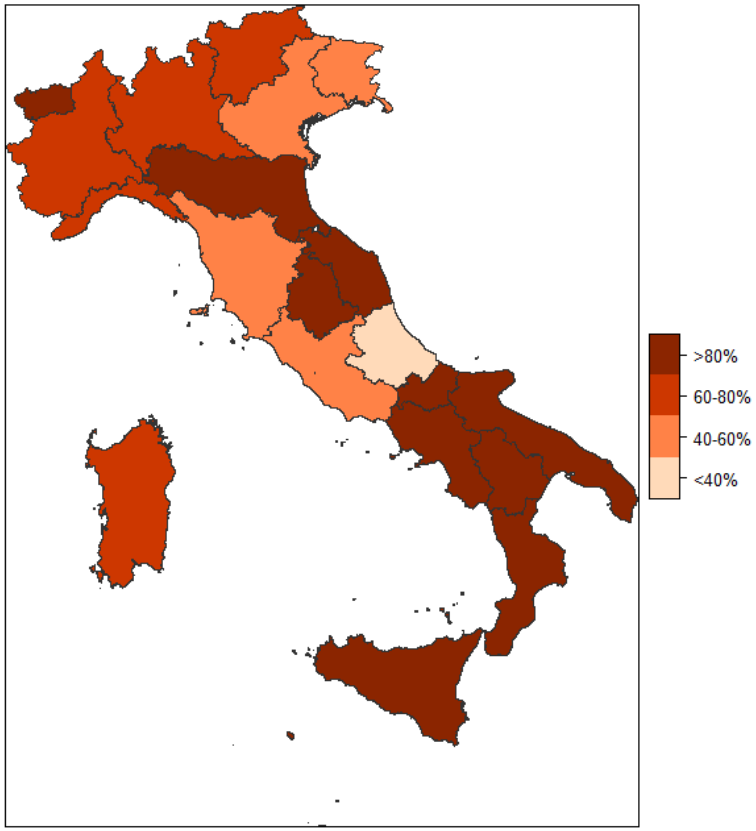
…also observed in 2009-2010



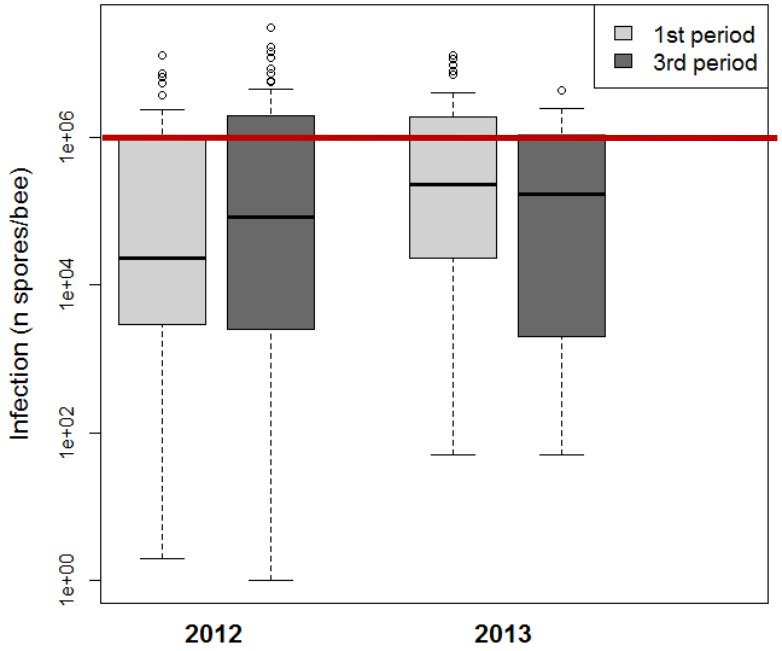
Nosema apis **was found in one sample in 2013**

Monitoring network - Nosema

***Nosema ceranae* occurence in bee samples (2012-2013)**

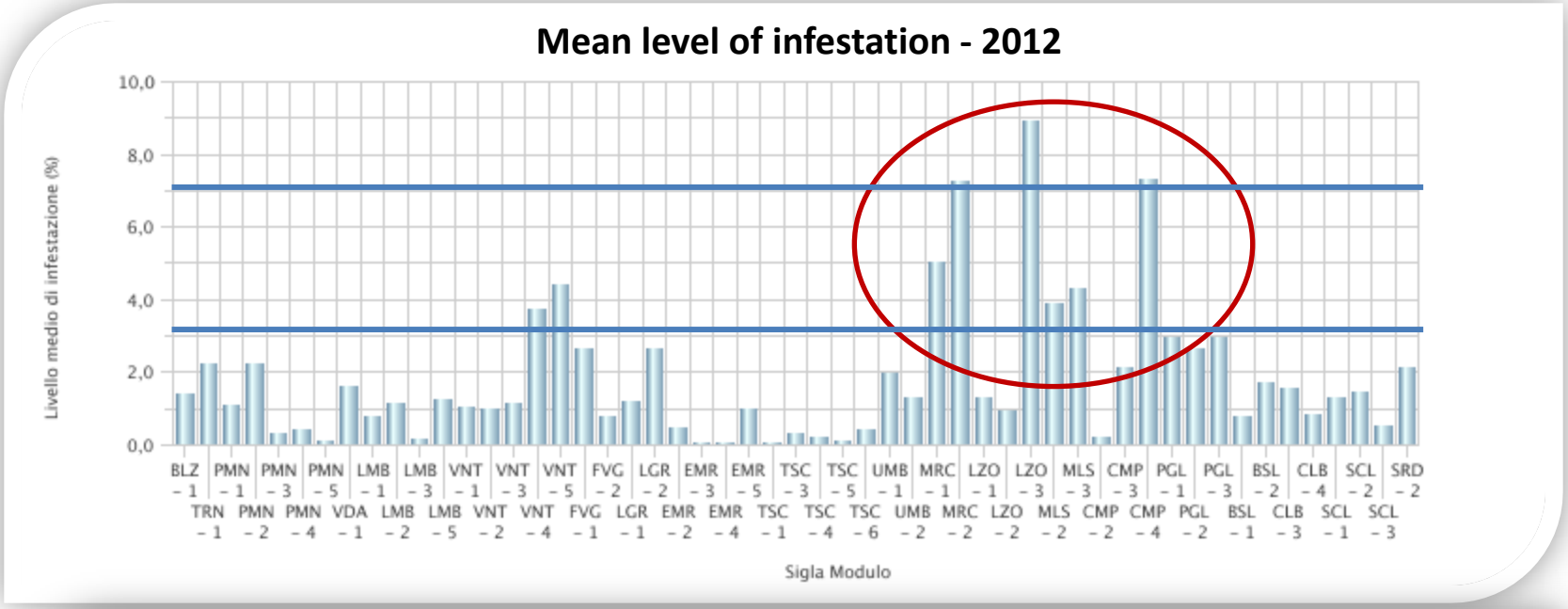


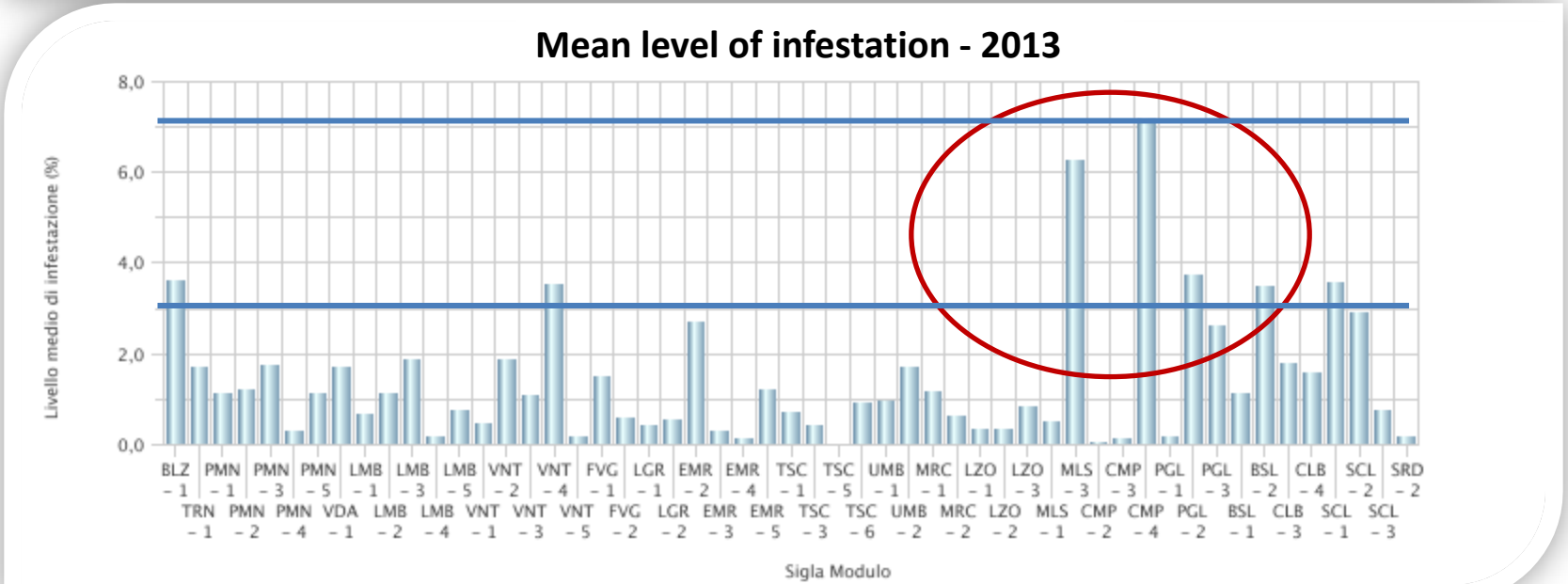
***N. ceranae* spore load (2012-2013)**



***Nosema apis* was found in one sample in 2013**

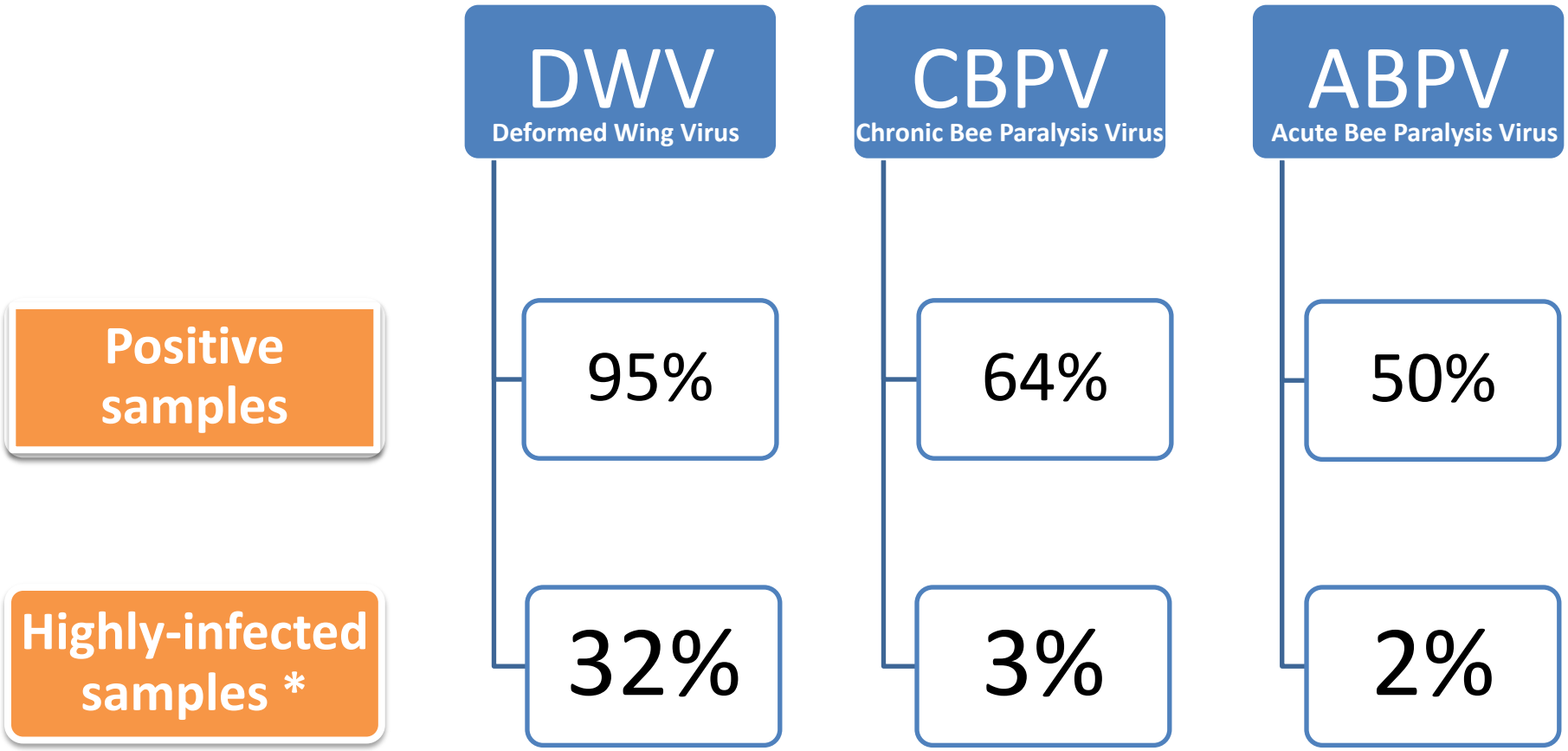
Monitoring network - Varroa





Monitoring network - Viruses

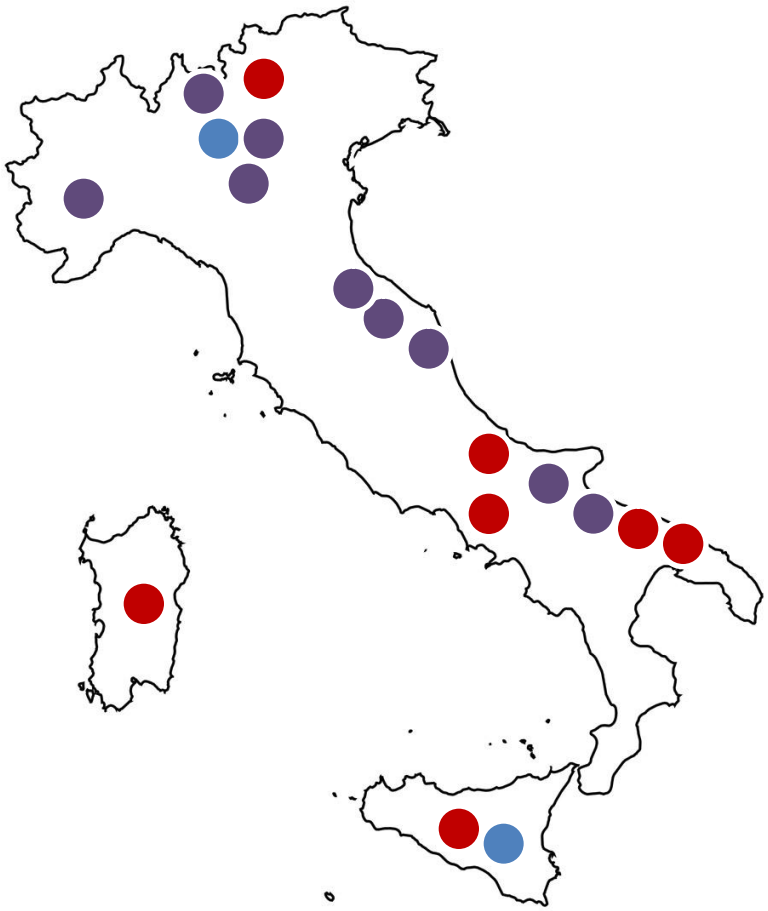
Viruses occurrence in bee samples (2012-2013)



*** Samples with more than 10^7 viral copies/bee**

BEST Reporting system - Viruses

Incident reports related to Viruses (2012-2014)

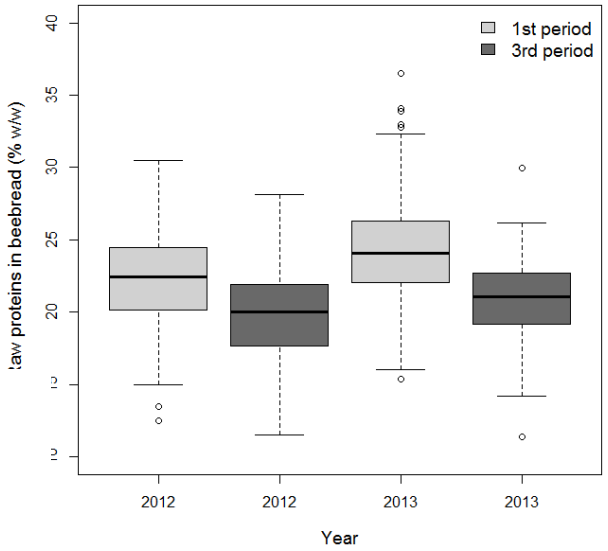


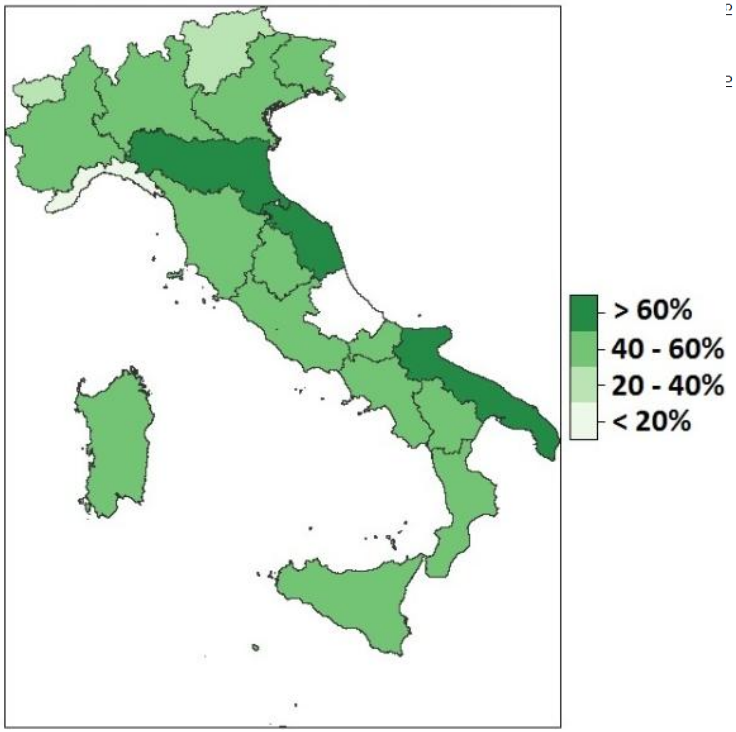
DWV ABPV CBPV

>10^6 viral copies/bee

Monitoring network - Pollen quality

Higher protein content in spring (beebread)





Protein content in spring is positively related to the % of agricultural ares

Monitoring network - Pesticides

High pesticide contamination in beebread

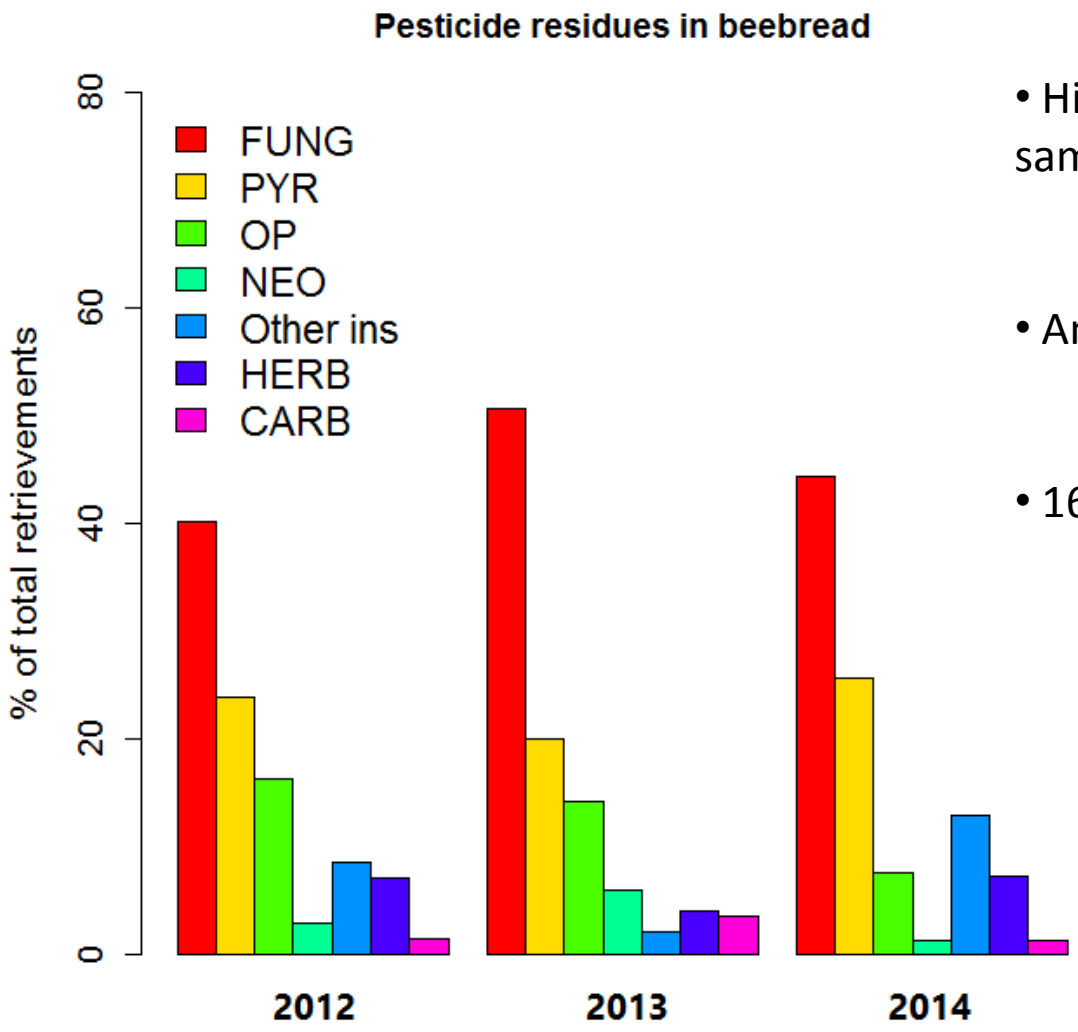
2012	2013	2014
50.4%	42.1%	63.6%

Other monitoring studies…

- 58% France (Lambert *et al*., 2013)
- 42% Spain (Bernal *et al*., 2010)
- 75% Germany (Genersch *et al*., 2010)
- > 60% Europe (Greenpeace report 2014)

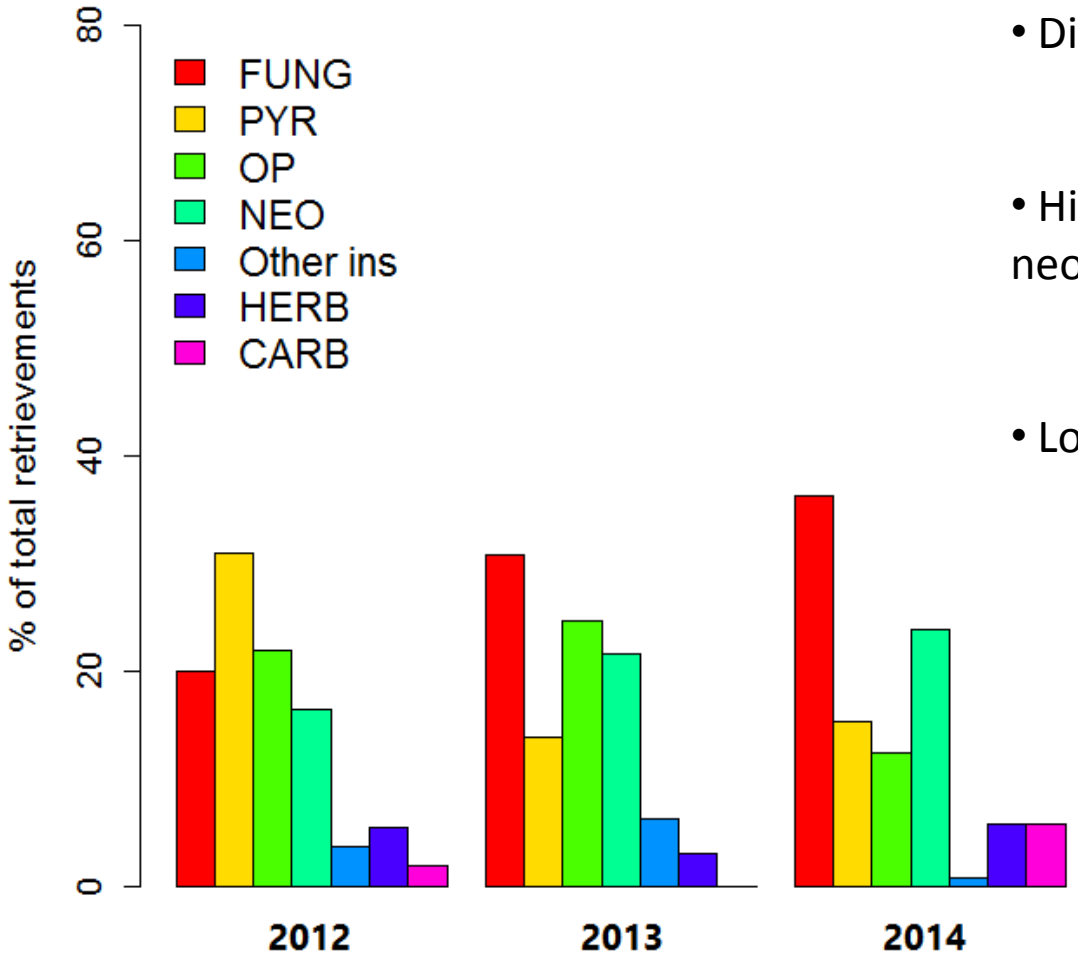
Higher pesticide contamination in agricultural areas

Monitoring network - Pesticides



- High presence of multiresidue samples
- Anti-Varroa aa.ii.
- 16 out of 87 a.i. are revoked

BEST Reporting system - Pesticides



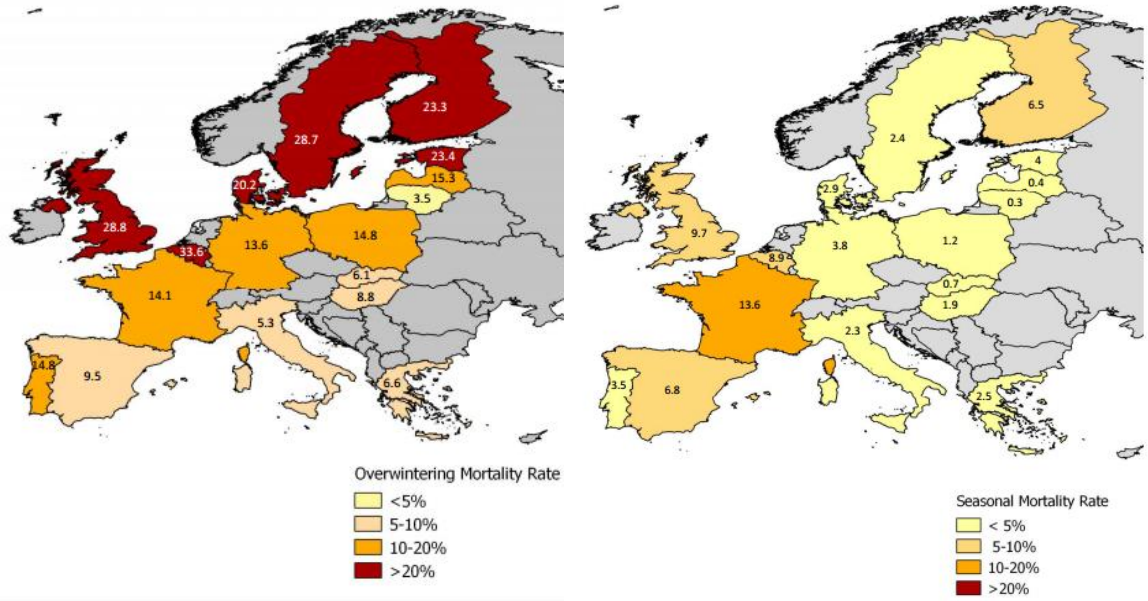
- Different matrices
- Higher relevance of neonicotinoids and pyrethroids
- Lower relevance of fungicides

Monitoring network – Colony mortality

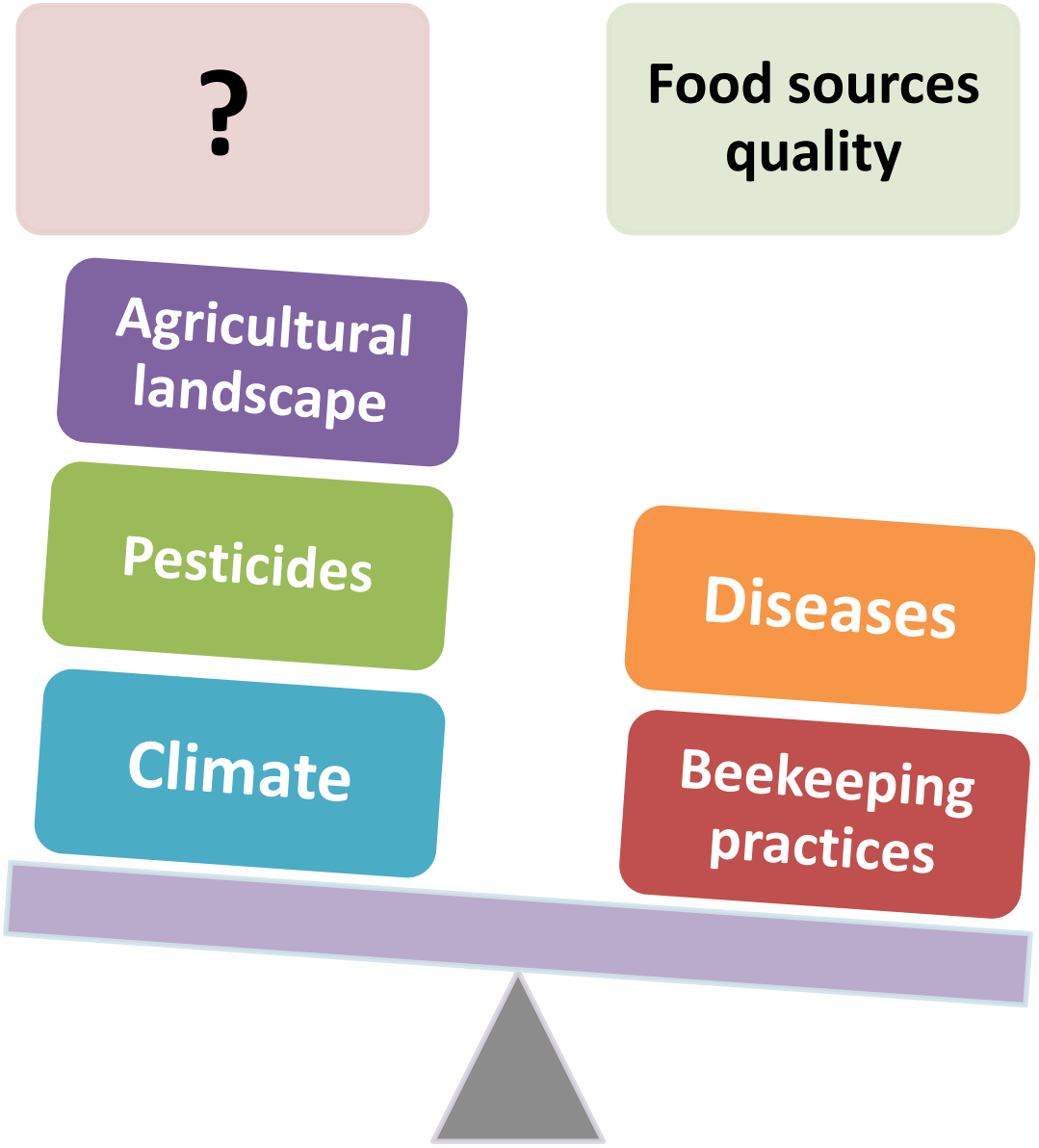
2012 7.07%

2013 6.18%

Overwintering 2012-2013 6.64%



Chauzat et al. A Pan European epidemiological study on honeybee colony losses (2012-2013)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Food sources quality
Agricultural landscape
Pesticides
Climate
Diseases
Beekeeping practices

THANK YOU FOR YOUR ATTENTION!