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The FACTS

- > Honey bee colony losses are questioning our practices year after year
- > Climate change also is showing its effects on our bees and production/ profits
- > The beekeepers are more and more depended on artificial feeding, veterinary medicines and even queens from breeding centers
- ➤ New technologies have been developed, still Varroa and other pests or pathogens do suppress the health of our bees

So the question is

Is beekeeping SUSTAINABLE? and what is SUSTAINABLE beekeeping?

➤ Sustainable beekeeping, by definition is the act of bee farming using principles of ecology, in a way that bees, humans, the practice and the economy of the act are bound together in a relationship where the use of the organism (bees) respect the rules of their environment









climate

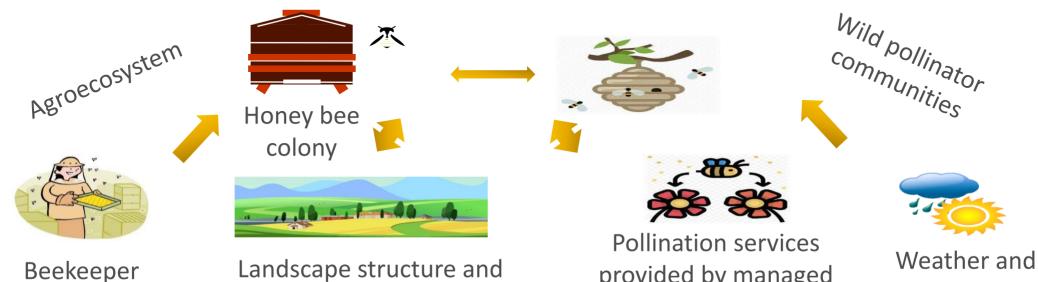




> All around the world, beekeepers and scientists are trying to find solutions and to explain the reasons behind the high colony losses, or the variability experienced in the vitality of the honey bee colonies between the different regions

provided by managed

and wild bees



land use

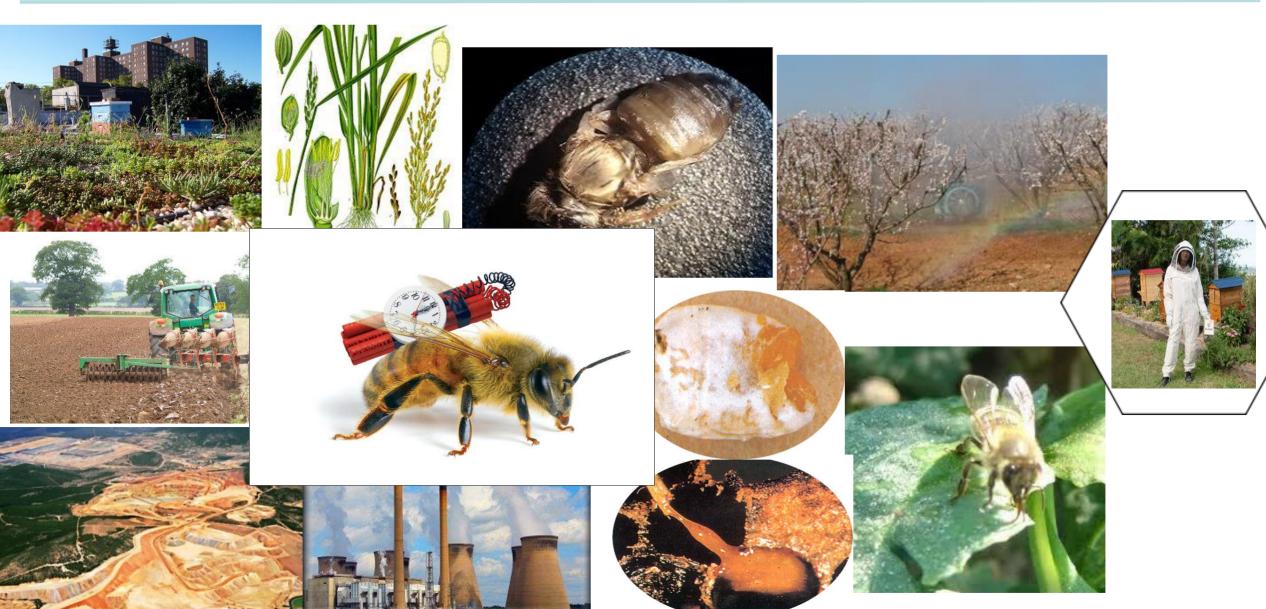












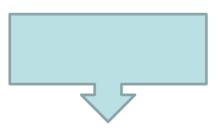




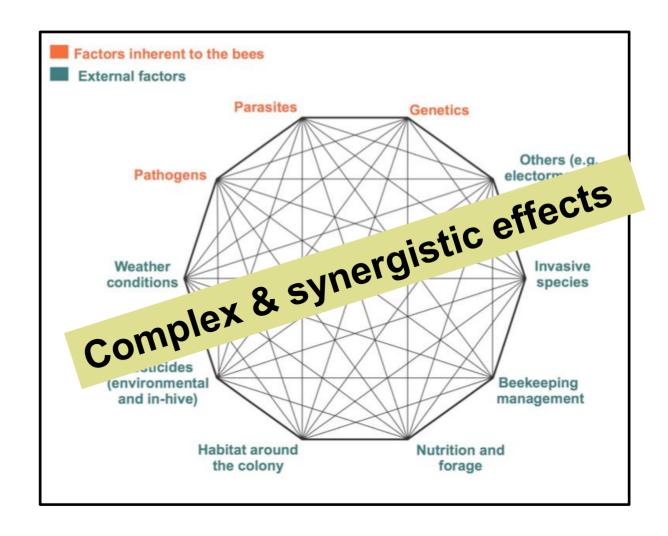








A global evaluation of the impacts of the biotic stressors on honey bees can lead to relevant and efficient mitigation measures, can improved educational pathways and create adaptive-local strategies for sustainable beekeeping













APIMONDIA- Bee Health + FAO collaboration

Aim: To better understand the impacts and differences among the world's regions

Methodology: Expert Knowledge Elicitation procedure: each expert graded each factor (pathogen, parasite or predator) in each region (Asia, Europe, Africa, North America, South America, and Oceania) against five (5) characteristic effects using six (6) predefined *a priori* classes.

The five characteristic effects against which the evaluation was made were: "Colony losses", "loss of foragers", "brood losses", "synergistic effects with other factors" and "costs of management".

The six *a priori* classes were: 1 = rarely/unknown, 2 = sometimes/some countries, 3 = sometimes/all regions, 4 = often/some countries, 5 = often/all regions, 0 = absent in the region.





>20 , red

14-19, orange

9- 13, green

1-8, blue

	Honey bee species	Apis mellifera Apis							Apis cerana
	Pest/Pathogen/Predator	ASIA	EUROPE	OCEANIA	AFRICA	Latin AMERICA	North AMERICA	AVERAGE	ASIA
1	Varroa destructor	20	23	17	20	21	23	21	5
2	DWV	18	20	16	17	18	23	19	5
3	Nosema ceranae	19	18	13	16	13	11	15	14
4	Paenibacillus larvae	16	17	11	13	14	11	14	5
5	Nosema apis	9	15	13	15	11	7	12	5
6	Aethina tumida	12	10	10	10	11	8	10	5
7	Hornet (Vespa spp.)	15	15	0	15	0	5	8	8
8	Galleria melonella	5	11	5	12	5	7	8	5
9	ABPV/IABPV/KBV	10	8	7	5	8	10	8	5
10	Melisococcus plutonius	8	7	8	6	7	12	8	5
11	BQCV	9	10	7	9	8	5	8	5
12	Ascoshaera apis	6	6	10	5	6	7	7	8
13	Wasp (Vespula spp.)	8	6	6	5	8	6	7	5
14	SBV	6	6	7	9	6	4	6	17
15	CBPV	6	7	5	5	7	7	6	5
16	LSV	5	5	5	5	6	7	6	5
17	Bee eating birds	7	7	6	5	5	5	6	8
18	Ants	5	5	7	5	7	8	6	8
19	Critidia mellificae	6	6	5	6	5	5	6	5
20	Lotmaria passim	5	5	6	5	5	7	6	5
21	Aspergillus spp	5	6	5	6	5	6	6	5
22	Acarapis woodi	8	8	0	5	6	5	5	8
23	Achroia grisella	5	8	5	6	6	2	5	5
24	Apocephalus borealis	5	5	5	5	5	6	5	5
25	Serratia marcescens	5	5	5	6	5	6	5	5
26	Senotainia tricuspis	6	5	0	6	0	5	4	5
27	Tropilaelaps mercedesae	17	0	7	0	0	0	4	9
28	Braula coeca	5	5	5	5	5	0	4	5
29	SBPV	5	6	0	0	7	0	3	5
30	Varroa jacobsoni	5	0	7	0	0	0	2	7
31	Tropilaelaps clareae	6	0	0	0	0	0	1	5

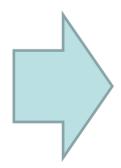












When the pathogen and/or the parasite loads in honey bees get too high, losses in brood or adult bee populations, or of whole colony may occur without the adoption of a systematic approach for monitoring and preventing each disease, even if there is proper training and management.

Good beekeeping management and a proper application of the biosecurity measures (including quarantine system and eradication of invasive species) are of importance. Selected case studies from all continents have revealed successful management to overcome the risks of bee losses.













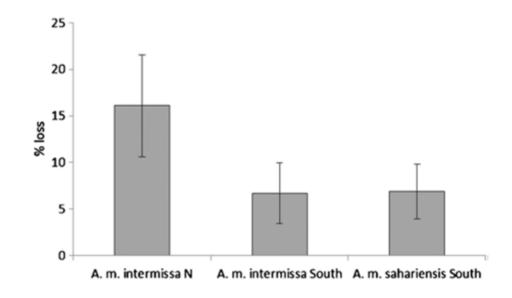
Managing SHB in Europe: possible solutions from Calabria region (Italy)



Debris collection /

Divider for Aethina tumida

Different susceptibility to pathogens in two *Apis mellifera* subspecies(*A.m. intermissa* and *A. m.sahariensis*)in *Algeria*











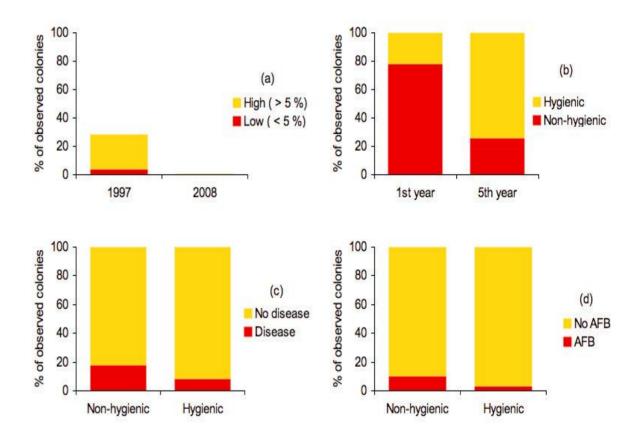


Mite free beekeeping in Australia



Photo: Trevor Weatherhead - Teaching local beekeepers how to use

Experience of Argentina in the management of AFB without antibiotics













Evolving bee management according to the globalization's effects in the U.S. of North America

"Due to our prolonged pollen dearth in summer, we feed pollen substitutes in autumn to build our colonies up, to prepare them for almond pollination in late winter.

In addition, we've been able to successfully manage varroa without the use of synthetic miticides since 2001 by using a rotation of oxalic acid, formic acid, and thymol, all applied at appropriate times of the season".

Monitoring varroa infestation levels is essential!





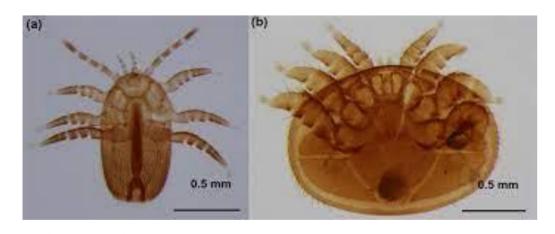








The impact of Tropilaelaps spp. in Eastern Asia beekeeping



The primary hosts of *Tropilaelaps spp.* are the giant bees, *A. dorsata*, *A. breviligula and A. laboriosa*, but this mite has become a major pest of *A. mellifera* in Asia

by Terd Disayathanoowat

In the Philippines, the native *A. cerana* can co-exist with bee mites, and no control measure is necessary

As *Tropilaelaps* continues to expand its geographical range and *A. mellifera* remains a suitable host, this mite poses a threat to global beekeeping if left unmanaged











https://teca.apps.fao.org/teca/en

Experiencing sharing knowledge for a sustainable beekeeping sector: the FAO TECA platform

The Database for Technologies and Practices for Small Agricultural Producers (ECA)

ne proposed practices and technologies must show evidences that they work in certain conditions or contexts, and have produced positive results.



TECA Webinars





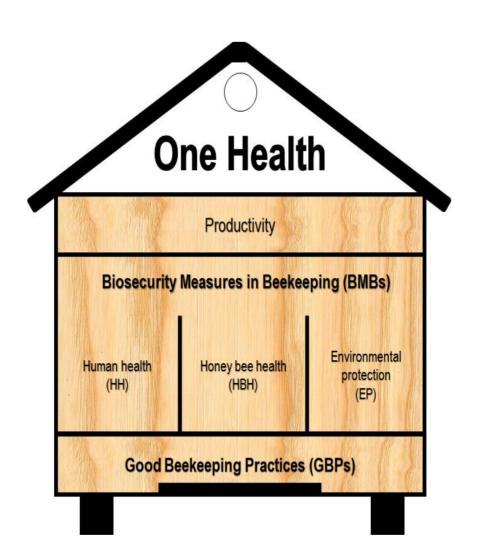








Trade controls/
mitigation measures



Education and training and knowledge sharing

Adoption of GBPs and BMsB













Panuwan Chantanwannakul,



Noureddine Adilane, Natalia Veronica Bulacio Cagnolo, Cleofas Cervancia. Jay D. Evans, Giovanni Formato. Charlotte Lietaer. Randy Oliver, Patcharin Phokasem. Selvaraju Ramasamy, John Roberts. Fani Hajina







in managed western and eastern honey bee populations "







" Evaluation of biological hazards linked to colony losses



Good beekeeping practices for sustainable apiculture







Identification on beekeeping's needs

(1st round meetings - 2, 6 Nov 2020)

Discussion and consolidation of the needs and their possible

(2nd round meetings - 12, 17 November 2020)

Final recommendation document

(3rd round meetings - 23, 27 November 2020)





SURVEY on

Risk assessment tools: A survey concerning the antibiotic use in beekeeping

About the survey

The model survey was developed and conducted by Food and Agriculture Organization of the United Nations (FAO), APIMONDIA, the Appalachian State University and IZSLT that is the FAO Reference Centre for Animal Health and Food Security-Discipline Apiculture, health and biosecurity.

Bees Unite The World 47thAPIMONDIA **International Apicultural Congress**

August 24 - 28, 2022 ISTANBUL, TURKEY











