



## The spread of pathogens through trade in honey bees: overview and recent developments

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Round Table: "Standards for international trade of honey bees"



- ✓ International trade in bees and bee products is a complex issue, affected by their different origins and uses.
- ✓ The trade in bees, which poses the main risk for disease dissemination, is very active and not all transactions may be officially registered by the competent authorities.
- ✓ Globally, bee health continues to deteriorate as pathogens, pests, parasites and diseases are spread internationally through legitimate trade, smuggling and well-intentioned but ill advised bee introductions by professionals.



- ✓ International trade rules strengthen the ability of many countries to protect bee health while trading but also carry obligations.
- ✓ Countries that are Members of the World Trade Organization (WTO) should only restrict imports to protect against identifiable health risks. If imports are safe, trade should be permitted.



- ✓ The trading rules of the WTO have given greater importance to the international standards applicable to bee health, developed by the World Organisation for Animal Health, which aims to prevent the spread of animal diseases while facilitating international trade in animals and animal products.

## Honey bees

**AFB:** It is the tenaciousness of the spores and the production of extremely high numbers of spores in diseased colonies that make the effective control of AFB so difficult.

**EFB:** Gram-positive bacterium, is less resistant, both within the hive and in the environment. The risk of disease transmission through honey-bee trade is rather limited.

**Nosemosis:** The world trade in honey-bee products and beekeeping materials may play an important role in the dispersal of infective spores of *N. ceranae* from apiary to apiary over different geographical areas. Nosemosis is not an OIE-listed disease as it does not fulfil the criteria for listing.

**SHB:** *Aethina tumida* is an exotic pest of bees in Europe. Dispersal includes small hive beetles following or accompanying swarms. Spread of infestation does not require contact between adult bees. The movement of adult bees, honeycomb and other apiculture products, as well as used equipment associated with beekeeping, may all cause infestations to spread to previously unaffected colonies.



## Honey bees

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**Tropilaelaps:** *Tropilaelaps* cannot survive for periods of more than seven days away from bee brood. Their phoretic survival on bees has been defined as lasting from two to three days to five to ten days because *Tropilaelaps* cannot pierce the integument of adult bees. However, it has been suggested that more extended survival is possible and it is now clear that *T. clareae* can easily survive even the longest of international airline flights. *Tropilaelaps spp. are presently exotic to Europe.*

**Varroosis:** *Varroa destructor* has worldwide distribution, with the exception of Australia.

**Viruses:** virus infections of honey bees have not been fully characterised at the molecular level and there are many gaps in our knowledge of the key processes underlying the dynamics of transmission, epidemiology, pathogenesis and host immunity. None of the viral diseases of honey bees is listed by the OIE



## Conclusions

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- ✓ Since international rules have been established to prevent the spread of diseases of honey bees, a proper knowledge of these rules and their correct application worldwide is particularly important.
- ✓ Furthermore, since not all the known diseases of bees are listed by the OIE, and those that are listed could undergo changes in their spread and pathogenicity, a continuing surveillance and reporting system should be implemented and the regulatory apparatus periodically updated.



- ✓ This could help in tracing the trade flow of bees and bee products and consequently improve current knowledge on the distribution of bee diseases and pests.
- ✓ To improve our knowledge of the spread of honey-bee diseases, exporting countries should establish epidemiological and health surveillance practices based on harmonised procedures and diagnostic tests.



- ✓ Diseases caused by viruses are not listed by the OIE and so the *Terrestrial Code* makes no recommendations on these when trading honey bees and their products.
- ✓ However, in recent years, molecular techniques have greatly improved diagnostic capacity and our understanding about the role of viruses as pathogens of honey bees.
- ✓ The role of *N. ceranae* as a pathogen has not yet been completely elucidated and more investigations are needed.



- ✓ While *A. tumida* and *Tropilaelaps spp.* are still exotic to Europe, it has been clearly demonstrated how *A. tumida* could be spread internationally through trade in honey bees and this could also be true for *Tropilaelaps spp.*, depending on transport time and conditions.
- ✓ Traceability of traded honey bees and their products, movement restrictions, and controls on imported queen bees and their attendants are still the tools upon which the prevention of further spread relies.



Thank you for your attention