Biosecurity Measures for Africanized Honey Bees (AHB)

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Current threats to the AHB

Imported European queens

Imported bee products

Illegal commerce of chemical controls for apiculture



Importation of European queens (EHB)

- People promoting a "better bee"
 EHBs not well adapted to Brazilian climate
 EHBs much more susceptible to Varroa, small hive beetles, and brood and adult diseases
 Consequence: disease and pest control measures that hide symptoms and spread the diseases and
 - pests.
- AHBs do not need pest or disease controls!

Promoting EHBs

- This has happened before in cycles and periodically since the late 1970s,
- The history of failures is soon forgotten. People who sell such queens are taking advantage of ignorance of the consequences by the people they sell queens to. The "special bee" that will save beekeeping!
- They are selling open-mated (with Africanized drones) daughters of imported European queens.

Brood/food allocation patterns – AHB bees do not store honey?





Disease problems

European bees get sick more easily

Examples: European Foulbrood, Varroa, chalkbrood

Replacing the Africanized bee?

- I) not possible colonies are too numerous and well adapted
- 2) not an advantage due to inferior adaptation of the European bees to diseases and pests – honey production increased greatly with AHBs
- Easy to select Africanized bees for characteristics that people may value, such as reduced defensive behavior if that is the goal.

Management of the AHB Handling techniques - judicious use of smoke - learn to work without gloves - do not provoke the bees Proper planning of the apiary ■ Swarm control - before, not after

Fast efficient bees - fast efficient beekeepers

Adapt to Africanized bees

Once people learn how to work with Africanized bees without provoking them, they become easily manageable and productive.

Virgin EHB queens helped initially

- In the late 1970s and early 1980s, the bee genetics section of the University of Sao Paulo in Ribeirao Preto distributed virgin European queens.
- These were helpful as these queens open-mated with Africanized drones produced colonies that could compete with Africanized bees and were easier to handle for beekeepers that were used to working with European colonies.

European queens were no longer accepted

After a few years, there was no more demand for the virgin EHB queens – discarded them (early 1980s)

Beekeepers learned to work with Africanized bees and found them superior in honey production.

The European/Africanized colonies declined during the mild winters and had disease problems not seen in the Africanized colonies. New disease organisms and pests with introduced EHB queens

- New viruses such as IAPV
- Nosema ceranae
- Others?

Introduced bees and chemical controls interfere with the natural selection for bees resistant to diseases and pests

Why do beekeepers do not need EHBs

Pure" European bee colonies do not thrive. The alternative was open mated virgin European queens that produce colonies that are effectively 50% Africanized.

Such colonies can compete reasonably with Africanized bees, but they have more disease and pest problems, especially during dearth and cold seasons and decline rapidly during the off season

Threats from importation of bee products

Importation of bee products, including royal jelly, honey, and pollen, carrying disease organisms and pests – chalkbrood, American Foulbrood, Viruses, including IAPV

Viruses in imported royal jelly – sometimes used to produce queens

■ AFB spores in honey

Chalkbrood in imported pollen – even mummies!

Commerce of unneeded chemicals

- Offering chemical controls for Varroa though it is not needed – free initially for tests.
- Beekeepers see Varroa falls on the bottom board, become scared and start buying the products – word of mouth

Bees in the same region not treated and more productive – so treatment not needed.
 Propagating weak bees and resistant pests

Pesticides kill bees – a major problem

- Pesticide applications that kill bees (both AHB and native bees).
- Beekeepers that make their living from the bees often need to move away from areas where there is intensive agriculture to avoid losses
- Resulting in a lack of bees for pollination citrus, soybeans, coffee
- More pesticides after stopped burning sugarcane

Pesticides to eliminate bees – impact far beyond the problem colony

- Inadequate use of pesticides to eliminate problem colonies
- Honey in combs becomes contaminated with chemicals used to kill the feral in trees and structures attracts bees from other colonies.
- Colonies in apiaries and wild colonies are attracted and rob this honey, often killing all bees within a radius of kilometers

Green agriculture?

Demand for biofuels such as ethanol from sugar cane

Huge areas with no flowers for the bees – no natural food sources or habitat

Heavy pesticide use.

Small hive beetle

Small hive beetles found in at least five states in Brazil.

Africanized bee colonies are very little affected

Beekeepers need to take care of cappings, combs, and debris in honey houses.

Possibly, there will be more of an impact on colonies in the southern states, where they are not yet established.