

SECTION 2.2.

APINAE

INTRODUCTORY NOTE ON BEE DISEASES

Bees are insects that are closely related to ants and wasps. There are many thousands of species of bee, most of which are not social but solitary insects. The honey bee, Apis species, lives as a colony, which is a family of social insects. A honey bee colony is a super-organism with important implications for disease epidemiology, where disease transmission at both individual and colony levels needs to be considered. There are many species and subspecies of honey bees that are adapted to their environment.

Two species are important for bee keeping – the western honey bee Apis mellifera, and the eastern honey bee A. cerana. The Western honey bee is native to the continents of Europe and Africa and is the largest of the cavity-nesting honey bees. It is found in almost every country in the world. Twenty-four subspecies of A. mellifera are currently recognised. At least two subspecies of A. mellifera are of concern to managed beekeeping. The African bee, A.m. scutellata, was accidentally introduced into South America and is known for its defensive behaviour. The Cape bee, A.m. capensis, can be a major problem to other subspecies of A. mellifera as it is a serious social parasite of these in a commercial beekeeping context.

It is thought that all bees are susceptible to the known diseases of bees, but different subspecies may have varying susceptibility. The diagnosis and control of honey bee diseases at the colony level is quite difficult. More than with other animals, the possibilities and the methods for clinical observation and diagnosis applied depend on seasonal conditions. This is mainly aggravated in regions with a reduced rearing of brood at certain times of the year, normally in winter, and the temporal production of bee products. In terms of treatment with medicinal products and the application of chemical disinfection methods, honey production should always be taken into account as such treatments can contaminate bee products such as honey, wax and pollen.

When sampling a colony of bees for diagnosis of diseases, sampling of dead bees, if present, in or outside the hive, might best reflect the health status of the colony. If live bees are to be sampled, these must first be killed with diethyl ether or in a deep freezer (–20°C) overnight. Bees may also be killed by submersion in 70% ethyl alcohol, e.g. when collected for diagnosis of acariosis (Acarapis). Larval and pupal smears must be made when testing for brood diseases or a piece of comb containing brood showing visible signs of disease may be sent to the laboratory. Honey bees are susceptible to diseases caused by parasites, fungi, bacteria and viruses. Honey bee colonies may also be affected by various pests, predators and adverse environmental factors.

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