PP-033 [Bee Health]
Diseases and parasites in managed honey bees in Europe (Horizon 2020 project B-GOOD)

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To obtain an overview of the diseases and parasites in managed Apis mellifera colonies, and to deduce the impact of these pathogens on honey bee colony health, colonies from 14 European countries were sampled three times per year (spring, summer, autumn) in the framework of the Horizon 2020 project B-GOOD (Giving Beekeeping Guidance by cOmputatiOnal-assisted Decision making). Sampled bees were examined at two National Reference Laboratories for Bee Diseases for the presence of 12 known honey bee pathogens.

From 2020 to 2022, 1580 samples from 352 colonies were examined (obtained from research institutes and beekeepers in Belgium, Finland, France, Germany, Greece, Italy, Latvia, Netherlands, Poland, Portugal, Romania, Sweden, Switzerland, United Kingdom). Of these colonies, 64 were sampled during the three years (2020-2022); 120 colonies were sampled during two years (2021-2022) and in 2022, bees from an additional 168 colonies were collected. All samples were tested for the viruses DWV-A, DWV-B, BQCV and SBV, for the presence of Malpighamoeba mellificae and the level of infestation with Varroa destructor was determined. All spring and summer samples were also analysed for Nosema apis and Nosema ceranae. Additionally, spring and autumn samples were tested for ABPV and CBPV. Infection with Paenibacillus larvae and Melissococcus plutonius (American and European foulbrood) was checked in autumn samples only.

The results give an insight in the honey bee health situation in Europe. Differences in the levels of parasites and pathogens were observed between different countries and seasons. The most prevalent viruses were BQCV, DWV-B and SBV, although with variable viral loads in the different countries. Nosema ceranae was frequently detected while Nosema apis seems nearly vanished in Europe. The frequencies of different viral loads were used to suggest a threshold for each virus above which occurrence of clinical symptoms is more likely. The co-occurrence of various diseases and the relationship between presence and intensity of pathogen infection and the death of colonies during winter was studied and compared for different climate zones within Europe. Knowledge of the risk factors could help beekeepers in preventing winter mortality.