

## **Bee Emergency Service Team (BEST): bee losses and mortality reports in Italy (2012-2014)**

The Bee Emergency Service Team (BEST) was established in 2009, in the framework of the ApeNet project (2009-2011) and the BeeNet project (since 2012), in order to improve the national survey of bee mortality and colony losses in Italy. Before BEST, local surveys were carried out through spontaneous reporting with questionnaires and, only rarely, by direct inspection of the affected hives. The BEST activity is carried out by DipSA<sup>1</sup>, in collaboration with CRA-API<sup>2</sup>, IZSVE<sup>3</sup> and SIN<sup>4</sup>.

The aims of this service are: a) to integrate the data gathered from the BeeNet monitoring network; b) to produce a database of the events of bee mortality and colony losses in Italy; c) to analyse the event in real time, when the phenomenon is still in action. These objectives are achieved through the on-call intervention and direct inspection of the injured apiary, following the beekeeper report. Every Italian beekeeper may request this service through a dedicated website or directly contacting the BEST coordination by phone, fax and email (see contacts below). The BEST procedure (in collaboration with Local Health Services, beekeepers associations and regional extension services) follows a standardized methodology, consisting in the collection of geographic and environmental data, the evaluation of the sanitary status of the apiary, the sampling of bee matrices for chemical, pathological and palynological analysis. All these data are integrated in order to better understand the causes of colony damages.

The results of all cases are regularly published in the BeeNet Bulletin (see links below). Since 2012, 219 bee mortality reports have been received, whereof 103 only in the first half of 2014. Most intervention requests came from the northern regions, accounting for 69% of overall demands, while 14% and 17% of the intervention requests have been recorded from Central and Southern Italy, respectively. Pesticides were considered

to be the main cause of bee mortality in about one third of cases for which analytical results are available. Pathologies were associated to the mortality incidents in about 10% of cases and the interaction between pesticide and pathogen stressors is suspected to have caused the colony decline in another 10% of cases. In the other cases it has not been possible to identify the causes of bee mortality or colony losses. Overall, 97 samples were positive to at least one pesticide, with 57 different active ingredients found in bees, pollen and other matrices. Multi-residual contamination was demonstrated to occur in most cases. Fungicides have been the most frequently retrieved molecules, followed by neonicotinoid, organophosphate and pyrethroid insecticides. With respect to pathogens, in the majority of cases the bee mortality was associated to a high viral load, particularly of Deformed Wing Virus (DWV), Acute Bee Paralysis Virus (ABPV) and Chronic Bee Paralysis Virus (CBPV).

The BEST activity provides valuable service for beekeepers and essential data for scientific research on honey bees. Further promotion and diffusion of this service among beekeepers would be profitable for achieving a comprehensive overview of honey bee health in Italy.

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### **Contacts**

BEST (SPIA-Squadra di Pronto Intervento Apistico): <http://www.reterurale.it/api>

### **Links**

Bollettino BeeNet n.1 2012: <http://www.reterurale.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/10291>  
Bollettino BeeNet n.2 2012: <http://www.reterurale.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/12049>  
Bollettino BeeNet n.1 2013: <http://www.reterurale.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/13084>  
Bollettino BeeNet n.2 2013: <http://www.reterurale.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/14015>