

## TRENDS IN HONEY BEE POPULATIONS

The honey bee is an indicator of the state of ecosystems; its populations have been declining for several decades. Their mortality rate fluctuates from year to year but remains particularly high. This decline is the result of several factors acting in synergy.

### Important role in crop pollination

Of the 400 species of bees present in Belgium (399 species of wild bees and bumblebees)<sup>1</sup>, only the honey bee *Apis mellifera* L. produces honey. In our regions, about 75%<sup>2,3</sup> of the flowering plants reproduce thanks to pollinators (mainly wild bees, with the honey bee contributing no more than 15% of the pollination of crops). In Wallonia<sup>4</sup>, the economic value of pollination can be worth several hundred million euros per year<sup>2,5</sup>.

### Multiple factors for the decline of honey bees

Since the late 1990s<sup>6</sup>, honey bee populations have been declining. According to the Belgian beekeeping monitoring<sup>5</sup>, during the 2012 - 2013 beekeeping season, the winter mortality rate for honey bee colonies was 34.6%, which is comparable to that observed in the European EPILOBEE<sup>7</sup> study (32.8% mortality in Wallonia, the highest percentage among the 17 participating European countries). This mortality rate is thought to be primarily explained by a lack of food due to a particularly harsh winter and an unusually cold and rainy spring. During the 2013 - 2014 season, the winter mortality rate in Wallonia was 18.2% according to the Belgian beekeeping monitoring data and 9.8% according to the EPILOBEE<sup>8</sup> study (17.8%<sup>9</sup> for the whole Belgian territory). Methodological differences could explain these mixed results. The decrease in the mortality rate is probably due, at least in part, to climatic conditions (milder winter). Experts agree that there are many factors to the observed decline, and that the causes act in synergy: diseases (parasites, viruses, bacteria, fungi), intensive agriculture, loss of floral diversity, climate change, etc.

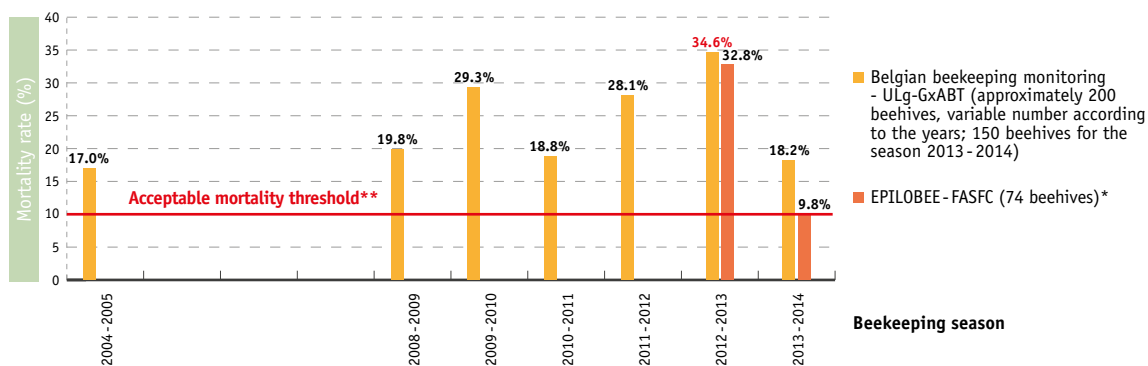
The *Varroa destructor* mite is an invasive species now considered in our regions as one of the main causes of mortality in honey bee colonies. A meta-analysis<sup>10</sup> also questioned the use of systemic plant protection products (PPPs)<sup>11</sup> such as neonicotinoids used in seed coating.

### Taking action for pollinating insects

Since 2011, Wallonia has been implementing the Maya Plan (*Plan Maya*)<sup>12,13</sup>. In 2016, it was aimed at restoring areas rich in melliferous plants, raising public awareness, supporting beekeepers, reinforcing late mowing of roadsides, continuing and strengthening the actions implemented under the Walloon Pesticide Reduction Programme (*Programme wallon de réduction des pesticides*)<sup>14</sup> and plans for the differentiated management of green areas, and plant developments in cemeteries. By the end of 2016, 212 municipalities and 3 provinces participated.

[1] Rasmont *et al.*, 2017 | [2] Gallai *et al.*, 2009; Gallai & Vaissière, 2009 | [3] Klein *et al.*, 2007 | [4] Vereecken *et al.* (data not published) | [5] Breeze *et al.*, 2011 | [6] Belgian beekeeping monitoring - ULg-GxABT | [7] EPILOBEE, 2014 | [8] EPILOBEE, 2016 | [9] 17.8% according to figures calculated by the Belgian reference laboratory of CERVA for the FASFC, 14.8% according to figures calculated by the European reference laboratory of ANSES for the EPILOBEE study | [10] Pisa *et al.*, 2015; Task Force on Systemic Pesticides (<http://www.tfsp.info>) | [11] PPPs found in all parts of the plant (roots, stems, leaves, pollen, nectar, etc.) | [12] <http://biodiversite.wallonie.be> | [13] → FFH 17 | [14] → TRANSV 3; pesticide-free management of public spaces from June 2019 onwards

Fig.FFH 7-1 Changes in the winter mortality rate of honey bee colonies in Wallonia



\* The 74 beehives monitored in 2012-2013 and 2013-2014 are not the same.

\*\* Previously, the mortality rate considered acceptable by beekeepers in Europe was 10% (Morgenthaler, 1968). Since the beginning of 2010, it has been estimated at 15% to take into account the reality observed in the field ([www.monitoringapicolebelge.be](http://www.monitoringapicolebelge.be)).