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# **Bee Colony Decline**

Summary of Copa-Cogeca questionnaire

**17 November 2009**

**COPA-COGECA, Brussels**

\* This presentation takes into account those responses that the Secretariat received in time.  
It can be amended in the light of newly received data.

## **Copa-Cogeca questionnaire MI(09)4383**

- based on the conclusion adopted at the last WP meeting held on 27 April 2009
- deadline for responses: mid-August 2009
- participation: 9 countries, 12 organisations

# Measuring the phenomenon

# Bee colony decline

**...Do you receive information from the members of your association about problems regarding health and production of their bee colonies?**

- yes

**Where are these problems located in your country?**

Mostly everywhere in the country. There are some areas which are more prone to losses due to different reasons (adverse weather conditions, intensive agricultural production)

## **When dit it start?**

in 1995 (FR) – in 2007/2008 (DK)

## **...Have you observed differences in the timing from one year to another?**

Mostly yes, no differences in AT, DK, SE, LV

## **What kind of problem is observed?**

Mainly colony deaths (mortality)

Autumn/winter: varroasis, viruses

Spring: pesticides (coated seed sowing), colony weakness, depopulation, loss of production, bees trembling, susceptibility to pathologies

March – October: decreasing colonies, susceptible to pathologies (foul and sackbrood) and unable to regain also if stimulated; bad mating/queen failure

## **How important are these problems?**

### **How many colonies are affected?**

10-15% (FI, AT – winter losses) up to 80% (certain apiaries in BE);

### **How much do these colonies represent in the total of your country's be colony population?**

100.000 – 200.000 colonies (2008, IT)

5% (LV) to max. 40 % (BE), 3% due to pesticides in AT

### **How many colonies have approximately died in your country?**

From 5-8.000 to 80.000 in IT and UK

**How much is approximately the loss of production (in tonnes)?**

100 t (LV) – 6.000 t (IT); In addition, yields are affected by having to split colonies to make up numbers again.

**How much is approximately the loss of production per hive (kg)?**

15 - 40 kg/hive, total year production in many colonies

**How much is approximately the loss of production (in euro) per hive?**

40 (LV) to 260 € (FI), losing both honey and the bees

IT: Total loss in the country estimated between 9-18 million €

## **Has the average lifespan of the queens changed?**

Lack of data, yes or no depending on the country; UK and FR report significantly shorter average life, more swarming / weak queens / need to further investigate the impact of varroa/chemicals on drones; queens cannot stay more than 2 years and they lay only male eggs.

## **Has the percentage of re-queening changed?**

Mostly yes, no in DK, FI, no data from SE

FR and UK report that much higher rates of re-queening are needed (15-50% increase compared to the past)

## **Which loss percentage can be reached during winter?**

5-95% locally (many countries report average comprised between 20-33%)

## **Have there been observed any changes in the percentage of loss of beehives during winter in the last years?**

Mostly yes

**If so, to what extend?** + 5 - 40% depending on the country

**Which percentage of beekeepers in your country experienced losses of colonies larger than 50% in the worst year?**

Only response from BE: 20% in 2006

**Which percentage of beekeepers in your country experienced losses of colonies larger than 90% in the worst year?**

Only response from BE: 5% in 2006

**Have there been any changes in the number of beehives (bee colonies) per beekeeper?**

Yes, with exception of UK and AT (no significant changes because beekeepers tend to use summer months to try and make up numbers. However many older beekeepers are giving up and not making up numbers - less beekeepers).

**If so, what extend or percentage?**

Increasing average amount of beehives/beekeeper; +20 % in 10 years (BE)  
Professional beekeepers have got more beehives (15-30% in IT, FR);

## **Was it necessary to increase the number of beehives during winter in order to keep production at the same level?**

Mostly yes (no in LV and FI)

FR: It is not enough to keep the production at the same level

UK: In general, where a beekeeper has made up numbers, honey production has halved. Overall production of UK honey is down by 30-40% over the last 3 years. Beekeepers generally have insufficient equipment, time or bees to over-increase colonies in anticipation of winter losses.

**If so, in which percentage? +15-35% depending on the country**

# **Causes of bee colony decline**

## Has the origin or cause been officially identified?

Mostly not or only partly

FI: Yes, but not from all viruses; SE: does not know

### If so, which are the causes?

- outbreaks of disease, often in areas that do not usually have disease
  - UK: Scotland EFB/ AFB 2009, significant increase in detected cases of Nosema, Varroa remain implicated in many instances of colony loss.
  - other countries: Varroa, secondary pathogens (viruses), Nosema ceranae, AFB, BBP (inaccurate beekeeping practices in this field)
- pesticides (neonicotinoids)
- multifunctional: Environment and climate (air, water and plants), lack of pollen in late summer-autumn, bad weather conditions in autumn-winter.

**In your opinion, in which percentage do the following contribute as a cause for loss of beehives (%):**

- 1) varroa: 2-10% (BE) up to 90% (UK), FR and IT: 30 - 50%
- 2) nosema: 0,5% (BE) to 30% (FI)
- 3) European Foulbrood: 0 - 5%
- 4) American Foulbrood: 0,01 (BE) - 15% (FI)

Total contribution of bee disease: 60% in IT

- 5) climate: significant factor but % effect often not known  
1% (BE, FR) - 30% (DK)
- 6) pesticides: less data available, 2% (AT) to 50% (FR)

UK - no confirmed evidence that in recent years correctly used plant protection products have been a cause of loss of beehives. There are a limited number of instances each year, typically less than 5 (0.01% losses)

- 7) other: 2% (BE) to 15% (SE): lack of pollen, environmental pollution

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**Are you in contact / collaborating  
with any scientific project on the  
matter?**

**If yes, please mention the name of the project:**

COLOSS: DK, FI, SE

APENET (IT)

AT: Project "Melissa" regarding Pesticides + project "unexplicable bee losses" (both by AGES)

BE: EFSA report

UK: The National Bee Unit is working with EU research institutions, as are bee researchers generally.

FR: annual questionnaire sent to members of some of the beekeepers organisations

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# Conclusions

## The result of the questionnaire has been sent to EFSA and the EU Commission for information

- 1) the phenomenon has to be better identified, monitored and measured
  - there is a growing **(socio-)economic dimension** of the problem
- 2) There seem to be differences among member states in the degree bee colony decline manifests itself
- 3) The causes may be multiple and some of them multifactorial depending on the country
  - bee disease, climate and pesticides are the most cited
- 4) In Europe, there are several ongoing initiatives to better deal with the problem (depending on the country)
- 5) Existing international initiatives such as current EFSA study or COLOSS project do not cover all EU countries