

# BeeWise remote monitoring of beehive activity

(Written By H. ROBIN, 2005, oct. 5<sup>th</sup>. Many thanks to Marc B. for the English translation)

The purpose of this document is to describe how data supplied by the BeeWise system can be used by Apiarists.

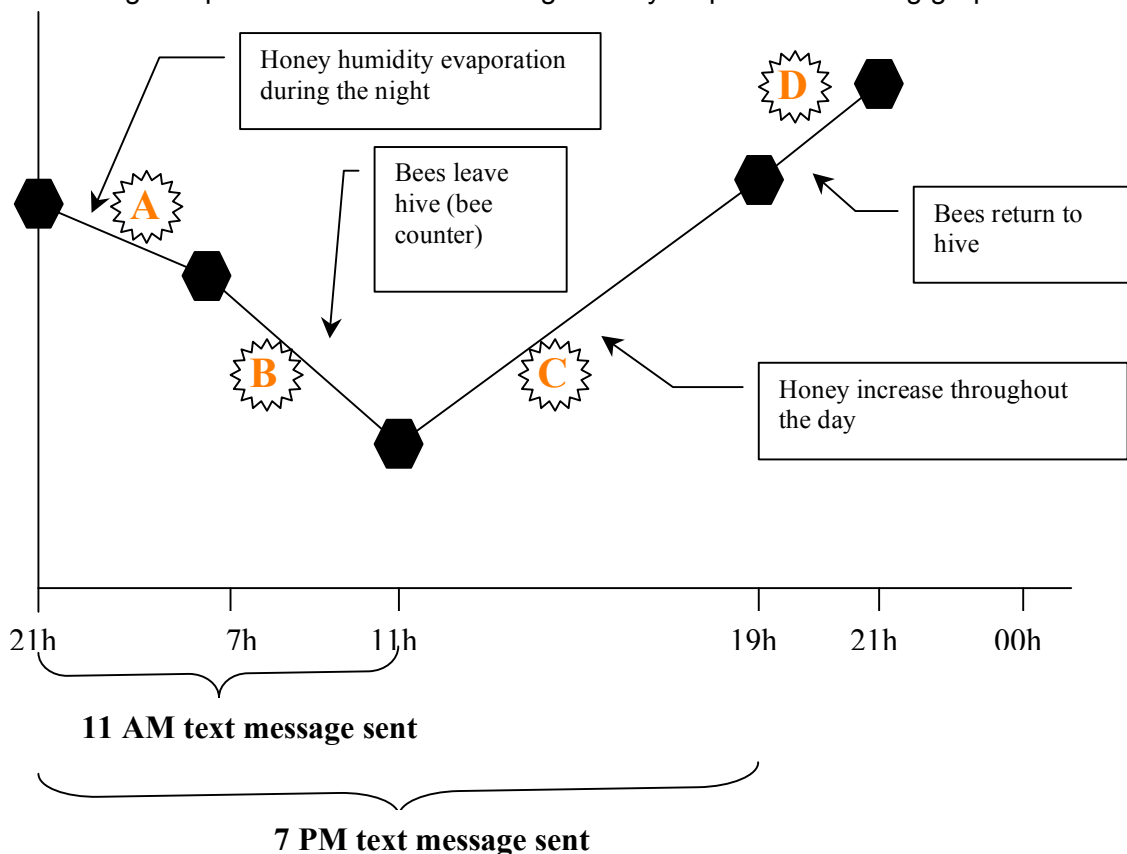
BeeWise is a weight scale connected to the mobile phone network. It gathers beehive weight and outside temperature up to 4 times a day (configurable). Data is sent by SMS (text message) twice a day during network connection slots.

BeeWise enables the monitoring of three key indicators:

- Weight increase: honey gathered by the bees
- Bee counter: weight variations brought by bees leaving and returning to the hive
- Weather: rain or sunshine

## 1- Introduction: typical hive daily weight variation.

The following information was gathered over 4 years of operation of BeeWise in Germany and France. Beehive weight experienced variations during the day as per the following graph:



The above data can be analysed in 4 specific sections:

- A : Weight decreases during the night as water evaporates from honey.
- B : Weight decreases in the morning as bees leave the hive.
- C : Weight increases from late morning as honey accumulates.
- D : Weight increase due to bees returning to the hive before sunset.

## 2- The 11 AM text message

BeeWise automatically connects to the mobile phone network at 11 AM. It then sends a text message including, amongst other information, weight and temperature data gathered at **11 AM**, **7 AM** (on the day) and **9 PM** (the previous day).

Data is shown in sections **A and B** of the daily weight variation graph.

Section B is of the most interest for the beekeeper. It shows weight difference recorded between 7 AM and 11 AM. This is in effect a bee counter. One honeybee weights 0.1 gram. 10,000 honeybees = 1 kilo. Once the beekeeper is familiar with BeeWise, it will be easy to assess activity level by comparing with previous data.

By 11 AM, the beekeeper will have a clear indication on how the day is “kicking off”. It is truly a bee counter.

The 11 AM text message also includes data from the previous day at 7 AM. Temperature comparison made over two days at the same time will give good indications as to the weather conditions or variations over the apiary.

One text message truly delivers a lot of useful information.

## 3- The 7 PM text message

BeeWise automatically connects to the mobile phone network at 7 PM. It then sends a text message including, amongst other information, weight and temperature data gathered at **7 PM** (on the day) and **7 AM & 9 PM** (the previous day).

Data is shown in sections **C and D** of the daily weight variation graph.

By comparing weight data gathered the previous day at 9 PM with the current weight (as at 7 PM on the day), the beekeeper can obtain a good indication of the gross honey gathered during the day. It will be instantly clear if the day was good or not.

This is useful management information to plan the next day: load additional equipment on truck, put more super ? additional hives because the site proves to be very productive, remove or relocate hives if weight declines gradually indicating the bees are feeding on their honey, etc...

## 4- Conclusion

Beehive weight variations are a clear indicator of beehive activity. BeeWise remote monitoring system allows timely transmission of weight and temperature to the beekeeper.

It is a very useful management tool for increasing productivity, reducing petrol and vehicle running costs and free valuable time for more productive activities.

BeeWise is a clever way to keep a finger on the pulse of the apiaries !