APIMONDIA SCANDINAVIA 2025
SWEDEN | DENMARK | NORWAY

PP-234 [Beekeeping Technology and Quality]

APIMONDIA SCANDINAVIA 2025 23-27 SEPTEMBER

COMAPIS APICULTURA

COPENHAGEN

Uso de cámara térmica para diagnóstico de ubicación de colonias de Abejas *Apis mellifera mellifera* en diversas estructuras urbanas

Parrado, Mario; Calle, Sara. **COMAPIS APICULTURA**. Bogota DC, Colombia. 2024. contacto@comapis.com
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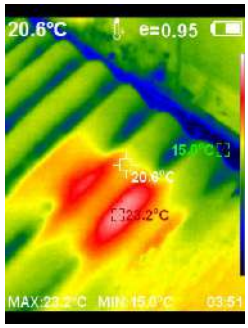

Image 1 of 4. Case 1. Top view with thermal camera. Combs are held in place by Eternit tiles. The colony is large, two years old. Red color indicates a breeding temperature of 23.2°C.

- Bogota has more than 8 million inhabitants.
- Altitude of 2,640 MSL and temperatures between 14 and 25°C.
- Bogota, DC, has more than 10,000 bee colonies per year.
- Bogota has large green areas that are a food source for bees.
- These colonies are located on false facades, roofs of houses, manhole covers, trees, poles, among other places.
- Bees in Colombia already have a law that protects them, and several companies and homeowners are aware of this and pay for the proper removal of bee colonies.
- COMAPIS APICULTURA is the first company to implement the use of a thermal camera and a vacuum cleaner exclusively for bee swarm removal.

Image 2 of 4. Case 1. Interior view. Internal view of the ceiling of a room, the size of the bee colony is unknown.

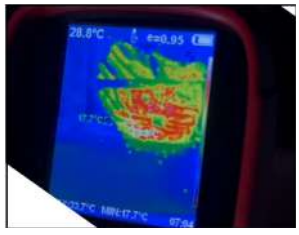

Image 3 of 4. Case 1. Thermal camera view. Image with the exact location of the bee colony.

Image 4 of 4. Case 1. Discovery of the bee colony and validation of the technique. We confirmed that the thermal camera was able to detect the honeycombs.

Image 5. Recommended for use in cold environments. Newly established colonies (≤5 days) are not detected because the surrounding structure is no longer warm.

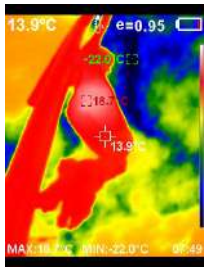

Image 6. On sunny days, there are detection biases. For this camera model, it is important not to base it on color, but on temperature.

Image 7. Comparison of the location of a bee colony after 6 months of establishment.

Cell phone photography **Photography thermal camera**

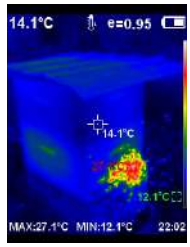

Image 8. Use in hives, external view.

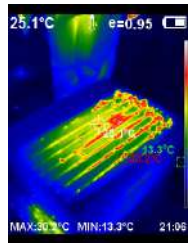

Image 9. Use in hives, internal view.

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PP-234 [Beekeeping Technology and Quality]
Use of thermal camera to diagnose the location of Apis mellifera mellifera bee colonies in various urban structures

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In Bogotá DC, Colombia alone, with an average altitude of 2,600 meters above sea level and a temperature between 0 to 24 C, more than 10,000 swarms and colonies of bees (CoBee) occur each year in different places (roofs, facades, aqueduct covers, trees, poles, among others), being a risk and discomfort for residents. Due to the high incidence of swarms and the new beekeeping law that protects bees, they are no longer considered a pest and must be removed and relocated. COMAPIS, an innovative company, has implemented the use of thermal cameras (ThermCam) for the precise identification of CoBee in structures; This diagnosis is normally made by palpation, where the location of the brood was determined by the slight change in temperature in the hand, since it generates heat, but this diagnosis and the high flow of bees, the color of the spout was not enough to determine the exact point of the CoBee. A ThermCam was acquired, temperature range -50 C to 150 C, range of 30m, numerical temperature variation on the screen, in order to more accurately determine the location of the established CoBee, which generate a temperature range between 26 to 34 C, being the optimal temperature to locate with ThermCam. To use ThermCam, certain conditions are required, such as direct mid-day radiation, the variation is not differentiated, the best time to diagnose is late afternoon, due to the drop in temperature in structures; For CoBee established for more than 4 months, the thermal camera can show the honeycombs. The bee colony must touch the structure to generate heat and be detected by the ThermCam. The use of ThermCam allows the exact location and size of the CoBee to be detected, thereby reducing the cost of repair.