Bees Unite The World

47th APIMONDIA

International Apicultural Congress

August 24 - 28, 2022

ISTANBUL, TÜRKİYE

www.apimondia2021.com

ABSTRACT BOOK

PP-228 [Beekeeping Technology and Quality]

Preliminary investigations on propolis collected by honey bees on *Cannabis* light in Italy

Valeria Malagnini, Paolo Fontana
Technology Transfer Center, Fondazione Edmund Mach, San Michele all'Adige (TN), Italy

In recent years in Italy there has been a spread of the cultivation of some varieties of hemp known under the name of "Cannabis light", due to the multiplicity of uses that can be made of it. "***Cannabis*** light» is the generic name that refers to ***Cannabis*** varieties in which the quantity of the active ingredient delta-9-tetrahydrocannabinol (THC) is low while the content of its metabolite, cannabidiol (CBD) is high, which has various positive effects on human health. The hemp plant is an invaluable source of bioactive compounds with important pharmacological and nutraceutical properties: an oily resin is secreted and accumulated within the glandular trichomes of female inflorescences, consisting of cannabinoids and terpenes. Interest in the therapeutic use of Cannabis and its derivatives is on the rise, since the scientific literature, which has become increasingly extensive in recent years, supports its effectiveness. The propolis collected on the resin of ***Cannabis*** light by the bees could provide a very interesting product.
To evaluate the presence of THC and CBD on propolis collected from bees, a preliminary study was conducted by bringing some hives to a ***Cannabis*** light cultivation and preparing them for the propolis harvest.
The analyzes conducted on the collected propolis indicated that THC in this propolis was below the limits established by Italian law while CBD was present. These results indicate that propolis produced near ***Cannabis*** light crops can be a very interesting product from a therapeutic point of view. Further investigations are needed to confirm the collected data.

PP-230 [Beekeeping Technology and Quality]

Two models of pollen trap in Jumbo type beehives during two flowering periods and the technology transfer process with a group of beekeepers in Mexico

Sóstenes Rafael Rodriguez Dehaibes[1], Elissa Chávez Hernández[2], Yulma Fabiola Herrera Mendoza[1], Alfonso Torres Ruíz[4], Gonzalo Luna Olivares[1], Juan Antonio Villanueva Jiménez[3], Rodrigo Morales García[1]
[1]Laboratorio de Abejas, Facultad de Medicina Veterinaria y Zootecnia, Universidad Veracruzana, Veracruz, México
[2]Centro de Innovación Apícola Koppert SAPI de CV, Veracruz, México
[3]Campus Veracruz, Colegio de Postgraduados, Veracruz, México
[4]Dirección General, Koppert México SA de CV, Querétaro, México

Two types of pollen traps were evaluated in the Highland region of Puebla and the coffee region of Xico, Veracruz, Mexico, in Jumbo-type hives during autumn-winter 2014-2015 and spring-summer 2015. Two groups of six hives each were used, where six entrance Anel model traps and six Colombian type OAC floor traps, modified by the authors, were placed. Both groups were standardized for the bee population and breeding brood comb to have similar strengths. Results obtained in the Highland region with modified Colombian OAC-type floor traps were significantly higher (727 g/hive) than those obtained with the entrance Anel model trap (271.5 g/hive). Although the productivity in both types of traps was lower in the coffee region compared to the Highland region, production in hives with modified Colombian OAC type floor trap was significantly higher (423 g/hive) than in hives with the entrance Anel model trap (79 g/hive). The Colombian OAC-type floor modified traps, adapted for Africanized bee hybrids from the study region, yielded significantly higher production than the entrance Anel model traps. The latter is used mainly for European bees, morphometrically larger than the Africanized hybrids in Mexico. The modified OAC-type floor traps were evaluated and transferred in a technological package to a group of beekeepers between 2016 and 2020 in the Highland region of Guerrero, Mexico. Productivity increased from 1.2 kg/hive/year to 20.5 kg/hive/year, improving the group of beekeepers' economy.

PP-242 [Beekeeping Technology and Quality]

Digital bee colony twin is the most comprehensive monitoring system for more than 30,000 beehives worldwide. Scientific data contains 15 billion data samples

Peter Kocalka, Stanislava Horcikova
Bee Hive Monitoring S.R.O., Jelka, Slovakia

The Digital Twin Hive is a comprehensive monitoring system for more than 30,000 hives worldwide. Scientific data contains 15 billion sensory data samples and millions more are added every day.

Technology is interconnected and supported by artificial intelligence. Measurements and data recording are performed every 10 minutes. The data, we measure record the change in hive weight, the number of bees flying out of the hive, the number of bees returning to the hive, recording and analysis of beehive sound, indoor and outdoor temperature, indoor and outdoor humidity, air pressure, CO2, altitude, gps position of hives, automatic photos. The beekeepers can also make detailed notes on the control of hives, honey extraction, age and queen line, hive strength or diseases and reproduction. The system identifies and predicts the swarming of beehives, the presence of the queen, rabbis, the theft of hives.

From the measured scientific data, we created a digital twin of beehives that can accurately model the development of beehives on a daily basis throughout the year in details such as the number of eggs laid, the number of open and closed fetuses, the number of bees born but also the number of varroa destructor in the hive and its development.. The digital model can also simulate different methods of healing the beehive and predict how many varroa destructor will remain in the hive after treatment and how it will develop further.

The digital twin system consists of the following parts: hive weight, hive heart, bee counter, gsm gateway, 10 cloud servers, meteo sensor, online camera, artificial intelligence system, online beekeeper support, beehive simulator

PP-243 [Beekeeping Technology and Quality]

Sugar Profiles of Stingless Bee Honey sampled from North East Peninsular of Malaysia: Trehalulose as Potential Marker for authenticity

Suhana Binti Samat[1], Muhammad Ashraf Bin Mohd Salleh[1], Mohd Zulkifli Bin Mustafa[1], Shazana Hilda Binti Shamsuddin[2], Nadia Izzati Binti Nordin[1]
[1]Department of Neuroscience, School of Medical Sciences, Universiti Sains Malaysia, 16150 Kubang Kerian, Kota Bharu, Kelantan, Malaysia
[2]Department of Pathology, School of Medical Sciences, Universiti Sains Malaysia, 16150 Kubang Kerian, Kota Bharu, Kelantan, Malaysia

Honey is a natural food that is mainly composed of sugars such as glucose, fructose, sucrose and maltose. Other constituents include minerals, organic acids, amino acids, polyphenol compounds, vitamins, essential oils, and other active substances. Sugar properties of honey are responsible for such as energy value, viscosity, hygroscopicity, and granulation important factors related to honey quality, low insulinemic index, low glycemic index and highly active antioxidant. Recent study has identified a unique trehalulose sugar in stingless bee honey (SBH). The finding sparks a new interest in honey, particularly in Malaysia which is produced nearly 150 metric tons of SBH yearly. The objective of the study was to determine major sugar composition of SBH from North East Peninsular Malaysia especially trehalulose. Further, Hydroxy-methyl-furfuraldehyde (HMF) level was also determined to ascertain the freshness of honey samples. A total of 50 samples were collected from 50 farms and tested for fructose, glucose, sucrose, trehalulose and HMF using ultra high-performance liquid chromatography (UPLC) techniques. The various sugars in the 50 honey samples were found in SBH starting with fructose range (37 to 48 g /100 g) and glucose (37 to 43 g/100 g). The UPLC analysis also revealed the presence of trehalulose ranging between 15 to 25 g/100 g. Furthermore, Fructose + Glucose (F+G) (77 to 84 g/100 g), Fructose/Glucose (F/G) (0.8 to 1.3). HMF values range from 3 mg/kg to 13 mg/kg. Results showed that sugar and HMF values meet the Malaysian Standard for SBH MS2683:2017 Specification. The chromatographic results showed the presence of the trehalulose in all stingless bee honey samples