



10th CONGRESS OF APIDOLOGY

16.-19.09.2024 Tallinn, ESTONIA

Abstract book



eurbee10.ee



Eesti Maaülikool

Estonian University of Life Sciences

Põllumajandus- ja keskkonnainstituut
Institute of Agricultural and Environmental Sciences

Chair of Plant Health

www.emu.ee

[visit estonia](http://visitestonia.ee)

Table of Contents

Welcome.....	3
Acknowledgements	5
Programme overview.....	6
Abstracts	9
Keynote speakers.....	23
1-2 Bee immunity and diseases.....	36
3 Impacts of climate change and other factors in a changing environment.....	97
4 Pollinators and pollination ecology in natural and agricultural landscapes.....	114
5 Novel technologies and methodologies in bee research	146
6 Ecotoxicology, pesticides, pollutants	170
7 Communication and behavior	221
8 Evolution and population genetics of bees.....	235
9 Beekeeping issues	252
10 Bee diversity, conservation and interactions among species.....	286
11 Bee nutrition	322
12 Information flow from research to public and practice.....	350
13 Open Topic.....	372

Welcome

It is our sincere pleasure to welcome you on the EurBee 10 Congress in Tallinn, Estonia! The Congress is organized by the Estonian University of Life Sciences with assistance by Publicon OÜ.

EurBee is the event, where old and new friends get together to exchange the knowledge of novel scientific findings, associated with honeybees and other pollinators.

We encourage young researchers to meet the leading scientists on their field. Establishing networking and creating new connections is extremely important for sustainable bee research.

The City of Tallinn is the capital of Estonia. Tallinn's Hanseatic old town and nowadays modern architecture is a great mixture for every taste. We recommend you to discover the great Estonian flavors and the interesting culture that Tallinn offers you in abundance on every corner.

Looking further, Estonian nature with its forests, bogs and swamps is unique in the world – all the EurBee guests have the opportunity to experience its magic!

Experience magic – experience Estonia!

Sincerely Yours,

Risto Raimets

President of EurBee 10



The host committee

Risto Raimets (PhD), Congress chair

Prof. Marika Mänd (PhD)

Reet Karise (PhD)

Sigmar Naudi (MSc)

Margret Jürison (MSc)

Kaarel Pent (MSc)

Egle Liiskmann (MSc)

The scientific committee

Dalial Freitak, University of Graz, Austria (Chair)

Reet Karise, Estonian University of Life Sciences, Estonia

Tiit Teder, University of Tartu, Estonia

Helena Wirta, Umeå University, Sweden

Jens Pistorius, Julius Kühn-Institut, Germany

Fabio Manfredini, University of Aberdeen, United Kingdom

Congress organiser



Congress secretariat



PUBLICICON

PCO Publicicon

eurbee10@publicicon.ee

+372 5919 2019

www.publicicon.ee/

Acknowledgements

The organisers of EurBee 10 wish to wholeheartedly thank all our generous sponsors, supporters and exhibitors for participating in the congress!

Bronze sponsor



Best student talk and best student poster award sponsor



Exhibitors



The congress is supported by



Eva Crane Trust

Eurbee 10 is co-funded by



Co-funded by
the European Union



Investing
in your future

Kindly supported by



SURVIVAL TO THERMAL STRESS IN MEDITERRANEAN SUBSPECIES OF *APIS MELLIFERA*

Soledad Sagastume de Andrés¹, Giovanni Cilia², Antonio Nanetti², Banan AlShagour³, Mustafa Necati Muz⁴, Dilek Muz⁴, Nizar Haddad³, Mariano Higes¹, Raquel Martín-Hernández¹

¹Centro de Investigación Apícola y Agroambiental de Marchamalo, Spain

²CREA-Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria, Bologna, Italy

³Bee Research Directorate, National Agricultural Research Center, Jordan

⁴UNK- University of Namik Kemal, Faculty of Veterinary Medicine, Tekirdag (Turkey), Turkey

Abstract

Heat stress in bees produces a series of adverse effects on bees, affecting their growth, development and reproduction. It can also condition their ability to forage for food, thus affecting their pollinating activity. The climate change scenario makes it likely that increasingly hotter environments will affect the life expectancy of bees. On the other hand, environmental humidity may be another stressor in isolation and may also act synergistically with temperature.

To understand the effect of temperature and humidity on the survival of *Apis mellifera* subspecies, bees were exposed to six different conditions: 35°C, 40°C and 45°C at 75% relative humidity (RH), and 35°C combining 15, 30 and 50% RH. During the trial, the bees were kept on food ad libitum and the mean survival (in days) was recorded. This trial was conducted with 4 subspecies of Mediterranean honey bees (*Apis mellifera iberiensis*, *Apis mellifera ligustica*, *Apis mellifera anatoliaca* and *Apis mellifera syriaca*) in order to determine if there are differences between them.

Our results showed a clear negative effect of heat on the survival rate of the bees, as in all cases the bees survived less than half of the days at 40°C versus 35°C, and in no case were they able to survive 24 hours at 45°C. The effect of humidity was not relevant for the subspecies studied. Differences between species were observed, suggesting that each subspecies has developed different heat adaptation mechanisms. It is noteworthy that *A. m. iberiensis* was the subspecies that showed the longest life expectancy compared to the rest of the subspecies studied.

These results are under the project 2011-MEDIBEES, which is part of the PRIMA programme supported by the European Union.