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Abstract book



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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



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TOLERANCE TO HEAT AND COLD OF *APIS MELLIFERA IBERIENSIS* AND *APIS MELLIFERA SYRIACA*

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Abstract

The temperature range between the coldest temperature (critical thermal minimum, CT_{min}) and the warmest temperature (critical thermal maximum, CT_{max}) at which an organism can maintain muscle control is called thermotolerance. Both characteristics seem to be different among honeybee subspecies, which today are trying to adapt to new and increasingly extreme climatic environments caused by climate change. In bees, both thermal tolerance and the degree of plasticity or adaptation play key roles in determining the geographical distribution of species.

In this paper we present the results of exposing *Apis mellifera iberiensis* from Spain and *Apis mellifera syriaca* from Jordan to two different temperature ramps: from 30 to 70°C (heat study), and from 35 to 0°C (cold study). Our results showed differences in heat and cold tolerance between subspecies, as well as sex- and age-related differences within both subspecies. In the heat test, Iberian bees suffered heat stress up to 40°C, and both *A. mellifera iberiensis* and *A. mellifera syriaca* individuals showed hyperthermia up to 45°C, where mortality was detected in some groups. Regarding cold tolerance, both subspecies showed different effects: while no signs of cold stress or hypothermia were detected in *A. mellifera syriaca*, all of them appeared in *A. mellifera iberiensis*. In the latter, mortality of foragers occurred below 6°C. Further experiments are currently being carried out at MEDIBEES to understand the molecular basis of the differences found.

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