



# Methods to improve honey bee queen mating control, as alternative to Instrumental Insemination

Dr. Fani Hatjina – GREECE

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***BeeCome – GRAZ - February 25<sup>th</sup>, 2018***





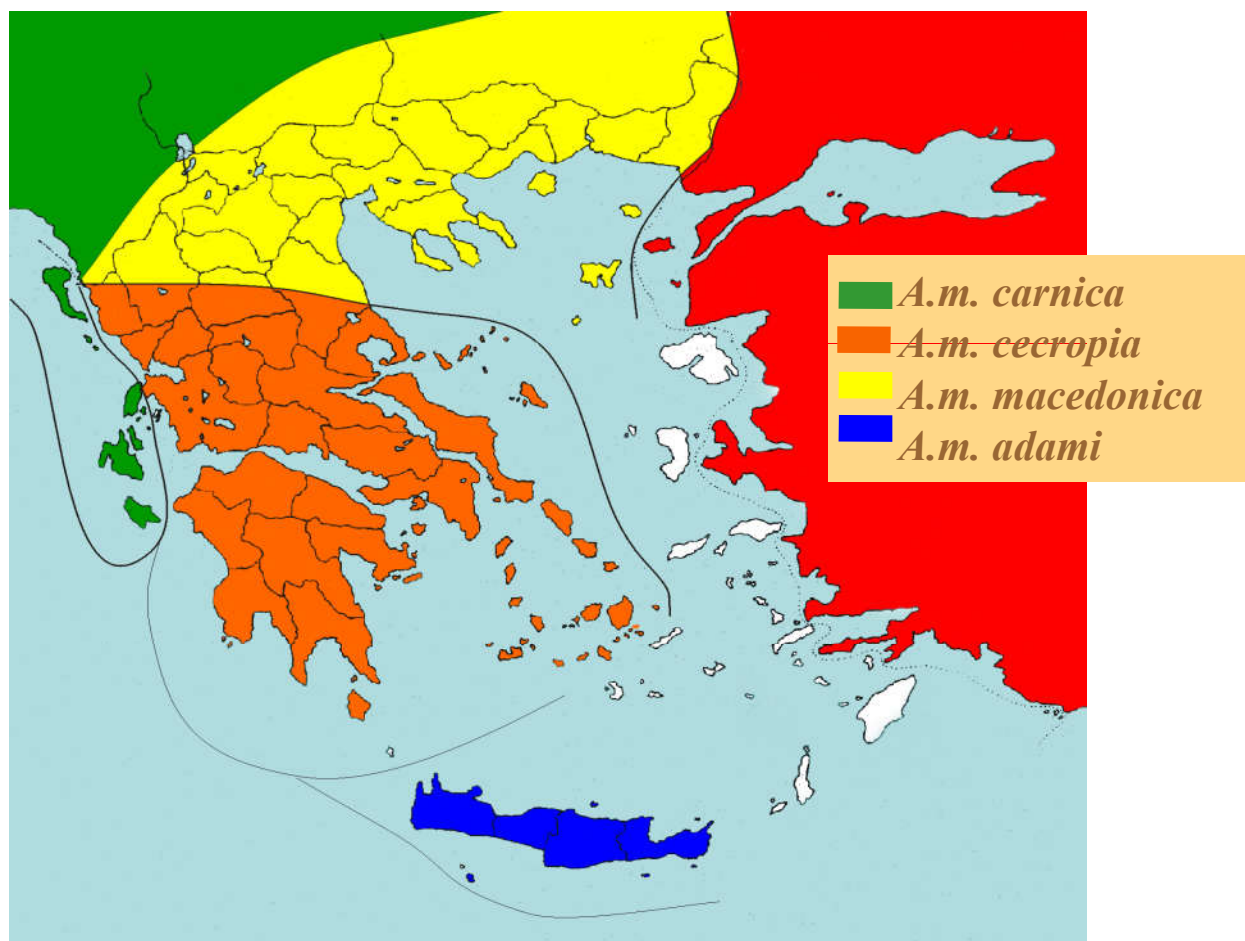
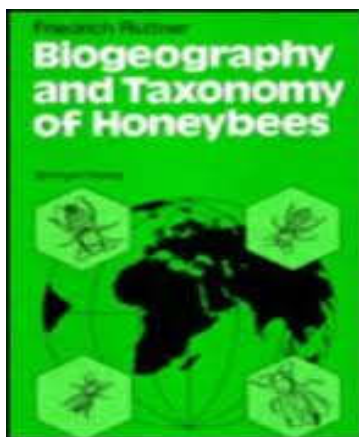
## Breeding activities in Greece

- No National program- a private initiation
- A Breeding Association is set up just now
- Production of about 40.000- 50.000 queens for sale
- No quality control of the queens
- No support for the local strains
- Regional and international cooperation through **COLOSS** & **RNSBB**
- Data on adaptation of local strains



## Honey bee subspecies in Greece according Ruttner's (1988) morphometrics analysis

Aegean islands:  
“Aegean race  
near to adami”  
(Ruttner, 1988)





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## GENETIC STRUCTURE OF THE BEE FROM CRETE ISLAND (GREECE)

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### Abstract

The genetic structure of honey bee populations from different areas of Crete Island (Greece), corresponding to *Apis mellifera* adami, (according to morphometric analysis Ruttner, 1988), were studied by means of RFLP's analysis of two mtDNA gene segments. Sixty samples were studied, taken from different queens. Total DNA was extracted, then 16s rDNA (965 bp) and CO I (1028

*Journal of Apicultural Research* 50(1): 42-50 (2011)  
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### ORIGINAL RESEARCH ARTICLE

## Phylogenetic relationships of Greek *Apis mellifera* subspecies based on sequencing of mtDNA segments (COI and ND5)

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# Genetic structure of *Apis mellifera macedonica* in the Balkan Peninsula based on microsatellite DNA polymorphism



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ORIGINAL RESEARCH ARTICLE

## The genetic variability of honey bees from the Southern Balkan Peninsula, based on alloenzymic data



Evgeniya Ivanova<sup>1\*</sup>, Maria Bouga<sup>2</sup>, Teodora Staykova<sup>1</sup>, Mica Mladenovic<sup>3</sup>, Sladjan Rasic<sup>3</sup>, Leonidas Charistos<sup>4</sup>, Fani Hatjina<sup>4</sup> and Plamen Petrov<sup>5</sup>

DOI: 10.2478/JAS-2014-0007 J. APIC. SCI. VOL. 58 NO. 1 2014



DE GRUYTER  
OPEN

Original Article

## MORPHOLOGICAL DISCRIMINATION OF GREEK HONEY BEE POPULATIONS BASED ON GEOMETRIC MORPHOMETRICS ANALYSIS OF WING SHAPE

Leonidas Charistos<sup>1</sup>

Fani Hatjina<sup>1\*</sup>

Maria Bouga<sup>2</sup>

Mica Mladenovic<sup>3</sup>



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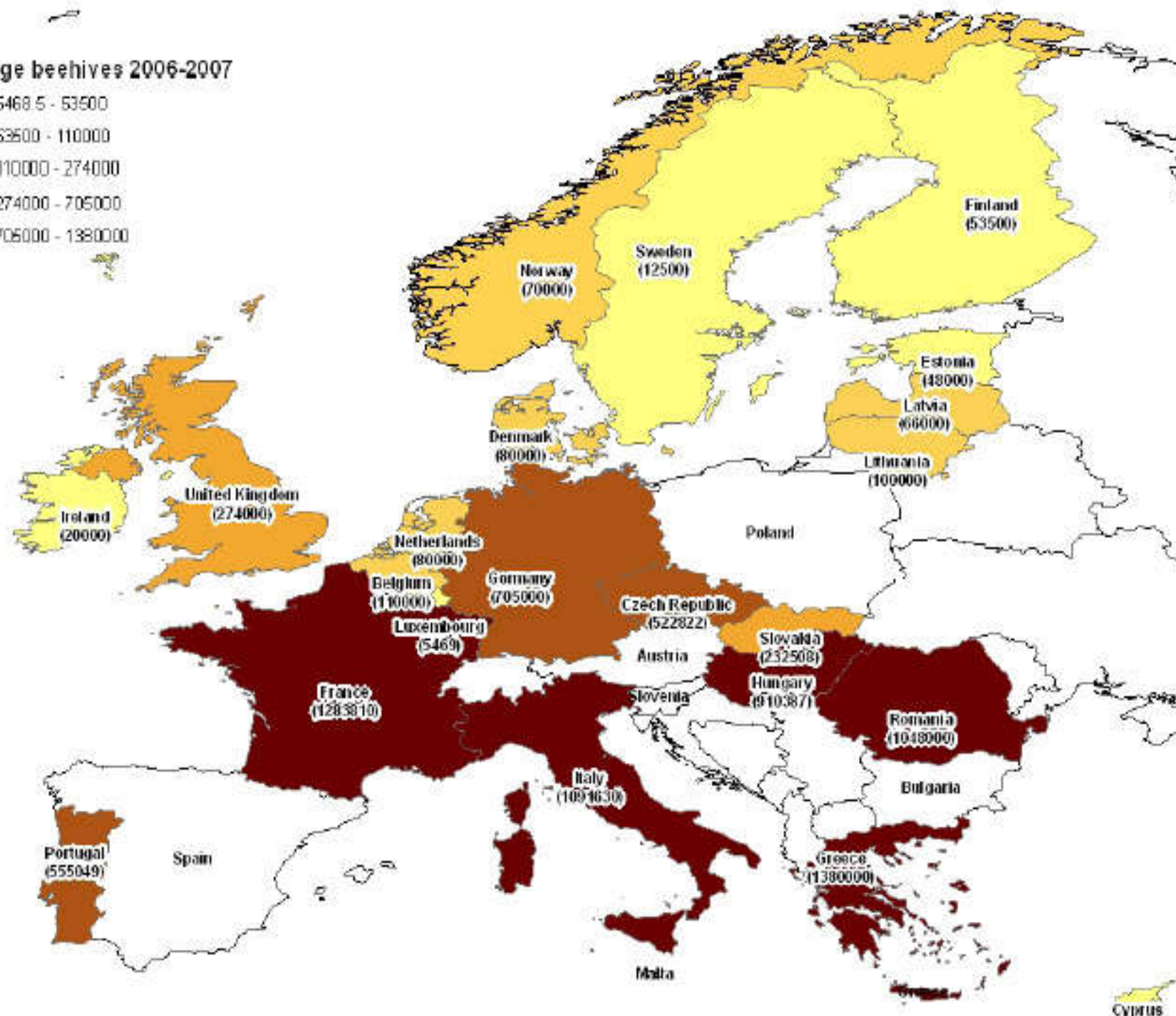
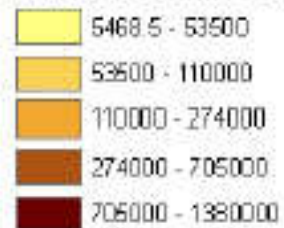
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Today's situation

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# Average beehives 2006-2007





**Project title:**

CHARTA MELISSA- Characterization, breeding and conservation of A.m. macedonica, A.m. cecropia and A.m. adami.

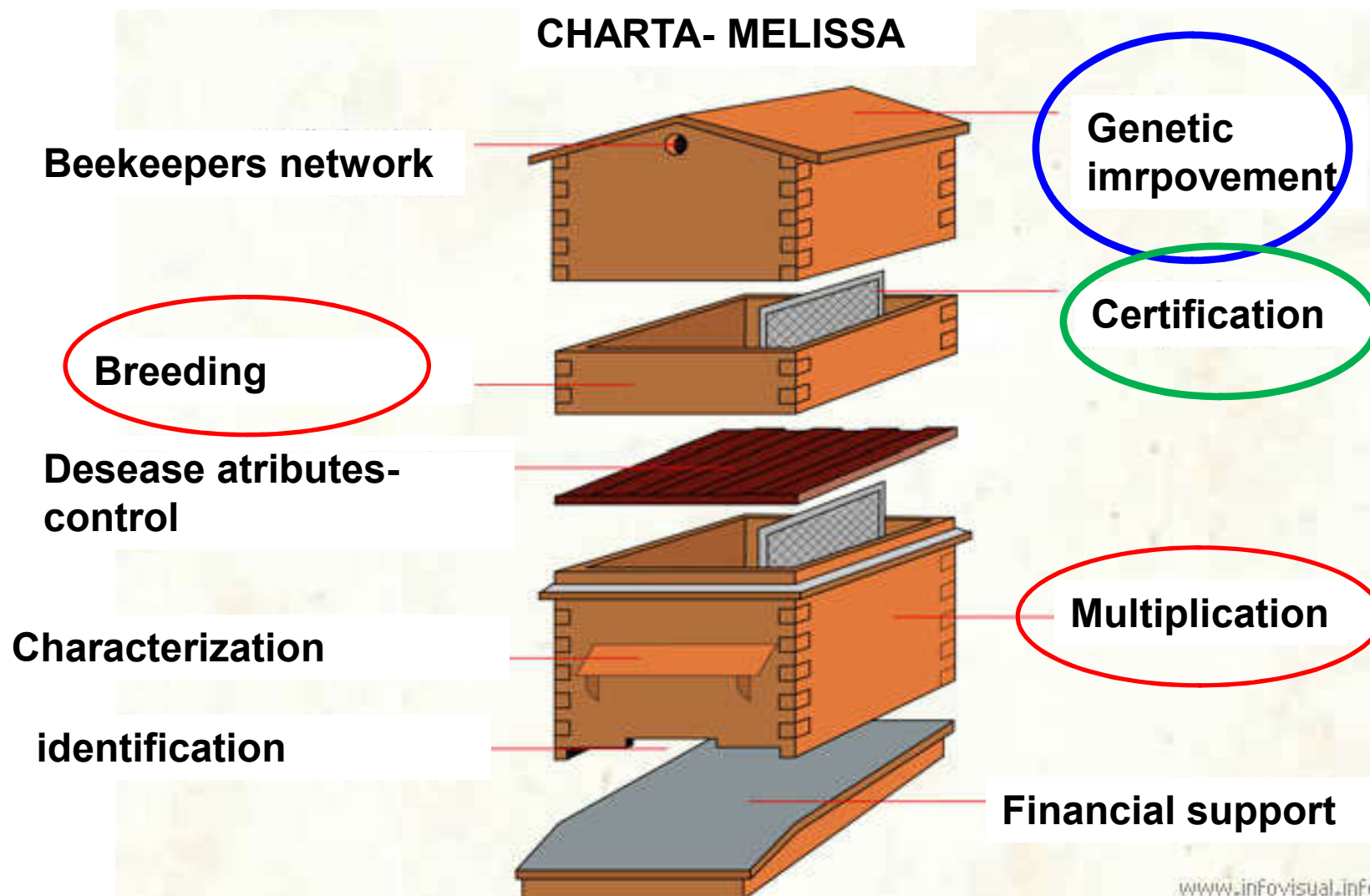
Financed under EC Reg. 1234/07  
for the years 2014- 2016

**Project title:**

SMART BEES: Sustainable management of resilient bee populations

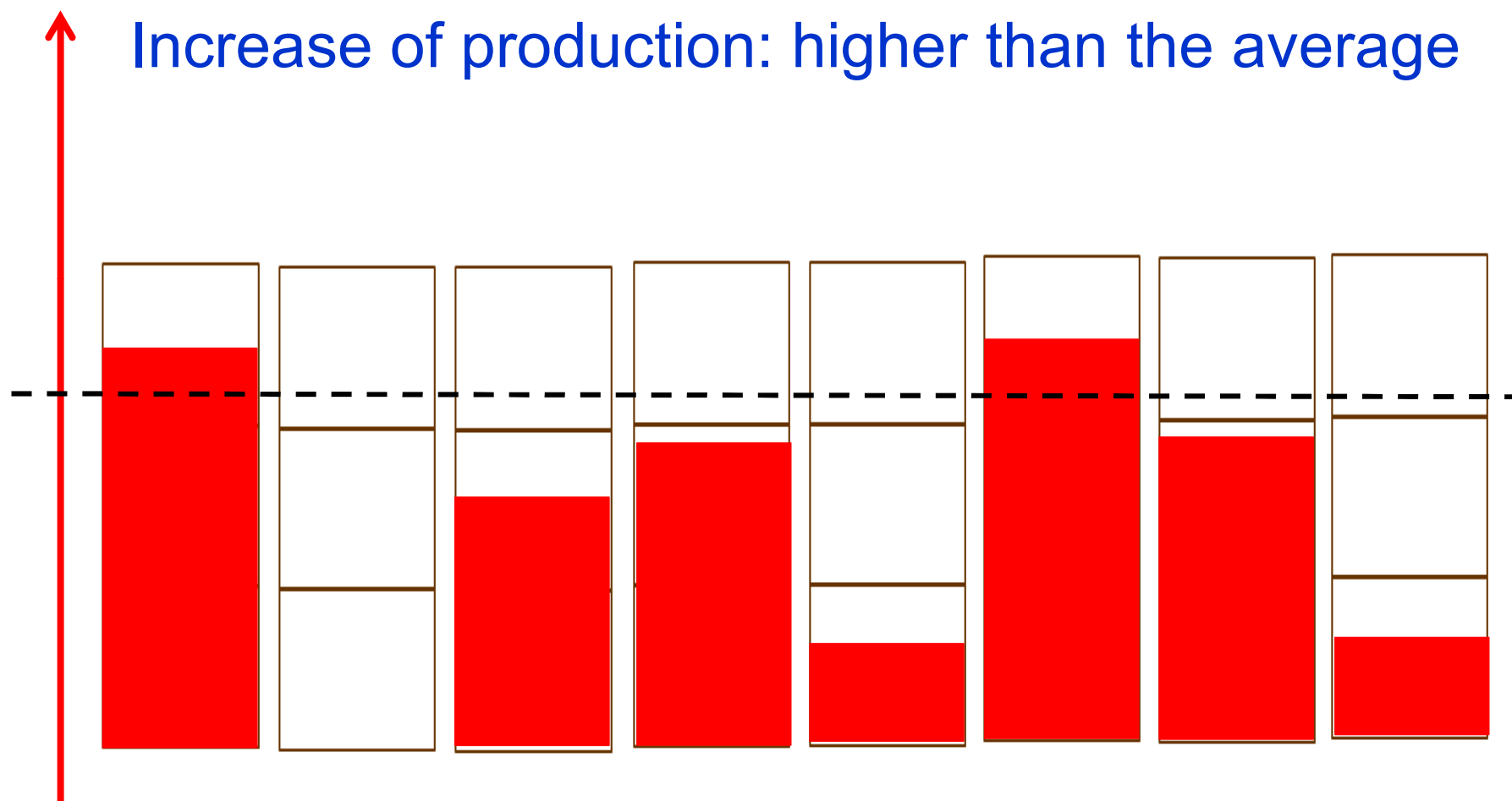
Financed under FP7  
for the years 2015- 2018







## PERFORMANCE Characteristics





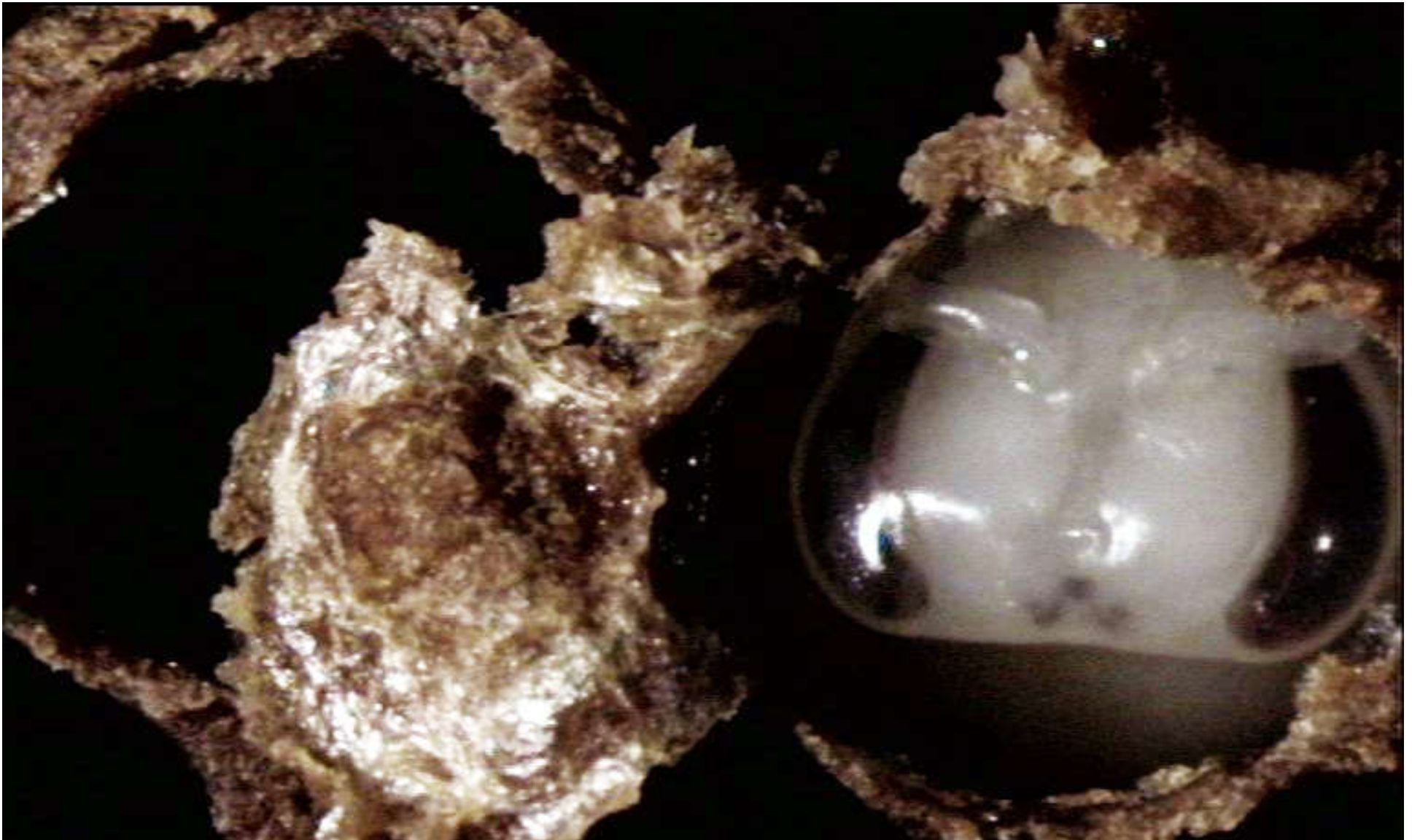


Hygienic behaviour



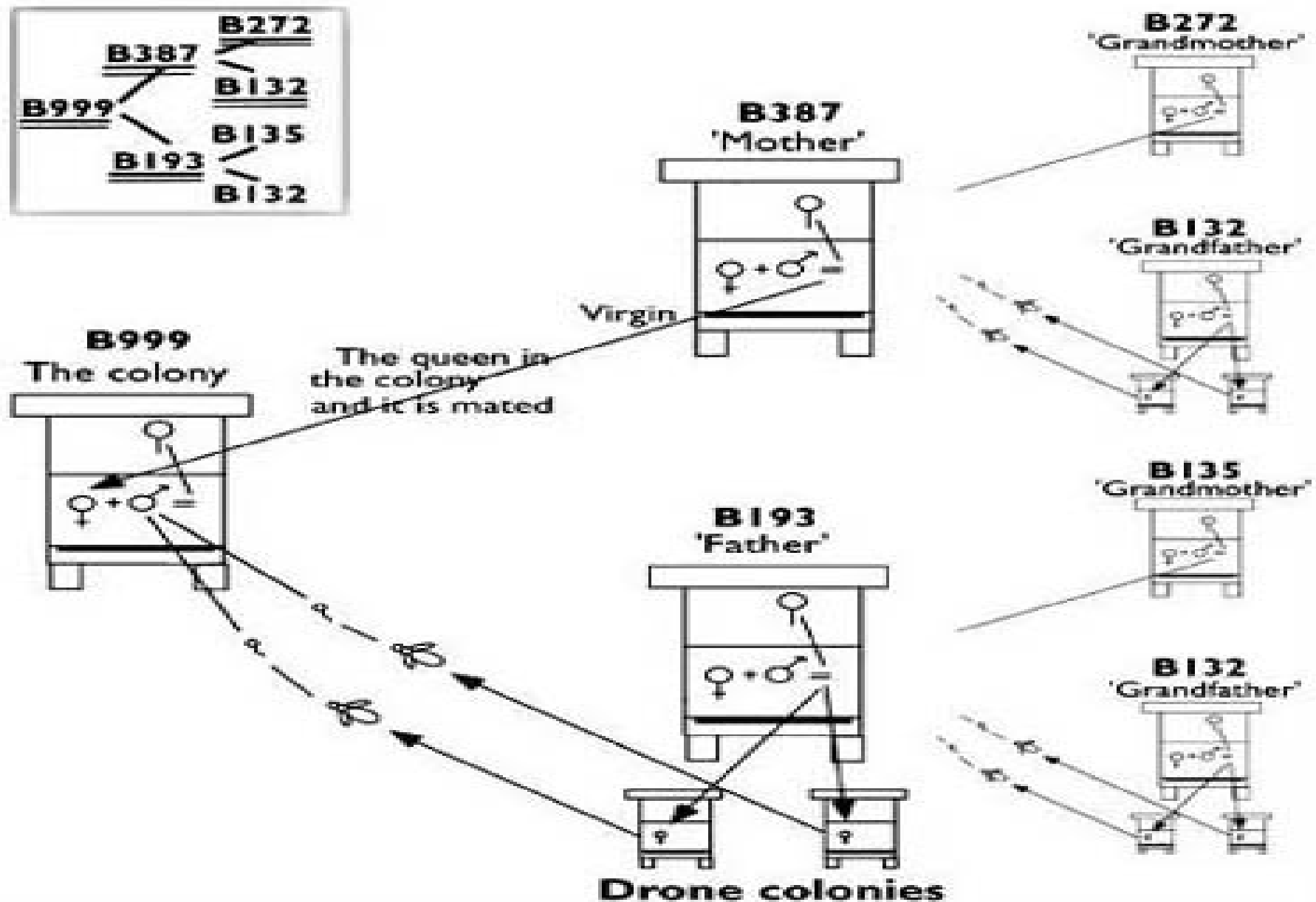


Lower varroa mite reproduction



Recupping and cupping ability of bees

# Need to know the patriline and its characteristics







# Methods to improve honey bee queen mating control, as alternative to Instrumental Insemination

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## The 'Train of virgin queens' (TVQ)

- The method requires a cage, in which the virgin queens kept at a temperature of 14-15 C and in the darkroom,
- The nuclei with the virgin queens are rolling on rails.
- At the afternoon and when all available free drones have returned to their colony a) we release the selected drones and b) we pull over the nuclei with the virgin queens
- Then the nuclei are placed in specific positions and the queens are released for natural flight and mating

More information in :

<https://www.youtube.com/watch?v=V8jXQeScgVg&t=2s>









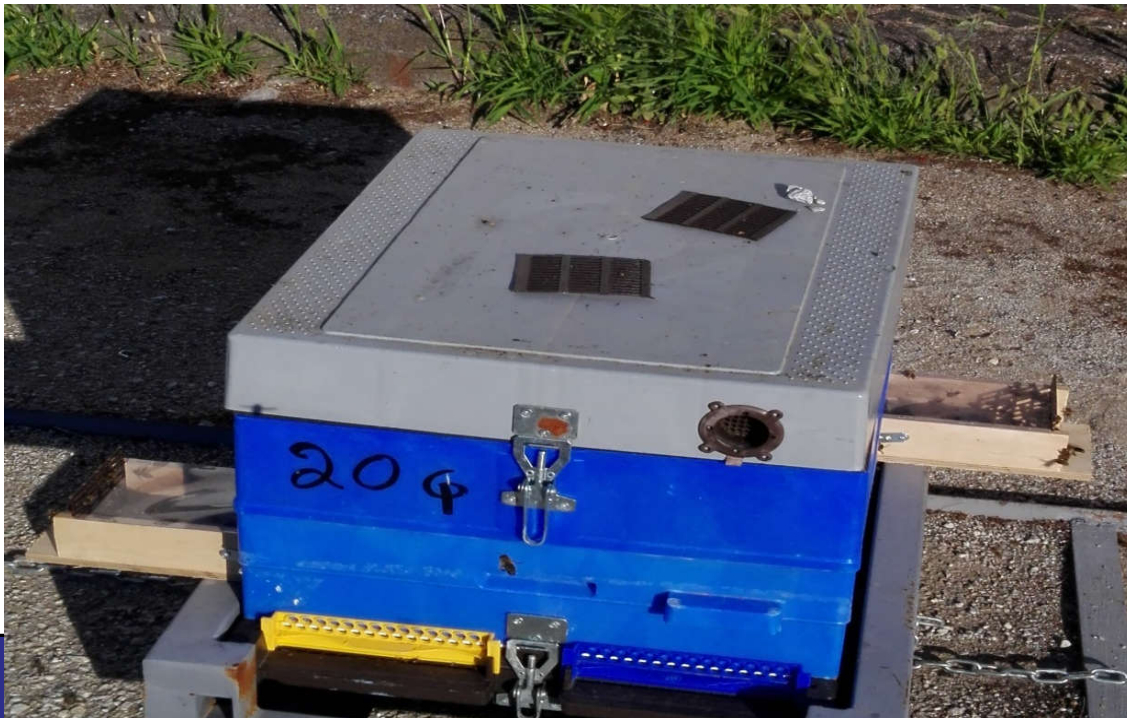
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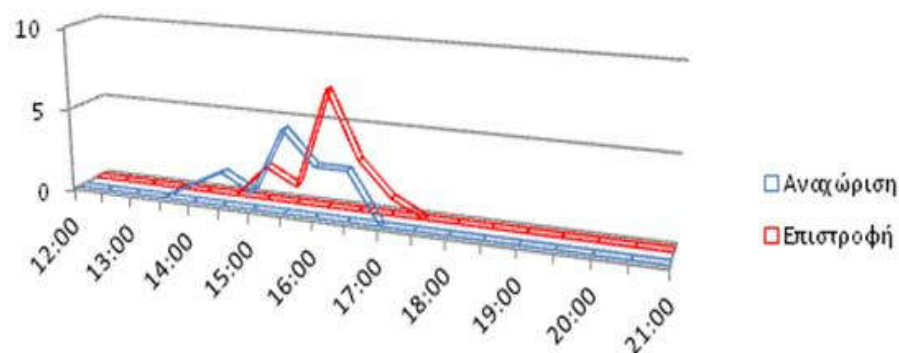




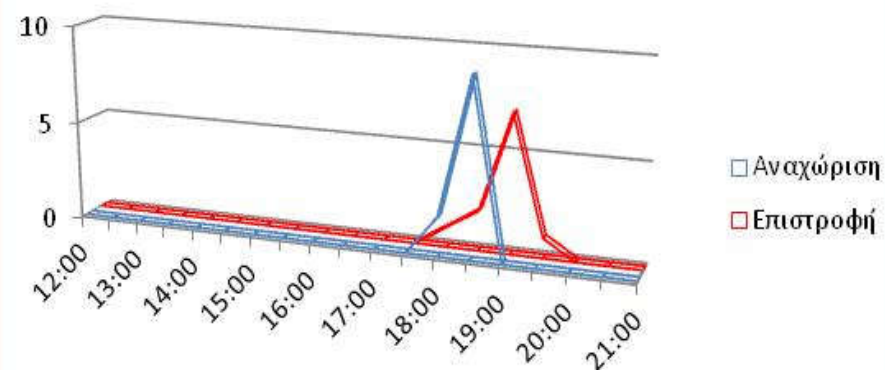


# Mating behaviour of *A.m. macedonica*

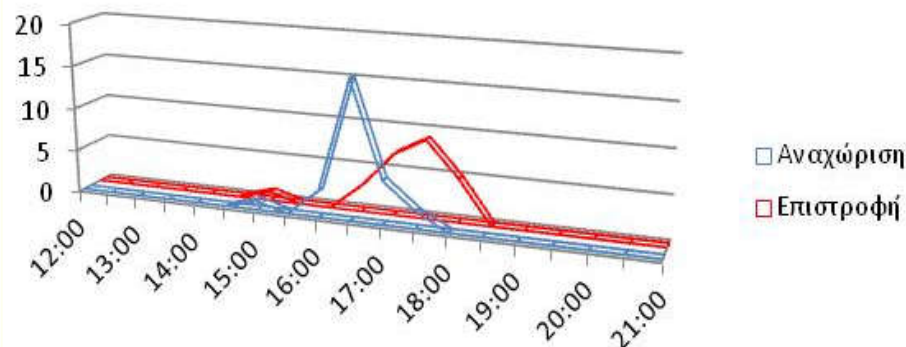
May: open mating



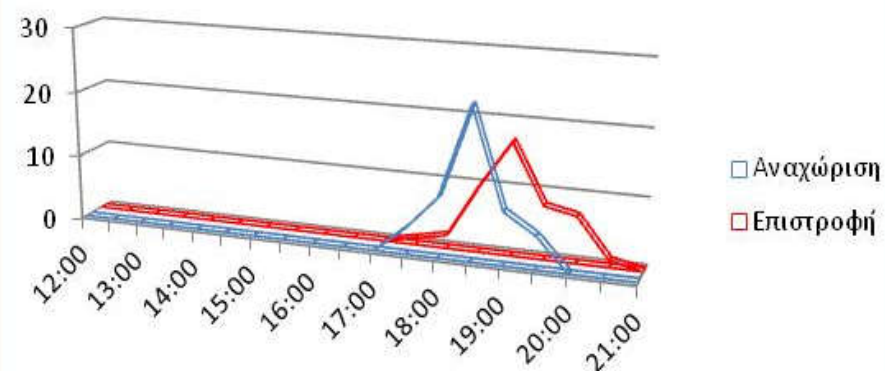
May: mating using TVQ



June: open mating



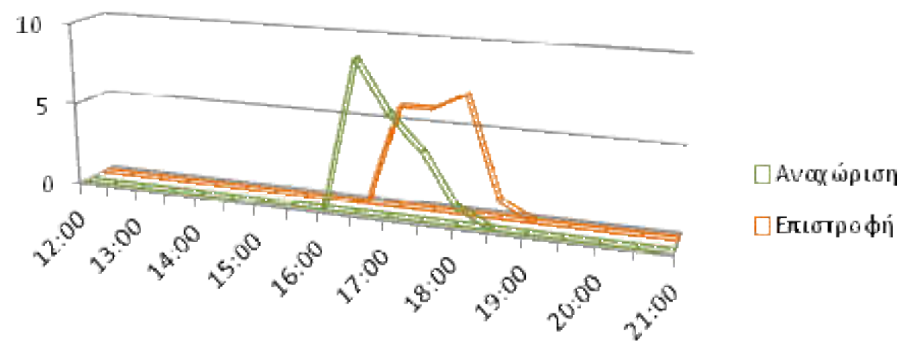
June: mating using TVQ



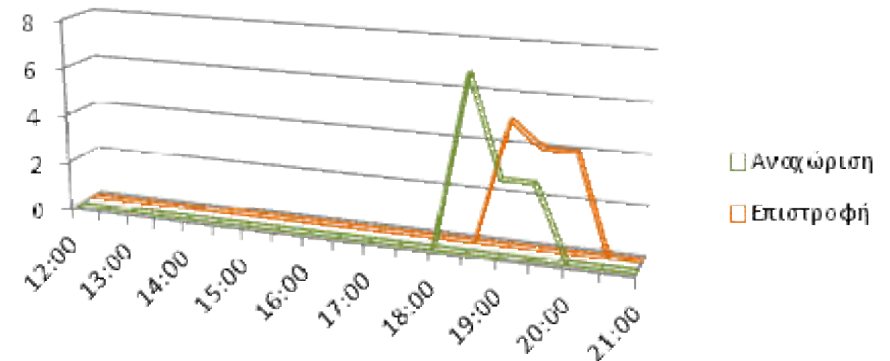


# Mating behaviour of *A.m. cecropia*

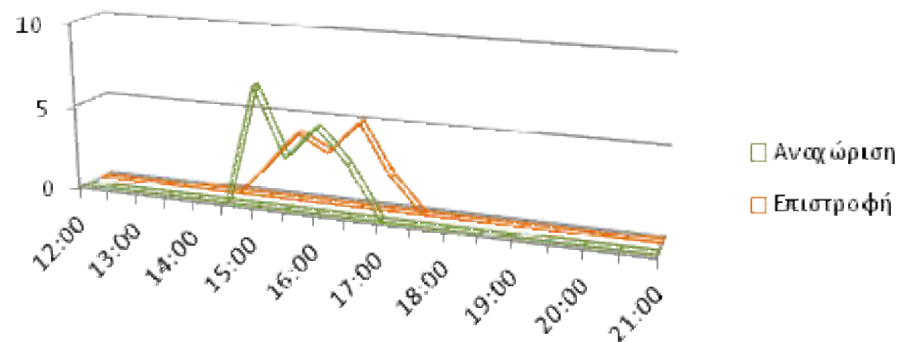
June: open mating  
βασίλισσών σε  
φυσιολογικές συνθήκες



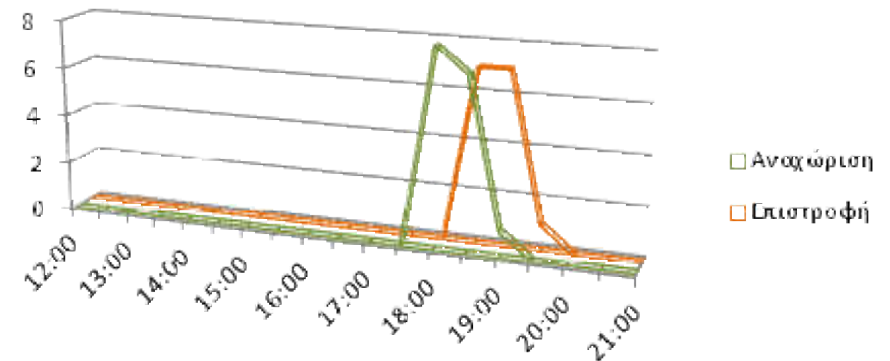
June: mating using TVQ



July: open mating  
βασίλισσών σε  
φυσιολογικές συνθήκες



July: mating using TVQ





# Thank you for your attention

