

# How challenging to Apivar field treatments are amitraz-tolerant Varroa populations?

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## Introduction

Some amitraz-tolerant Varroa populations were recently identified in Portugal (via field and lab testing), during the course of a nationwide study.

Samples of Varroa from these populations were then challenged with a properly applied Apivar field treatment, in order (i) to investigate the practical meaning of such increased levels of amitraz-tolerance and (ii) to study how quickly those populations could be expected to return to “normal levels” of susceptibility to amitraz.

## Results

After circa 4 months of population growth in host colonies free from amitraz applications, Varroa from populations previously identified as displaying high amitraz-tolerance showed a high mortality (mean treatment efficacy of 78%) resulting from a properly applied Apivar treatment (Figure 1).

The high negative impact of Apivar on these Varroa populations was confirmed by the residual percentages of apparent Varroa infestations remaining on worker brood and on adult bees of the host colonies, after the first acaricidal treatment (Figure 2).

## Conclusions

If freed from contexts where amitraz treatments are applied too frequently/inappropriately, Varroa populations that previously stood out as being highly tolerant to amitraz, tend to quickly revert to a status of high susceptibility to a properly applied Apivar field treatment.

## Materials and methods

Eighteen samples of previously identified amitraz-tolerant Varroa populations were collected on capped worker brood and left to emerge in practically Varroa-free colonies (in early autumn).

In these host colonies, Varroa were allowed to multiply for approximately 4 months before starting the experiment in late winter (mid February).

During the next 4 months, treatment colonies were treated twice (with Apivar and, later on, with Apistan) and periodically evaluated for (i) daily rates of dead mature Varroa fallen to protected hive bottom boards and (ii) levels of apparent Varroa infestation on capped worker brood and on

### Daily mortality of previously amitraz-tolerant Varroa

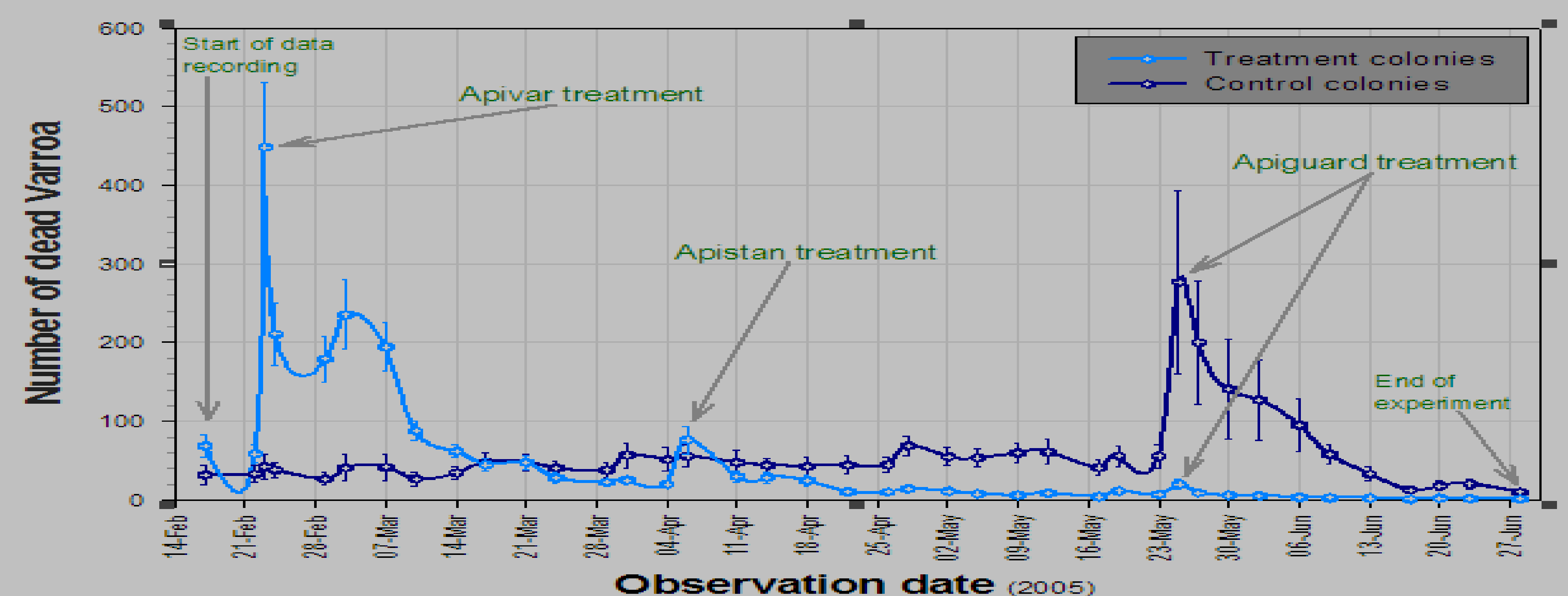


Figure 1 (Mean ± s.e.m.)

### Apparent Varroa infestation levels on capped worker brood and adult bees

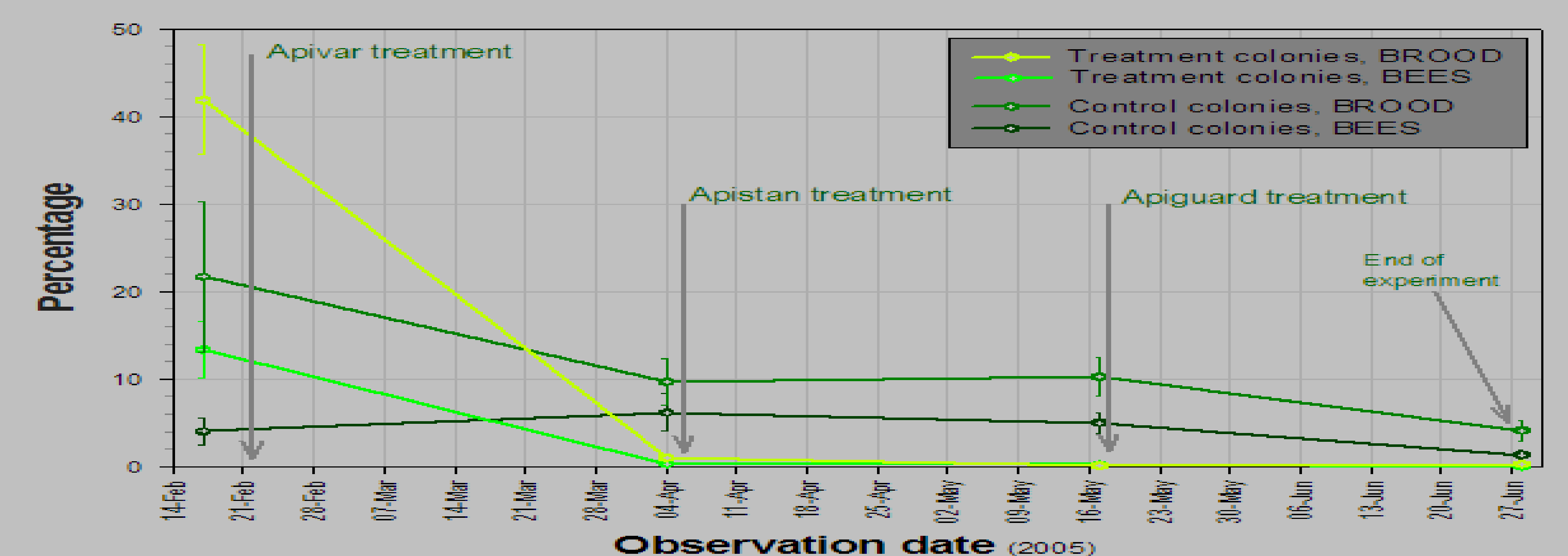


Figure 2 (Mean ± s.e.m.)