

# FIELD STUDY TO ASSESS THE EFFICACY ON VARROA MITES AND SAFETY ON HONEYBEES OF APIGUARD® IN GREECE

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## INTRODUCTION

Apiguard® is a new product, a white gel in which thymol crystals are incorporated. It has two different modes of action. Vapor, according to the manufactures the max daily temperature during application must be over 15°C and contact - by the bee's social behaviour (feeding exchange and cleaning activities). To assess the efficacy of Apiguard® in controlling Varroa mites and possible side effects on honeybees, three experiments were conducted on colonies of *Apis mellifera macedonica* during the spring, summer and autumn of 2002. Experiments took place in Thessaloniki (North Greece).



## METHODOLOGY

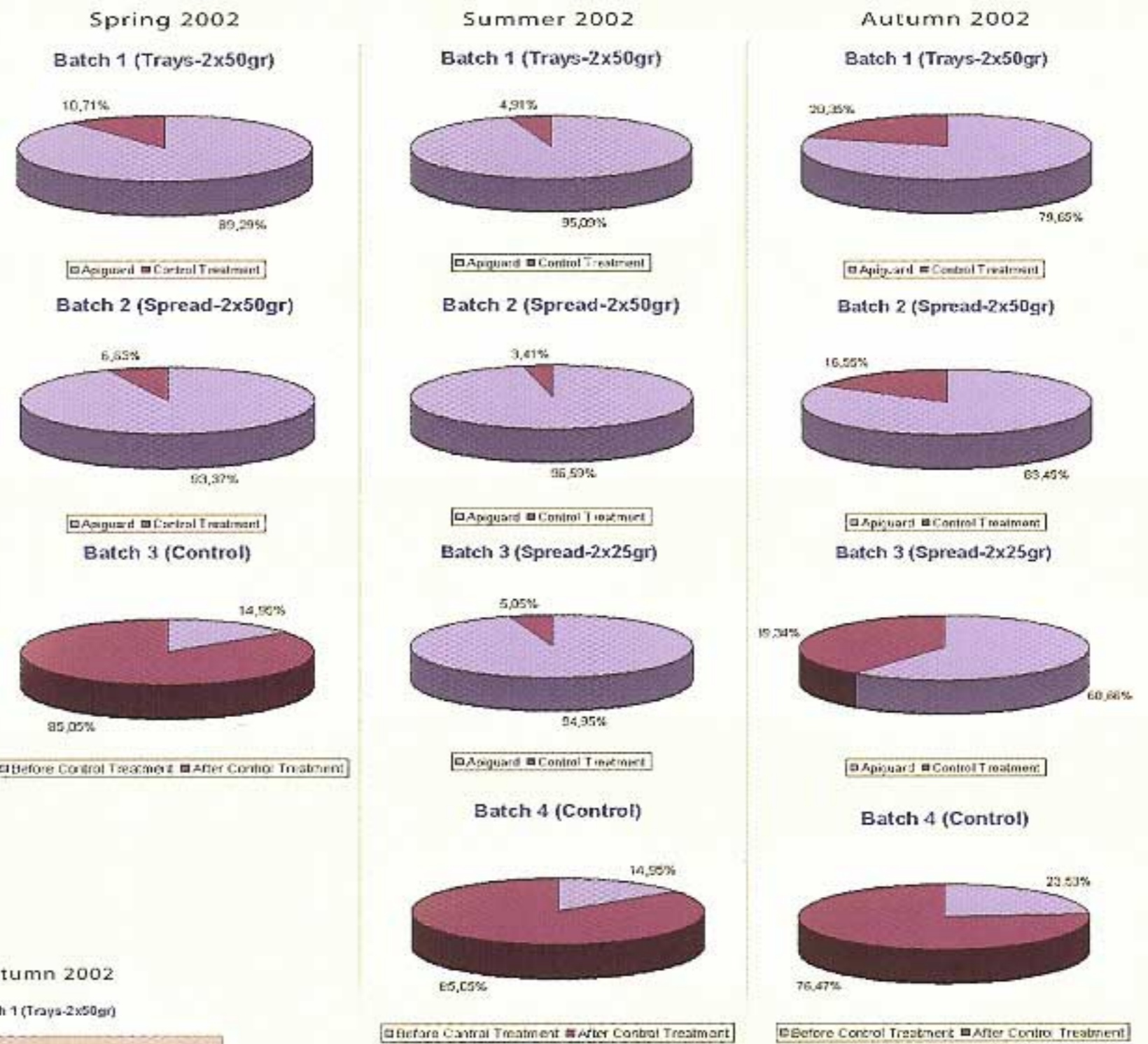
In the first experiment, Apiguard® was applied to two batches of naturally infected by *Varroa destructor* colonies in two different ways: batch 1- Ten colonies treated with aluminum trays (2x50gr at a two week intervals), and batch 2- ten colonies treated with spread on a 10x10 cm flat support (2x50gr at two week intervals). Before the beginning of the experiments and at the end of them, the presence of a laying queen, the number of occupied bee ways and the number of brood frames were noted in all colonies, treated or untreated and at the end of the experiments, the growth of colonies (population and brood frames) and their behavior was observed and compared with control-colonies. During Apiguard® application, daily maximum and minimum temperature was monitoring by a thermometer placed under shadow in the apiary. In aim to control the daily mite's fall, screened bottoms with a removable counting board under the screen, were placed under each colony. At the end of Apiguard® application, Amitraz and Coumaphos were applied as control treatment. In the second (summer) and third experiment (autumn), a third batch (batch 3) was added to the experiment, in which Apiguard® was applied in ten infected colonies, spread on a 10x10 cm flat support. The treatment of this third application was 2x25gr at one-week interval.



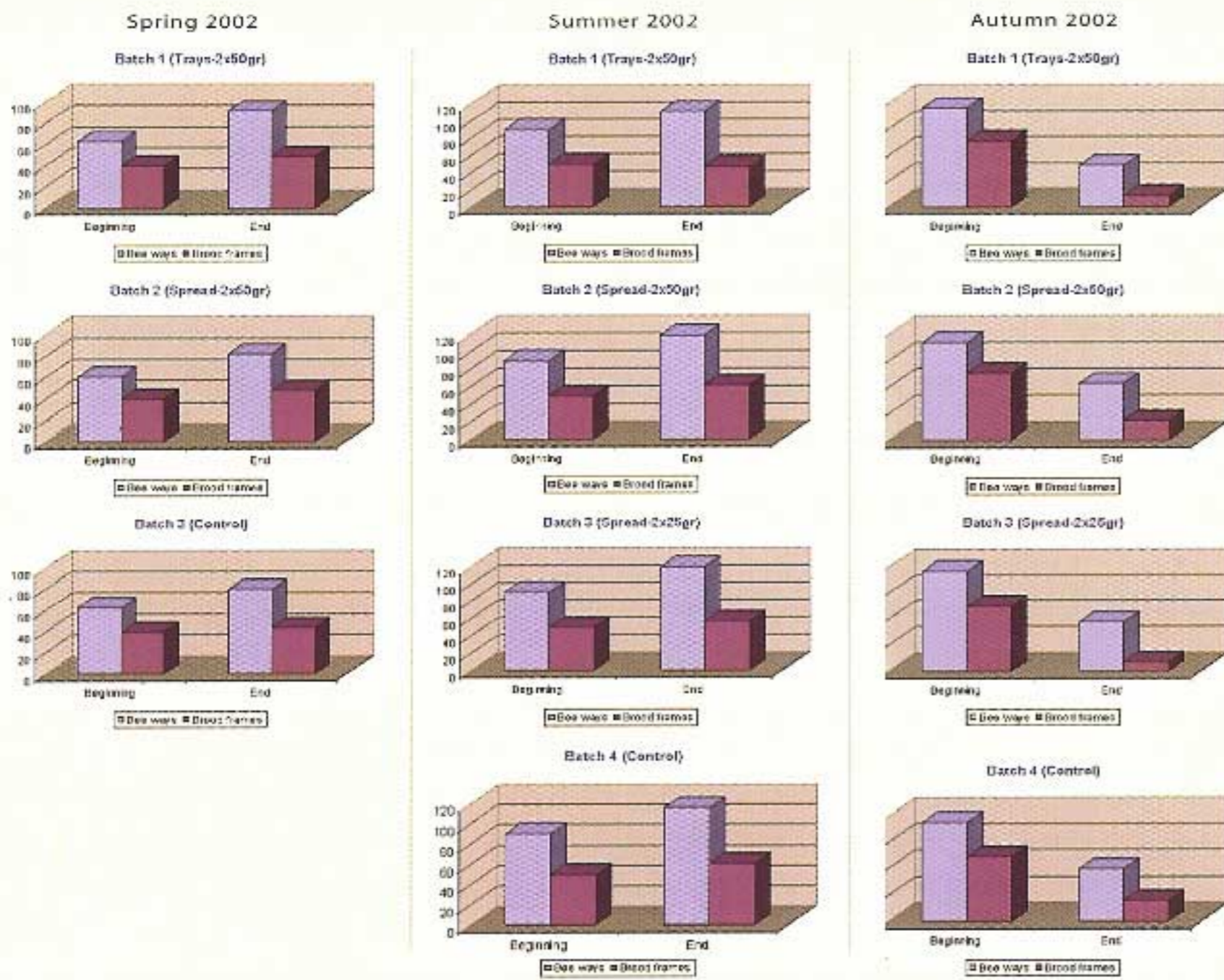
## RESULTS

During spring experiment, the efficacy of Apiguard® on batch 1 was 89,3% and on batch 2 was 93,4%. Natural mites fall before control treatment on batch 3 was 14,9%. During the application of Apiguard®, the average daily temperature (maximum) was 16,4°C. During summer experiment, the efficacy of Apiguard® on batch 1 was 95,1%, on batch 2 was 96,6% and on batch 3 was 95%. Natural mites fall before control treatment on batch 4 was 15%. During the application of Apiguard®, the average daily temperature (maximum) was 30,5°C. During autumn, the efficacy of Apiguard® on batch 1 was 79%, on batch 2 was 83,4% and on batch 3 was 60,6%. Natural mites fall before control treatment on batch 4 was 23,5%. During the application of Apiguard®, the average daily temperature (maximum) was 15,6°C. In all experiments, the growth of colonies treated with Apiguard® had slight, but not statistical significant differences, in comparison with control colonies. No adverse changes in bee behavior such as, aggressiveness, robbing or erratic movements were observed.

# TOTAL EFFICACY



# COLONIES STRENGTH



# DAILY FALLING OF VARROA MITES IN ACCORDANCE TO THE TEMPERATURE

# CONCLUSIONS

The results of the trials indicate that Apiguard® appears to be effective against Varroa under Greek weather conditions. Half dose is also effective during very high summer temperatures. Temperature during application is important for the efficacy of Apiguard®. However, the efficacy during spring and autumn treatment was satisfactory though higher temperatures were close to 15°C.

In all experiments, spread application on a flat support was the most effective treatment.

In conclusion, Apiguard® could become an economical, reliable way in controlling Varroa mites without chemical residues in honey and beeswax.

