



"Five Millennia of Beekeeping on your Doorstep"

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resistance. All beekeepers, even those who formerly had utilised synthetic pyrethroids for Varroa control, dropped using any substance of this group during the whole examination period. Always in August, one brood sample was extracted from each of the constant number of 10 colonies to determine the extent of resistance. During the two last years, the effect of Bayvarol® was simultaneously tested in the field. During the first years, the effectiveness of Flumethrin varied considerably between the individual apiaries. Also on the apiary itself, there were differences between the colonies. On one part of the apiaries, the effectiveness was so low that from this a resistance could be concluded. In the course of the years, this resistance decreased more and more. This was also confirmed by the examinations in the field. However, in the last year, one apiary still showed a reduced effectiveness. This leads to the conclusion that after stopping treatment with synthetic pyrethroids resistance will decline already within a few years. In singular cases, however, the effect can be reduced because of a transfer of resistant mites from the environment. The beekeeper can identify those colonies from the persisting mite fall-off over a longer period. When Bayvarol® works fully effective the mite fall-off increases significantly during the first days, before it decreases correspondingly afterwards. The beekeeper can use Bayvarol® for a save Varroa control if he controls the mite fall twice in the first week.

BEESWAX FOUNDATIONS WITH IMPREGNATED THYMOL FOR VARROA CONTROL

No 456

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The use of essential oils and organic acids is generally accepted as an alternative tool for the control of the Varroa Destructor levels in bee's colonies, avoiding mite resistance and reducing the residues contaminations resulting from the systematic application of synthetic chemicals.[1]

Under all the alternative substances, thymol is the most studied and used, presenting under certain application conditions an acaricide efficiency close to 100 %.[2] Due to the non-polar properties of these organic compound it is mostly insoluble in water, but dissolves easily in fat substances like beeswax. Nevertheless, its high volatility leads to a quick concentration deflection in wax, specially if under hive conditions.[2] These properties took as to explore the use of beeswax as a potential matrix for the application of thymol in Varroa control.

The study was made using 21 Langstroth hives, divided in three groups, with bottom boards for mite fall counting. One group was used as the control, where no treatment was applied, while on the other groups two different methodologies were tested, changing the thymol dosage and the number of impregnated beeswax

foundations. The infestation level was accessed counting the natural mite fall before treatment, and the efficiency was measured counting the mite mortality during the treatment and after the applications of Apivar.

The acaricide effect of the beeswax foundations impregnated with thymol is evident, with a mite fall increasing between 3 and 10 times more after inserted in the hive. In terms of efficiency the use of two foundations impregnated with 9 grams of thymol and inserted with a 10 days interval showed better results than the use of one foundation with 18 grams.

[1] Imdorf S.; Charrière J.; Kilchenmann V.; Bogdanov S.; Fluri P. (2003); Alternative strategy in central Europe for the control of Varroa destructor in honey bee colonies. *Apiacta* 38, 258-285.

[2] Bogdanov S.; Imdorf A.; Kilchenmann V. (1998) Residues in wax and honey after Api Life VAR treatment. *Apidologie* 29, 513-524.

STUDIES TO ASSESS THE EFFICACY OF BACILLUS CBB AND APIGUARD® AGAINST ASCOSPHAERA APIS UNDER FIELD CONDITIONS

No 458

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In order to control Chalk brood disease, the bacillus CBB, developed by Dr Yacobson in Israel, was found to inhibit the growth of *Ascosphaera apis* in vitro. It was also found to be harmless to bees. Another environmentally friendly product, Apiguard® (Vita-Europe LTD) containing thymol crystals and applied against varroa mites, was also found to inhibit the growth of this fungus.

To assess the efficacy of CBB alone or in combination with Apiguard®, against chalk brood disease in field conditions, two experiments were conducted during spring and summer of 2003 and 2004 in the area of Thessaloniki, North Greece. In 2003, 30 colonies of *Apis mellifera macedonica*, artificially infested by *A. apis*, were divided in three batches for the trials. In batch 1, there were four applications of 1 liter syrup (60%) containing CBB. In batch 2, there were four applications at weekly intervals of 1 liter syrup (60%), containing CBB plus one application of 25 g Apiguard®. In batch 3 (control) there were four applications at weekly intervals of 1 liter syrup (60%). In 2004, another batch was added on which one application of 25 g Apiguard® was contacted.

For the 2003 treatments, in batch 1 the decrease of the infection was estimated at 77.2%, in batch 2 at 83.9% and in batch 3 (control) at 7.8%. Furthermore, the growth of colonies (number of bees and brood frames) was significantly better in colonies of batches 1 and 2 compared with control.

For the 2004 treatments, the efficacy of the bacillus was lower than in 2003. In batch 1, the decrease of the