Efficacy of the thymol-based varroacide THYMOVAR® in a multi-site trial in France during the end of summer and the autumn of 2007

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Introduction

The thymol-based varroacide THYMOVAR® was officially registered in France in January 2007 (M.A. n°679 850.7).
To confirm its good efficacy under the particular French conditions, a multi-site trial was carried out in six different climatic regions throughout France: Bouches du Rhône, Calvados, Drôme, Finistère, Haut-Rhin and Vaucluse.

Materials and methods

The THYMOVAR® treatment (active substance thymol) was conducted according to the instructions on the official product label. A control treatment with APIVAR® (active substance: amitraze) was applied after the second THYMOVAR® application was terminated.

Between 3 and 10 productive colonies (Dadant-Blatt hives) were used per department, making a total of 48 beehives. The treatment was carried out from September to November, with the start depending on the region and on the end of the honey flow. The daily maximal temperatures during the treatment were monitored in each trial location.

The THYMOVAR® hive dosage for the whole treatment was 3 strips (15 g thymol per strip). 1.5 strips were applied for 3 to 5 weeks and then renewed for another 3 to 5 weeks (see table 1 for details). The mite fall on the bottom board was counted weekly.

The APIVAR® hive dosage for the whole control treatment was 2 strips (500 mg amitraze per strip) in one application for 2 to 6 weeks depending on the location.

Results

An overall very satisfactory mean efficacy of 91.5 ± 6.5 was found for THYMOVAR®. The mean total number of mites per hive was 2'000 ± 1'223 (see Table 1 and Fig. 2 for exact data per department). The range of daily maximal temperatures was mostly between 15 and 25 °C (see Fig. 3).

During the first days of the treatment, the bees showed some signs of stress. Nevertheless on the long term no abnormal bee mortality or any significant disturbance of the brood could be registered.

Discussion

In an international comparison, the mean efficacy per country of THYMOVAR® is known to range between 87 and 97 % (GISLER 2005).

Given the late start of the treatments and the short waiting period between the main treatment and the control treatment in this French trial, the efficacy results are very promising and homogeneous.

Within a French Integrated Pest Management programme, THYMOVAR® is an optimal anti-varroa product when combined with a complementary treatment (use of another active substance). To keep the number of mites always below the damage threshold, the complementary treatment should be applied either during the broodless period, or in early spring prior to the first honey flow.

Literature

GISLER S. (2005), THYMOVAR® Contains the Natural Substance Thymol to control the Varroa Mite – field Results from Different Countries. Apimondia International Apicultural Congress, 2005, Dublin, Congress Abstract

Figure 1: Application of THYMOVAR® in a Dadant hive.

Table 1: Mean efficacy, standard deviation, varroa infestation rate, date of start and length of the THYMOVAR® treatment per department.

Department	Ø Efficacy (%)		Number of treated hives	Ø Total Varroa (THYMOVAR® + APIVAR®)		Start	Length (weeks)	Interval between end of treatment and control treatment (weeks)
B. du Rhône	**94.5**	± 5.1	3	1185	± 241	22.09.2007	8	0
Calvados	**81.5**	± 9	10	300	± 197	05.09.2007	10	0
Drôme	**93.4**	± 9.3	9	1060	± 462	06.09.2007	8	4
Finistère	**98.8**	± 1.1	6	1390	± 943	05/09 & 03/10/2007	6 (3 hives) & 10 (3 hives)	0
Haut-Rhin	**94.8**	± 3.7	10	4399	± 2464	15.09.2007	6	3
Vaucluse	**90.9**	± 5.3	10	2756	± 574	09.10.2007	8	0
Total	**91.44**	**± 6.60**	**48**	**2'000**	**± 1'223**			

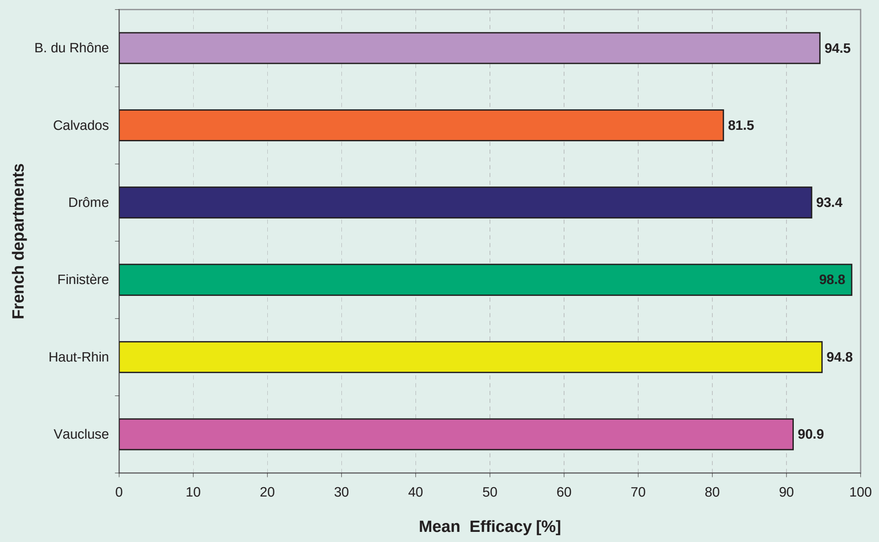

Figure 2: Mean efficacy of the THYMOVAR® treatment per department.

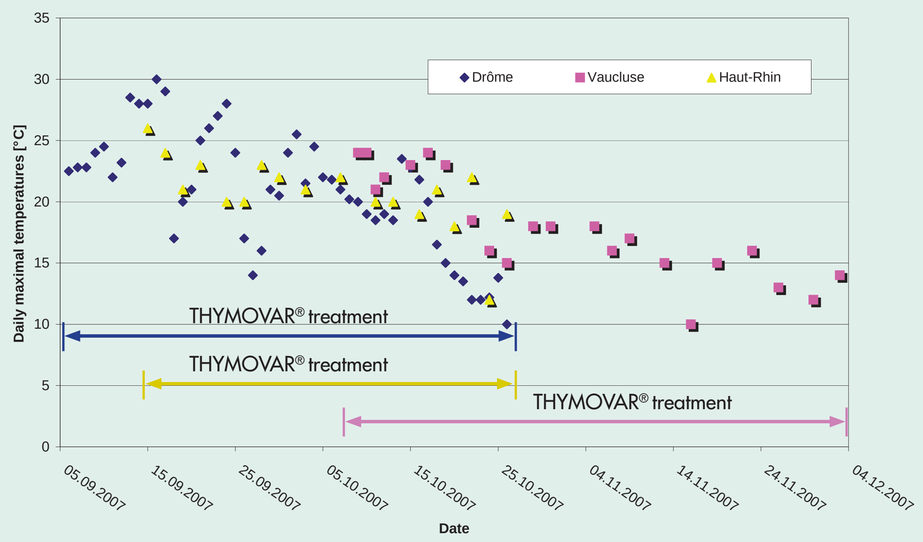

Figure 3: Daily maximal temperatures in three departments during THYMOVAR® treatment.