

MONITORING EFFECTIVENESS OF TREATMENTS WITH APIGUARD® AND APISTAN® IN COMBINATION IN THE 2010 - 2012 PERIOD - THE NORTH EAST ITALY



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Since 2003, beekeeping groups in the region of Friuli Venezia Giulia, in North Eastern Italy, have worked on plans to control Varroa, taking into account the alternating use of synthetic active ingredients (mainly Apistan) and thymol.

In particular during the years 2010, 2011 and 2012, the treatments were carried out using a combination of Apistan® and thymol (in the form of Apiguard®).

It was the objective of the monitoring tests, carried out between 2010 and 2012 to determine the effectiveness of the combined action of these two active ingredients and products.

The protocols and the results obtained during the three years of monitoring are described below.

2010

Start of monitoring 7th August, ending 3rd November with mitefall readings after treatment with oxalic acid (Api - Bioxal®).

Treatment 1: 2 strips of Apistan®, 2 trays Apiguard® with sugar and protein feed.

Apiguard: 1 tray (50g) applied 15 days after the insertion of Apistan, 2nd tray of Apiguard applied 12 days after the first.

Feed: 3 x 2.5 liters of sugar syrup, commercial product APIINVERT® (syrup composed of fructose, glucose and sucrose, supplied by the company SÜDZUCKER) with addition of 100 grams protein supplement dissolved in the packaging of syrup.

Treatment 2: 2 strips of Apistan®, 2 trays Apiguard® with sugar feeding

Feed: 3 x 2.5 liters of sugar syrup, commercial product APIINVERT® (syrup composed of fructose, glucose and sucrose, supplied by the company Südzucker) with no addition of protein supplement.

The food was administered every 12 days, the first two doses given at the same time as the application of the individual doses of Apiguard to the colonies.

In this test the importance of nutrition during treatment was examined; the effectiveness, in terms of Varroa fall, did not differ significantly between the two treatments (in the group fed with carbohydrates plus protein, the efficacy average was 93.3%, (max 96.8% and min 88.3%) whilst in the group receiving carbohydrate food only, the average efficacy recorded was 94.4%, (max 98.3% and min 89.1%).

Colony strength was determined but did not, however, show significant differences between the two treatments.

2011

In 2011, the monitoring involved 20 hives which had been studied the previous year and had been treated with Apistan and thymol.

Group 1: 5 hives

Treatment: 2 strips of Apistan®

Group 2: 5 hives

Treatment: 2 strips of Apistan®, 1 tray (50g) Apiguard®

Apiguard: Application at the same time as Apistan

Group 3: 5 hives

Treatment: 2 strips of Apistan®, 2 trays (50g) Apiguard®

Apiguard: 1st application at the same time as insertion of Apistan, 2nd application at 12 days after the first.

Group 4: 5 hives

Treatment: 2 trays (50g) of Apiguard®, 12 days apart



Figure 1 – Treatment and feed with sugar candy



Figure 2 Division of the honeycomb into 6 parts, sixths, to be able to count of bees present in the hive

All treatment groups were fed solid sugar candy; each hive received 3,750g of candy

(APIFONDA ®) provided by the company SÜDZUCKER in three separate doses of 1.250 g.

The effectiveness of the treatments was calculated and colony strength was determined before and after treatment.

Colony strength is a very important parameter that allows a comparison to be made between treatment efficacy and average number of bees at the end of the treatment.

	2 strips of APISTAN®, 2 trays of APIGUARD®	2 strips of APISTAN®, 1 tray of APIGUARD®	2 strips of APISTAN®	2 trays of APIGUARD®, 12 days apart
Min	93,13	88,15	37,12	38,37
Max	97,65	99,45	66,22	92,83
Mean	95,74	96,94	56,70	71,44

Table 1 – Percentage efficacy of different treatments, 2011

Treatment	Average decrease sixths / hive	No. average sixths / hive beginning of test	No. average sixths / hive end of test
Apistan + 2 APG	-42,4	66,5	24,1
Apistan + 1 APG	-34,8	63,1	28,3
Apistan	-61,8	80	18,2
2 APG	-75,3	91,9	16,6

Table 2 – Change in colony strength from the beginning (27 July 2011) to the end of monitoring (17 November 2011)

Please note that the general decline of the colony strength can be attributed in part to natural aging and subsequent death of bees present.

The months of September and October 2011 were particularly mild and this resulted in a greater and prolonged activity of bees.

As of January 12, 2012 all hives in which the treatment type Apistan + Apiguard was applied in combination were healthy and in good condition, with a significant egg-laying activity on the part of the queen.

2012

For 2012, the same protocol was followed for monitoring efficacy as was adopted in 2011.

	2 strips of APISTAN® + 1 APIGUARD®	2 APIGUARD®	2 strips of APISTAN®	2 strips of di APISTAN®+ 2 APIGUARD®
Min	74,15	70,56	43,83	79,83
Max	88,07	82,40	65,52	92,57
Mean	80,86	75,03	56,95	84,79

Table.3 – Percentage efficacy of different treatments, 2012.



Figure 3 – End of September 2012, the colonies of the treatment Apistan® + Apiguard® are well populated, with much brood present and good stocks of eggs deposited.

The three-year monitoring combination of Apistan + Apiguard showed a very high efficacy in the first two years with averages above 90 percent, only in the third year was there an as-yet unexplained decrease, with an average efficacy of 80.86%

The food supply given during treatment is also an important factor with a significant impact on the strength and vitality of the honeybee colony.

Monitoring studies continue in 2013 and will be the subject of a further publication.