

TREATMENT OPTIONS FOR CONTROL OF VARROA MITE IN ROMANIA - A REVIEW -

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Abstract

Varroosis is an ectoparasitosis (caused by Varroa spp.) of the honey bee that can deal with a variety of substances, but none of them provides for zeroing the number of mites. Due to this fact it takes a strict protocol of treatments, which must be complied with strictly. To be able to prevent the installation of the parasite to the substances used, it is important to know all the products approved and commercially available, and to choose the most effective of them.

Key words: Apis mellifera, Varroa destructor, treatment options.

INTRODUCTON

Since the parasite Varroa spp. moment, it produces discomfort, and in some cases significant damage and so beekeepers and bees. It is considered the most serious parasitic disease of bees.

In recent years there have been numerous substances marketed drugs, have been devised various methods of biological, physical and technical, but no results until today are not satisfactory. By performing the treatment correctly through the integrated control methods parasitosis may not be fully eradicated, and only it can maintain at a level that will not affect the productive capacity of bee families.

MATERIAL AND METHODS

The most commonly used substance is amitraz. The first uses of this substance is dating back to 1979. The product marketed in Romania is called Varachet forte (active substance amitraz and taufluvalinat) (37), Varatraz (active substance amitraz). Research shows an efficiency of over 99% of amitraz in the form of fumigation (15). When using amitraz in the form of strips of plastic the effectiveness is 97-99% (3).

The fumigation treatments takes place at temperatures above 15 degrees °C in the morning or in the evening (when the vast majority of the bees are in the hive), because the bees are not tight in the cluster.

RESULTS AND DISCUSSION

Fluvalinate (taufluvalinate) belongs to the Group of synthetic piretroids. The product marketed in Romania is called Mavrirol, which is presented by strips of fabric impregnated with this substance. Effectiveness of taufluvalinate impregnated strips form is between 30-97% (4, 9, 10, 15, 30), great variation given that *Varroa destructor* can develop resistance against taufluvalinate. Mavrirol bands are left in the hive for 45 days, after which they will be removed.

Flumetrin is part of piretroids group. The product being marketed is called Bayvarol and presented in the form of strips of white plastic, non-transparent. Other commercial products based on flumetrin are Varostop, Varotom. Research shows that the use of correct treatment efficacy of this substance is 95-99% (26, 33, 14, 1).

After 1-2 weeks of use the fall should be almost zero, if not, it means that the installation resistance of the parasite to flumetrin and it takes a complementary treatment with another substance acaricide. Use of this product leads to the occurrence of residues in wax.

Coumaphos is part of the organophosphate group. Products marketed in Romania are called CheckMite (inked strips) and Perizin (10 ml bottle). The effectiveness of cumaphos impregnated with bands in the case of fair use is between 85-97% (25, 3). When administering the cumaphos solution form efficiency is between 95-99% (11, 1).

The organic acids group includes formic acid, lactic acid and oxalic acid. These substances may be used in organic farming and strengthening the appearance of these substances are minimal.

Formic acid (concentrated 60%) is used with success since 1980 (22, 32). You can use an impregnated pleasant or sponge, or can be administered with an evaporator, the dosage of 2 ml/frame or 20 ml/hive.

Impregnated pad (cardboard) sits at the bottom of the hive, barbecue wire mesh with small and very often in order to avoid direct contact with the bees and the Queen Bee. Apply 4-6 treatments at intervals of 4 to 7 days, when the outside temperature is 12-25 degrees °C (optimal period is following the lifting body with honey-late summer or fall, the night temperature does not fall below 12 degrees °C) (21).

The introduction is done in the evening and leave the pad with formic acid for 24 hours in the hive. The treatments are done and in the presence of brood, regardless if it is capped or not. Formic acid efficacy largely depends on the ambient temperature. The results obtained are very different even for this reason, the mortality rate is between 56-98% (5, 6, 13, 31, 34).

Lactic acid is a miticide, is used in beekeeping diluted 15% (30). In the fall, when there is no family bee brood, each honeycomb drizzle with

5 ml of solution. Make 2-4 treatments when the outside temperature exceeds 6 °C. Efficacy of lactic acid based on studies performed is situated between 68-99% (8, 23, 28). In one study, when the product has been used spring effectiveness was only 41% (11).

Oxalic acid presents itself in the form of colorless, odorless crystals. In the trade are ready made products, in liquid form, the strength of 3%. Oxalic acid can also be used by spraying over frames or administered in syrup. You can perform up to two treatments per season, at an interval of three weeks.

Due to the fact that the substance develop their work through ingestion and not through evaporation, the ambient temperature is lower than the other products. However, it is preferable that the outside temperature is above 10 degrees °C. Product efficacy is 82-99% (19, 27, 29).

BeeVital Hive Clean product contains essential oils, citric acid, oxalic acid, propolis, sucrose and water. The product can be used at temperatures between -1 to 25 degrees °C and may be used in organic apiaries. Howis and Nowakowski (2009) after the use of the product were obtained between 85,3% efficiency – 100%, the average overall the studied colonies of 91,6%.

Essential oils, or group called volatile oils include Thymol, camphor, eucalyptus oil. Products marketed in Romania with the active ingredient in this group bears the name of Apiguard, ApilifeVar, Thymovar. Apiguard is a product that only contains Thymol. In the form of gel. ApilifeVar takes the form of evaporante tablets containing Thymol, menthol, eucalyptus oil and camphor.

The effectiveness of the products is between 54-98% (12, 16, 18, 24). A study conducted in Italy looks a mite mortality rate after treatment of 98% (7). Due to the fact that the rate of volatilization is an important factor in the use of the product it is recommended that the outside temperature to be between 15-25 degrees °C. A study of Al-Ghamdi (2002) states that the efficacy of his era of Apiguard 95%, and his ApilifeVar to 89%, compared to natural mortality from untreated colonies which were 13%.

Polioel4 product is authorized and marketed in Romania. This product has in his composition anise oil, pelinice oil, oregano oil and lavender oil. The product was designed to stop the nosemosis, but as it was observed a reduction in the number of Varroa in beehives treated (35).

CONCLUSIONS

Mehpatika is a fun loving person product containing cimenol,-2,4-hexadienic acid and water extracts of the medicinal plants. This product can be used as a complementary treatment in reducing the number of Varroa,

but cannot replace antiparasitic treatments with specific substances antivarroa (36).

As you can see we have a wide range of products in the fight against the pub, both for traditional beekeeping, organic, and thus each beekeeper has the opportunity to choose the most optimal products for own Apiary.

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