Field And Laboratory Screening For Fluvalinate Resistant Varroa Populations In Portugal

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Introduction

The varroa mite *(Varroa destructor)* was first detected in Portugal in 1986. Since then, there has been a widespread use of what were the only two registered treatments Apistan (fluvalinate) and Apivar (amitraz). Following (i) the practically exclusive dependence of these two pyrethroids to cope with varroa and (ii) repeated claims from national beekeepers of poor efficacy of Apistan treatments, a large screening project was established in 2003 for trying to identify varroa populations tolerant to fluvalinate in Portuguese honey bee colonies.

Materials and methods

Approximately 1% of continental country-colonies were field-tested according to the "British National Bee Unit" field-testing methodology, and compared to blank control tests (same kits and methodology, but without using fluvalinate). Brood samples were later collected for laboratory (Milani, 1995) reassessment of populations of varroa that had been flagged, by the field tests, as resistant to fluvalinate.

Fig 1. Loaded "British National Bee Unit" field-test kit

Fig. 2. Dead varroa after Apistan treatment (2,5% of fluvalinate)

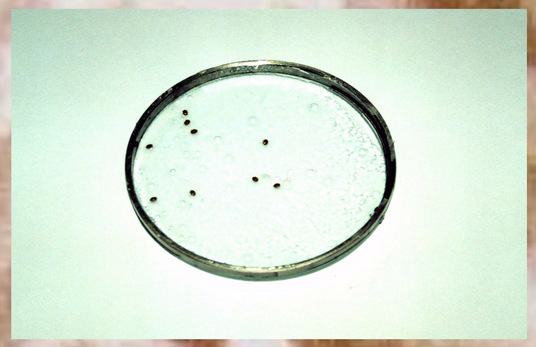

Fig. 3. Varroa under laboratory test with fluvalinate (200 ppm)

Results

From those investigated colonies, approximately 38% (1536) allowed conclusive testing (i.e. where 3 or more varroa per honey bee colony were submitted to the action of fluvalinate).

Approximately 57 % (878) of these colonies were considered to host varroa populations highly tolerant to fluvalinate (using, as border line, 60 % of fluvalinate induced varroa mortality).

Field tests of colonies where highly fluvalinate-tolerant varroa populations were found studied an average of 18 mites and showed an average therapeutic efficacy of fluvalinate of 26.4 % (s.e.m. of 0.6 %).

Laboratory data for brood samples was relatively limited (approximately, 56% of brood samples were rejected, due the small number of mites on them).

In most cases (44%), we could lab-confirm the results provided by the field tests, regarding the indications provided in terms of varroa status to fluvalinate tolerance.

Conclusions

Field and lab testing for fluvalinate-tolerance varroa status provide convergent results, with the later frequently confirming the indications provided by field testing.

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