PP-148 [Bee Health]
Laboratory and field tests to assess the efficacy of B403 against wax moth (Galleria mellonella) and safety on honeybees (Apis mellifera)

Konstantinos Ilanidis[1], Paulo Damian Mielgo[2], Max Watkins[2], Alexandros Papachristoforou[1]
[1]Laboratory of Applied Apiculture "ApisLab", Department of Animal Science, University of Thessaly. Geopolis 41334, Larissa, Greece
[2]Vita Bee Health. Vita House, London St., Basingstoke, RG21 7PG, UK

To assess the efficacy of B403, Bacillus thuringiensis – based product, against larvae of the greater wax moth, Galleria mellonella, both laboratory and field tests were conducted in Greece, between 2023 and 2025. Two different lab tests and two different field tests were conducted. During the first lab test, a total of 96 wax moth larvae (WML) of 3rd instar stage, divided in 4 batches of 24 specimens, isolated individually in arena-boxes, were used. Doses of 5%, 10% and 20% were applied. Tested products were applied in artificial diet for each WML. The mortality as well as the repellence effect of each formulation, was tested in the arena boxes, stored in incubators at 30°C for a period of 21 days. Results indicated that B403 was very toxic for WML at tested doses and on the same time, induced a strong repellence effect. All tested larvae were found dead when 10% and 20% doses were applied. Mortality at 5% dose reached 98%.

During the second test, pieces of pre-treated wax combs were introduced in cages contained 125 honeybees and the same B403 doses were applied. All bees died within a period of 21-27 days post application and their longevity presented no differences with untreated bees.

During field test, different B403 was tested for the repellency of wax moth and the protection of stored honeybee wax combs, stored under typical beekeeping conditions. A total of 160 honeybee wax combs were used, divided in 4 batches (3 experimental, 1 control). No combs were destroyed in batches of 10% and 20% while the protection of 5% reached 99.99%. All control combs were destroyed by WML. Furthermore, impact on honeybees was examined by placing treated combs of all three tested doses, inside colonies. The mortality of honeybees presented no difference between any dose of B403 batches and the control.

Finally, olfactometry tests applied in 2025, showed a strong repellency effect of all doses tested on 96 individual WML. All experiments, in laboratory and in field, showed a high efficacy of B403, against WML and proved the tolerance of the product by honeybees.