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PP-128 [Bee Health]

UNIVERSIDAD DE LA REPÚBLICA URUGUAY

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Evaluation of screen and sticky bottom boards for the control of Varroa destructor in Africanized and European honeybees

INTRODUCTION

Varroa mite is the most important biotic threat to honey bees worldwide.

Honey bees exhibit several behavioral resistance mechanisms against Varroa parasitism, with grooming being one of them. Detached mites that fall onto bottom boards may re-infest bees, reducing the effectiveness of grooming behavior.

METHODOLOGY

90 standardized hives without Varroa divided in six groups

15 Africanized colonies with conventional bottom boards

15 European colonies with conventional bottom boards

15 Africanized colonies with Screened bottom boards

15 European colonies with Screened bottom boards

15 Africanized colonies with Sticky bottom boards

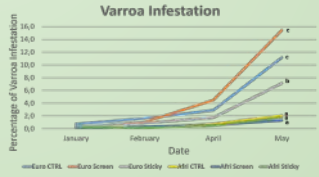
15 European colonies with Sticky bottom boards

Every 35 days – January to May – assessed:

- ✓ Adult population
- ✓ Brood
- ✓ Varroa infestation levels

RESULTS

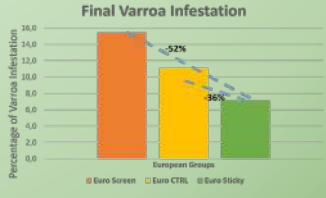
At the beginning of the experiment (January, summer in the Southern Hemisphere), all colonies had an infestation rate below 1%.



At the end of the trial, the Varroa Infestation was significantly higher in the European groups compared with Africanized Groups

By May, the infestation levels in Africanized bee colonies remained around 2% across all groups, where as European bee colonies exhibited between 4 (sticky bottom boards) and 8 times (conventional and screened bottom boards) higher than their Africanized counterparts.

In European bees, colonies with sticky bottom boards had 36% and 52% lower infestation rates than those with conventional and screened bottom boards



CONCLUSION

Our results confirmed that European honey bees are significantly more susceptible to Varroa than Africanized bees.

Sticky bottom boards proved to be a valuable tool in reducing Varroa population growth and could be effectively integrated into pest management strategies.

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Evaluation of screen and sticky bottom boards for the control of Varroa destructor in Africanized and European honeybees

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The ectoparasitic mite Varroa destructor is the main biotic threat to honey bees worldwide. Honey bees exhibit various behavioral resistance mechanisms to manage Varroa parasitism, with grooming being one of the most important. It consists on the dislodgement of the mites from parasitized bees and can be autogrooming (by dislodging the mites from themselves) or allogrroming (when receiving help from other bee to dislodge the mites). However, detached Varroa mites that fall to the bottom boards (except the damaged ones) might parasite bees again, limiting the benefits of the grooming behavior. This issue could be mitigated by using bottom boards designed to prevent mites from re-entering the colony. In this study, we evaluated the effectiveness of screened and sticky bottom boards in limiting Varroa population growth in colonies of European and Africanized honey bees, which have previously been shown to differ in grooming behavior. Colonies were divided into six groups: European bees with conventional bottom boards, European bees with screened bottom boards, European bees with sticky bottom boards, Africanized bees with conventional bottom boards, Africanized bees with screened bottom boards, and Africanized bees with sticky bottom boards. Adult population, brood, and Varroa infestation levels were assessed every 30 days from January to May. At the beginning of the experiment (January, summer in the Southern Hemisphere), all colonies had an infestation rate below 1%. By May, the infestation levels in Africanized bee colonies remained around 2% across all groups, whereas European bee colonies exhibited significantly higher infestation rates, between 4 (sticky bottom boards) and 8 times (conventional and screened bottom boards) higher than their Africanized counterparts. In European bees, colonies with sticky bottom boards had 36% and 52% lower infestation rates than those with conventional and screened bottom boards, respectively. Our results confirm that European honey bees are significantly more susceptible to Varroa than Africanized bees. Furthermore, sticky bottom boards proved to be a valuable tool in reducing Varroa population growth and could be effectively integrated into pest management strategies.