

Background/Purpose

Over the last decade, research has focused on finding approaches to varroa control based on apicultural measures and the use of active ingredients with a low risk of contamination of hive products. In recent years, two main approaches have often been mentioned: Brood interruption and the use of oxalic acid when brood is present in the colonies.

Description of the problem

Queen caging, one of the methods of brood interruption, is very labour intensive for the beekeeper, and beekeepers also fear that colonies with disrupted brood will have less chance of a successful overwintering. On the other hand, the use of oxalic acid during brood rearing, which could be a method for large-scale beekeepers, has been shown to have negative effects on open brood, the queen and the lifespan of the bees.

Methodology

We caged the queens for 24 days in a smaller (first group) and a larger (second group) cage and treated them with a single application of oxalic acid. In the third group of colonies, we applied the active ingredient oxalic acid to the strips present in the colonies for 28 days. We determined the effects of the different methods by observing the effectiveness of the treatment and the effects on colony development and honey yield. The most common bee viruses and the number of nosema spores were measured four times in each colony from fall 2023 to spring 2025.

Results and conclusions

Brood interruption has no effect on colony strength in fall and overwintering success in our study. The use of oxalic acid strips for 28 days led to a higher varroa load in late summer, comparable to groups in which the queens were confined.

Practical implications for beekeepers

According to our results, the size of the queen cage has no influence on the success of the queen cage protocol; climate and pasture conditions seem to have a very important influence on the results. The mode of action of oxalic acid is still unknown, its application according to our protocol did not lead to satisfactory results and should still be treated with caution.