

Abstract

The persisting western honeybee decrease caused by *Varroosis* and the elimination of the standard approval of formic acid with 85% concentration put extended action recommendations for formic acid of 60% concentration once again in the focus. Several studies have found that the application of acid with lower concentration also leads to a reliable mite reduction if the average daily temperature is over 15°C.

This trail examines if the correct handling, environmental factors, the state of health of a single bee colony and its size might play a key role in this context besides the daily temperature. As a consequence we hypothesize that certain combinations of these factors promote the survival of honeybee colonies.

After the honey harvest during a field experiment in August 2015 30 colonies of the western honeybee *Apis mellifera carnica* were selected from the training and research apiary at the University of Bonn and treated with 60% formic acid used in three popular dispenser-types. Within the application period of 24 days the amount of dead mites and bees was counted on a daily basis. Additionally three estimations of all 30 populations were carried out between August 2015 and March 2016. For more detailed information about the degree of mite infestation a counting of mites in extracted bee- and brood-samples of every colony was added.

In conclusion the effect of three popular treatment methods, the impact of colony size, the remaining feed amounts and the hive location within a colony group were checked against a successful hibernation.

With regard to colony size and the remaining degree of mite infestation in March 2016 it became clear that certain combinations of the influencing factors apparently support a successful hibernation into the new season. This thesis points out which combinations thereby are the most successful.