A REVIEW OF SOME ISSUES IN THE ETHOLOGICAL STUDIES OF BEEKEEPING

Summary

The article discusses several important issues in the ethological studies of beekeeping including defense behaviour, hygienic behaviour, foraging for nectar and pollen, some aspects of communication, spatial orientation and sensory biology, and reproductive behaviour. It describes methods of testing defense behaviour using the ball test. This test has been applied to examine the aggression in African bees brought to Brazil. The import of African bees was aimed at increasing the honey yield of local honey bees. This, however, resulted in enhanced aggressiveness of the native bees, and gave rise to the emergence of Africanised bees.

The uncapping and removing of infected/dead brood from the honeycomb is the way bees try to eliminate infection. Selection for the uncapping and removing behaviour, will enhance the self-healing abilities of bee families. The quantities of chemicals (drugs) introduced into beehives in the future may then be reduced. The quality of bee products will also improve. When studying bee hygienic behaviour, it is necessary to check the rate of the removal of dead brood from combs. There is an alternative method that is useful for testing hygienic behaviour: instead of killing the brood and then determining the brood removal rate, bees can be supplied with cardboard. The cardboard removal rate in bee colonies may then be estimated.

Strategies of nectar and pollen hoarding used by bees,–have been presented. Foragers flying out to collect nectar are guided by long-term profit maximization. Therefore, irrespective of the presence of demand/stimulus, bees collect nectar which they will ultimately need. Foragers flying out to collect pollen have a short-term goal, i.e., they collect pollen when there is a need/stimulus. Collection of pollen is stimulated by a large number of open brood cells, and lack of bee bread (preserved pollen); it is inhibited by lack of space in the honeycombs, lack of brood, and sufficient bee bread stocks. Additionally, pollen foragers may employ various strategies related to the quality of pollen and a preference for particular plants.

In the article, Karl von Frisch's classic study of the bee dance is also mentioned. Dancing bees are able to communicate the direction of nectar sources to their nestmates. The bees in the hive are able to choose a more abundant/better source of nectar flow on the basis of the intensity of the dance performed by foragers. Bees remember the location of the hive in relation to landmarks on the ground, such as trees or shrubs. Bee orientation is facilitated by the ability to distinguish the colours of the hive entrances.

The article also discusses haplo-diploid sex determination in bees. After the mating flight, the queen stores the sperm in the spermatheca. The queen is then able to lay fertilized and unfertilized eggs throughout her life. The number of eggs laid daily may be twice as high as the queen's body weight. It depends on the care and nutrition of royal jelly provided by worker bees during oviposition.