https://doi.org/10.7250/CONECT.2023.059

OPTIMIZING HONEY BEE DRONE REARING: AN EXAMINATION OF COLONY MANAGEMENT TECHNIQUES AND THEIR IMPACT ON SPERM QUALITY

Agnese SMILGA-SPALVINA[1*], Kriss SPALVINS[2], Ivars VEIDENBERGS[3]

[1] *LLC SMILGA SPALVINA, Sigulda district, Incukalna parish, Incukalns, Plānupes iela 11A, LV2141, Latvia*

[1–3] *Institute of Energy Systems and Environment, Riga Technical University, Āzenes iela 12/1, Riga, LV-1048, Latvia*

[*] ***Corresponding author.*** *E-mail address: smilgaspalvina@gmail.com*

Abstract – The vitality, ejaculation success, sperm quantity, sperm viability and motility directly depends on the breeding conditions of the honey bee drones because since the egg stage, both the larva and the adult drones are fully taken care of by the worker bees. Worker bees choose to care for and feed drone brood only during the season when mating of virgin queen bees takes place in nature. If there is a lack of food resources in the bee colony, the worker bees can decide not to feed both the drone larvae and adult drones and throw them out of the nest. In this field study, the various methods of preparation of drone rearing colonies are reviewed and tested: in the presence of a queen and without one, with an additional feed base (sugar syrup, honey, pollen), various sizes of colonies, etc. Drones were reared in these colonies, then their sperm were collected and sperm motility, viability, cell concentration and sperm quantity per drone were determined. In addition to that, authors also evaluated the parameters characterizing the quality of sperm in different races of honey bee drones.

Keywords – Beekeeping; colony management; drone rearing; honey bee drone semen; sperm cell concentration; sperm motility; sperm viability