

J. Woyke : Instr. insemination of Cape worker : 17 June

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INSTRUMENTAL INSEMINATION OF *APIS M. CAPENSIS* WORKER BEE

Contrary to other subspecies, workers of *Apis m. capensis* have a spermatheca. However, laying workers are not inseminated. Despite of this, they lay unfertilized eggs from which females (workers or queens) develop.

We undertook investigation to see whether Cape worker bee can be instrumentally inseminated, and what will be the result.

Larger Cape worker bees were reared by the technique described in my previous message. Black Cape worker was instrumentally inseminated with semen from yellow Italian drones. Yellow body color is dominant over black. The worker was marked and introduced into small *A. m. mellifera* bee colony. It started to lay eggs few days later. After the brood was sealed, it was put in an isolator and placed in an incubator at 34.5 oC. The color of emerging workers was examined.

Results obtained showed, that instrumentally inseminated Cape laying worker produced both types of worker bees: Black Cape workers and yellow banded hybrid workers.

The results shows that Cape worker bee can be instrumentally inseminated. The semen entered into the spermatheca and from there it fertilized eggs laid by the worker bee.

Some worker bees were black, which means they originated from not fertilized eggs. However, it is not known, whether some eggs were not inseminated; no spermatozoa entered them. It could also happened that spermatozoa penetrated the eggs, but did not unite with the egg nucleus. Perhaps two egg pronuclei united and formed a diploid nucleus before the head of the spermatozoon reached them.

Yellow banded worker bees originated from fertilized eggs. However, it is not known whether they were diploid, originating from the fusion of a haploid egg pronucleus and the spermatozoon pronucleus. The hybrid yellow workers could be also triploid, resulting from a fusion of a diploid egg nucleus and the spermatozoon haploid pronucleus. This would exclude the second option, presented above, concerning black offspring.

The above result shows that Cape worker bee can be instrumentally inseminated and it would produce biparental offspring.