

J. Woyke : Larger workers : 09 June

From: woyke@alpha.sggw.waw.pl

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LARGER HONEYBEE WORKERS

Appearance of larger workers, called also false queens is characteristic for the period when *A.m. capensis* laying workers take over the heading of a colony.

We investigated this phenomenon.

A. m. capensis workers were reared in 3 queenright colonies and in 3 colonies headed by laying workers. Combs with sealed brood were removed from the colonies and were put in isolators in an incubator at 34.5 oC. Emerged workers were collected each day. They were killed in boiling water, and were preserved in 75% alcohol. Morphological measurements of different body parts presented below were conducted by standard methods on 25 workers. Statistical calculations were conducted. Results of some measurements are presented in tab. 1.

Table 1. Body size (in mm) of *A. m. capensis* workers reared in different colony conditions (L = length).

Body part	Queenright	With laying workers
Mandibles L.	1.30	1.36
Tibia L.	4.22	4.40
1st wing L.	9.47	9.49
No bristles on wing	96	102
4th tergite L.	8.98	9.12
4th sternite L.	5.32	5.81
Weight mg	104.3	118.2

Results obtained showed, that Cape workers reared in colonies with laying workers were significantly larger and heavier, than those reared in queenright colonies.

Nobody noticed this, but similar phenomenon occurs also in European honeybees. Measurements were made on 30 workers reared in queenright and queenless colonies and in colonies headed by laying workers. Different subspecies of honeybees were investigated. Results concerning *A. m. ligustica* are presented in tab. 2.

Results obtained showed, that body parts of Italian workers reared in queenless colonies or headed by laying workers were significantly larger, than those of workers reared in queenright colonies.

One reason of such results may be the amount of food supplied for larvae. Special investigations were conducted by us. Two colonies were divided into equal parts. However, one part was queenright and the other was queenless. Larval food was collected from 10 cells with larvae of the same age. The food was soaked into small glass tubes. At first empty and then filled tubes were weighted. Together larval food from 4320 brood cells was collected.

Table 2. Body size (in mm) of *A. m. ligustica* workers reared in different colony conditions (L = length).

Body part	Queenright	Queenless	With laying workers
Mandibles L.	1.34	1.43	1.47
Tibia L.	4.23	4.42	4.50
1st wing L.	9.25	9.57	9.44
4th tergite L.	8.54	8.86	8.81
4th sternite L.	6.13	6.26	6.40

The average amount of food found in 10 cells with larvae 1, 2, 3 and 4 days old was 13, 33, 109, and 144 mg in nests with queen and 16, 42, 122 and 162 mg in the queenless ones, respectively. Thus larvae of ages presented above, received in queenless colonies 127, 127, 112, and 112 % of the amount of food supplied for larvae in queenright colonies. The increase of food in queenless colonies was relatively higher in cells with younger than older larvae.

Hence, larger amount of food supplied for larvae in queenless colonies may be the reason of appearing larger worker bees.

The results will be presented at the 24th International Apicultural Congress in Lousanne, Switzerland, August 1995.