

J. Woyke : Survival of CLW brood : 19 June

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Subject: Survival of CLW brood

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LOW SURVIVAL OF BROOD ORIGINATING FROM CAPE LAYING WORKERS

In my report of 18 June 1995, concerning dwindling of bee colonies headed by Cape laying workers (CLW), I presented data according to which survival rate of larvae originating from Cape laying workers was about 0.5 of that for larvae originating from Cape queen.

Mike Allsopp in his return message of 18 June 1995 commented on low survival of brood produced by CLW:

‘This might be so in long established CLW colonies, when brood mortality is extremely high - probably because brood care is so lacking. But in the beginning (especially in a *capensis*-infested *scutellata* colony) brood care is very good - and there might be a number of frames of brood - with healthy brood in almost every cell. Often it is very difficult to distinguish between queenlaid brood and early CLW brood. Brood mortality soon starts to increase, and in most cases many cells with open pupae are found. This might be because of decreased viability of the LW brood, but more probably because of a breakdown in hygienic behaviour in the colony. ... But in a young CLW colony egg-larvae-adult is the rule not the exception. So the viability cannot be too much lower.’

Thus, he argues, that the low viability of CLW brood is the result of no brood care.

However, I presented data according to which survival of larvae originating from CLW was lower, than that of larvae originating from queen, independently of the rearing conditions.

Below another investigation is presented.

Small piece of brood comb with eggs from *A. m. capensis* queen was inserted into *A. m. mellifera* brood comb. Similar piece of brood comb with eggs oviposited by CLW was inserted into another *A. m. mellifera* brood comb. Both combs were placed side by side into the central part of *A. mellifera* colony. The colony was queenless, with sealed queen cells. Thus brood originating from

Cape queen and CLW was in identical conditions. Survival of brood was examined by method presented in the previous report.

Results are presented in tab. 1.

Table 1. Survival of larvae originating from eggs deposited by *A. m. capensis* queen and laying workers

Origin of eggs	No eggs	% 1 day	larval 2 days	survival 3 days	days 4 days	after 5 days	hatching 6 days
Queen	337	87.2	79.5	76.3	76.0	74.8	70.3
L worker	437	59.7	49.2	43.7	40.0	39.8	39.6

Results obtained showed that the first day after hatching, survival of larvae from queen and CLW was 87.2% and 59.4. the 3rd day 76.3% and 43.7% and the 6th day 70.3% and 39.6% respectively. The greatest loss occurred during the 1st day, similarly like it was presented previously. The loss from the 1st till the 6th day was 16.9% and 19.6% for larvae originating from queen and CLW respectively. In the previously presented example it was 13% and 16% respectively.

This investigation prove the previous one. In the same rearing conditions, the survival rate of brood originating from CLW is about 0.5 of that originating from Cape queen. Also in the very beginning of CLW invasion of *A. m. scutellata*, survival of CLW brood is about half of that of brood originating from Cape queen.

Survival rate of CLW brood in long established CLW colonies may be much lower than that of brood in colonies with Cape queen.

The compact appearance of sealed healthy looking brood is a weak indicator of high survival rate of brood. When some larvae disappear, the queen as well as the laying workers lay new eggs into empty cells. After the brood is sealed it looks compact, but larvae, prepupae and pupae of different age are present there. Scattered appearance is visible when first workers start to emerge, or when the brood comb is separated from the queen or laying workers.