



Effect of grafted larvae and supplemental feeding on morphometrics and oviposition in the honeybee queen *Apis mellifera scutellata*

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INTRODUCTION

Beekeeping contributes to food security globally. In E. Africa, honeybees provides critical pollination services, nutrition, and income for smallholder farmers and rural families (Raina 2004). A queen honeybee is fundamental to the colony's survival and function, and is the repository of a colony's heritable genetic traits (Burns, 2013).

These genetic traits influence many aspects of colony behaviour, such as honey production, hygienic behaviour, defensiveness, parasite tolerance, and disease resistance (Muli, et al., 2014). To improve the genetic traits queen breeding is an essential requirement in any colony development programme (Cobey, 2007). To raise productive colonies, one requires a healthy queen. This project is, therefore, conducting studies to determine the right larval age for grafting, to produce healthy queens through artificial insemination.

OBJECTIVES

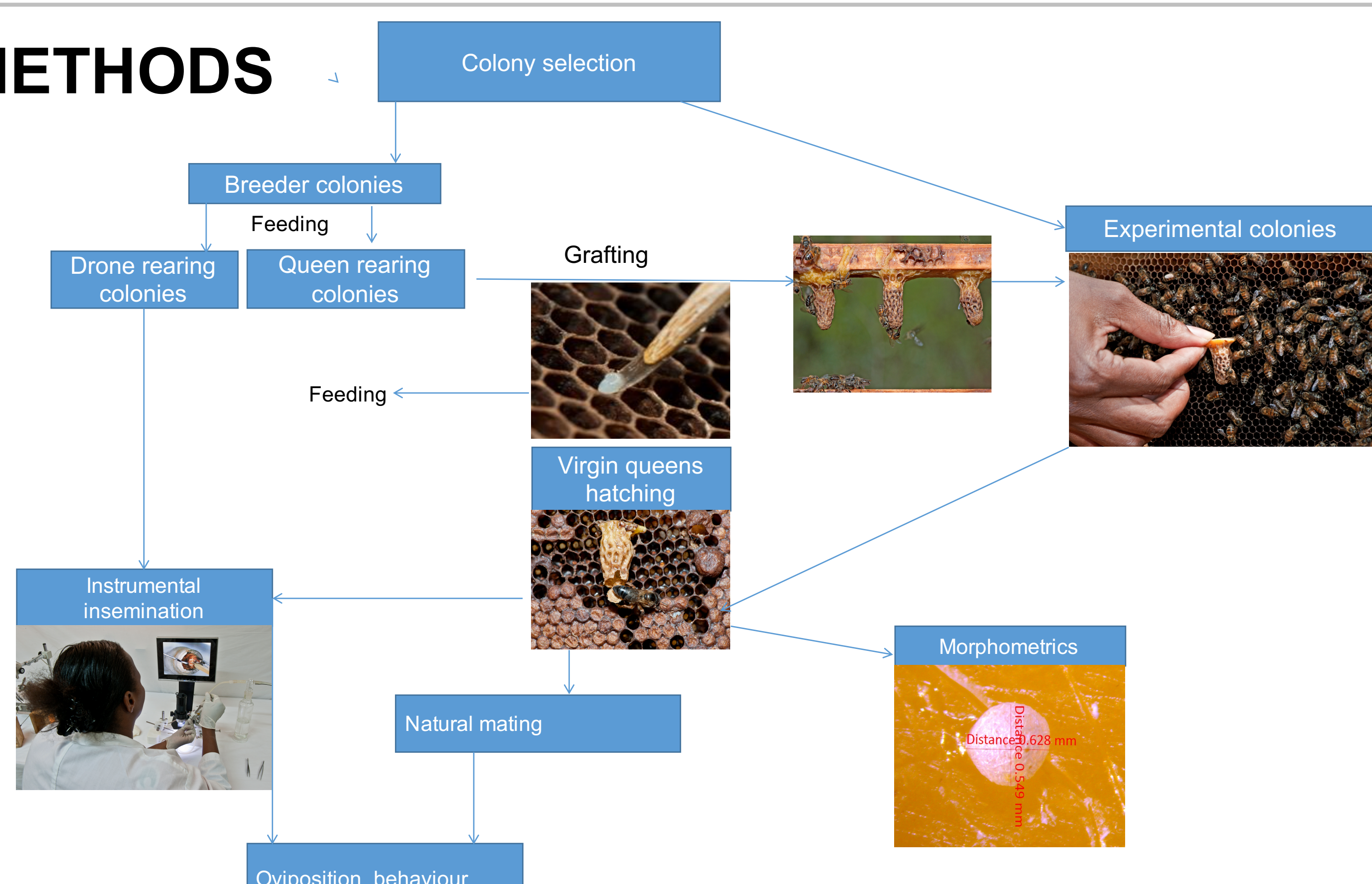
General objective

To determine the effect of larval age and supplemental feeding on morphometrics and oviposition behaviour of naturally mated and instrumentally inseminated queens of *Apis mellifera scutellata* in Karura Forest, Kenya.

Specific objectives

- To determine the effects of larval age on the morphometrics of the honeybee queen *A. m. scutellata*.
- To determine the effects of supplemental feeding on morphometrics of the honeybee queen of *A. m. scutellata*.
- To evaluate the oviposition behaviour of naturally mated and instrumentally inseminated queens of *A. m. scutellata*.

METHODS



CONCLUSION

- Age of grafted larvae and supplemental feeding significantly affect the queen quality.
- The best age for grafting larvae in African honeybees is 24 hours, as 48- and 6-hour-old larvae are difficult to graft because 48 h larvae are too big and 6h larvae is too delicate.
- The present investigation demonstrates that the African honeybee species can be conserved through queen breeding.

IMPACT

- Improved queen quality which results to improved bee stock in a population.
- Effective pollination capability.
- Increased hive products.
- Increased income for small-holder farmers.
- Improved food security and alleviation of poverty.

RESULTS



Fig 1: Eggs laid by an inseminated queen

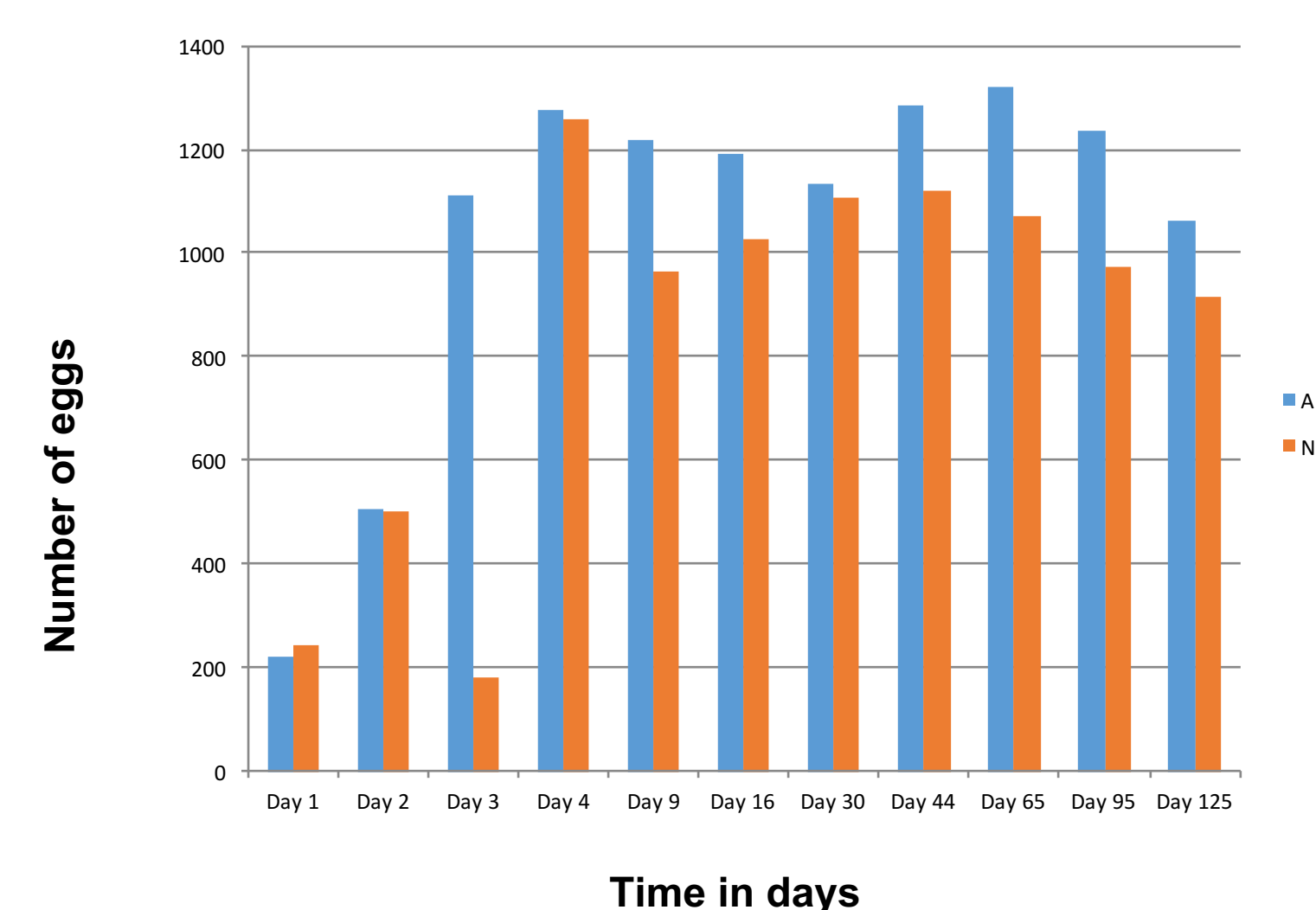


Fig 2: Oviposition behaviour in instrumentally inseminated and naturally mated queens

There is correlation between queen quality and age of the larvae used for grafting. Feeding done to the rearing colonies also contributes to the quality of the queen.

Onset of oviposition in naturally mated queens starts earlier than the instrumentally inseminated queens, and they laid slightly more eggs on day 1 compared to instrumentally inseminated queens. However, from day 2, the oviposition was high in instrumentally inseminated compared to naturally mated queens; but there is no significant difference.

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