

Comparative evaluation of sperm parameters of European and Africanized drones in Caatinga biome

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INTRODUCTION & AIM

Bees play an essential role in pollination, as well as producing honey and other bee products. With over 20,000 known species, bees differ morphologically and physiologically, which emphasizes the need for knowledge about the biology and reproductive parameters of different species to promote management adjustments. Therefore, the objective was to compare the semen quality of European (*Apis mellifera*) with that of Africanized honeybee drones (*Apis mellifera* L.) raised in the Caatinga biome.

METHOD

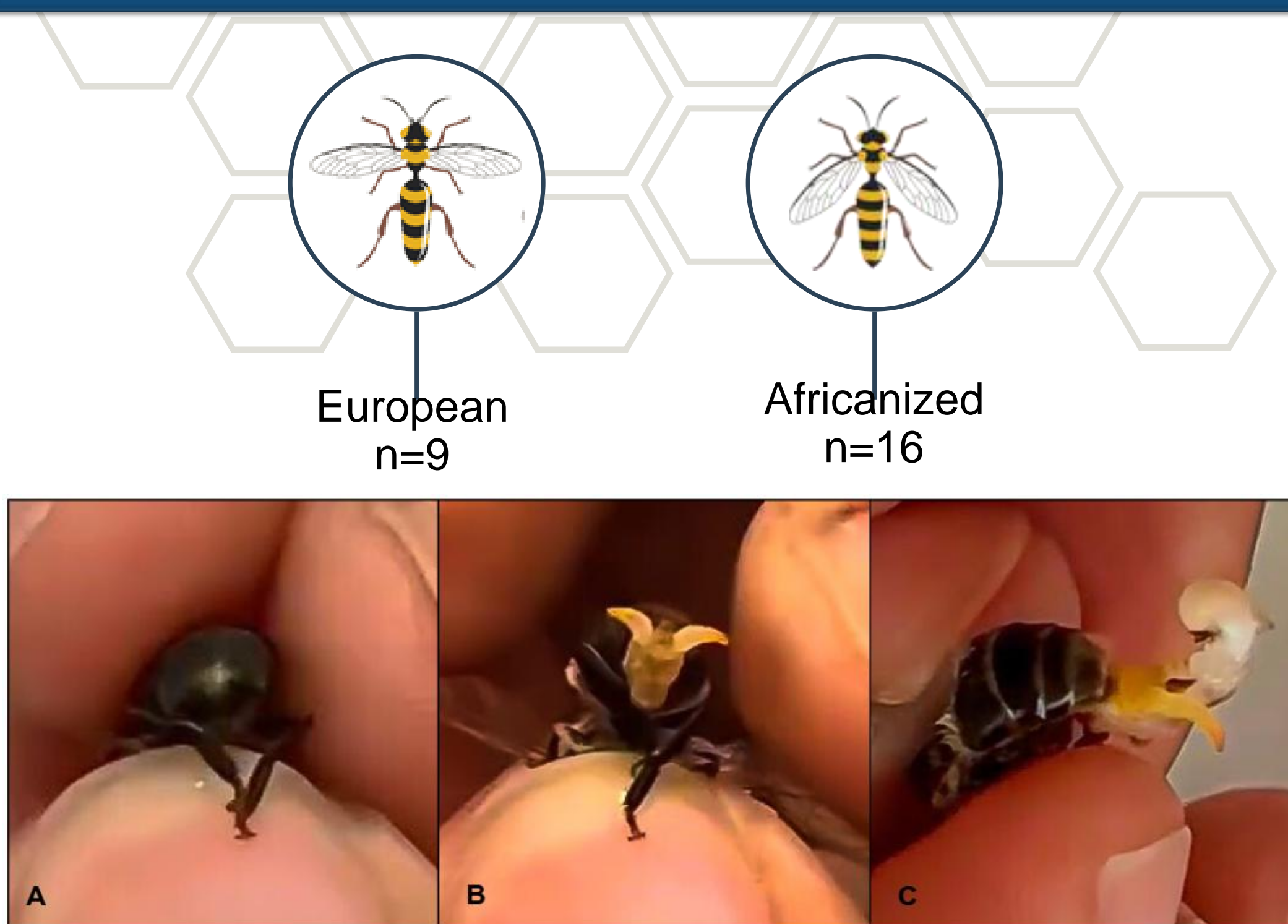


Figure 1. Collection of Africanized drone semen (*Apis mellifera* L.). (A) Gentle pressure on the abdomen; (B) Partial eversion of the endophallus; (C) Complete eversion of the endophallus with exposed semen.

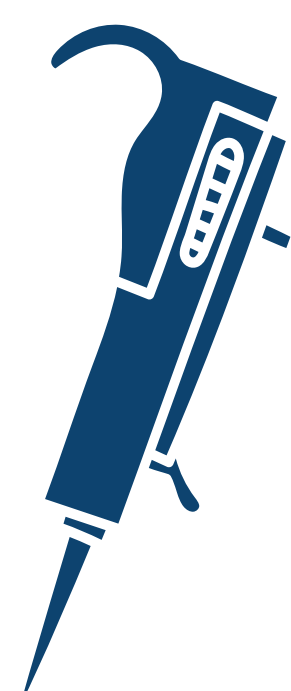
The semen was diluted 1:20



Motility (0-100%)

Membrane integrity
Hoechst 342 and propidium iodide

Membrane functionality
0 mOsm/L



Data were expressed as the mean \pm SE of the mean, were compared using the Mann-Whitney test (hypo-osmotic test) and Student's t-test (for other parameters). ($P < 0,05$).

RESULTS & DISCUSSION

Table 1. Mean (mean \pm SEM), for sperm motility, membrane integrity and membrane functionality of Africanized and Italian European honeybee drones.

Semen Variables	Africanized		Italian European	
	Mean \pm (SEM)	Range	Mean \pm (SEM)	Range
Motility (%)	90.00 \pm 0.000	90	90.00 \pm 0.000	90
Membrane integrity (%)	81.14 \pm 2.404	65-94	82.44 \pm 2.517	71-99
Membrane functionality (%)	91.60 \pm 1.518	80-97	93.44 \pm 1.773	84-98

There was no significant difference between species groups ($p < 0.05$).

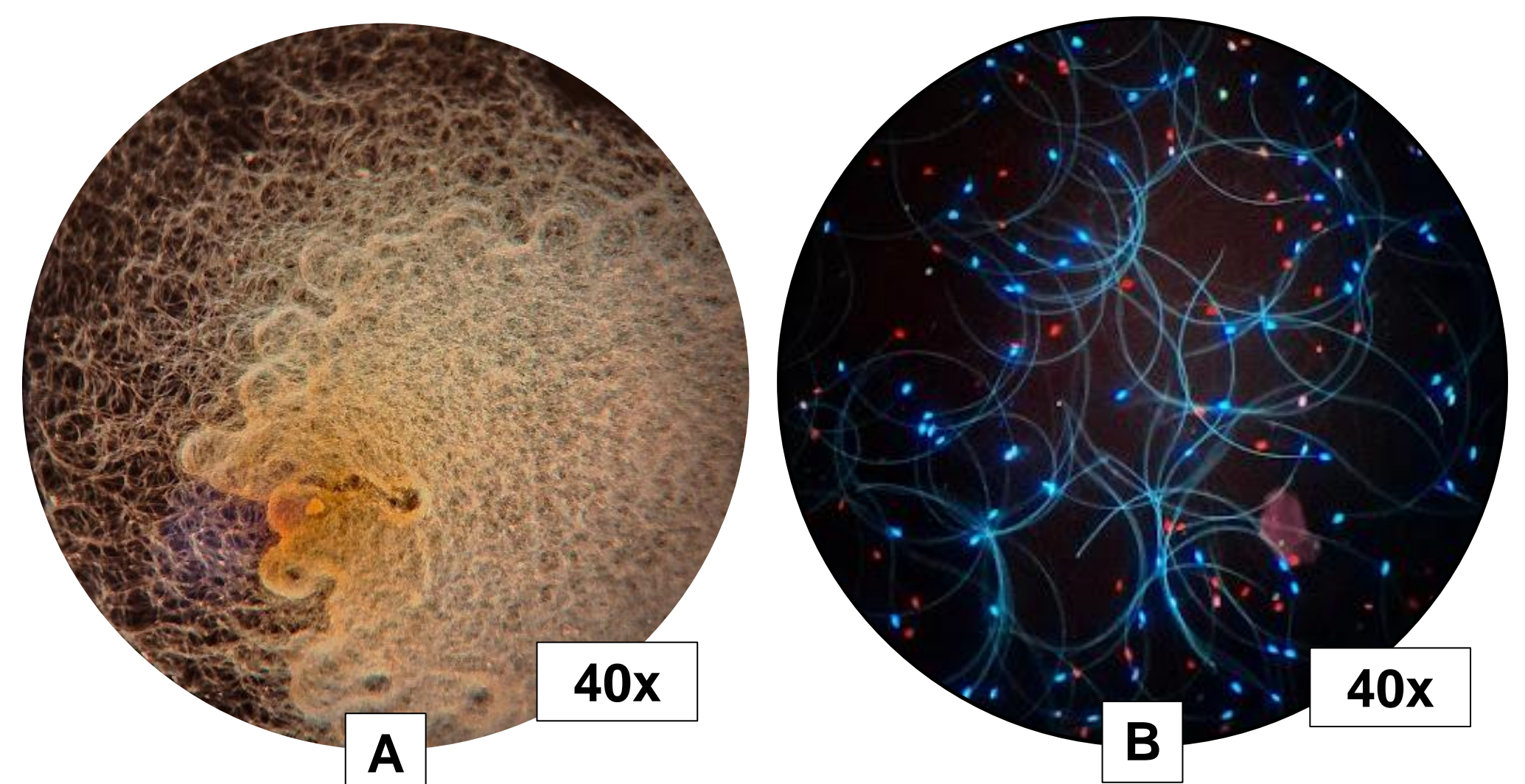


Figure 2. (A) Motility circular helical sperm movement. (B) Viability of drone spermatozoa with fluorescent probes, in blue (Hoechst 33342) and in red (propidium iodide)

CONCLUSION

In conclusion, it was demonstrated that there is a similarity between the sperm parameters of European and Africanized bees, which indicates the possibility of applying similar reproductive managements.