

X-ray computed tomography reveals that intraspecific competition promotes soldier differentiation in a one-piece nesting termite

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© 2017 The Netherlands Entomological Society Investment in soldier production in eusocial lineages involves a trade-off between maintenance costs and defense benefits. Termites are eusocial insects that live in colonies organized into three castes: primary reproductives, soldiers, and workers or pseudergates. *Neotermes chilensis* (Blanchard) (Isoptera: Kalotermitidae) is a one-piece nesting termite that nests and forages in a single piece of wood. Two scenarios may be of importance in a defense context of one-piece nesting termites: during swarms, when colonies may be invaded by winged termites (alates) in search of a place to found a new colony, and when colonies of conspecifics are present within the same substrate. It was hypothesized that the ratio of soldiers to non-soldiers would be higher at the onset of the swarming period and in substrates bearing more than one termite colony. A method based on X-ray computed tomography (CT) was developed to study gallery connectivity in coloni