

CONSUMPTION OF THE NEONICOTINOID THIAMETHOXAM DURING THE LARVAL STAGE REDUCES THE SURVIVAL OF THE STINGLESS BEE, *SCAPTOTRIGONA* AFF. *DEPILIS*

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In Brazil, the stingless bee species *Scaptotrigona* aff. *depilis* visits a wide range of floral resources from crops on which it is common the use of neonicotinoids. We investigated whether the survival rate of individuals of this species decreases (until the emergence) with increasing thiamethoxam doses, from the intake during the larval stage. The doses of thiamethoxam provided to the larvae were based on the recommended concentrations for use on citrus crops in Brazil (translated to ng of active ingredient/larva): 0.0 (CS, control with solvent); 0.007 (T1= one-tenth of the maximum recommended concentration “MRC”); 0.044 (T2= “MRC”); and 4.375 (T3= ten times more than the “MRC”). The control group was NC (negative control, no solvent). We verified individuals emerging at all doses, however, the survival curves obtained from Kaplan-Meier estimators showed that the T3 had a significant decrease in survival (43.7%), comparing to NC (80.3%), CS (74.6%) and T1 (68.5%). Only the T2 (45.0%) was similar to the T3, and different from everyone else. When comparing T1 and T2 to NC, we can also observe decrease in survival. It means that the larvae exposed to the dose at field-realistic level and to the doses ranging this level had their survival rates significantly impaired. It corroborates earlier findings in this context. Evidently, we need to consider that, as a systemic insecticide, thiamethoxam reaches the pollen and nectar at residual levels. Moreover, they are processed by nurse bees, and are ultimately destined for offspring. Thus, it is difficult to accurately estimate the amount of residue that one larva consumes. Nevertheless, our findings suggest a warning, since the larvae of *Scaptotrigona* aff. *depilis* had their survival affected by thiamethoxam when exposed to a dose one-tenth of the “MRC” for use on citrus, crop whose flowers are commonly visited by this bee species.

Keywords: bees, larval food, offspring, residual levels of neonicotinoid, systemic insecticide.

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