

Endogeic earthworm (*Balanteodrilus* sp.) exposed to agricultural soils of the Yucatan Peninsula

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INTRODUCTION



Especially in the tropics, intensive agriculture induces the excessive use of pesticides.

Terrestrial organisms are highly exposed (Hackenberger et al., 2018).

Endogeal earthworms are indicators of soil quality; however, there is still a lack of knowledge about its biochemical response to soil contaminants such as pesticides

METODOLOGY

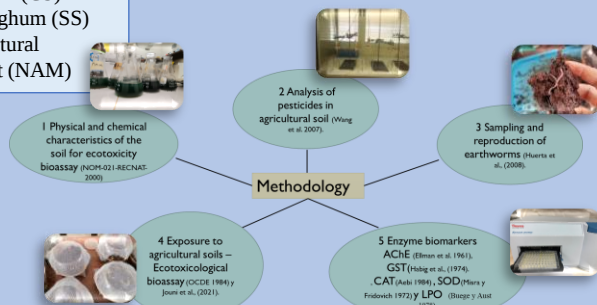
Treatments:

Corn-sorghum (CS)

Soybean-sorghum (SS)

Non-Agricultural

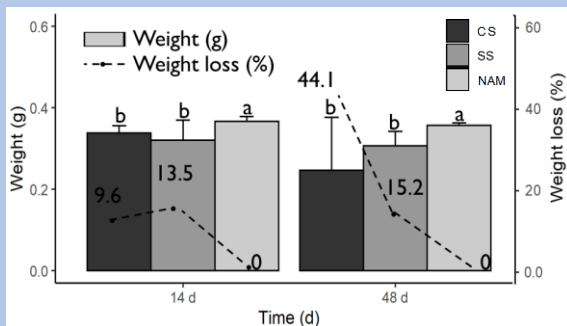
Management (NAM)



RESULTS

Mortality and changes in weight of *Balanteodrilus* sp.

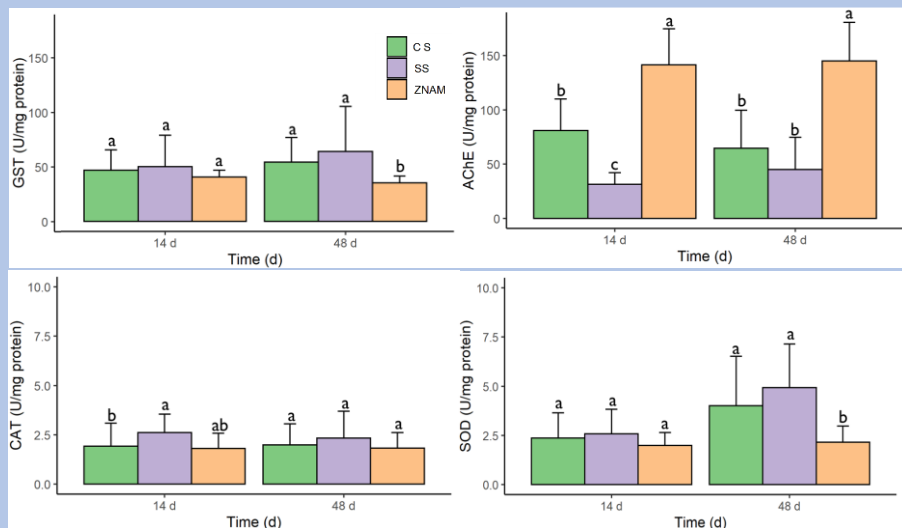
The weight decreased in all the treatments, except in the NAM.



No cocoons were found in any treatment, however, neonatal individuals were detected.

Parameter	MS	SS	NMA
Mortality % (14 d)	3.3	6.6	0
Mortality % (48 d)	23.3	3.3	0
Number of cocoons (48d)	0	0	0
Number of neonates (48d)	1±1.2	0.33±0.5	0

Enzymatic and biochemical response



The five biomarkers that were analyzed, four of them were sensitive in *Balanteodrilus* sp. at 14 (CAT and AChE) and 48 d of exposure (GST, AChE, SOD and CAT). Greater toxicity was detected in the SS culture with respect to MS.

CONCLUSIONS

- *Balanteodrilus* sp., due to its sensitivity, can be a bioindicator of contaminated soils in tropical regions.
- SS presented greater neurotoxic and oxidative stress effect than MS.
- Physiological changes were presented in both culture systems in which an effect was generated in the reproduction of the earthworms that accelerated their reproductive cycle.
- Studies with native species as indicators of soil contamination are important to measure the effect of contaminants such as pesticides on soil fauna.