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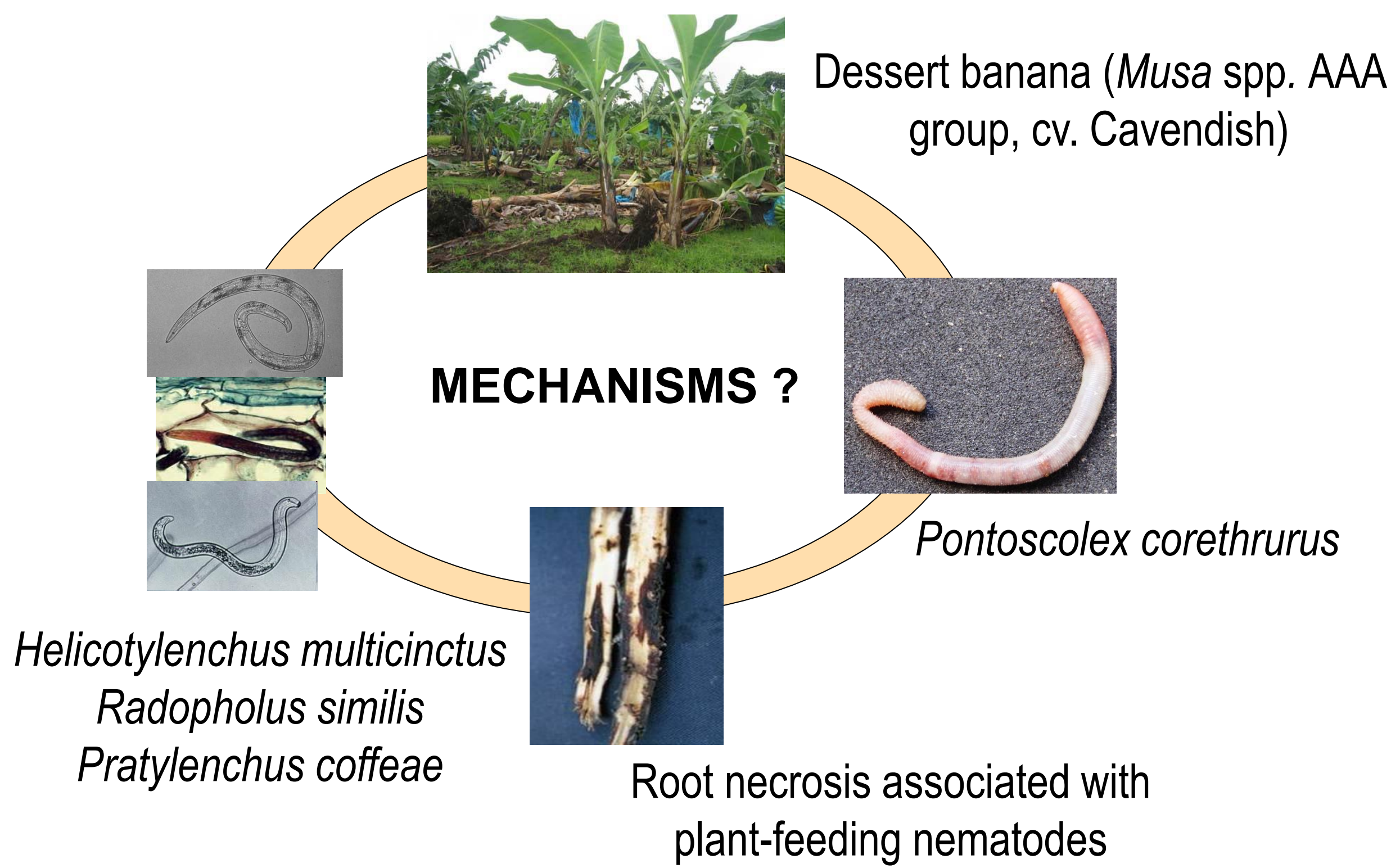
Can earthworm activities induce better phosphorus availability and resistance to banana plant-parasitic nematodes ?

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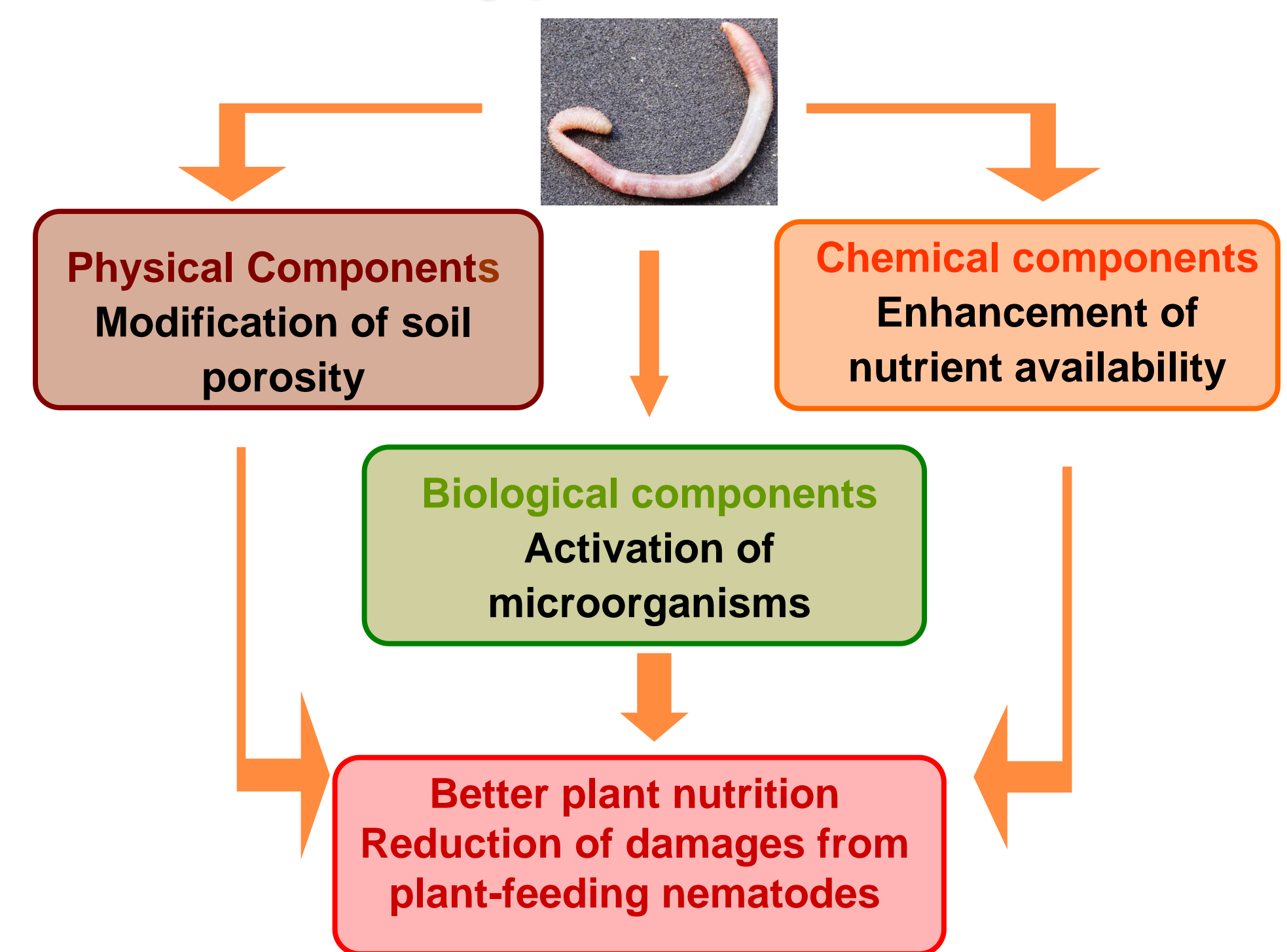
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Background and Objectives

How earthworm activity affect the pathogenicity of the three main plant-feeding nematodes associated with dessert banana in Guadeloupe (French West Indies) ?



Hypothesis



Materials and Methods

Greenhouse experiment at the INRA station in Guadeloupe FWI

Complete banana vegetative cycle: 337 days.

Macrocosmes: 20 kg pots filled up with andosol.

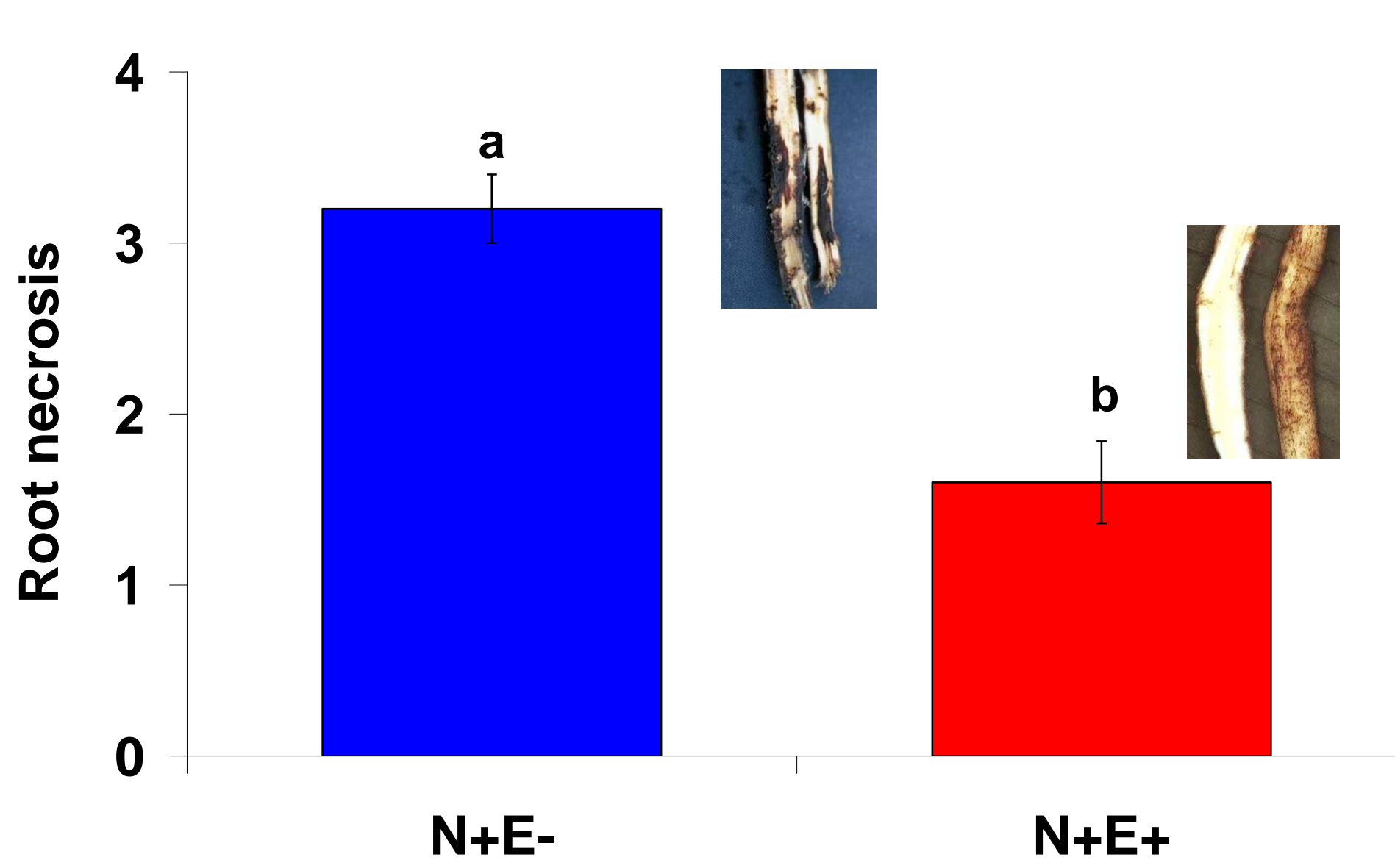


- Earthworms (E): *Pontoscolex corethrus*
- 3 nematodes (N): *Radopholus similis*, *Helicotylenchus multicinctus*, *Pratylenchus coffeae*.
- 4 treatments × 5 replicates (N-E- ; N-E+ ; N+E- ; N+E+)

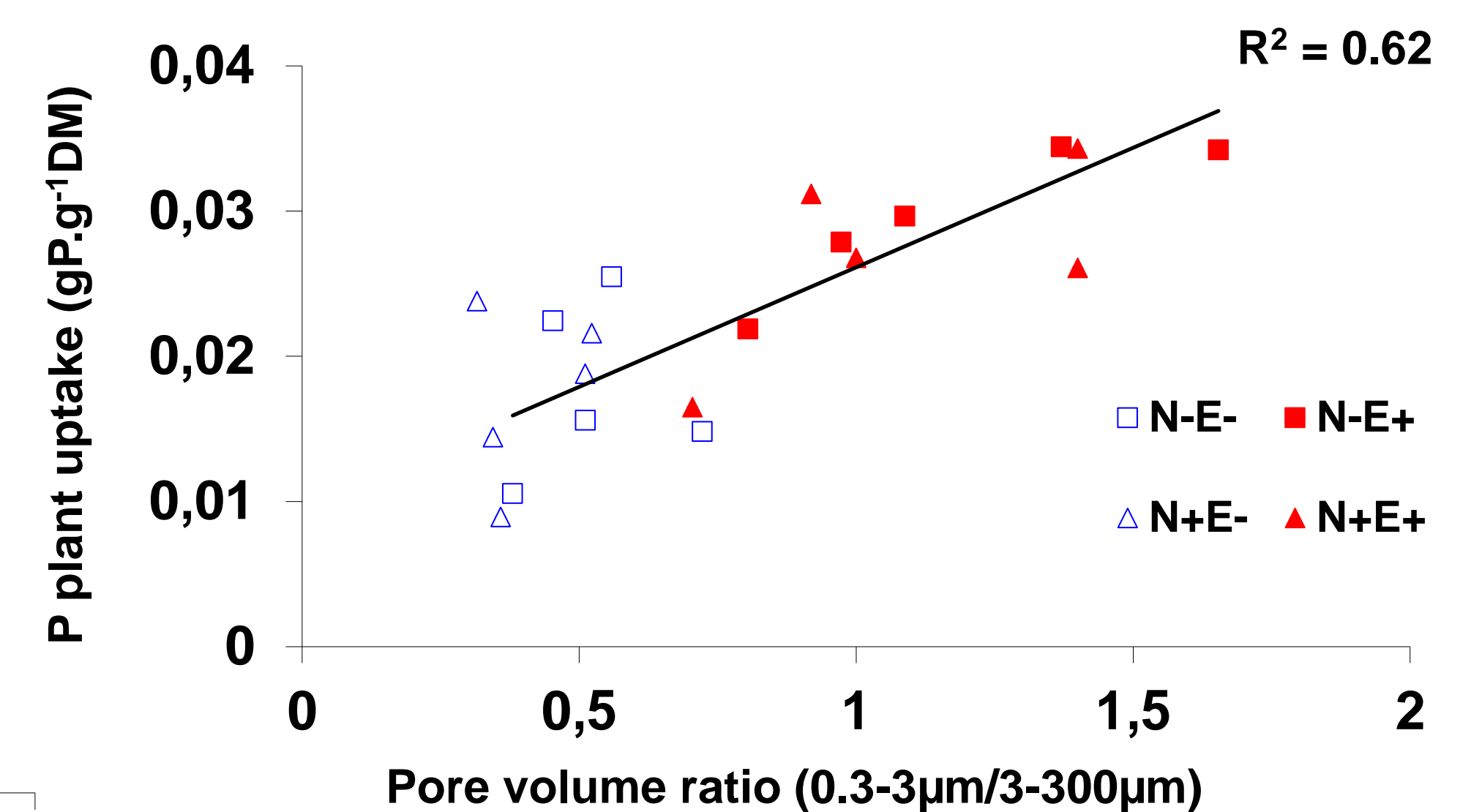
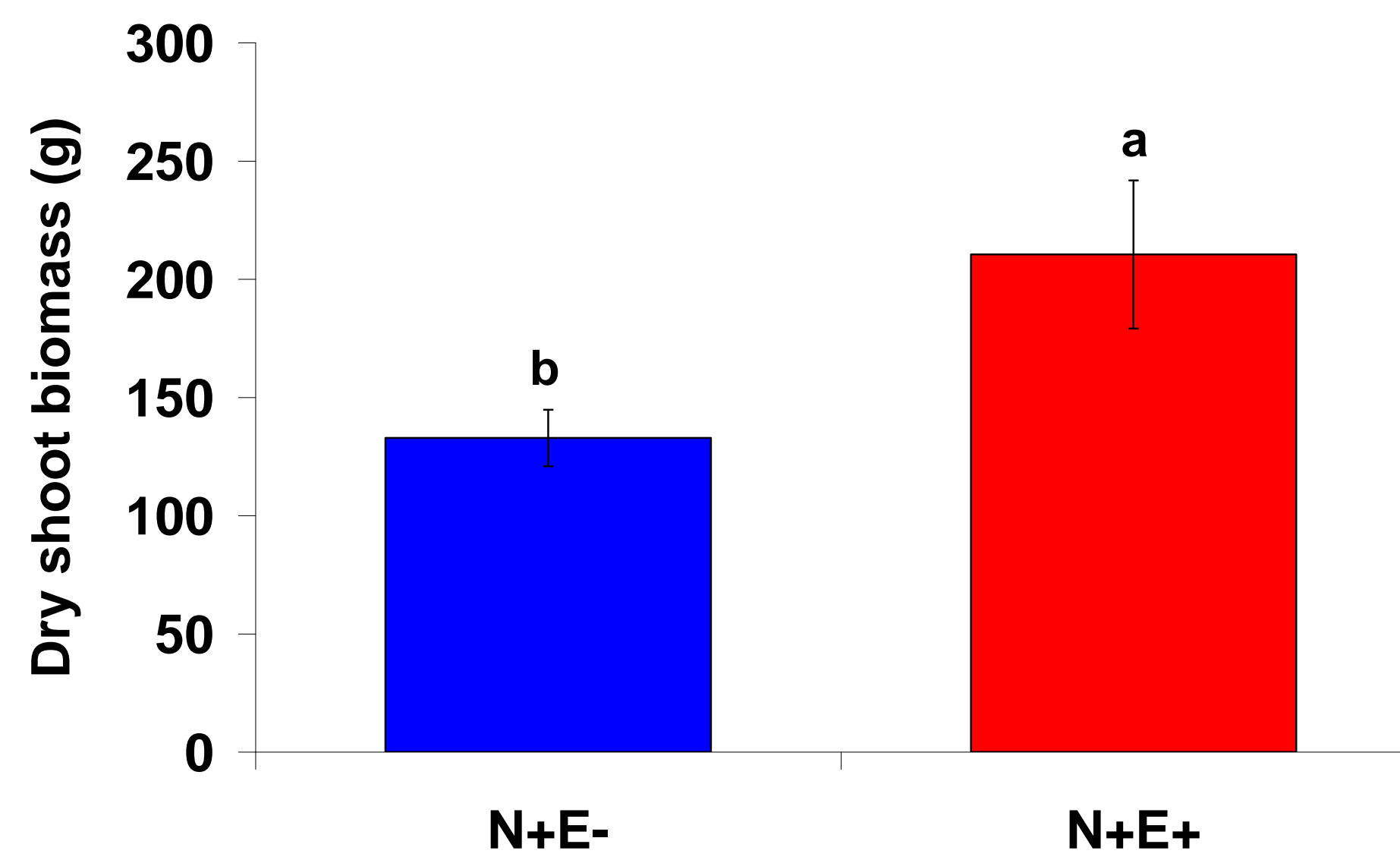
Measurements

- **Plants:** shoot and root biomass, root necrosis, leaf N and P content
- **Soil physical and chemical properties:** Shrinkage curves: casts and centimetric aggregates, P, N
- **Biological compartment:** number of earthworms and nematodes, microbial activity

Results



Earthworm activities induce the reduction of root necrosis and the increase of banana growth.



P. corethrus activities transform mesobiotic porosity to microbiotic, creating better conditions to microorganisms activity, stimulating soil mineralisation and P availability → better conditions for plant growth.

Conclusion

Phosphorus uptake induced by *P. corethrus* feeding activity resulted in a better plant nutrition and a better tolerance to plant-feeding nematodes. Besides, the reduction of the mesobiotic porosity by bioturbation could also have disturbed the nematodes activities during their soil phase and contributed to the reduction of their damage.

Caribbean Agroecology Networking Symposium

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