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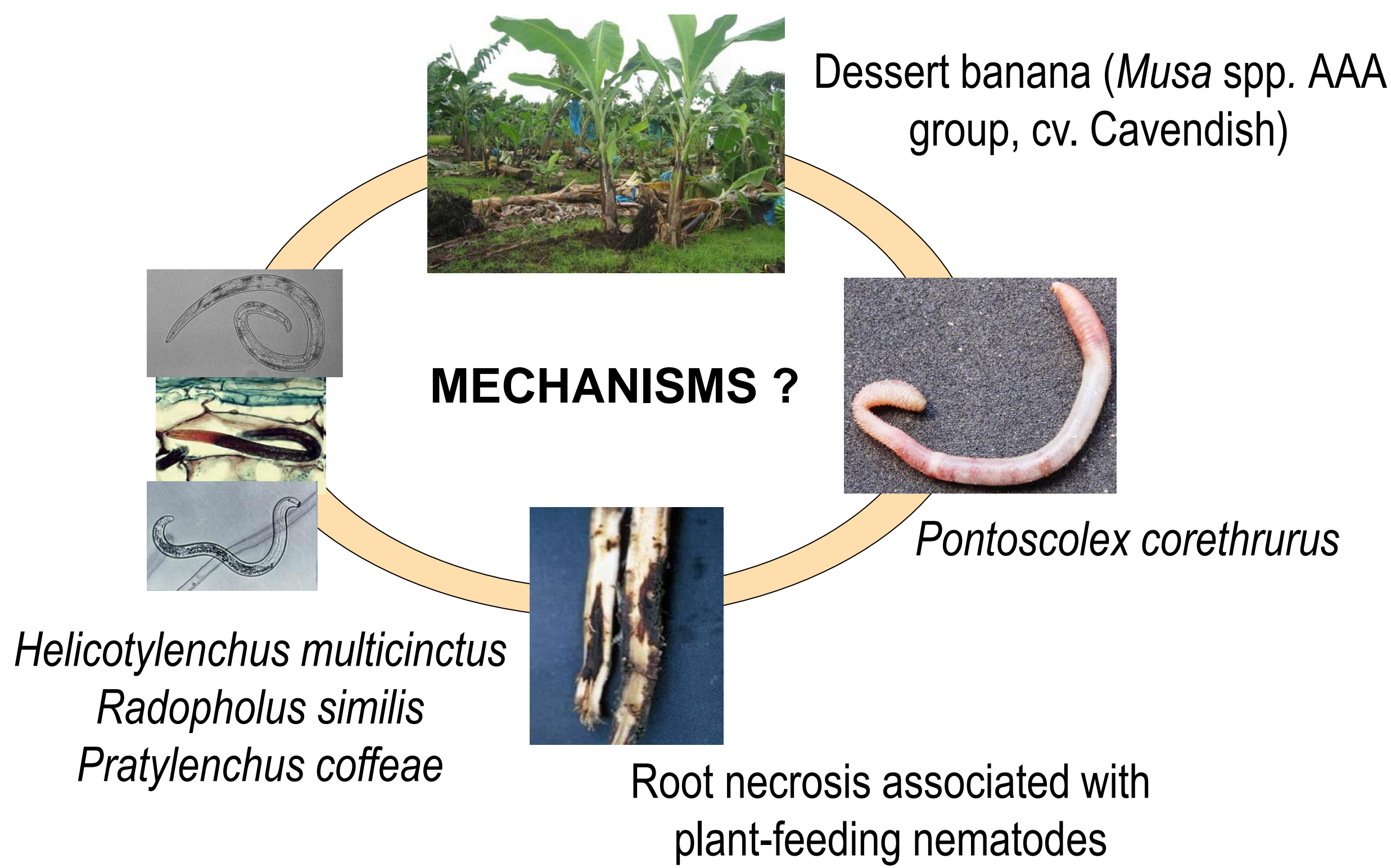
# Can earthworm activities induce better phosphorus availability and resistance to banana plant-parasitic nematodes ?

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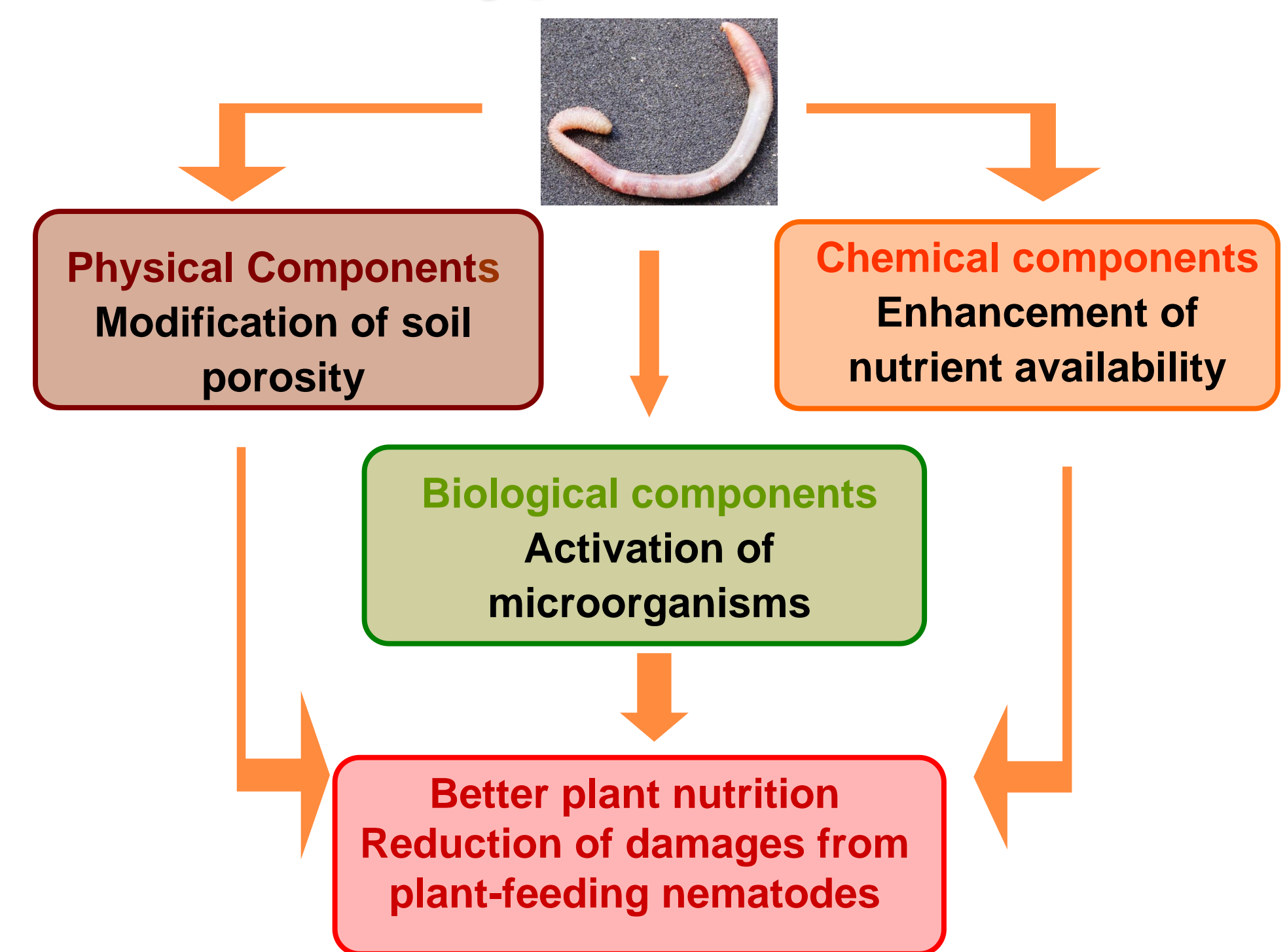
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## Background and Objectives

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.

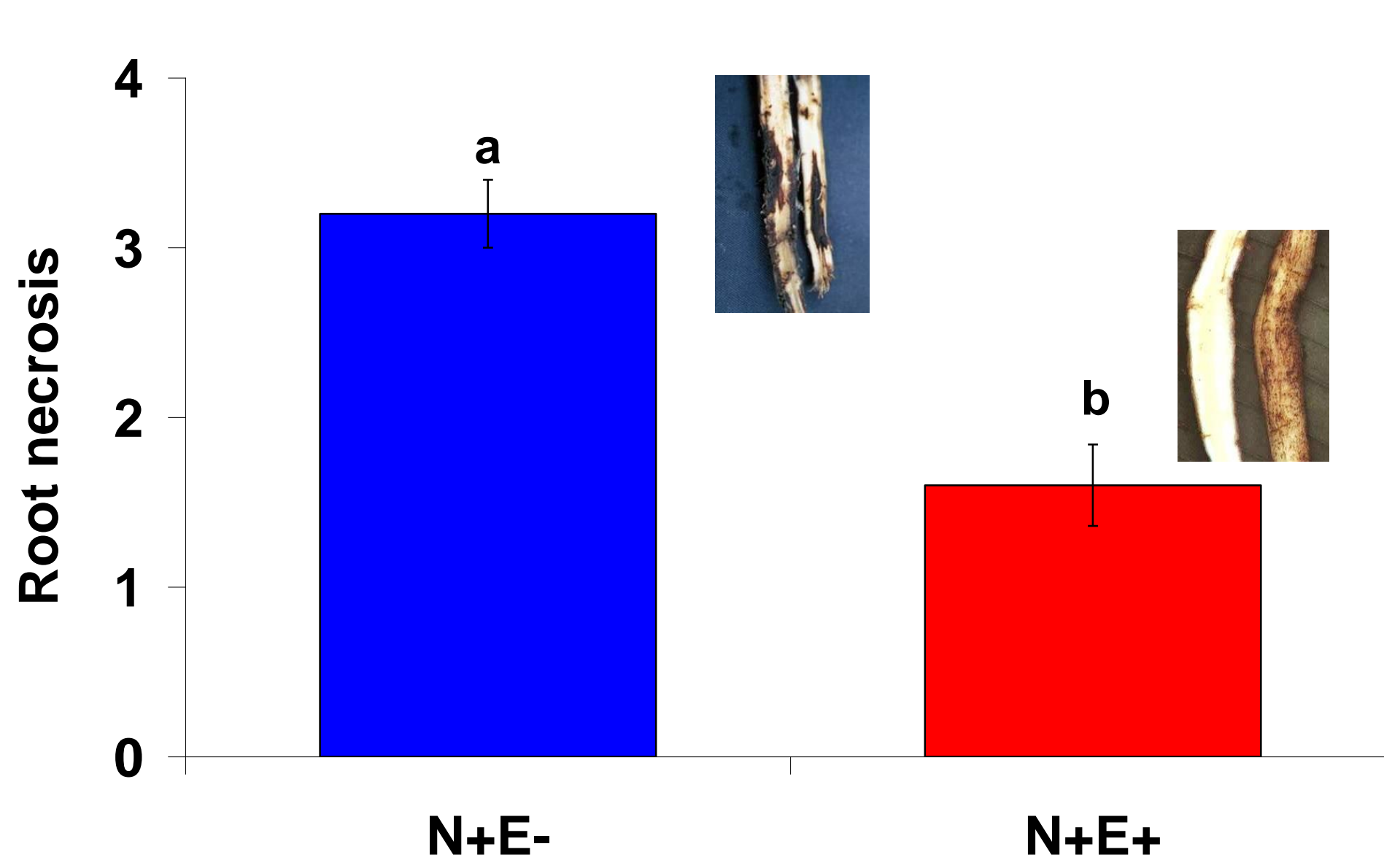


- Earthworms (E): *Pontoscolex corethrurus*
- 3 nematodes (N): *Radopholus similis*, *Helicotylenchus multicinctus*, *Pratylenchus coffeae*.
- 4 treatments × 5 replicates (N-E- ; N-E+ ; N+E- ; N+E+)

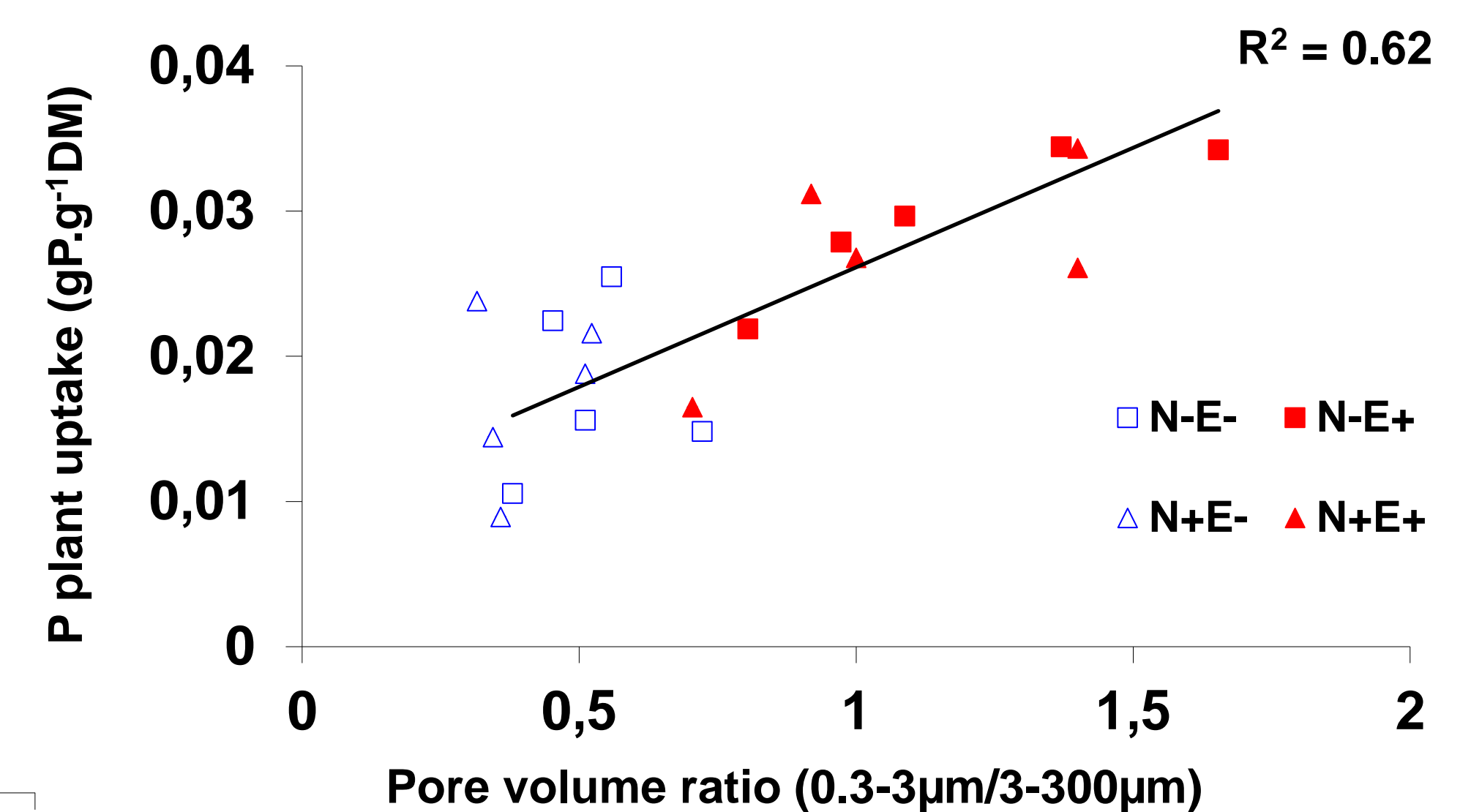
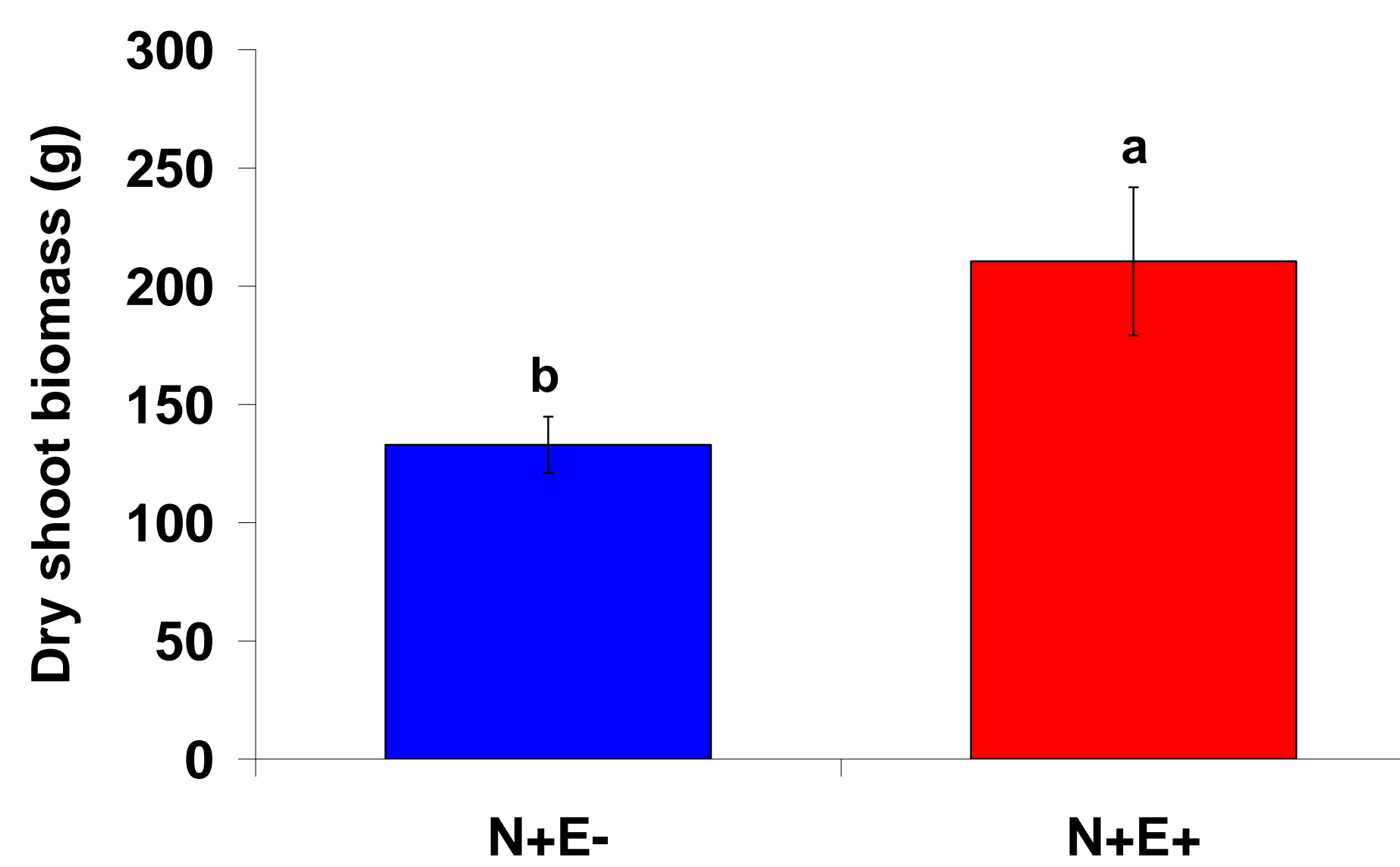
### Measurements

- **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. corethrurus* 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. corethrurus* 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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