



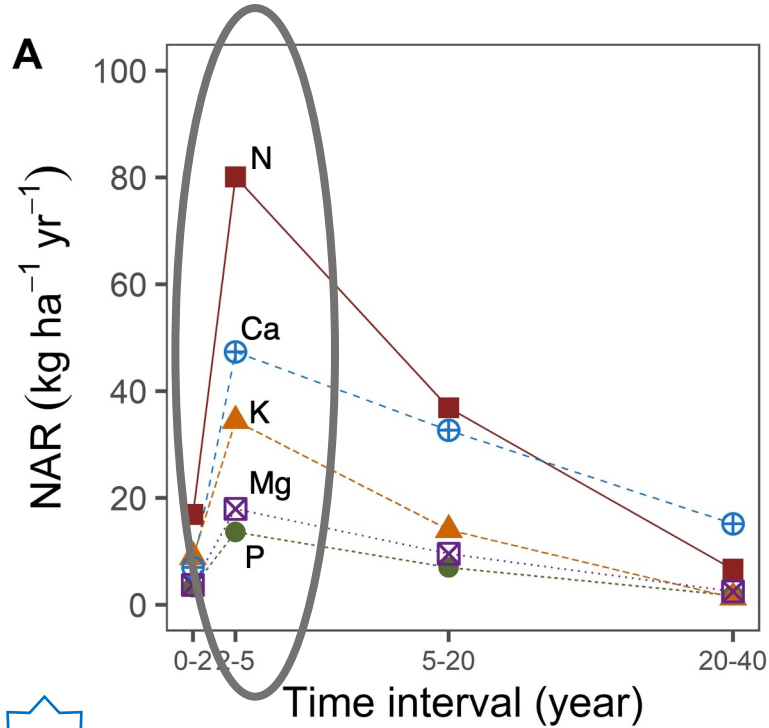
**Logging residues
promote positive relations
between soil erosion,
soil structure and soil
macrofauna diversity in
rubber plantations in Africa**

Thibaut Perron, J.L. Janeau, M. Legrand, F. Gay, A. Kouakou, A. Brauman, A. Manizan, J.P. Laclau, L. Mareschal

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Loss of fertility vs high nutrient demands of the stand



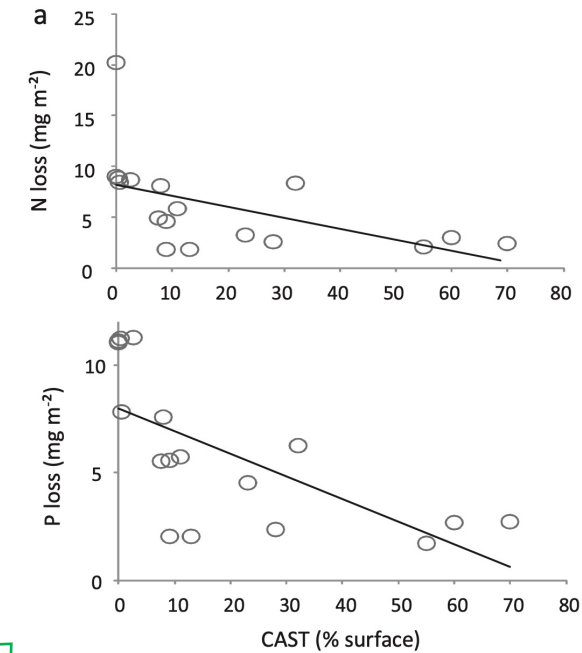
1

Assess **nutrient losses** through runoff and soil losses in a **young rubber stand**

Perron et al., 2021



Strong relations between **soil structure** and erosion



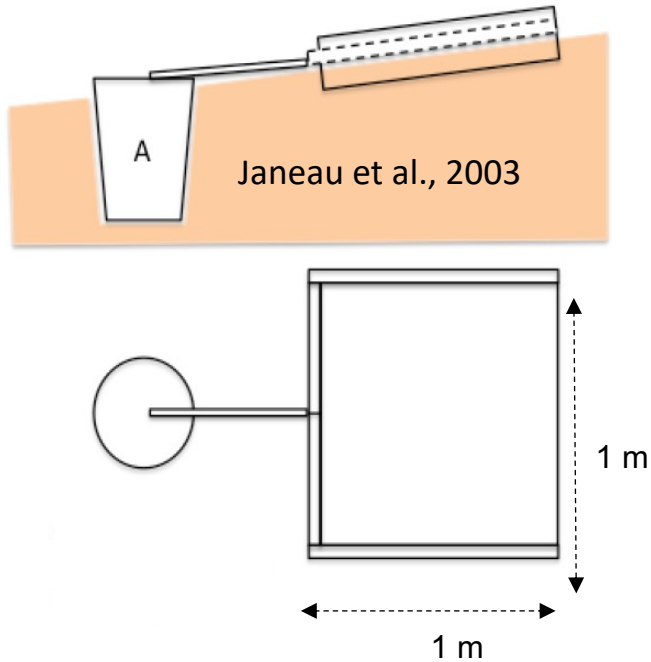
2

Investigate the links between **soil structure**, **soil macrofauna diversity** and nutrient losses

Jouquet et al., 2012

2.5 years of **runoff** and **soil detachment** monitoring using **1 m² microplot** to test the effect of **logging residues** and **legume** in **young rubber plantations**

how ?



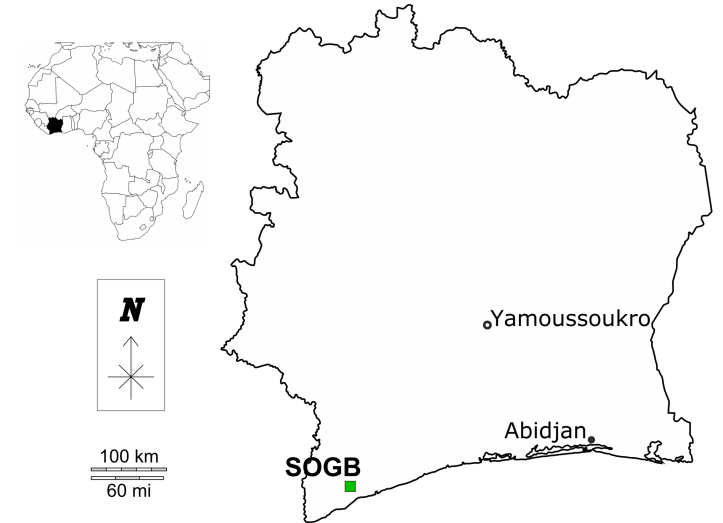
Water and soil analysis
Infiltration test
Aggregate stability
Fine root density
Bulk density
Soil macrofauna diversity

what ?



where ?

Ivory Coast



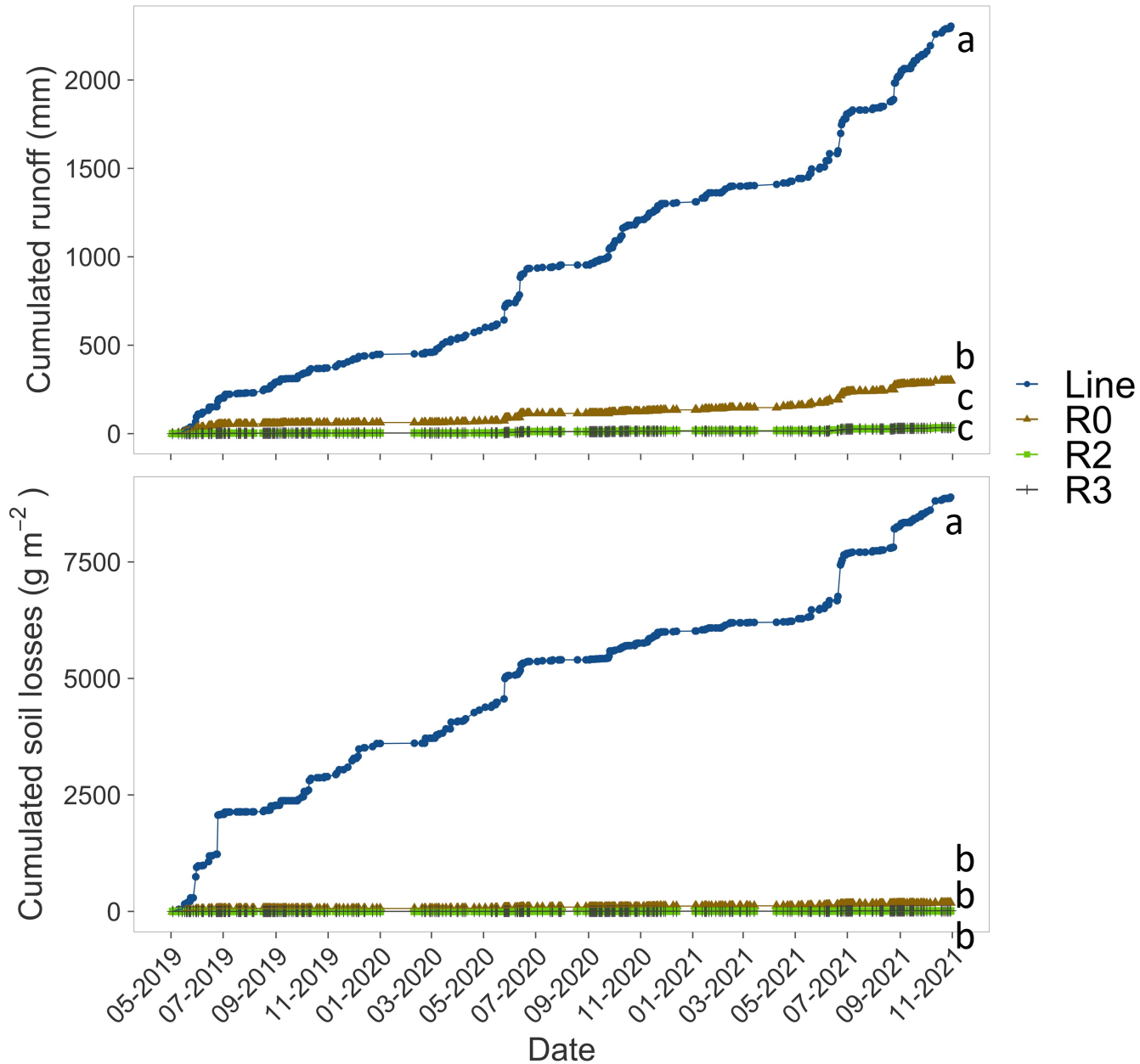
rainfall : 1600 mm y⁻¹

slope ~20°

May 2019 – October 2021

1 year-old **rubber plantation**

1



Bare soil = **maximum** runoff and soil losses

Legume alone or combined with **logging residues** reduce **runoff and soil losses**



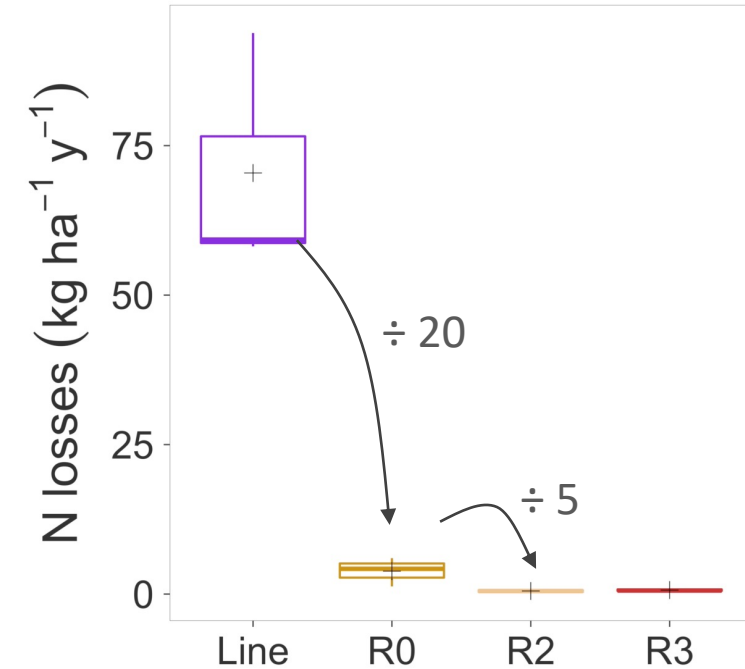
1

Legumes alone or combined with logging residues drastically reduce nutrient losses

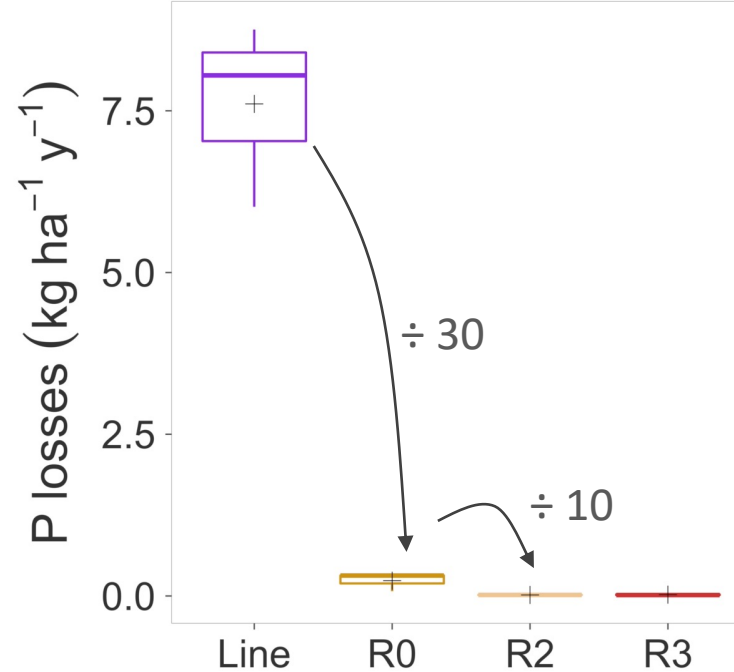


89 % of the stand demand

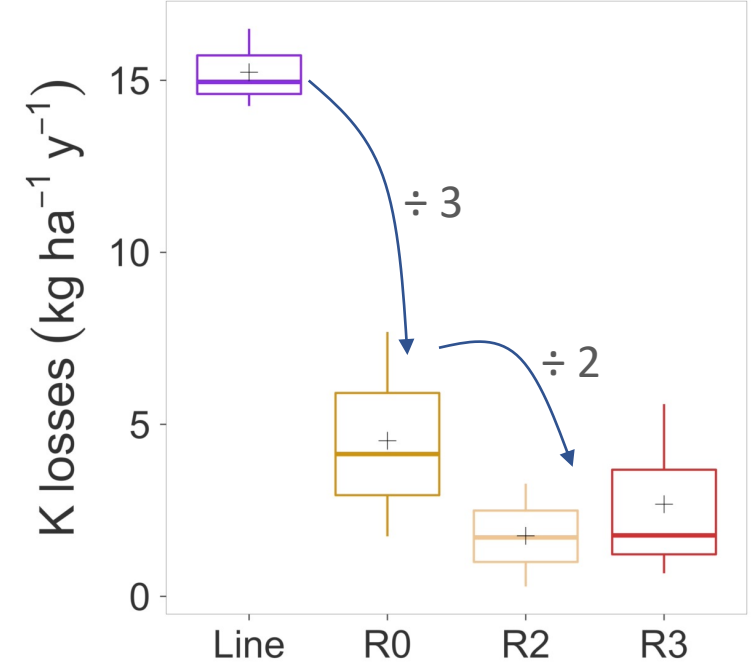
Export from the planting Line



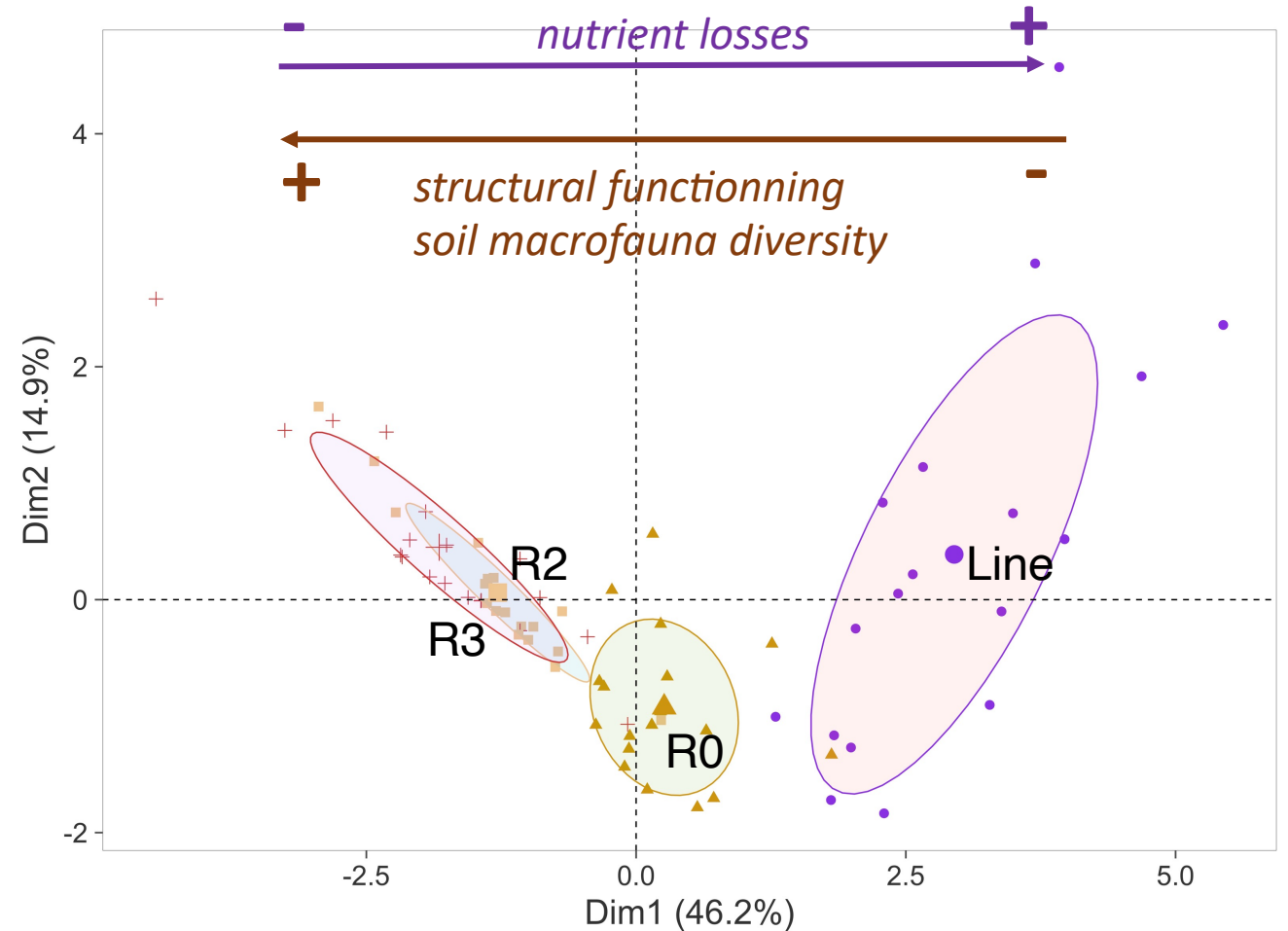
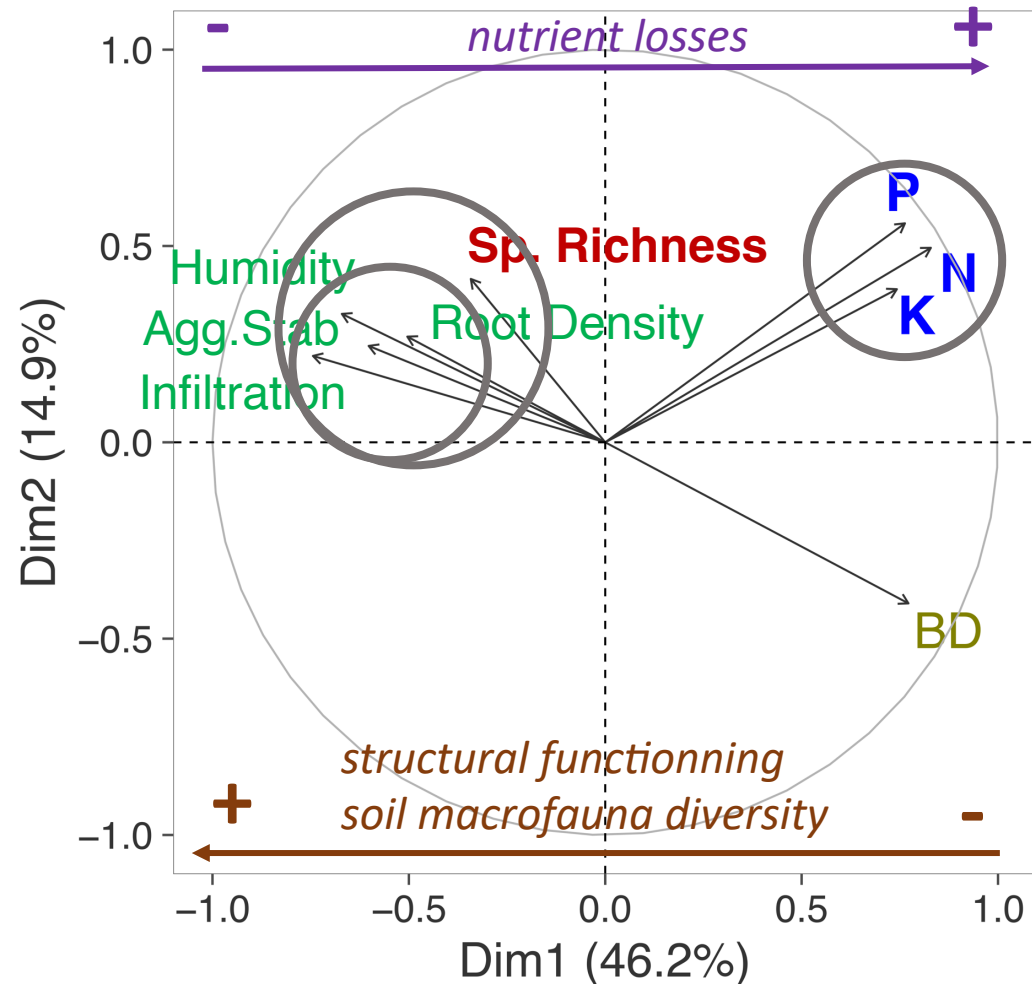
44 % of the stand demand



43 % of the stand demand



Soil macrofauna diversity improves soil structure, improved soil structure reduces nutrient losses





Legume reduces drastically **nutrient losses**, even more when combined with **logging residues**

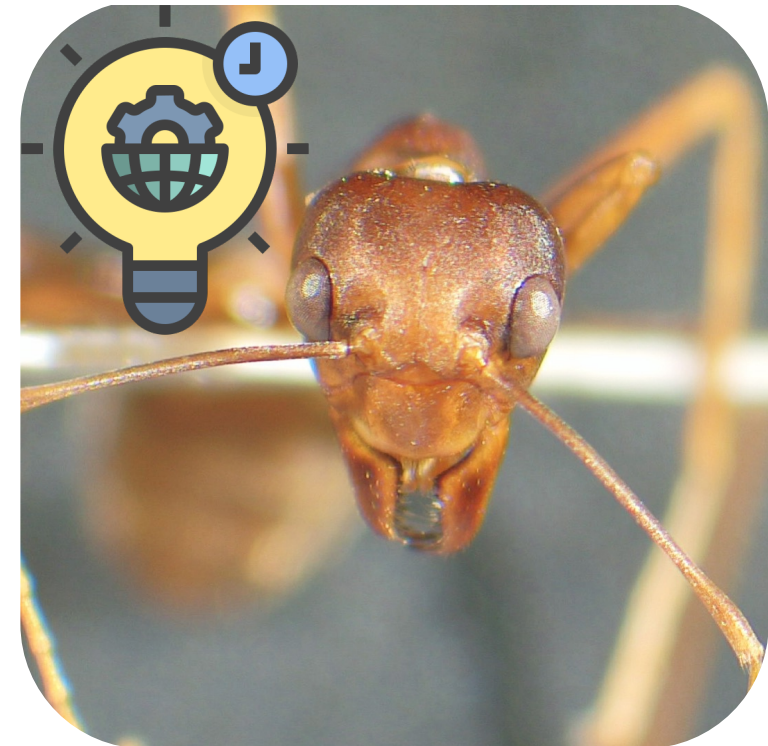


- + soil macrofauna diversity
- + soil structure
- nutrient losses

Stimulated by **logging residues**



Promote **soil biodiversity** through appropriate crop management



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acknowledgements



