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Termite mounds in Cambodian paddy fields. Are they always kept for improving soil quality?

Ratha Muon^{1,2}, Chenda Lai¹, Eve Bureau-Point³, François Chassagne⁴, Frank Wieringa⁵, Jacques Berger⁵, Kimchhin Sok⁶, Martine Audibert⁷, Pascal Podwojewski², Sebastien Marchand⁷, Vannak Ann¹, and Pascal Jouquet²

¹WAE Research Unit, Institute of Technology of Cambodia. Russian Federation Blvd, PO Box 86, 120404 Phnom Penh, Cambodia

²IRD, Sorbonne University, University Paris Est Creteil, CNRS, INRA, Institute of Ecology and Environmental Sciences (iEES-Paris), F-75005 Paris, France

³UMR 8562 Centre Norbert Elias, CNRS, EHESS, UAPV, AMU, France

⁴UMR152 PharmaDev, Université de Toulouse, IRD, UPS, France

⁵UMR QualiSud, IRD, Montpellier, France

⁶AERD Research Unit, Royal University of Agriculture (RUA), Phnom Penh, Cambodia

⁷UMR6587 CERDI, Université Clermont Auvergne, CNRS, France

Abstract

The utilization of termite mounds for the improvement of soil fertility is a worldwide practice and usually explained by the specific properties of this biogenic material. In Cambodia, farmers also use termite mound soils as amendments with the aim to improve the fertility of paddy fields. The first objective of this study was, therefore, to describe the physical and chemical properties of this material and, consequently, to determine its potential for improving soil fertility. A second objective was to consider farmer's perception and to quantify the diversity of services provided by termite mounds. We confirmed the specific soil properties of termite mounds but showed that their positive influence on soil chemical fertility and water retention are only significant in very sandy soil (>80% sand) while they remain limited in less sandy soil (~40 and 60% of sand). However, termite mounds are considered useful by farmers independently of the soil condition, mostly because this soil material is considered to positively increase soil fertility but also because they host a specific biodiversity which can be used for medicinal purposes or because consumed, then increasing population livelihood. Our work shows the discrepancy between the perception of farmers and the real impact of termite mounds on soil fertility as well as the diversity of services delivered by biodiversity in paddy fields.