

Agroforestry boosts soil-mediated ecosystem services in the humid and sub-humid tropics: a meta-analysis

Article

Supplemental Material

Creative Commons: Attribution-Noncommercial-No Derivative Works 4.0

Muchane, M. N., Sileshi, G. W., Gripenberg, S. ORCID: <https://orcid.org/0000-0002-8788-2258>, Jonsson, M., Pumarino, L. and Barrios, E. (2020) Agroforestry boosts soil-mediated ecosystem services in the humid and sub-humid tropics: a meta-analysis. *Agriculture, Ecosystems and Environment*, 295. 106899. ISSN 0167-8809 doi: <https://doi.org/10.1016/j.agee.2020.106899> Available at <https://centaur.reading.ac.uk/89345/>

It is advisable to refer to the publisher's version if you intend to cite from the work. See [Guidance on citing](#).

To link to this article DOI: <http://dx.doi.org/10.1016/j.agee.2020.106899>

Publisher: Elsevier

All outputs in CentAUR are protected by Intellectual Property Rights law, including copyright law. Copyright and IPR is retained by the creators or other copyright holders. Terms and conditions for use of this material are defined in the [End User Agreement](#).

www.reading.ac.uk/centaur

CentAUR

Central Archive at the University of Reading

Reading's research outputs online

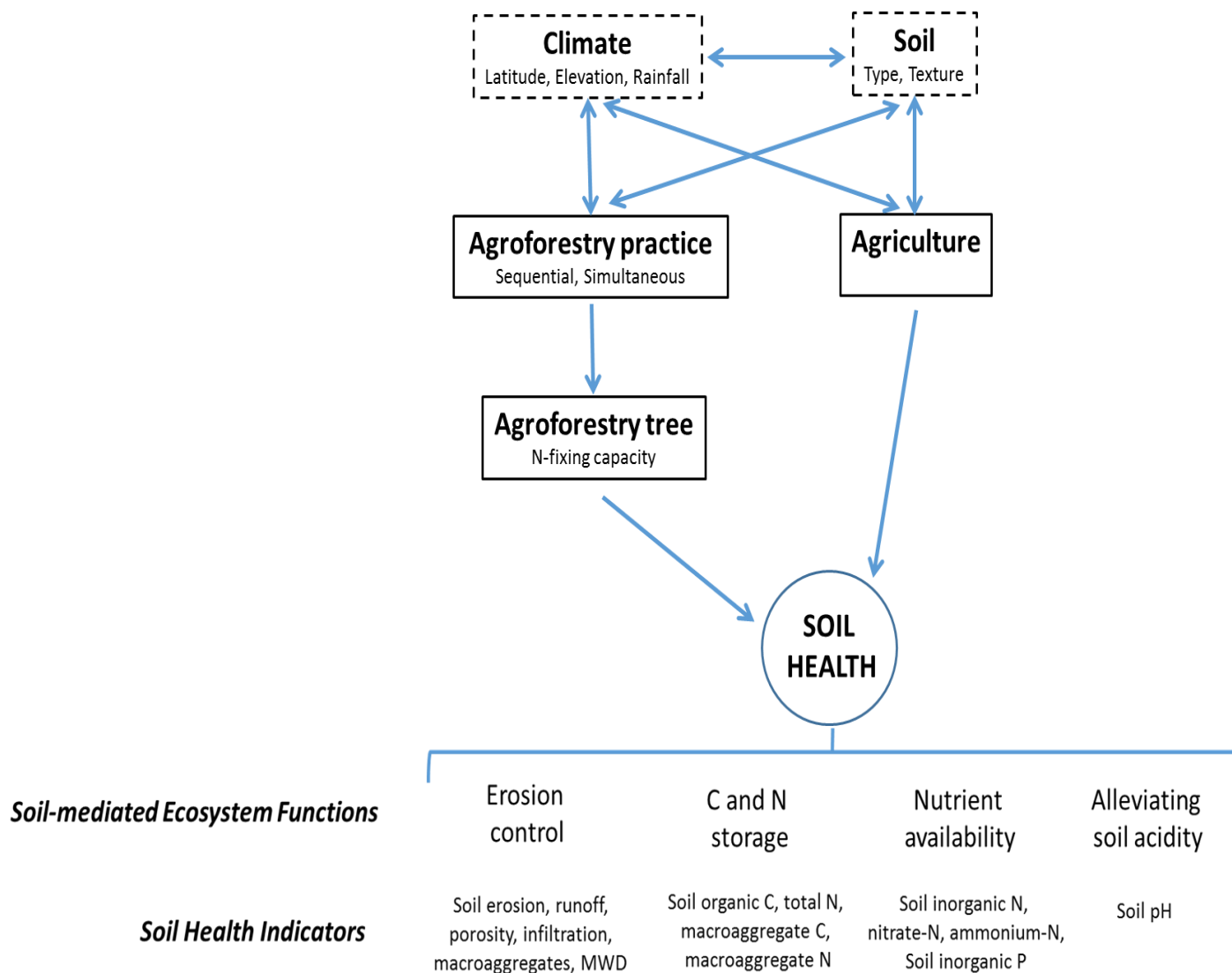


Figure 1. Summary of the data set highlighting linkages between climate and soil contextual features, common agroforestry practices (as influenced by key tree functional trait) compared with conventional agricultural management in their impact on soil health, soil-mediated ecosystem functions provided and indicators of soil health.

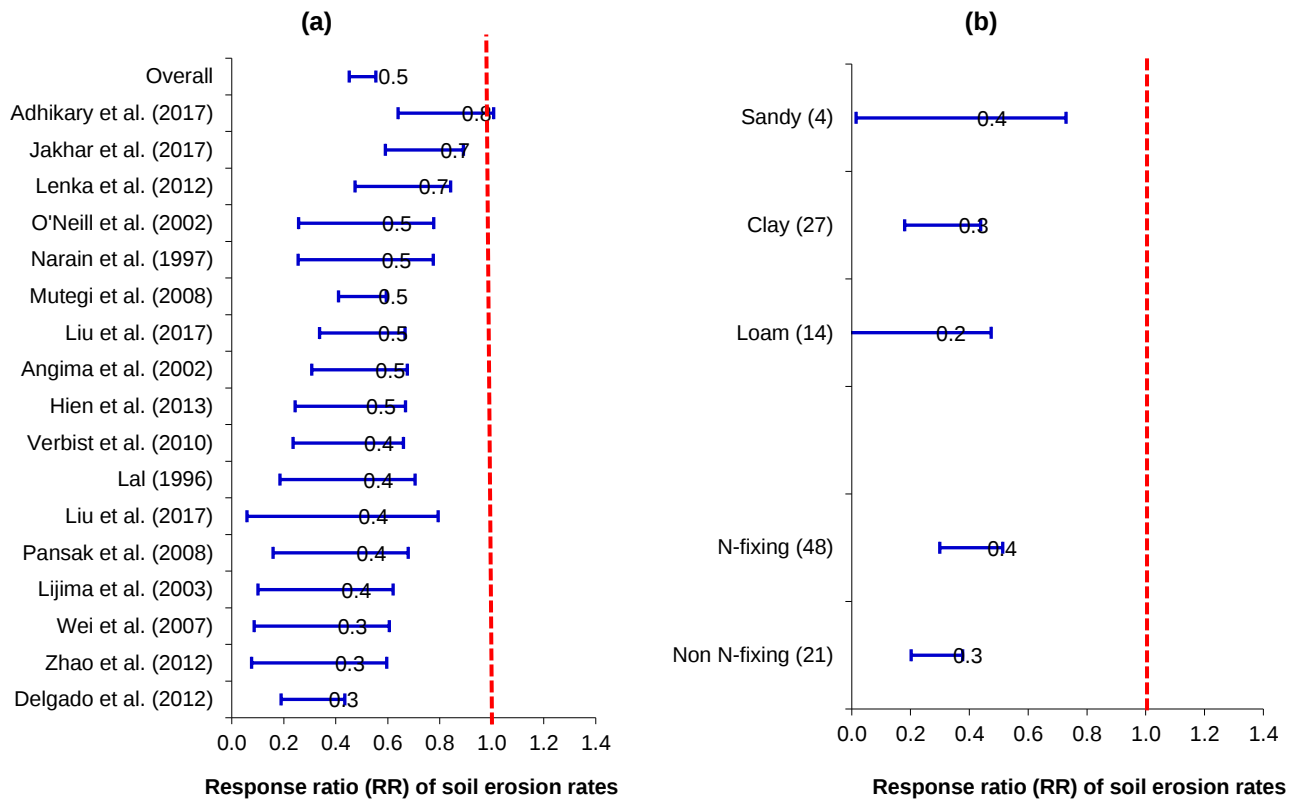


Figure 2. Variations in response ratios (RR) of soil erosion rates with study (a) and the N-fixation ability of the tree and soil texture (b). Horizontal bars represent the 95% confidence limits of RR. The red broken line indicates the $RR = 1$, i.e. where responses in agroforestry and control are the same. Significant reductions or increases are indicated when the 95% confidence intervals lie below or above the red broken line, respectively. The figures in parentheses in front of each variable in Figure 3b represent the total sample size available for analysis.

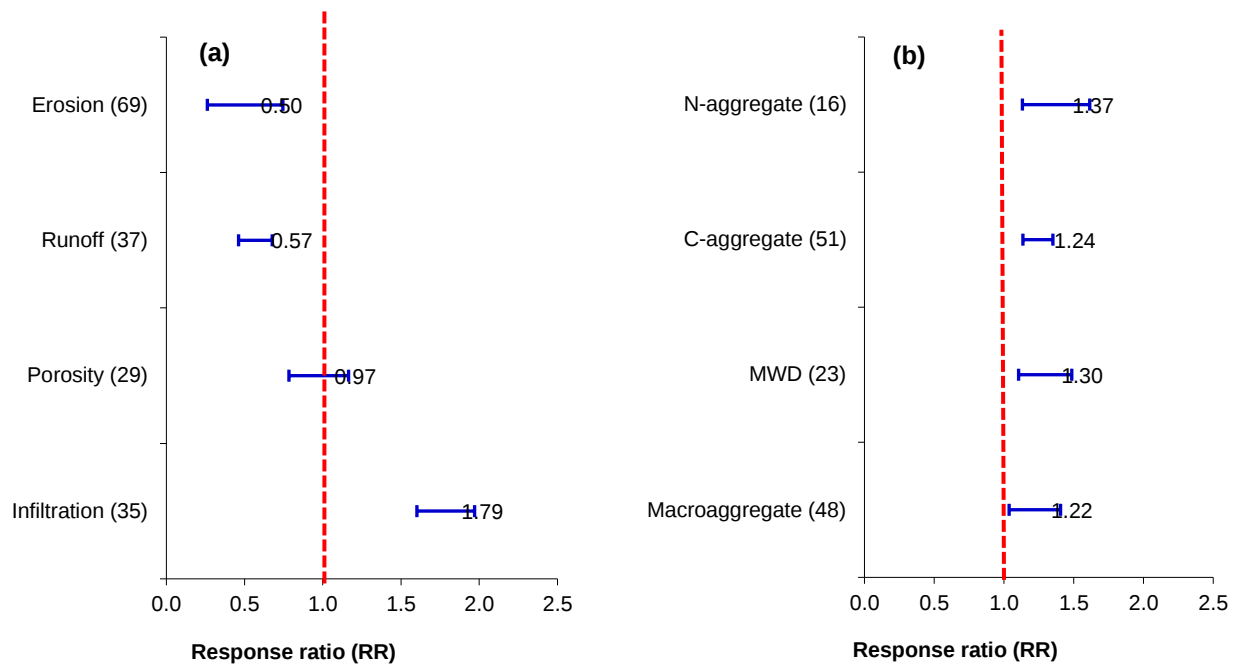


Figure 3. Variations in soil erosion related indicators as affected by agroforestry. The red broken line indicates $RR = 1$, i.e. where responses in agroforestry and control are the same. Significant reductions or increases are indicated when the 95% confidence intervals lie below or above the red broken line, respectively. The 95% confidence intervals were estimated through bootstrapping. The figures in parentheses in front of each variable represent the total sample size available for analysis.

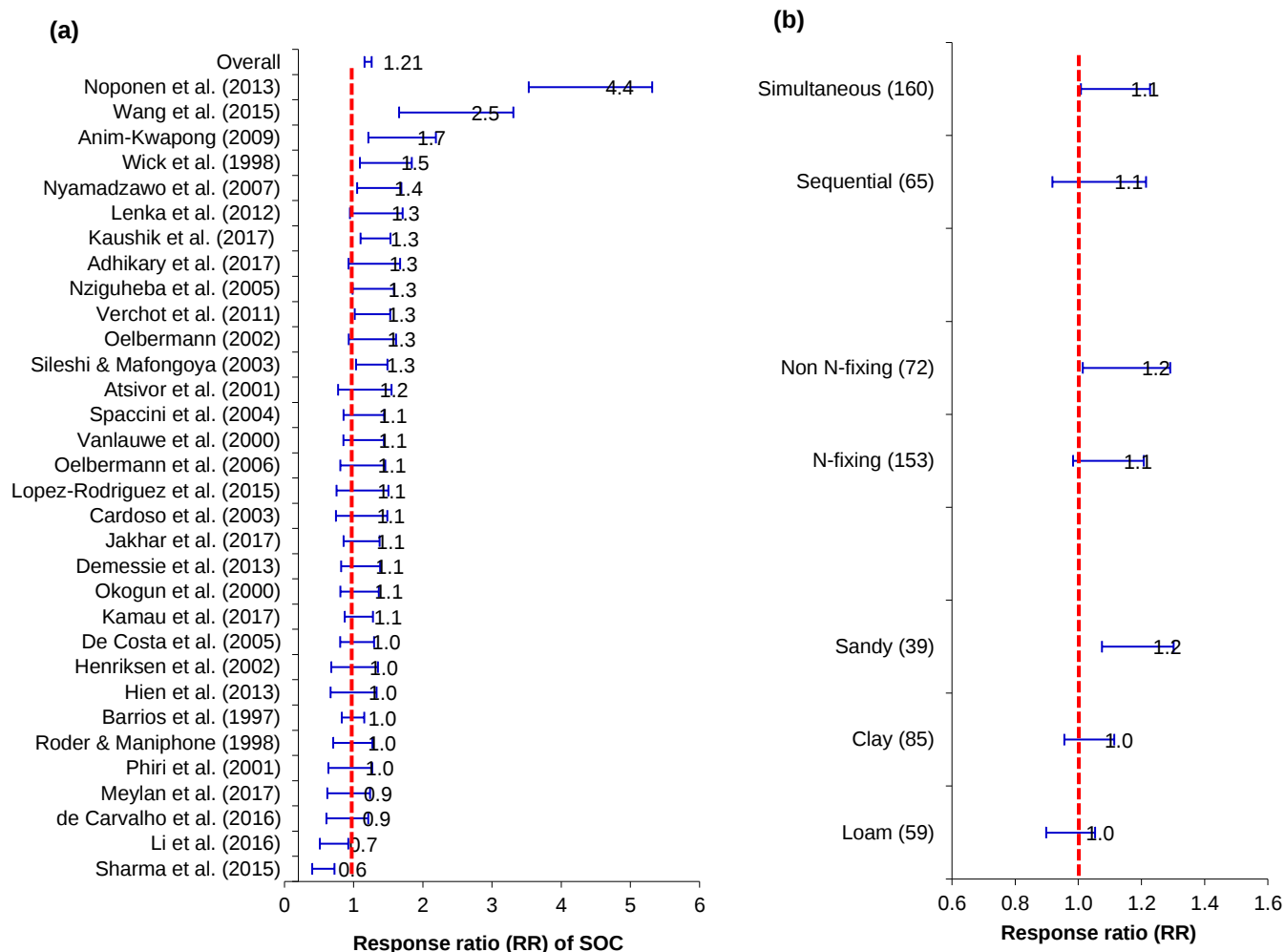


Figure 4. Variation in the response ratios (RR) of soil organic carbon (SOC) with study (a), agroforestry management, the N-fixation ability of the tree and soil texture (b). Horizontal bars represent the 95% confidence limits of RR. The red broken line indicates the RR = 1, i.e. where responses in agroforestry and control are the same.

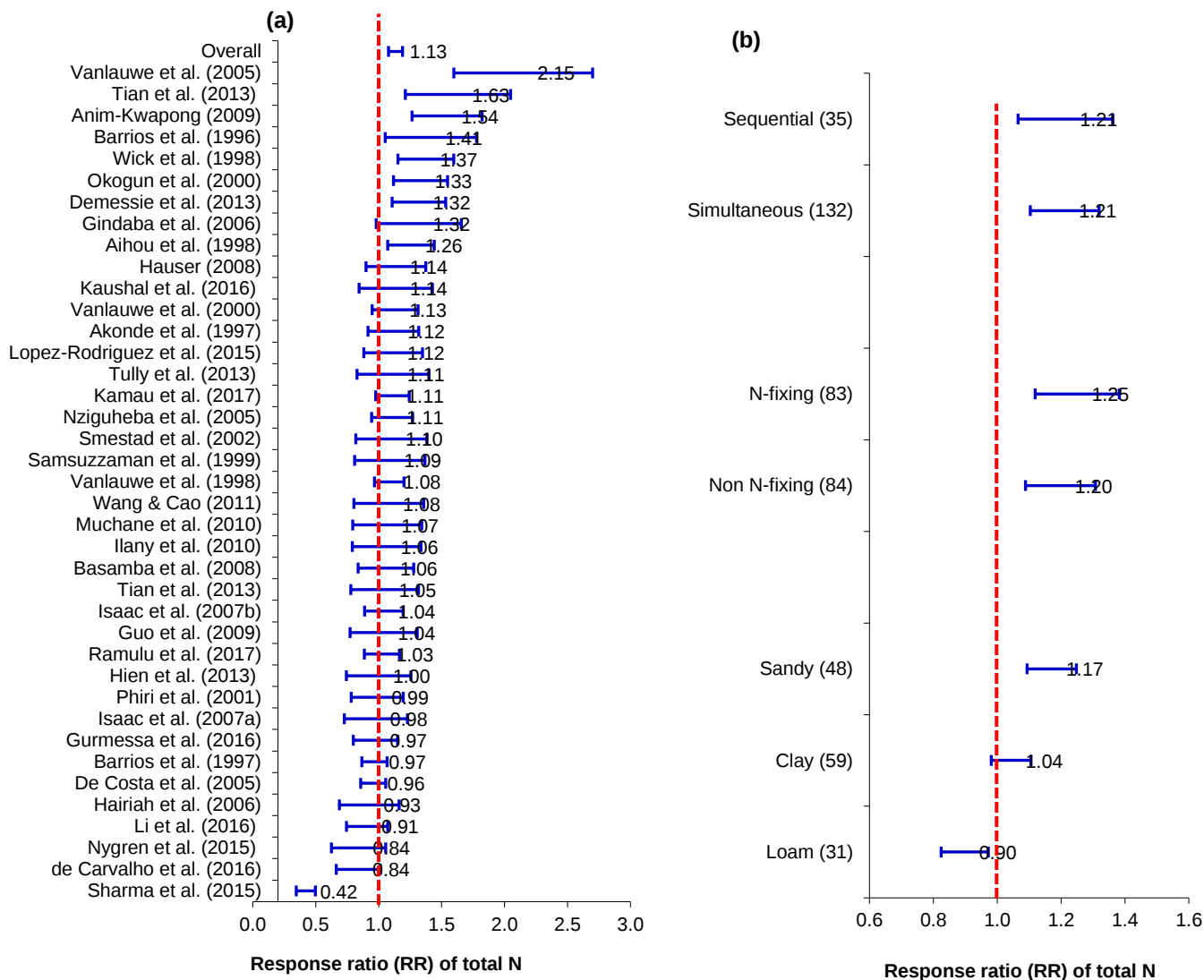


Figure 5. Variation in soil total nitrogen with study (a), agroforestry management, the N-fixation ability of the tree and soil texture (b). Horizontal bars represent the 95% confidence limits of RR. The red broken line indicates the $RR = 1$, i.e. where responses in agroforestry and control are the same.

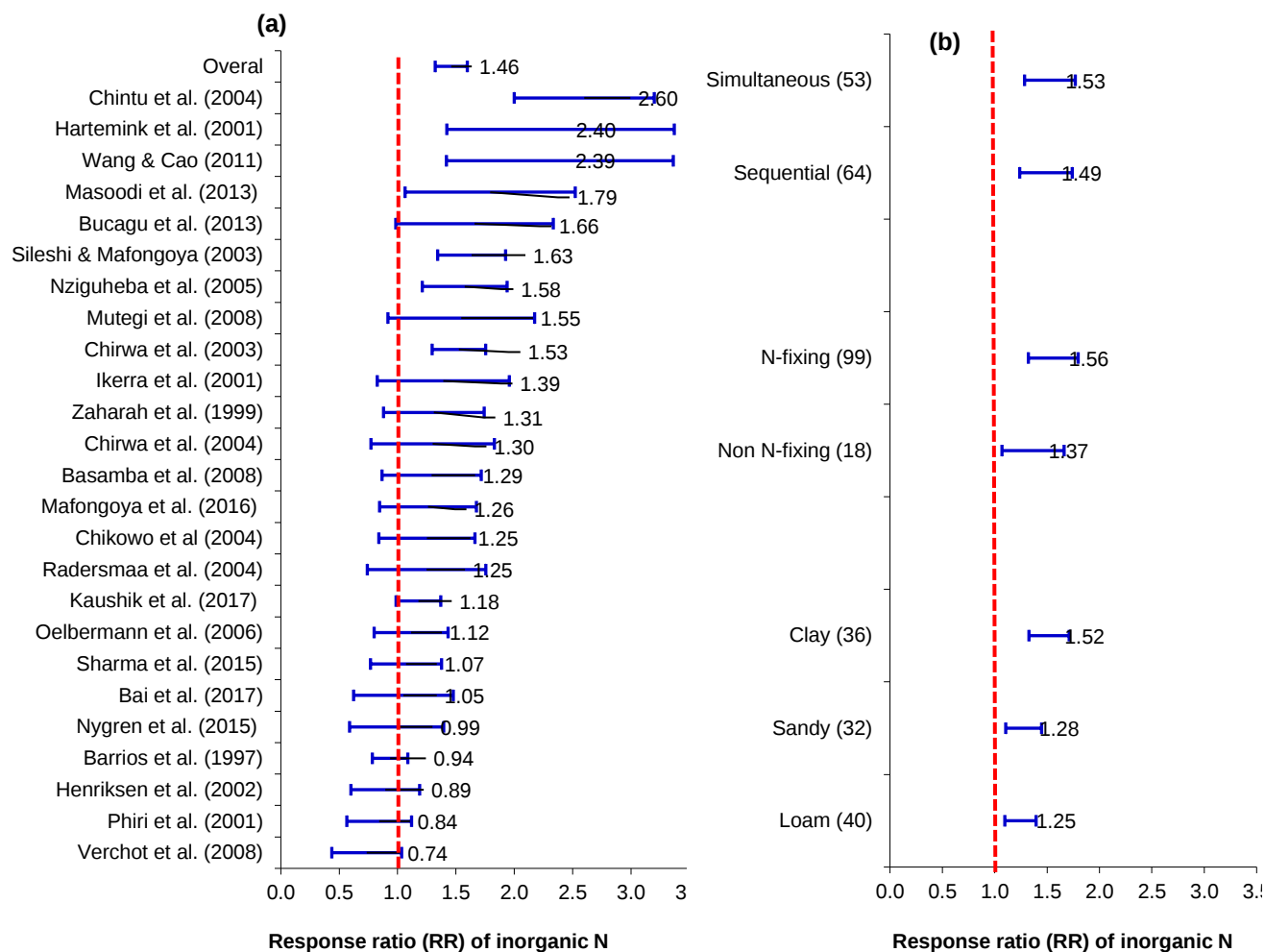


Figure 6. Variations in response ratios (RR) of soil available inorganic nitrogen with study (a) and the N-fixation ability of the tree and soil texture (b). Horizontal bars represent the 95% confidence limits of RR. The red broken line indicates the RR = 1, i.e. where responses in agroforestry and control are the same. Significant reductions or increases are indicated when the 95% confidence intervals lie below or above the red broken line, respectively.

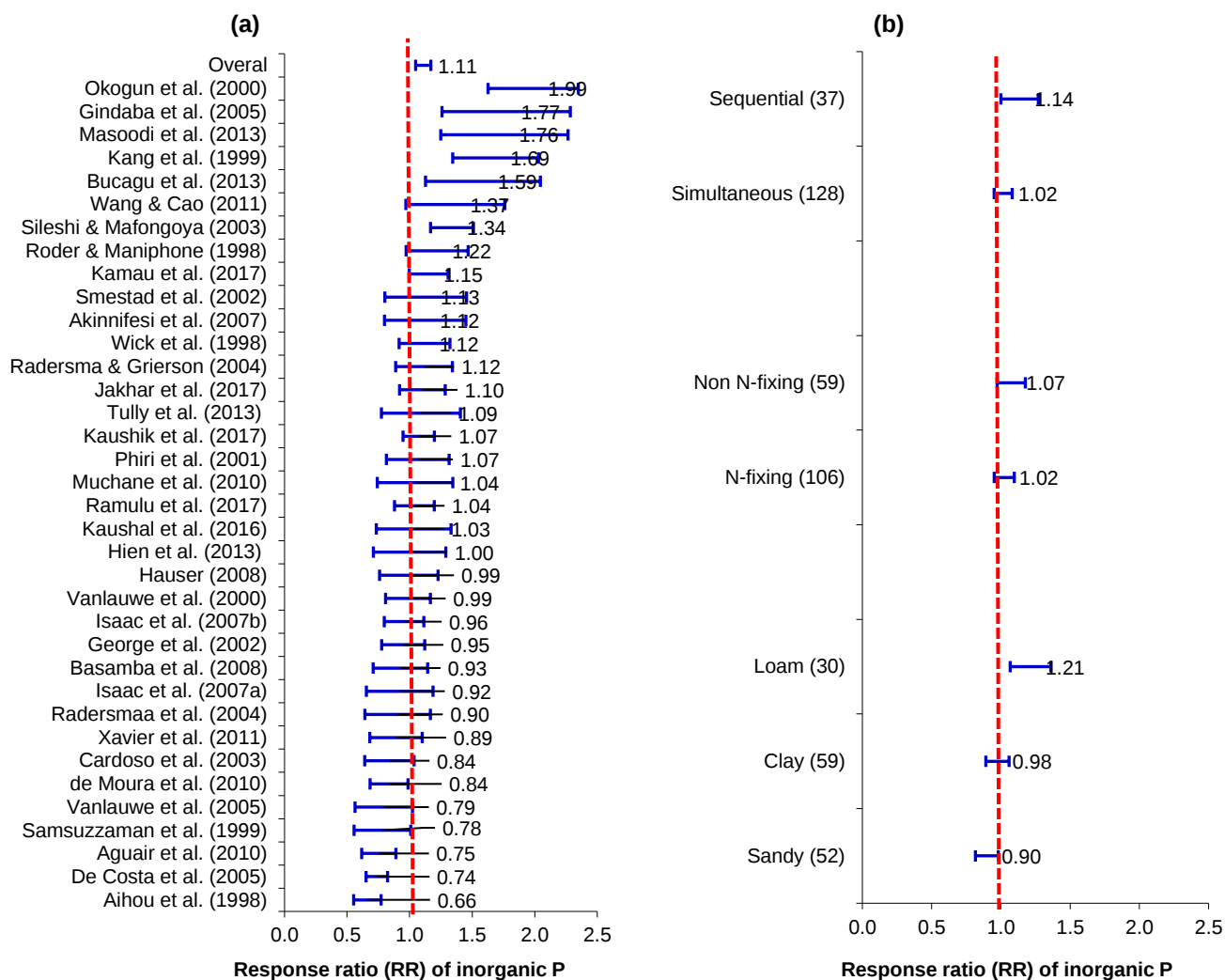


Figure 7. Variations in response ratios (RR) of soil-available inorganic phosphorus with study (a) and the N-fixation ability of the tree and soil texture (b). Horizontal bars represent the 95% confidence limits of RR. The red broken line indicates the RR = 1, i.e. where responses in agroforestry and control are the same. Significant reductions or increases are indicated when the 95% confidence intervals lie below or above the red broken line, respectively.

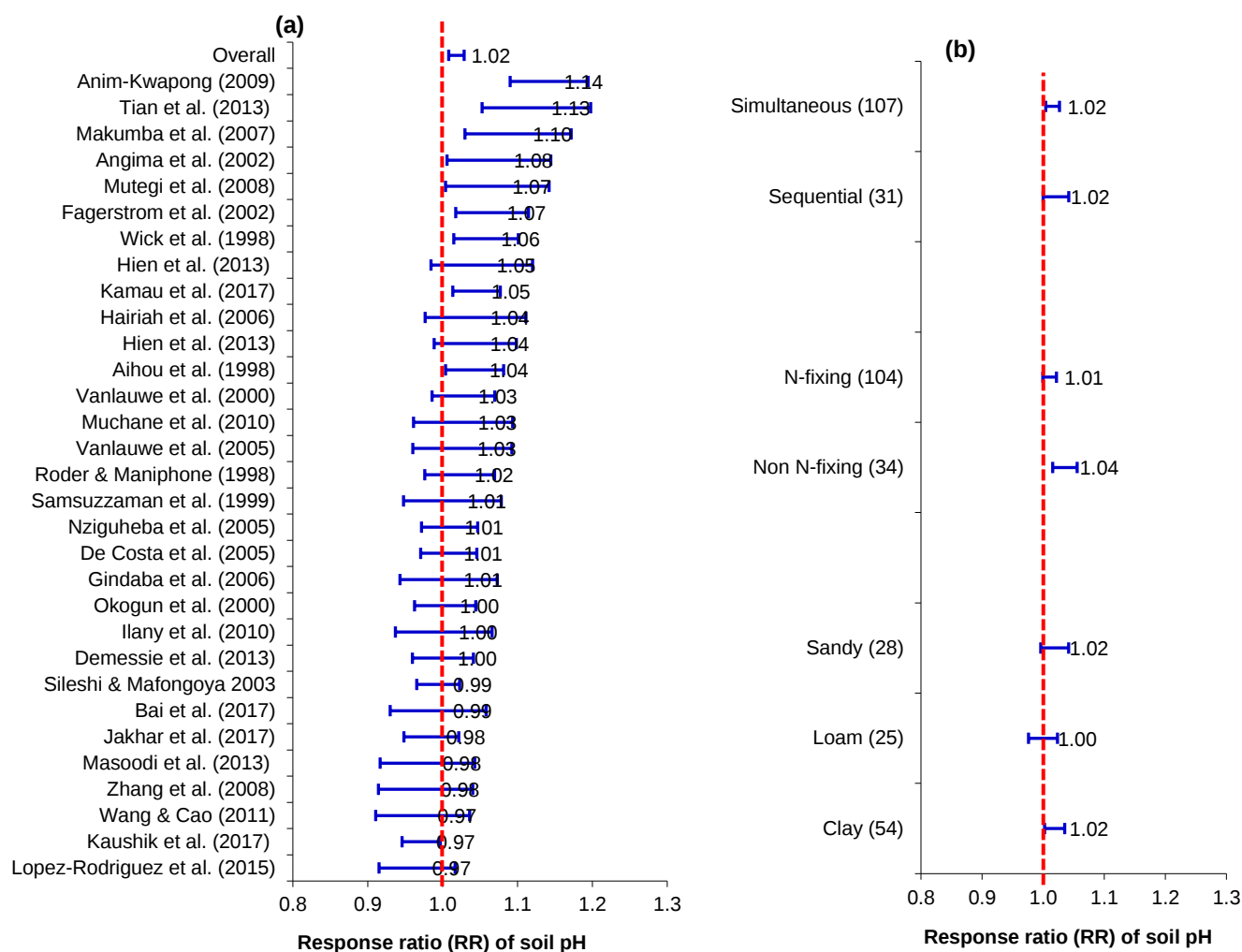


Figure 8. Variations in response ratios (RR) of soil pH with study (a), agroforestry management and the N-fixation ability of the tree and soil texture (b). Horizontal bars represent the 95% confidence limits of RR. The red broken line indicates the $RR = 1$, i.e. where responses in agroforestry and control are the same. Significant reductions or increases in effect sizes are indicated when the 95% confidence intervals lie below or above the red broken line, respectively.

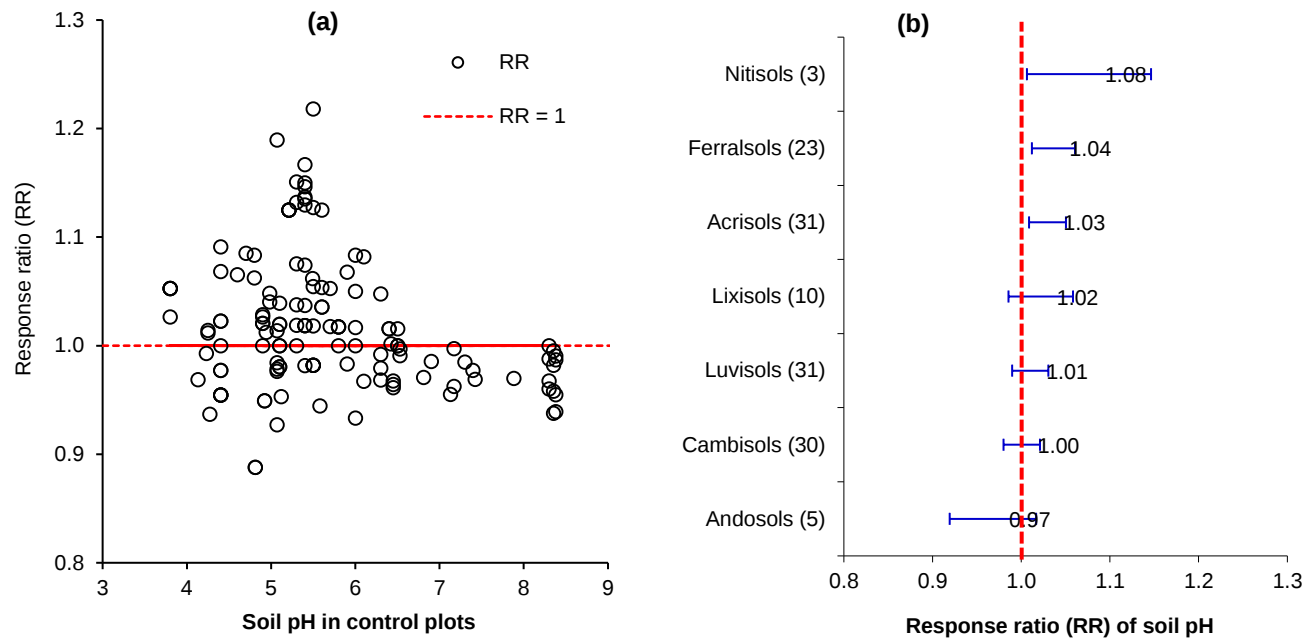


Figure 9. Variations in response ratios (RR) of soil pH with soil pH in the control plots (a) and the soil type of the study site (b). Horizontal bars represent the 95% confidence limits of RR. The red broken line indicates the RR = 1, i.e. where responses in agroforestry and control are the same. Significant reductions or increases in effect sizes are indicated when the 95% confidence intervals lie below or above the red broken line, respectively.