BOOK OF ABSTRACTS

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Building a global carbon database to characterize agroforestry as a natural climate solution

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Corresponding Author:
mgj2@psu.edu

Susan Cook-Patton[1], Michael Jacobson[6], Tanushree Biswas[1], Remi Cardinael [2], Katherine Culbertson[3]; Andrea DeStefano[4]; Edenise Garcia[5], Kripa Neupane[6], Todd Rosenstock[7]; Hyppolite Starry Sprenkle[8], Marta Suber[9]; Alison Surdoval[1], Drew Terasaki Hart[1], Bhuwan Thapa[10], Yesenia Valverde[3], Stephen Wood[1], Sam Yeo[1], Alina Zarate[3]

[1] *The Nature Conservancy, United States*
[2] *CIRAD, UPR AIDA, Harare, Zimbabwe*
[3] *University of California Berkley, United States*
[4] *BREC, United States*
[5] *The Nature Conservancy, Brazil*
[6] *Penn State, United States*
[7] *Alliance of Bioversity-CIAT, France*
[8] *Conservation International, United States*
[9] *World Agroforestry, Peru*
[10] *University of Missouri, United States*

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Abstract

There is growing interest in agroforestry as a climate solution, given its potential to store additional carbon in agricultural landscapes, while also enhancing livelihoods and biodiversity. However, substantial uncertainty remains around how much carbon can be captured, and how that varies by location and by practice. One of the central challenges is the sheer diversity of agroforestry practices employed across the globe. Species identity, planting density, and management practices, as well as many other factors, will influence the overall climate mitigation potential of an individual agroforestry system. Although recent reviews have begun to compile carbon sequestration rates and stocks within agroforestry systems, the current evidence base is not fully comprehensive. Individual reviews have examined only a subset of the existing literature and typically partition agroforestry systems into coarse categories that do not reflect the diversity of actual on-the-ground practices.

As individuals, corporations, and governments decide whether and how to deploy agroforestry as a climate solution during this climate critical decade, there is a strong need for a readily available and comprehensive dataset to better predict climate outcomes across diverse agroforestry systems. We have therefore conducted a systematic review of published studies to find empirical estimates of carbon sequestration rates and stocks in agroforestry systems. After reviewing over 18,000 papers, we have identified 800 or more papers that appear to have the necessary information. We are compiling this information into a consistent data structure to create a publicly available dataset that can help to accelerate our scientific understanding of the climate mitigation potential of agroforestry and facilitate the incorporation of agroforestry into climate goals. Although agroforestry offers high potential as a climate solution, delivering on that promise requires a more precise understanding of how much carbon can actually be captured, based on the best available data.