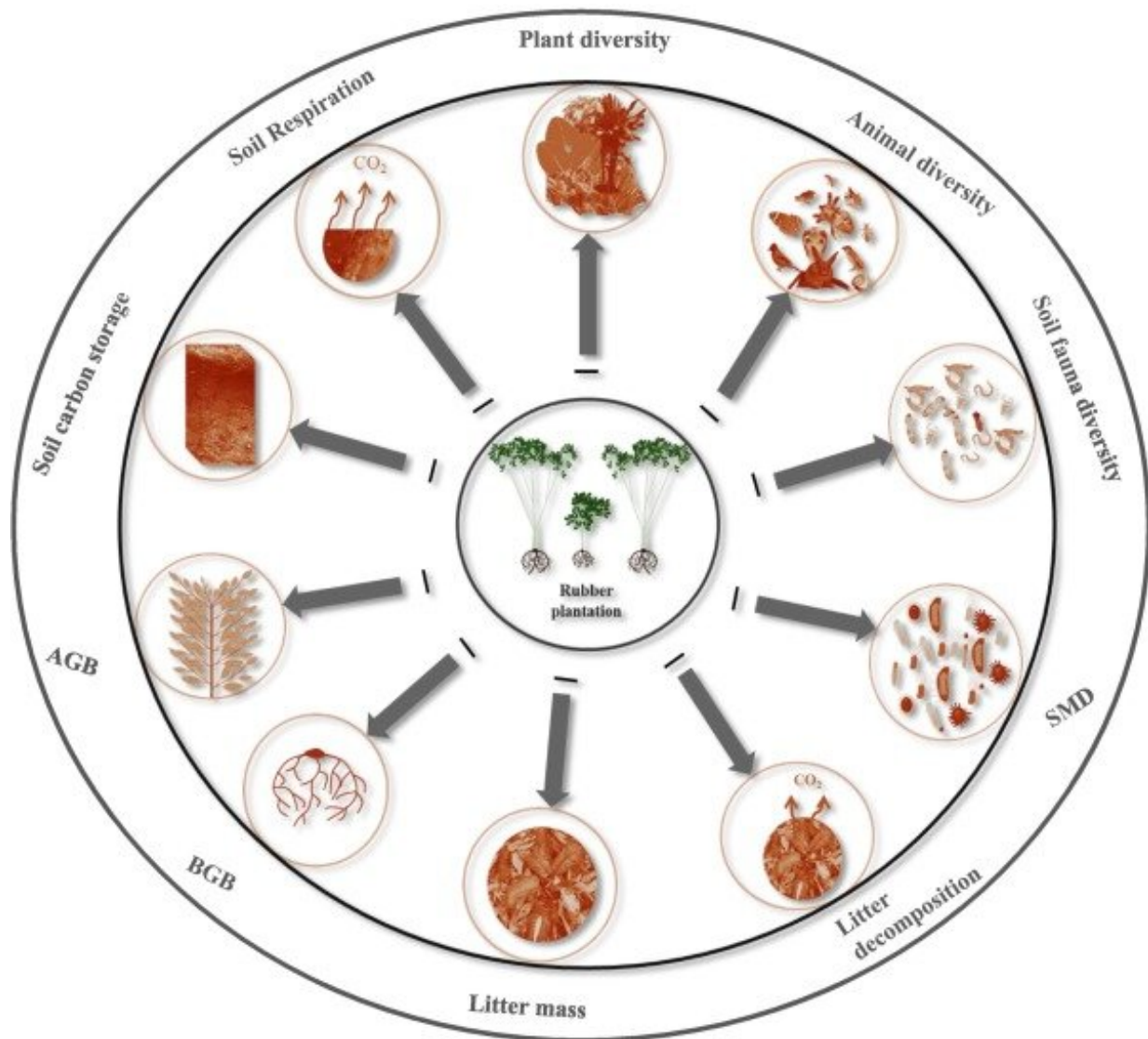


# Ecosystem functions of rubber plantations are lower than tropical forests

July 20 2021, by Zhang Nannan



Rubber plantation have a preferentially negative (Ⓜ) net effect on ecosystem functions when compared to adjacent tropical forest. Credit: Ashutosh

Kumar Singh

According to statistics, rubber plantations have covered more than 2 million ha in the tropics in the last decade globally. It has improved the economic status of farmers, but altered the habitat's ecology and ecosystem functions. However, few studies have focused on the impacts of rubber plantations on ecosystem functions of rubber plantation and no clear overview is available.

In a study published in *Science of the Total Environment*, researchers from the Xishuangbanna Tropical Botanical Garden (XTBG) of the Chinese Academy of Sciences presented an interdisciplinary and systematic overview of the ecological consequences of rubber plantations.

The researchers conducted an inclusive review of the [ecosystem functions](#) of rubber plantations, including [soil carbon storage](#), [aboveground biomass](#) (AGB) and belowground biomass (BGB), litter production and decomposition, respiration, and biodiversity (plants, animals, soil fauna, and microbes).

They first compiled the history of rubber plantations and their expansion based on data obtained from the Food and Agriculture Organization of the United Nations and presented the visible differences between forests and rubber plantations. Then they explored and summarized the impacts of rubber cultivation on each ecosystem function.

The replacement of forests with rubber plantations is altering multiple ecological processes and ecosystem functions. Compared with the tropical forests, all ecosystem functions showed lower values in the [rubber plantation](#). The impacts of rubber plantations on ecosystem

functions are consistently negative, irrespective of plantation age.

According to the researchers, the protection of diversity-rich forests is the best strategy for the restoration of the majority of ecosystem function in the rubber growing regions.

They also demonstrated that rubber-based polycultures and agroforestry systems promote ecosystem functions, such as nematode diversity, compared to rubber monocultures.

"Therefore, further efforts should be made to incorporate more species with [rubber](#) and understand their interactions," said Liu Wenjie, principal investigator of the study.

**More information:** Ashutosh Kumar Singh et al, A global review of rubber plantations: Impacts on ecosystem functions, mitigations, future directions, and policies for sustainable cultivation, *Science of The Total Environment* (2021). [DOI: 10.1016/j.scitotenv.2021.148948](https://doi.org/10.1016/j.scitotenv.2021.148948)

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