

Study investigates eco-hydrological influence of banana plantations in Xishuangbanna

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Banana plantation in Xishuangbanna. Credit: YANG Bin

Banana plantations in Yunnan Province account for over one-fifth of the total planted area of China, serving as a pillar industry for local farmers. However, hydrological threats caused by the rapid expansion of banana agriculture have received little attention from the local government.

In a study published in *Soil and Tillage Research*, researchers from

Xishuangbanna Tropical Botanical Garden (XTBG) showed that spatial distribution of rainfall would be directly affected, and indirectly affect the water source prediction in banana plantations.

They researchers tried to explore the effects of banana trees' funnel-shaped leaves on rainfall redistribution and plant water acquisition during the 2017/2018 [rainy season](#) in Xishuangbanna.

They used both the conventional and isotopic (δD and $\delta^{18}O$) methods to conduct rainfall partitioning, assess throughfall distribution, and predict plant water sources.

They found that most (71.8 %) of the gross rainfall was distributed by canopy throughfall. Banana trees absorbed 72.3 % of their water from the 0-30 cm soil stratum. Horizontal water acquisition was varying below the canopy of banana trees.

"Our study was one of the first to investigate the effects of [bananas'](#) funnel-shaped canopy on rainfall redistribution and plant water acquisition," said Prof. LIU Wenjie, principal investigator of the study.

"We hope that these findings will contribute to sustainable development of the banana industry in southwestern China. Further research into the effects of [banana plantations](#) on [soil erosion](#) and [surface runoff](#) would also be of use," said Dr. YANG Bin, first author of the study.

More information: Bin Yang et al. Effects of a funnel-shaped canopy on rainfall redistribution and plant water acquisition in a banana (*Musa* spp.) plantation, *Soil and Tillage Research* (2020). [DOI: 10.1016/j.still.2020.104686](#)

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