



# Monoculture Rubber Plantations Have Negative Effects on Controlling Splash Erosion

In Xishuangbanna, one of China's most biodiverse regions, landscape has changed dramatically during the past three decades due to the conversion of tropical rainforest to rubber plantations. In steep areas, terraces are often constructed before planting rubber trees, which causes two important changes in the soil: the destabilization of soil in the bench terraces and the increased vulnerability of unvegetated riser faces to erosion. Few studies have documented the nature and intensity of erosion on bench terraces.

Prof. LIU Wenjie and his colleagues from the Xishuangbanna Tropical Botanical Garden (XTBG) conducted a study in Menglun County (21°5'39"N, 101°15'55"E), Xishuangbanna to evaluate the influence of conversion of tropical rainforest to rubber plantation on potential splash erosion rate and actual splash erosion rate. Their main objective was to assess the influence of forest type on the splash erosion of rainwater input after its passage through the canopy.

The tropical rainforest (dominated by *Pometia tomentosa* and *Terminalia myriocarpa*) and rubber plantation (*Hevea brasiliensis*) were selected to conduct the field experiment. Researchers monitored the splash erosion rate (the amount of the disturbed soil per unit source area that was mobilized by rainsplash) in the control and rubber plantation stands within a 5 m×20 m plot.

Over the total period of observation, the average potential splash erosion rate was 2.1 times higher in the rubber plantation than in the open, while for the rainforest it was only 1.2 times higher than in the open, suggesting that the rubber plantation canopy greatly increased the rainsplash erosion. The average actual splash erosion rate was 2.0 times higher in the rubber plantation than in the rainforest, which demonstrated that the rainforest was more effective in controlling splash erosion. The actual splash erosion rate was considerably lower in the terrace bench than in the riser bank in the rubber plantation. It indicated that the riser bank was more sensitive to raindrop splash.



Serious soil splash erosion under the monoculture rubber plantation in Xishuangbanna.



Serious splash erosion in the riser bank under rubber plantation (A), and splash potential under open field (B), rubber plantation (C) and tropical rainforest (D).

The results clearly showed that the conversion of tropical rainforest to rubber plantation had a negative effect on controlling splash erosion.

Their study entitled "The Effects of Conversion of Tropical Rainforest to Rubber Plantation on Splash Erosion in Xishuangbanna, SW China" has been published online by *Hydrology Research*.