

Caffeine-Fueled Forests: Coffee Waste can help Forests Regenerate

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EDITORIAL

Researchers in Costa Rica distributed 30 dump truck loads of coffee pulp on deteriorated land and set aside an equal-sized area without coffee pulp as a control. "The findings were dramatic," stated the study's principal author. In just two years, the area treated with a thick layer of coffee pulp had transformed into a tiny forest, whereas the control plot was still dominated by non-native grasses. After only two years, the coffee pulp-treated region had 80% canopy cover, compared to 20% in the restricted zone. In addition, the canopy in the coffee pulp region was four times higher than in the control area. The exotic pasture grasses that had previously dominated the field were eradicated by the addition of a half-meter thick layer of coffee pulp.

These grasses are typically a barrier to forest succession, and their removal allowed natural, pioneer tree species to quickly recolonize the area after arriving as seeds by wind and animal distribution. The researchers also discovered that after two years, nutrients such as carbon, nitrogen, and phosphorus in the coffee pulp treated area were much higher than in the control area. Given that former tropical agricultural land is frequently heavily degraded and poor soil quality can delay forest succession for decades, this is an encouraging finding. This case study demonstrates that agricultural by-products could be used to help damaged tropical areas recover faster.

Coffee pulp can be a cost-effective forest restoration approach

because it is a readily available waste product that is high in nutrients. Such solutions will be critical if we are to meet our ambitious global goals of restoring big swaths of forest. The researchers tested soil samples for nutrients immediately before and two years after applying the coffee pulp. They also employed drones to record canopy cover and reported the species present, the size of woody stems, and the proportion of forest ground cover.

The researcher cautions that because this is only a case study with two years of data, more research is needed to see if coffee pulp can help with forest regeneration. Because this study only looked at one large location, more research is needed to evaluate if this method works in a wider range of situations. We only have data from the first two years to offer. Longer-term monitoring would reveal how the coffee pulp impacted soil and vegetation. Additional testing can be done to see if the coffee pulp treatment has any negative consequences.

The use of coffee pulp and other agricultural by-products is confined to reasonably flat and accessible places where the material can be transported and the risk of additional nutrients being washed into surrounding watersheds can be addressed. The primary researcher said of future research into the utilization of coffee pulp, "We'd like to expand the study by putting this technology to the test in a range of damaged landscape locations. This concept might also be attempted with non-market agricultural goods such as orange husks."

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