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Robusta coffee yields are limited by magnesium on smallholder farms in the Ecuadorian Amazon

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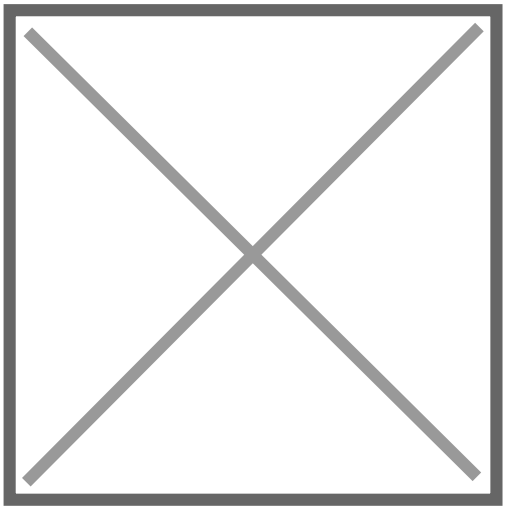
Robusta coffee beans make up a large portion of the global coffee market, yet they are relativel

Robusta coffee beans make up a large portion of the global coffee market, yet they are relatively understudied. Photo courtesy of Adobe Stock.

Humans love coffee. We harvest seeds from coffee cherries to make the beloved beverage. *Coffea canephora* (also known as robusta) is one species from which seeds are derived. It is a major (~40%) contributor to the global coffee export market—yet it is relatively understudied. Robusta in the Ecuadorian Amazon is largely produced by smallholders, who often lack fertility recommendations.

Researchers from the University of Illinois collaborated with Ecuadorian research institutions ESPOL and INIAP to evaluate potential nutrient limitations to robusta coffee yields in the Amazonian region of Ecuador, under realistic treatments that reflect local smallholder farmer practices.



Researchers found that robusta coffee yields are best explained by macronutrients, like magnesium, in the leaves. Photo courtesy of Adobe Stock.

The study found that secondary macronutrients, in particular magnesium, may be overlooked as constraints to robusta yields under such local conditions. Additionally, leaf nutrient measurements predicted yields better than soil nutrient measurements, which was consistent with better yield predictions that were found from foliar testing of other tropical perennials. By evaluating commonly overlooked secondary macronutrients, this research can guide smallholder farmers, so that the rest of us can continue to enjoy our daily cup of joe.

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Kasmerchak, C. S., Wade, J., Chavez, E., Caicedo, C., Subía, C., & Margenot, A. J. (2025). Evidence for non-primary macronutrient limitations on cherry yields in young robusta agroforestry systems in the Ecuadorian Amazon. *Agricultural & Environmental Letters*, *10*, e70026. https://doi.org/10.1002/ael2.70026

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