

A tale of two fungi

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In the February issue of *New Phytologist*, Tulane University biologists examine why leaf-cutting ants target some plants and avoid others, concluding that high levels of friendly fungi in the leaves of some plants protect them from destruction by ants.



Leaf-cutting ants defoliate crops, causing billions of dollars of damage to agriculture in the southern United States and Central America. (Photo by Catalina Estrada)

Leaf-cutting ants are major defoliators, inflicting billions of dollars of damage to agriculture in the southern United States and Central America. The ants harvest chunks of leaves, bring them to their nests and pile them to create compost heaps that host a special fungus.

“They grow this fungus to feed themselves,” says [Sunshine Van Bael](#), an assistant professor of ecology and evolutionary biology. The fungus devours the compost, producing fruiting bodies that the ants eat and feed to their larvae.

Ants are selective when they forage. “They need to bring plants that don't interact badly with their own fungus,” Van Bael says.

Earlier studies focused on plant chemistry to explain why ants are repelled from some plants. Van Bael teamed up with postdoctoral associate Catalina Estrada to look at another factor in plant/ant interactions ? cryptic endophytes, or fungi living symbiotically inside the leaves of plants.

The researchers manipulated cucumber plant leaves to have high and low levels of fungi. Ants consistently preferred to cut leaves with low levels. To explain this preference, the research team extracted all the chemicals from leaves with high and low endophytes, added them to small filter paper discs and let the ants choose.

“The ants preferred the discs with low endophyte loads,” says Van Bael. “We basically show that plants with a low level of endophytes taste different to the ants than plants with high levels.”

Researchers hope to use endophytes as tools for biological control against insects and pathogens that affect crops and restoration efforts. To learn more, [view these videos.](#)