

# Fungi embrace fundamental economic theory as they engage in trading

June 29 2021, by Amy McCaig

---



Conidiophores with conidia of the microscopic fungi *Aspergillus oryzae* under light microscope. Credit: Yulianna.x / Wikimedia / CC BY-SA 4.0

When you think about trade and market relationships, you might think about brokers yelling at each other on the floor of a stock exchange on Wall Street. But it seems one of the basic functions of a free market is quietly practiced by fungi.

New research from a Rice University economist suggests certain networks of [fungi](#) embrace an important economic theory as they engage in trading nutrients for [carbon](#) with their [host plants](#). This finding could aid the understanding of carbon storage in soils, an important tool in mitigating climate change.

A [research paper](#) entitled "Walrasian equilibrium behavior in nature" is available online and will appear in an upcoming edition of *Proceedings of the National Academy of Sciences*. Ted Loch-Temzelides, a professor of economics and the George and Cynthia Mitchell Chair in Sustainable Development at Rice, examined through an economic lens data from ecological experiments on arbuscular mycorrhizal fungi networks, which connect to plants and facilitate the trading of nutrients for carbon.

Loch-Temzelides found that these relationships resemble how economists think about competitive—also known as Walrasian—markets. The paper demonstrates that Walrasian equilibrium, a leading concept in the economic theory of markets used to make predictions, can also be used to understand trade in this "biological market."

"Far from being self-sacrificing, organisms such as fungi can exhibit competitive behavior similar to that in markets involving sophisticated human participants," Loch-Temzelides said.

His finding also implies that resources are allocated to the maximum benefit of the [market](#) participants—in this case, fungi and plants.

"Mycorrhizal fungi networks around the world are estimated to sequester around 5 billion tons of carbon per year," Loch-Temzelides said.

"Manipulating the terms of trade so that carbon obtained from host plants becomes less expensive compared to nutrients could lead to additional carbon being stored in the soil, which could provide major

benefits in fighting climate change."

Loch-Temzelides hopes future research by biologists and economists can make progress on better understanding these interactions.

**More information:** Ted Loch-Temzelides, Walrasian equilibrium behavior in nature, *Proceedings of the National Academy of Sciences* (2021). [DOI: 10.1073/pnas.2020961118](https://doi.org/10.1073/pnas.2020961118)

Provided by Rice University

Citation: Fungi embrace fundamental economic theory as they engage in trading (2021, June 29) retrieved 25 April 2024 from <https://phys.org/news/2021-06-fungi-embrace-fundamental-economic-theory.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.