

# Global food trade research upends assumptions about how biodiversity fares

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Soy growing on a farm in Illinois, USA, destined for international export. Credit: Sue Nichols, Michigan State University Center for Systems Integration and Sustainability.

In this week's *Nature Food*, Michigan State University (MSU) researchers find that imports from high-income countries benefit biodiversity in low-income countries.

The findings in "International food trade benefits biodiversity and [food](#)

[security](#) in [low-income countries](#)" fly in the face of conventional wisdoms: that [high-income countries](#) harm biodiversity in low-income countries by importing food from them, and yet low-income countries, particularly those with [biodiversity hotspots](#), were increasingly becoming net importers themselves.

Two MSU sustainability scholars from the Center for Systems Integration and Sustainability (CSIS) looked at the growing complexities of global food trade for a better understanding of the interactions and impacts of growing food to feed the world and protecting some of the most precious natural resources. Their paper is entitled

"Understanding the interrelationships between food security and biodiversity is essential to achieve the United Nations Sustainable Development Goals," said CSIS director Jianguo "Jack" Liu, MSU Rachel Carson Chair in Sustainability and co-author. "Our work seeks to understand how we can achieve global food security to feed a [growing population](#) without sacrificing biodiversity in the telecoupled world."

Countries that are growing both in population and wealth demand more food, and often turn to importing foods. Countries that are increasing their food exports, which often means converting their lands to farms or pastures, can find it results in damage to the environment and biodiversity.

Some low-income countries that don't have biodiversity hotspots such as Ukraine have rapidly increased exporting food to hotspot countries. Those exports might help further reduce negative impacts on biodiversity.

Liu and Min Gon Chung, who received his Ph.D. at MSU and now is a postdoctoral researcher at University of California, Merced, examined comprehensive datasets comprising 189 [food items](#) across 157 countries

during 2000–2018.

The pair offer suggestions, such as having food prices include costs to biodiversity, and those earnings be used to mitigate the damages to biodiversity. Underscoring all solutions involves countries working together to strike agreements benefiting both coffers and the environment.

"With increasing the complexity of food trade among countries with and without biodiversity hotspots, more innovative approaches are needed to minimize the [negative impacts](#) of global food production and trade on biodiversity in hotspot countries worldwide," Chung said.

**More information:** Jianguo Liu, International food trade benefits biodiversity and food security in low-income countries, *Nature Food* (2022). DOI: [10.1038/s43016-022-00499-7](https://doi.org/10.1038/s43016-022-00499-7).  
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