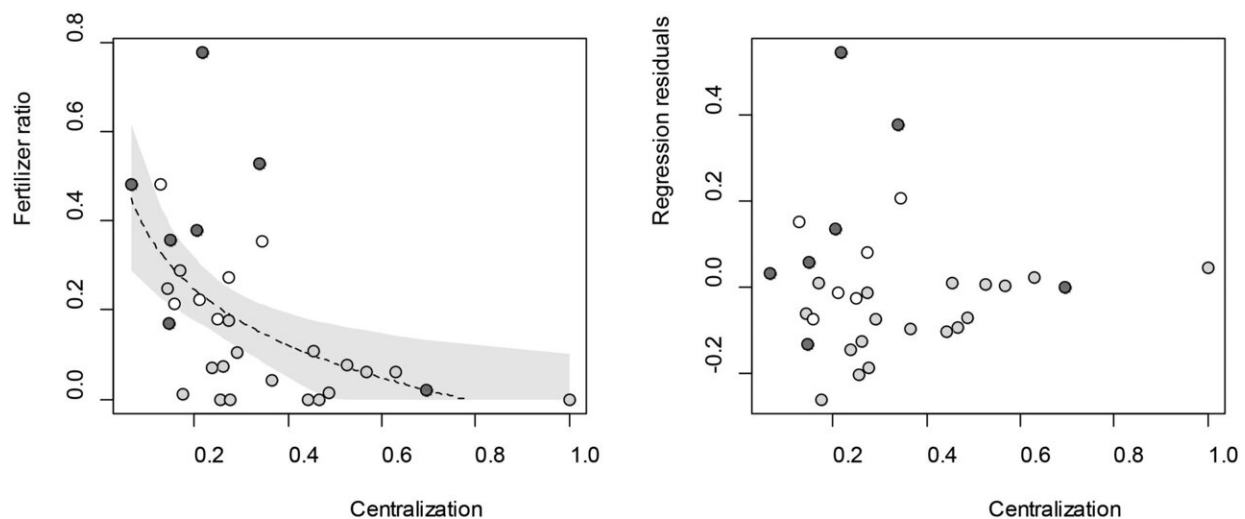


Centralized social networks potentially hinder agricultural innovation by making decision-making too similar

January 24 2024



Network centralization and fertilizer adoption. The fitted curve to the left is based on a linear regression of fertilizer ratio based on $\log(\text{centralization})$. Credit: *People and Nature* (2024). DOI: 10.1002/pan3.10578

Social systems where influence is focused around one or a few individuals may create environments where new ideas are ignored, and innovation is hindered.

This is according to a study published in [People and Nature](#) by researchers at the University of Sydney and Stockholm University. It

looked at the social networks and fertilizer use of 30 rural, cocoa-producing villages in Sulawesi, to examine how innovative and sustainable farming practices are adopted among communities.

It found that when one or two [farmers](#) hold a disproportionate level of influence (often due to their roles as "model farmers" in official sustainability programs) most other farmers tend to adopt similar practices, in this case decisions around how to fertilize their crops.

This type of social hierarchy—referred to by the researchers as "hub and spoke" networks—risks hindering innovation and could be detrimental to the adoption of practices that promote sustainability and [food security](#), said Associate Professor Matous from the University of Sydney's School of Project Management.

"If you've ever watched a group of kindergarteners play soccer, you'll know that they run after the one kid who has the ball all at the same time. It's a bit like that—to foster innovation what you really need is people playing a range of roles and exploring a problem from different angles," said Associate Professor Matous.

"Centralizing influence risks locking in the wrong approach as the status quo—from there it can create a culture of homogeneity, reinforcing pack mentality and group think. When combined with power hierarchies in which those who are less central are not listened to, it can crowd out innovative voices, sometimes swaying entire communities one way or another. In the case of fertilizers, this is a problem because too much can threaten the environment and too little can impact food security," he said.

According to a [UN study](#), smallholder farms support the livelihoods of 2.5 billion people worldwide, with farmers' decisions on how to manage their land having profound consequences for the environment and global

food security. The research was published in collaboration with Swisscontact, an NGO that works to promote sustainable agricultural practices.

"As we advocate for a nuanced approach to sustainable farming initiatives, we caution against programs that elevate a select group of farmers based merely on the fact that these farmers have been the conduit for outside interventions in the past. This can simply reinforce traditionalists and therefore, the status quo," says Ross Jaax, Swisscontact's Senior Technical Advisor for Sustainable Agriculture.

The study's co-author from the University of Stockholm, Professor Örjan Bodin said, "While these individuals may hold sway in the short term, our findings suggest that top-down interventions risk undermining the social fabric of communities, potentially hindering adaptive capacities in the face of evolving agricultural and environmental challenges."

Associate Professor Matous said the results extend beyond the agricultural context and may also hold some truth in corporate and other leadership settings, areas which the School of Project Management explores.

"In contrast to the popular idea of a strong leader, we are interested in understanding socialized forms of leadership where decisions and influence are broadly shared, so we can find more effective ways of engaging communities in projects and programs."

More information: Petr Matous et al, Hub-and-spoke social networks among Indonesian cocoa farmers homogenise farming practices, *People and Nature* (2024). [DOI: 10.1002/pan3.10578](https://doi.org/10.1002/pan3.10578)

Provided by University of Sydney

Citation: Centralized social networks potentially hinder agricultural innovation by making decision-making too similar (2024, January 24) retrieved 28 April 2024 from <https://phys.org/news/2024-01-centralized-social-networks-potentially-hinder.html>

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