

Seed microorganisms override soil microorganisms when colonizing plants

December 16 2021



Credit: CC0 Public Domain

New research shows that when it comes to colonizing plants, microorganisms from seeds have more staying power than microorganisms from the soil.

"Ever since I started working on plant microbiomes, I've been wondering about their origins," explained Étienne Yergeau, a [plant pathologist](#) based at the INRS in Quebec, Canada. "Are they coming from the seeds and transmitted somehow by the mother plant or are they picked up from the environment?"

Yergeau and colleagues set out to explore these questions through soybeans. They grew [soybean seeds](#) under controlled conditions and selectively removed the [microorganisms](#) from the seeds or from the soil then let the plant develop.

"We found that when the seed microorganisms were not removed, they had precedence over the soil microorganisms to colonize all the plant parts, including the roots and the soil associated to the roots. It is only when we removed the seed microorganisms that the soil microorganisms could colonize the plant, and only the roots and the soil associated to the roots," said Yergeau.

Previous studies had looked at the origin of the plant microbiome mostly by comparing the microorganisms found in and on the plant to the ones in seeds and soil, but without experimentally removing one or the other.

"Our ultimate goal is to find a way to modify the microbiomes of crops to increase yields, quality, and resistance to stresses and thereby reduce chemical inputs," explained Yergeau. "Our research shows that the seed should be the primary target for such efforts. If we modify the [seed](#) microbiome, there is a good chance we will be able to generate [plants](#) with tailor-made beneficial microbiomes and head toward a more sustainable agriculture."

More information: Itumeleng Moroenyane et al, Soybean Microbiome Recovery after Disruption is Modulated by the Seed and Not the Soil Microbiome, *Phytobiomes Journal* (2021). [DOI:](#)

[10.1094/PBIOMES-01-21-0008-R](#)

Provided by American Phytopathological Society

Citation: Seed microorganisms override soil microorganisms when colonizing plants (2021, December 16) retrieved 23 April 2024 from <https://phys.org/news/2021-12-seed-microorganisms-override-soil-colonizing.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.