

# Research suggests fumigants have very low long-term impact on soil health

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It started with curiosity. How does a fumigant, commonly used for nematode management in potato cropping systems, influence soil microbial communities?

To explore this question, scientists at Colorado State University and Oregon State University used high-throughput sequencing techniques to investigate changes in soil bacterial and fungal community structure in response to the application of 1,3-Dichloropropene (1,3-D) in Pacific Northwest potato production fields. Their research found that the [fumigant](#) had very minor effects.

1,3-D is an organic compound used as a pesticide to control nematodes (roundworms) that reduce the yields of many plants. Despite its widespread use, little is known about the fumigant's effects on other organisms in soil. A recent paper published in the open access *Phytobiomes Journal* is one of the first to report on the effects of [nematode](#) management practice, specifically 1,3-D, on soil microflora.

"We found it interesting that only minor effects of 1,3-D were observed on both bacterial and fungal communities, suggesting that soil can be a robust ecosystem and fumigants may not have a long-term impact on the overall microbial community," said researcher Kenneth Frost. The research also showed that the average efficacy of 1,3-D was estimated to be 98% across all nematodes studied, which included root lesion and stubby root nematodes.

As a result of this research, the authors suggest there may be a greater impact on microbial community from other [agricultural practices](#), such as tillage, use of cover crops, irrigation, and precipitation, than fumigant application in potato cropping systems.

There is still room for more studies of this nature, according to Frost, who says, "We think that

investigating [soil](#) microbial community structure in response to different crop management strategies, including pesticide application, may eventually help farmers manage their communities in ways that will enhance crop health and productivity."

**More information:** Yuan Zeng et al, Responses of Bacterial and Fungal Community Structure to Different Rates of 1,3-Dichloropropene Fumigation, *Phytobiomes Journal* (2019). [DOI: 10.1094/PBIOMES-11-18-0055-R](#)

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