

Can pollution help trees fight infection?

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Pollution may help trees fight infection. Credit: Frederic E. Pitre.

Trees that can tolerate soil pollution are also better at defending themselves against pests and pathogens. "It looks like the very act of tolerating chemical pollution may give trees an advantage from

biological invasion", says Dr Frederic E. Pitre of the University of Montreal and one of the researchers behind the discovery.

Unexpectedly, whilst studying the presence of [genetic information](#) (RNA) from fungi and bacteria in the trees, the researchers found evidence of a very large amount of RNA from a very common plant pest called the two-spotted spidermite.

In fact, 99% of spidermite RNA was in higher abundance in trees without contamination, suggesting that the polluted plant's defence mechanisms, used to protect itself against chemical contamination, improves its resistance to a biological invader.

"This higher spidermite gene expression (RNA) in non-contaminated trees suggests that tolerating contamination might 'prime' the trees' defence machinery, allowing them to defend themselves better against pests, such as spidermites," says Pitre.

While early experiments were conducted in greenhouses, the researchers are now in the process of repeating the work on trees grown in real contaminated sites. They have already identified similar interactions with arachnids and insects, and the numbers of interacting organisms, especially fungi, are very high (often in the hundreds) for a given plant tissue when grown outside the laboratory.

"It's rather intimidating to unravel but undoubtedly a fascinating, undiscovered world of biological complexity exists in the field environment, often at a level just beyond the human eye," says Pitre.

More information: This work will be presented by Frederic E. Pitre (IRBV Université de Montréal, Canada) at the annual meeting of the Society for Experimental Biology (SEB) in Prague at 11:55 Wednesday 1st July 2015.

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