

Scientists' new way to identify microscopic worm attacking coffee crops

May 16 2018

The plants which produce one of the most popular drinks in the world, coffee, are targeted by a microscopic worm, but scientists are fighting back.

An underestimated problem in [coffee](#) farming, the parasite has been found in soil samples across the coffee growing world thanks to a new and quick detection method.

Details of the method are published in the journal *Phytopathology* and the researchers hope their method will be used to further understand which species live where so growers can take mitigating actions and protect our morning brew.

Around two billion cups of coffee are consumed worldwide every day. This supply of coffee beans is challenged by two major nematode species which live in the soil and damage the roots of the coffee plant with no specific symptoms.

The nematodes feed on the plant roots, weakening the plant and ultimately cause yield loss.

They also enjoy banana and black pepper [plants](#), which are often grown alongside coffee providing a rich environment for them to thrive.

A team led by the University of Leeds, working with Nestlé agronomists and researchers, as well as international academic colleagues, took soil

samples from plantations in Brazil, Vietnam and Indonesia. They analysed these samples to identify DNA from the worms and found them at damaging levels wherever they looked.

The problem of nematode worms targeting coffee crops has been previously reported but this is the first molecular-based study to assess plant-parasitic nematodes in coffee fields by sampling multiple crop plants in three major coffee producing countries.

Peter Urwin, Professor of Plant Nematology at Leeds University's Faculty of Biological Sciences said: "We found widespread evidence of these parasites. The exact species vary by country and looking at [soil samples](#), I can tell the difference between Vietnam and Brazil or Indonesia. The sad fact is that wherever we take samples, we find plant-parasitic nematodes which are hugely damaging to coffee crops."

The average coffee plant has a 20 year lifespan and is a significant investment for a farmer. They are sometimes grown alongside banana and [black pepper](#) which gives a broader income stream, but may compound the problem. The researchers say one mitigation method could be to separate the crops so if one gets infected the others are not threatened.

Professor Urwin added: "In vineyards, growers often plant pest-resistant but less desirable grapes and then "graft" preferable grape varieties onto the vines to protect against root parasites. Once we have a better picture of which parasites attack which coffee crops and which coffee plants are resistant, this approach could be an option for growers."

The work was carried out by Ph.D. researcher, Christopher Bell. He said: "We were alarmed by the number of parasites we found in our samples and hope our method will be taken up by others so we better understand what we are facing. Ultimately, farmers and growers should

benefit from this work and take appropriate mitigating actions."

More information: Christopher A. Bell et al. A High-Throughput Molecular Pipeline Reveals the Diversity in Prevalence and Abundance of *Pratylenchus* and *Meloidogyne* Species in Coffee Plantations, *Phytopathology* (2018). [DOI: 10.1094/PHYTO-10-17-0343-R](https://doi.org/10.1094/PHYTO-10-17-0343-R)

Provided by University of Leeds

Citation: Scientists' new way to identify microscopic worm attacking coffee crops (2018, May 16) retrieved 27 June 2024 from <https://phys.org/news/2018-05-scientists-microscopic-worm-coffee-crops.html>

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