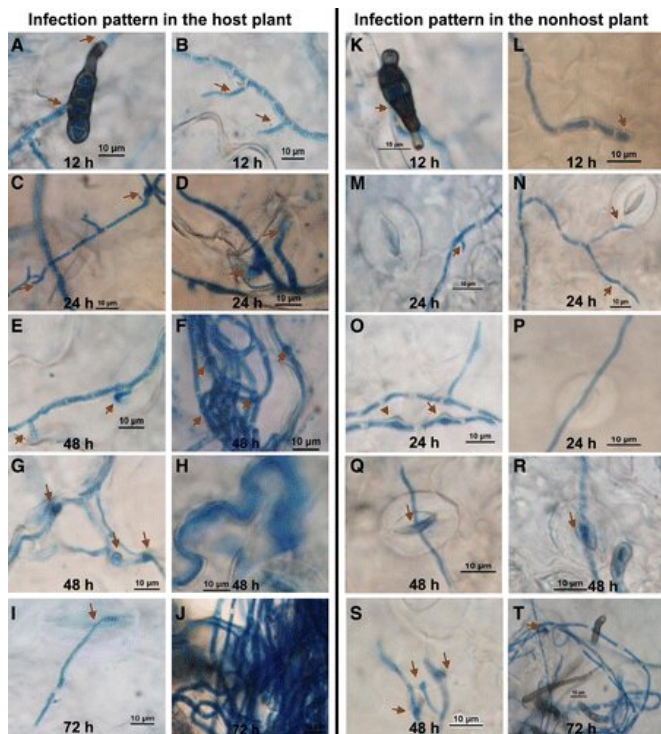


Can chickpea genes save mustard seeds from blight disease?

29 January 2020



Comparative microscopic analysis of the infection pattern of *Alternaria brassicae* on host plant (mustard) and non-host plant (chickpea). Credit: Urooj Fatima, Priyadarshini Bhorali, and Muthappa Senthil-Kumar

During visits to fields in Assam, Rajasthan and Uttar Pradesh, India, plant biologists Muthappa Senthil-Kumar and Urooj Fatima found mustard plants infested with *Alternaria* blight disease. They also noticed that an adjacent field of chickpeas were completely uninfected.

Alternaria blight caused by fungal pathogen devastates *Brassica* crops such as cabbage, cauliflower, broccoli, and [mustard seed](#). Highly infectious, this fungus can infect the host plant at all stages of growth. Currently *Alternaria* blight is managed by chemical fungicides, but recently efforts have been made to utilize breeding and

modern biotechnological approaches to develop blight-resistant crop varieties.

Non-host resistance (NHR) is the most durable resistance against [fungal pathogens](#). While *Alternaria* typically penetrates the epidermis or the stomata of a host plant, this is unable to deploy this attack on [plants](#) protected by NHR. To protect *Brassica* crops from this fungus, scientists are studying the mechanisms of NHR in order to develop improved crop varieties.

In a study published in *MPMI*, plant biologists in India detailed their research comparing the response of a host plant (mustard) and a non-[host plant](#) (chickpea) to the fungus on a morpho-pathological level. They found that the chickpea actively suppressed the fungal development, penetration, and colonization even after hours of infection.

They also studied chickpea transcripts to pinpoint several genes involved in the plant's pathogen defense.

"These genes are interesting candidates for additional study to determine their precise involvement in NHR," said Senthil-Kumar, who conducts research through the National Institute of Plant Genome Research. "These genes could then be transferred to mustard plants to develop blight-resistance crops."

For more information about this study, read "Morpho-Pathological and Global Transcriptomic Analysis Reveals the Robust Nonhost Resistance Responses in Chickpea Interaction with *Alternaria brassicae*" published in the December issue of *Molecular Plant-Microbe Interactions (MPMI)*.

More information: Urooj Fatima et al, Morpho-Pathological and Global Transcriptomic Analysis Reveals the Robust Nonhost Resistance Responses in Chickpea Interaction with *Alternaria*

brassicae, *Molecular Plant-Microbe Interactions*
(2019). DOI: [10.1094/MPMI-05-19-0117-R](https://doi.org/10.1094/MPMI-05-19-0117-R)

Provided by American Phytopathological Society

APA citation: Can chickpea genes save mustard seeds from blight disease? (2020, January 29) retrieved 19 January 2021 from <https://phys.org/news/2020-01-chickpea-genes-mustard-seeds-blight.html>

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