# Tobacco root rot and microorganism communities

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*Co-author Kuo Huang collecting basic soil samples after overwintering and before ridging in a tobacco field. Photo courtesy of Yongqiang Zhang.*

Tobacco root rot disease caused by *Fusarium spp.* is one of the most common and widely distributed soil-borne diseases and often occurs along with tobacco bacterial wilt disease and tobacco black shank disease. However, the microorganism communities associated with the occurrence of this disease in this system remain poorly identified.

New research in *Agronomy Journal* reports on the characteristics of the microbial community in the rhizosphere of tobacco (*Nicotiana tabacum* L.) and explores the potential microbiological indicators of tobacco root rot.

The team found that *Rubrobacter* and *Talaromyces* spp. may serve as beneficial microbiological indicators of tobacco root rot, and *Paenibacillus polymyxa* and *Trichoderma harzianum* may serve as antagonistic strains for biocontrol of the disease.

Bacterial and fungal diversity decreased with the increase in years of continuous cropping. The bacterial and fungal diversity in the rhizosphere with tobacco root rot was higher than that in the healthy rhizosphere. *Rubrobacter* and *Talaromyces* spp. were more abundant in the rhizosphere soil of healthy tobacco than in that of diseased tobacco. Treatment with *P. polymyxa* and *T. harzianum* led to an increase in the relative abundance of *Rubrobacter* and *Talaromyces* spp., implying that it could have a plant-promoting effect.

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Yao, X., Huang, K., Zhao, S., Cheng, Q., Zhang, S., Yang, L., Ding, W., & Zhang, Y. (2021). Identification and verification of rhizosphere indicator microorganisms in tobacco root rot. *Agronomy Journal.* **https://doi.org/10.1002/agj2.20547** (in press)

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