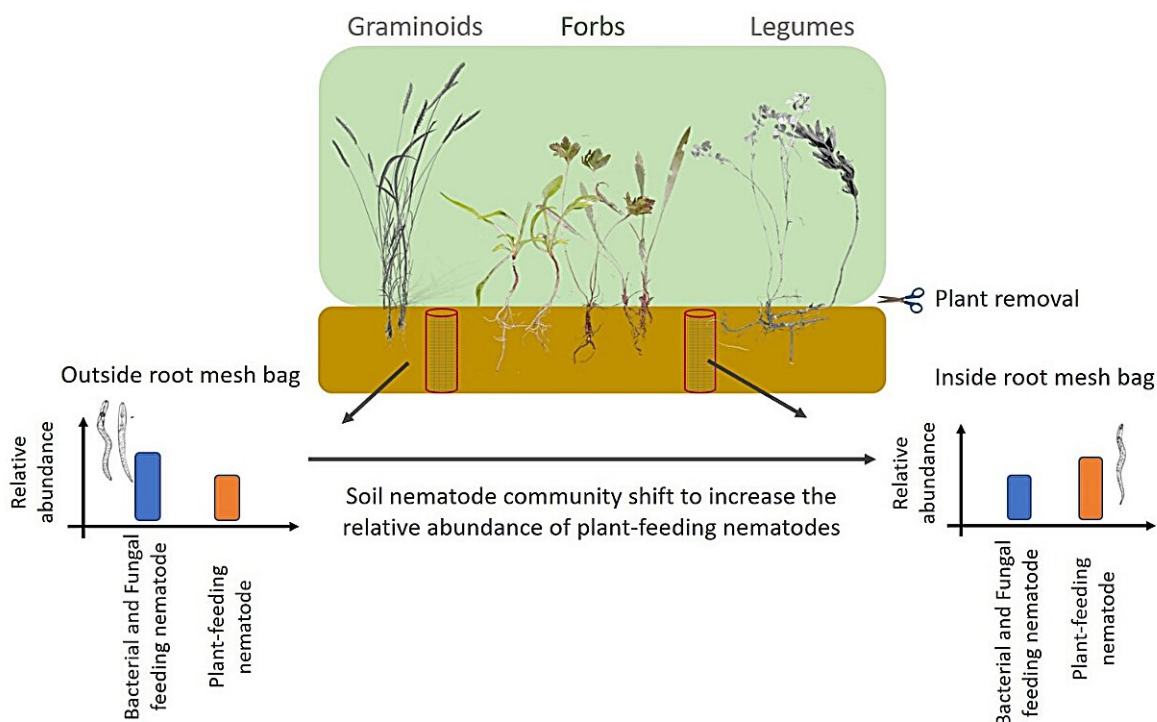


Remaining roots have legacy effect on soil nematode community structure: Study

January 30 2024, by Zhang Nannan



Conceptual figure of the effects of PFG removal and root mesh bags on soil nematode communities. Credit: WBG

Plant removal experiments are recognized as effective methods for understanding ecosystem functions of plant species under vegetation change scenarios. To minimize disturbance, the most prominent method

of plant removal is to repeatedly cut off the aboveground parts of plants and leave roots in the soil. However, how the remaining roots affect soil organisms remains to be investigated.

Researchers led by Prof. Zuo Juan from the Wuhan Botanical Garden of the Chinese Academy of Sciences set up 1 mm root [mesh](#) bags in a three-year plant [functional group](#) (PFG) removal experiment in a Qinghai-Tibetan alpine meadow with five PFG treatments: No removal control, [legumes](#) (legume and graminoid removal), forbs (legume and graminoid removal), graminoids (legume and forb), and all plant removed. The roots of the target plants (some as root litter) were present only outside the mesh bags. After one year, soil nematodes were identified inside and outside of the root mesh bags.

The study, titled "Impact of remaining roots on soil nematode communities in an aboveground plant functional group removal experiment," has been [published](#) in *Plant and Soil*.

Results showed that, except for the no-removal control treatment, the structure of nematode communities inside and outside the mesh bags was generally distinct, as indicated by non-metric multidimensional scaling.

Nematode communities outside the mesh bags had higher nematode channel ratios and lower channel index values, indicating that root litter outside the mesh bags increased energy flux to bacterial-feeding nematodes over fungal-feeding nematodes. The relative abundance of plant-feeding nematodes increased inside compared to outside the mesh bags, likely due to a higher proportion of living roots inside the mesh bags.

This study suggests that cutting off above-ground plant parts and letting [plant roots](#) remain in the soil has a legacy effect on the soil [nematode](#)

community structure.

More information: Yong Zheng et al, Impact of remaining roots on soil nematode communities in an aboveground plant functional group removal experiment, *Plant and Soil* (2023). [DOI: 10.1007/s11104-023-06429-1](https://doi.org/10.1007/s11104-023-06429-1)

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