Rhizosphere community selection reveals bacteria associated with reduced root disease

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Video Byte

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Abstract

At the roots of plants, there is more than meets the eye. The rhizosphere – the soil in contact with plant roots – is home to a rich community of microbes that are tightly associated with plant roots. Microbes can benefit plants by increasing nutrient availability, producing plant growth hormones, and protecting against pathogens, while in contrast, soilborne pathogens can reduce plant growth and cause yield loss. A recent study sought to better understand how plants influence their associated root bacteria. Using a multi-selection system and infection by the soilborne pathogen *Rhizoctonia solani* AG8, researchers found that successive plantings enhanced disease suppression in wheat cultivars. Distinct bacterial community profiles assembled over successive plantings, and the cluster of bacterial communities in AG8-infected plants was different from those in uninfected plants. In infected plants, bacteria that act as antagonists to AG8 and promote plant growth were enriched. These results show that successive wheat plantings and pathogen infection can shape the rhizosphere microbial community and enrich for beneficial microbes, suggesting that soil community selection may offer the opportunity to address concerns associated with plant diseases and crop productivity.