

Desert farming forms bacterial communities that promote drought resistance

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When there is little water available for plants to grow, their roots form alliances with soil microbes that can promote plant growth even under water-limiting conditions, according to research published Oct. 31 by Daniele Daffonchio and colleagues from the University of Milan, Italy in the open access journal *PLOS ONE*.

[Symbiotic relationships](#) between plants and soil microbial communities are critical to the health of plants. Though the effects of drought on plants are well-known, little is known about how lack of water affects the bacteria around plant roots.

In this study, the researchers grew pepper plants under conditions of limited water and analyzed the bacterial species around the roots of the plants. They found that drought stress enriched the microbial communities with bacteria capable of increasing plant photosynthesis and biomass production by up to 40% under limited water conditions.

According to Daffonchio, "Our findings highlight that fully functional plants cannot be considered single organisms anymore, but meta-organisms of the plant and its microbiome, which promotes essential functions like resistance to water stress. The promotion of [drought resistance](#) by bacteria can have important applications, for instance, in retaining high yields from plants even in the presence of lower irrigation."

More information: Marasco R, Rolli E, Ettoumi B, Vigani G, Mapelli

F, et al. (2012) A Drought Resistance-Promoting Microbiome Is Selected by Root System under Desert Farming. PLOS ONE 7(10): e48479. [doi:10.1371/journal.pone.0048479](https://doi.org/10.1371/journal.pone.0048479)

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