

# Microscopic life in the saline soil of the Marismas del Odiel Natural Park

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A University of Seville research group, led by the professor Antonio Ventosa, has, for the first time, studied and described the microbiome of saline soil in the Marismas del Odiel Natural Park. This research opens

new perspectives in microbiome study of this type of environment, which can produce data on, among other aspects, possible climate alterations and other environmental factors in microbial populations.

It is estimated that saline soil and soil with salinity problems cover 2% of the world's surface. Spain is one of the countries with the greatest area of this type of soil in Europe. Its wide distribution and the growing salinization of the soil due to irrigation practices and the processes of desertification means that research into the microbial community of these environments is vital for recovering soil affected by salinization due to agricultural use. In addition, it makes it possible to accurately predict how climate change will affect these communities and, therefore, the services that they provide to humans.

The research carried out at the University of Seville forms part of the doctoral studies of Blanca Vera Gargallo and was done in collaboration with the research group led by the teacher Janet K. Jansson from Pacific National Northwest Laboratory in the United States. It forms part of the international project Earth Microbiome Project (EMP), an open science project, which is collaborative and whose aim is to characterise the taxonomic diversity and microbial function of the diverse habitats that exist on our planet.

Massive sequencing techniques and data analysis methods were used in the study to analyse the composition of the microbial community in saline [soil](#) at different points in the Marismas del Odiel. The results, collected in the prestigious review *Scientific Reports*, published by *Nature*, show that microbial communities possess typically land-based characteristics, although they share other characteristics essential for life in hypersaline environments.

As well as salinity, other factors such as pH, humidity and the metals present in different points of the area are associated with changes in the

microbial communities. Also, a proportion of the microorganisms in these soils are not related to any other organism previously known, and therefore this study opens the door to the identification of new microbial taxa and the characterisation of their role in land-based saline habitats.

As the authors of the article indicate, this research widens the horizon for the study of the microbiome in hypersaline land-based environments and proposes the need to carry out more exhaustive studies on the same. This work will make it possible to determine the important role that halophilic and halotolerant microorganisms play in these ecosystems and that of the possible climate alterations and other [environmental factors](#) in [microbial populations](#).

Ventosa's research group has dedicated more than 30 years to the description of new bacteria and haloarchaea in hypersaline habitats, principally aquatic ones. With this project, they have begun the study of land-based hypersaline environments, to which less attention has been paid than to other hypersaline environments as they are more complex systems.

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Provided by University of Seville

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