Cofinanciado por la Unión Europea

GOBIERNO DE ESPAÑA · MINISTERIO DE AGRICULTURA, PESCA Y ALIMENTACIÓN

REDPAC Más impulso al medio rural

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HIDROOLIVAR

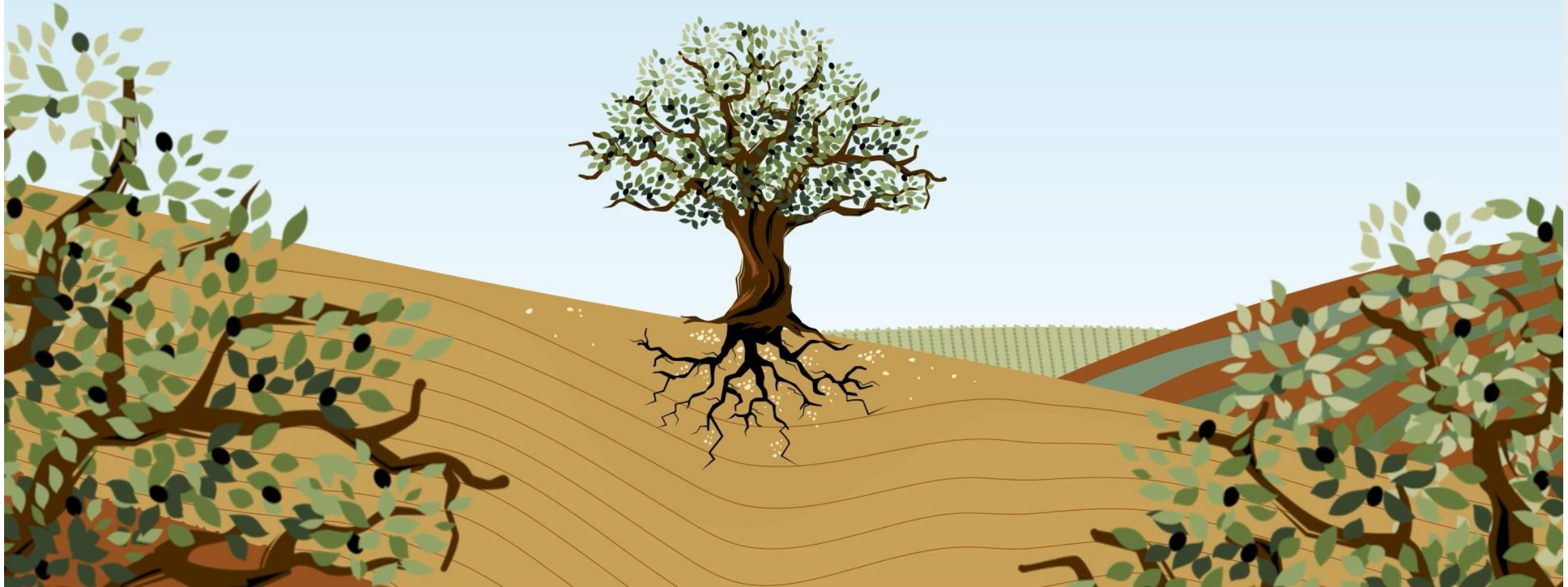
A Solution to Combat Drought in Olive Groves

Juan Manuel Martín-García

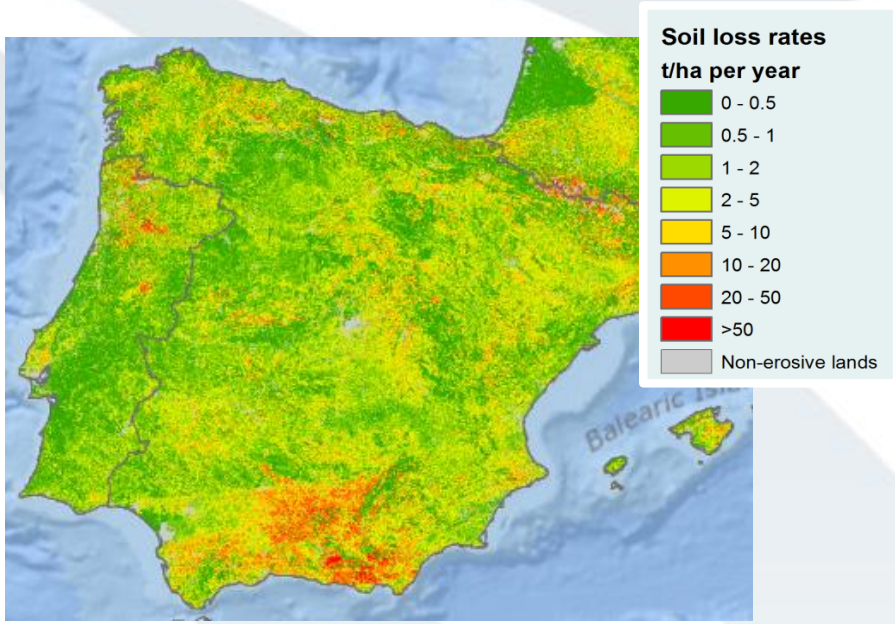
Dpto. Edafología y Química Agrícola; Universidad de Granada; Spain

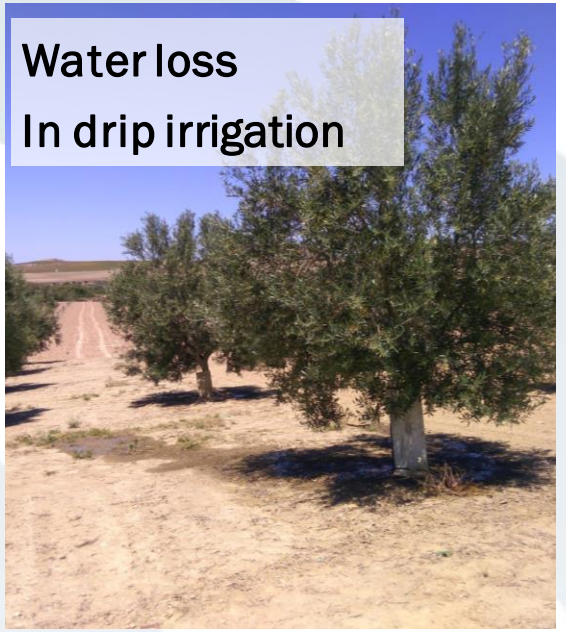
Instituto Universitario de Investigación en Olivar y Aceites de Oliva; Universidad de Jaén; Spain

HIDROLIVAR

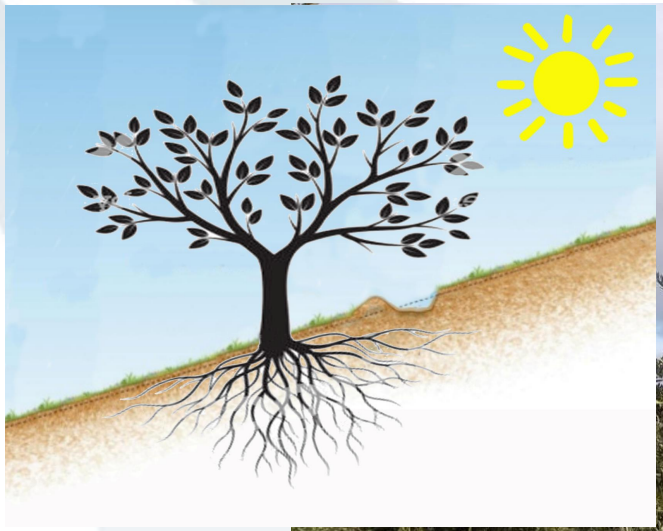


In Andalusia, water loss and water erosion in olive groves are the main environmental issues:





How to prevent water loss?: individual tree basin (microbasin) formed around each olive tree to enhance localized water retention

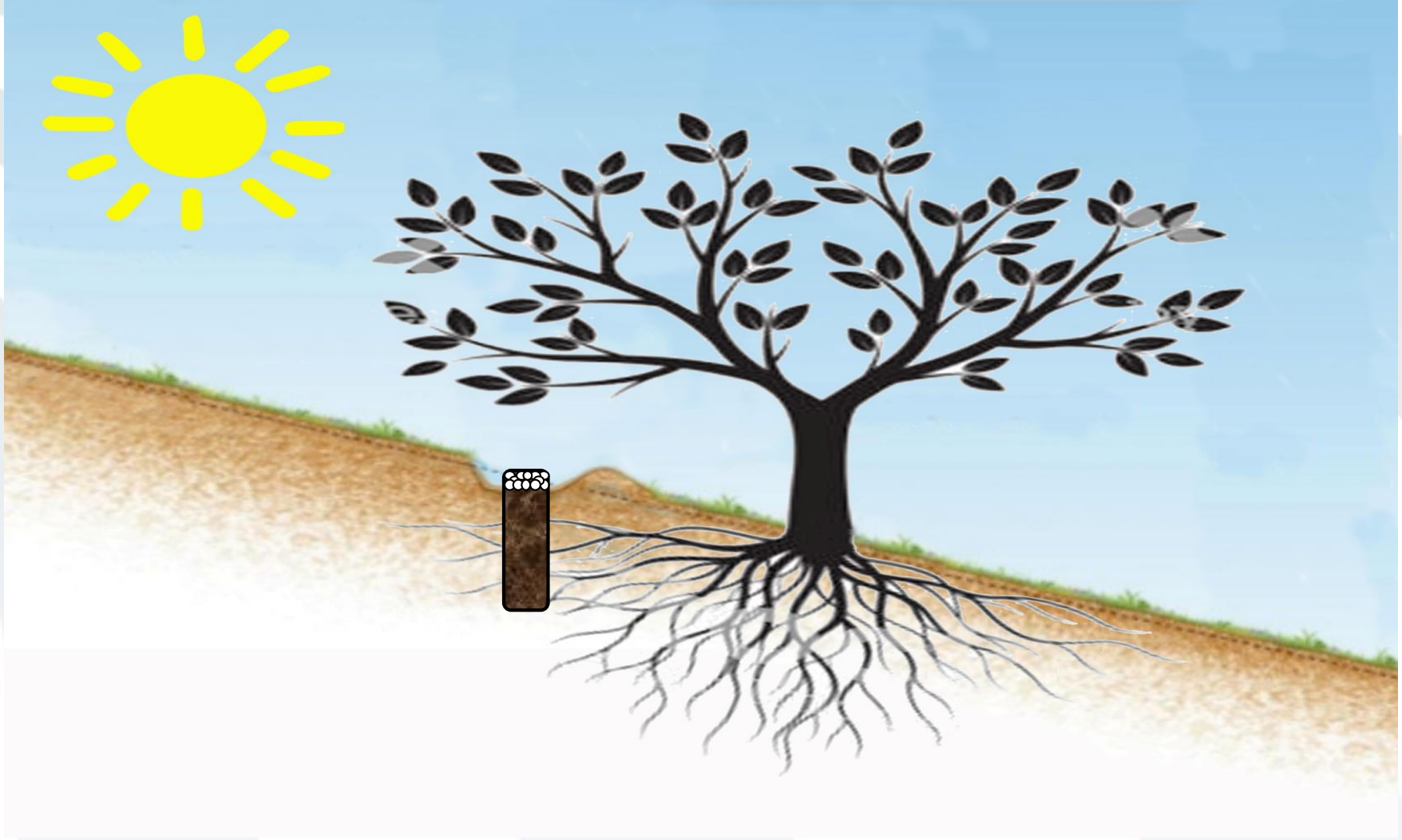


...but in the individual tree basin system, surface depositional crusts can form, rendering the soil impermeable.

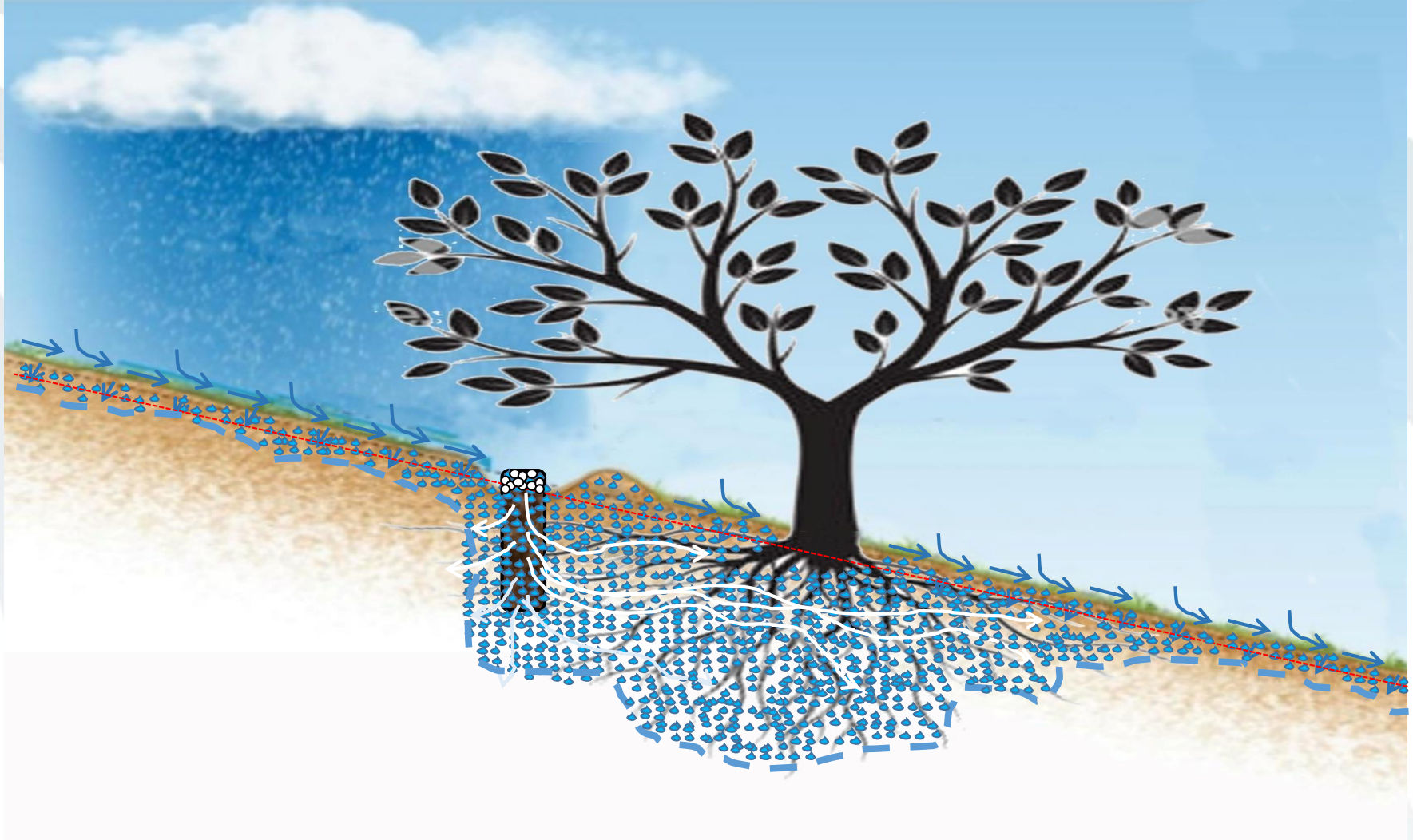
Examples of infiltration rates (loam texture):

Surface type	($l/m^2/h$)
without crust	45
structural crust	6
depositional crust	1

SOLUTION: HYDROINFILTRATOR (PATENT ES2793448B2)



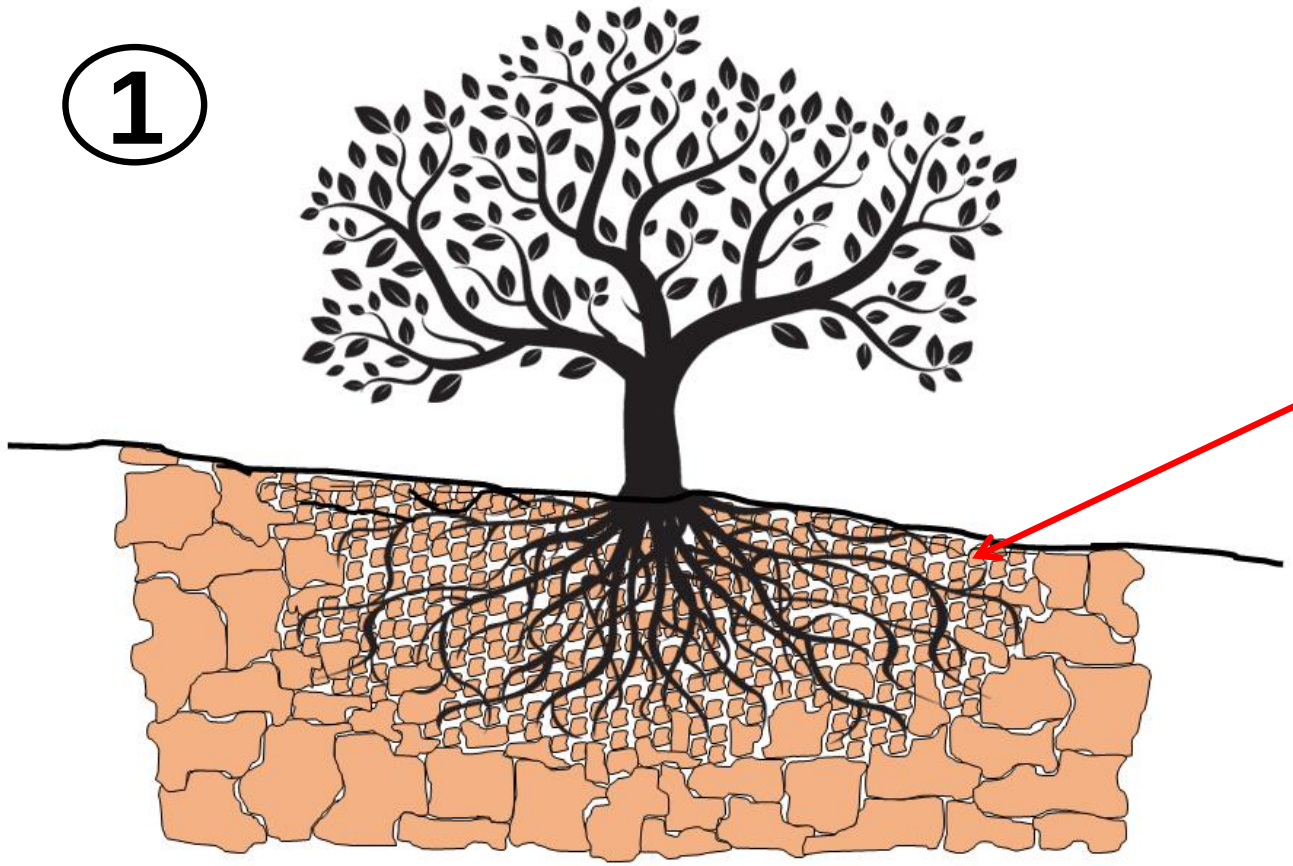
Made mainly of ultraporous material (biochar) capable of absorbing up to five times its weight in water...



...promoting the development of **preferential root pathways**, facilitating deep water infiltration and accumulation...

How are **preferential pathways** formed?:

1. Due to the soil structure
2. Because of root behavior



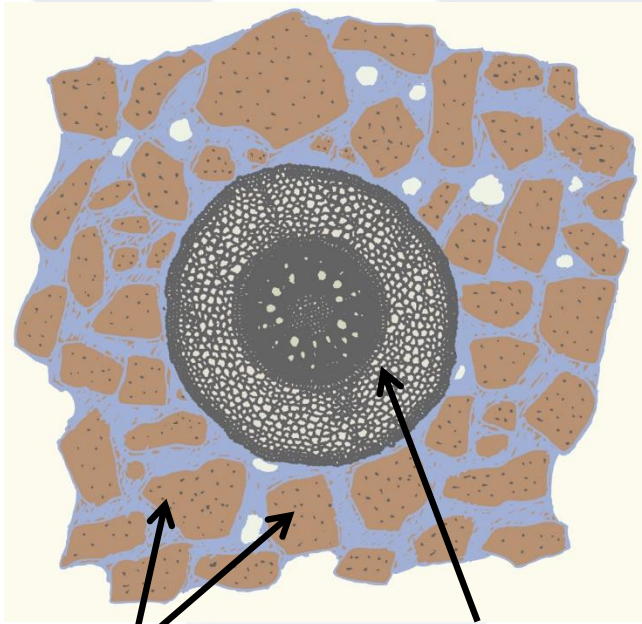
The roots of the olive tree reshape the soil structure, rendering it more porous and stable.

They serve as a reservoir capable of storing over 2000 liters of water.

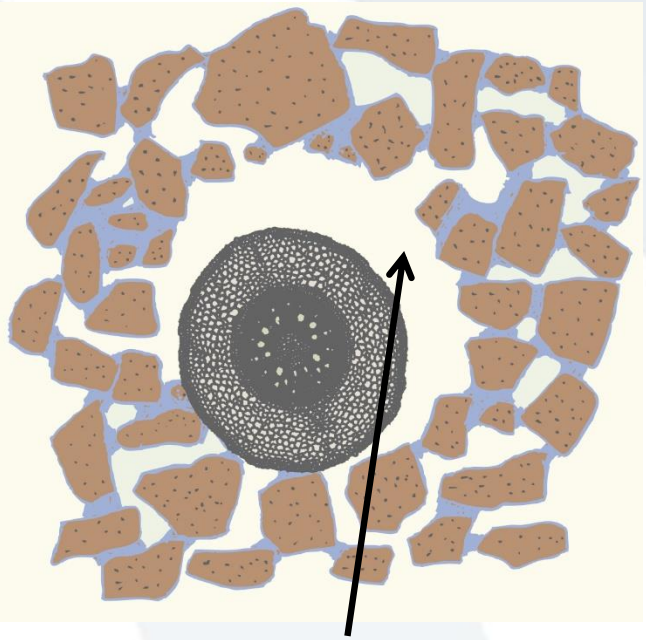
2

The roots naturally create gaps between themselves and the pore walls, establishing extensive "highways" (**preferential pathways**) that ease water movement throughout the olive tree's root system.

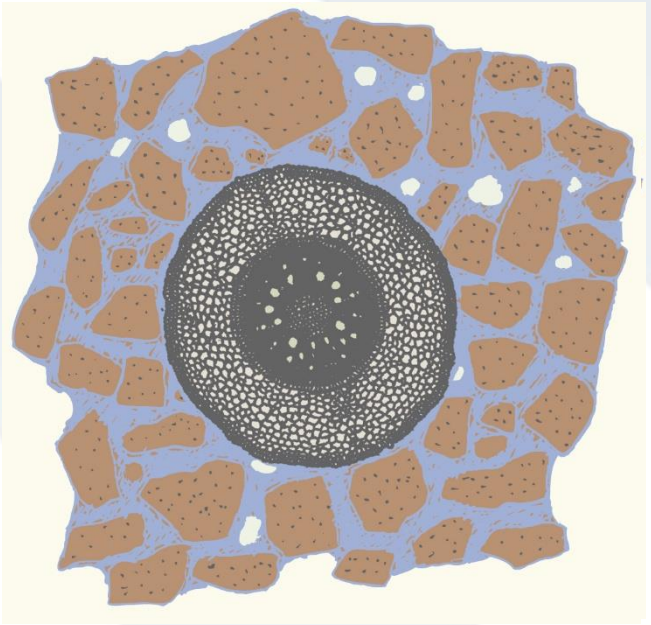
Wet soil



Dry soil

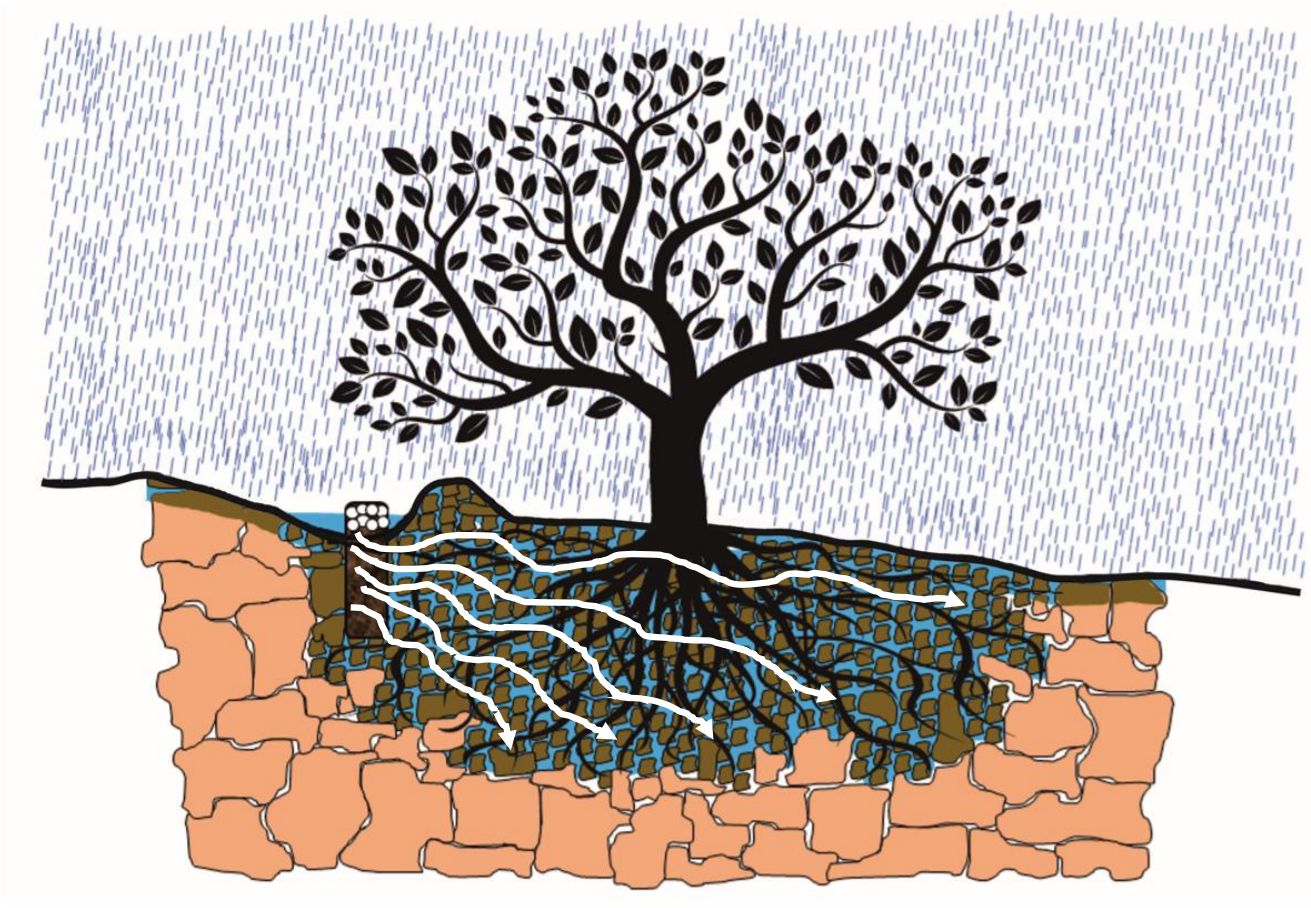


Greater space between the root and the pore wall

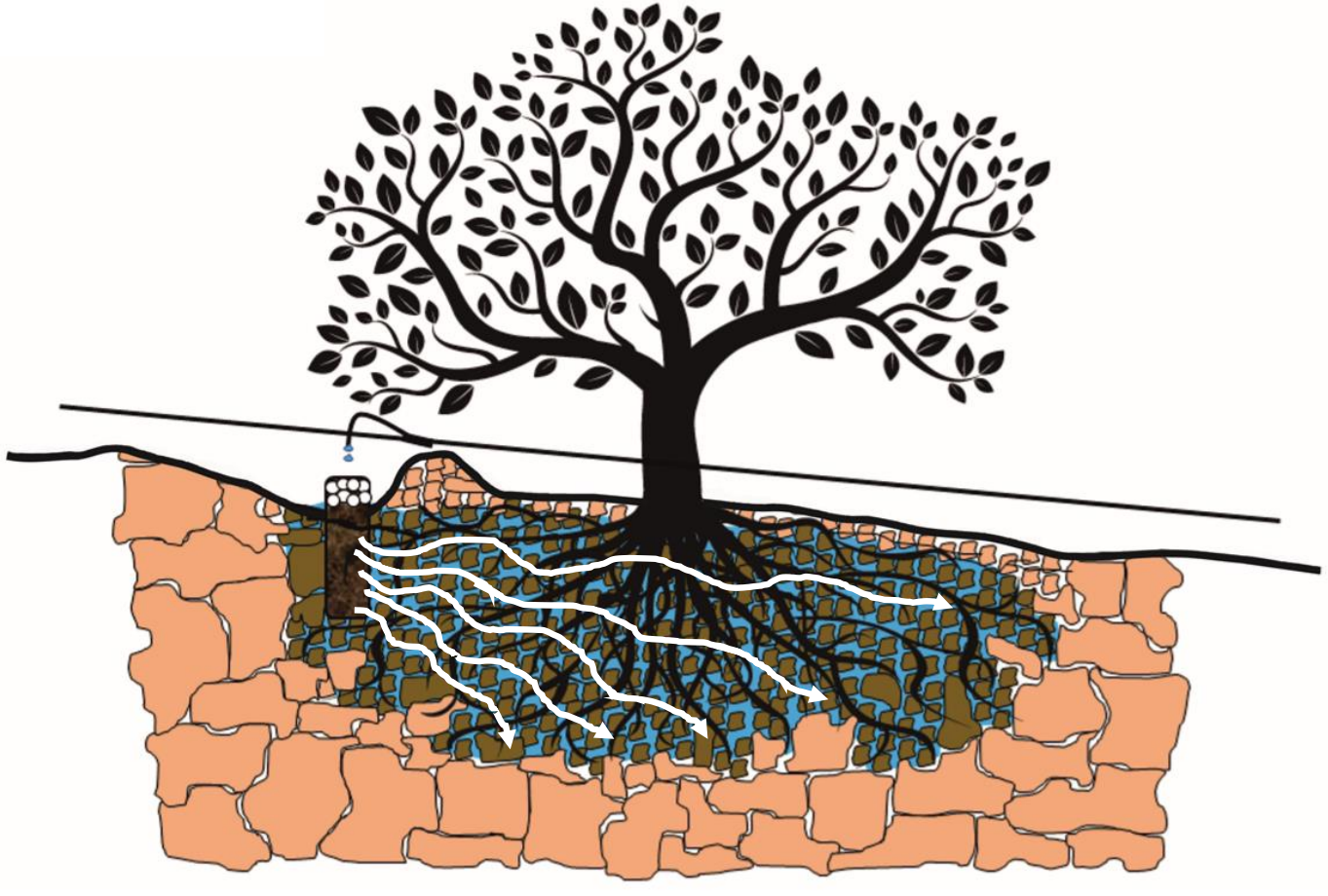


The root shrinks as the soil dries, even in the presence of moisture on a hot day.

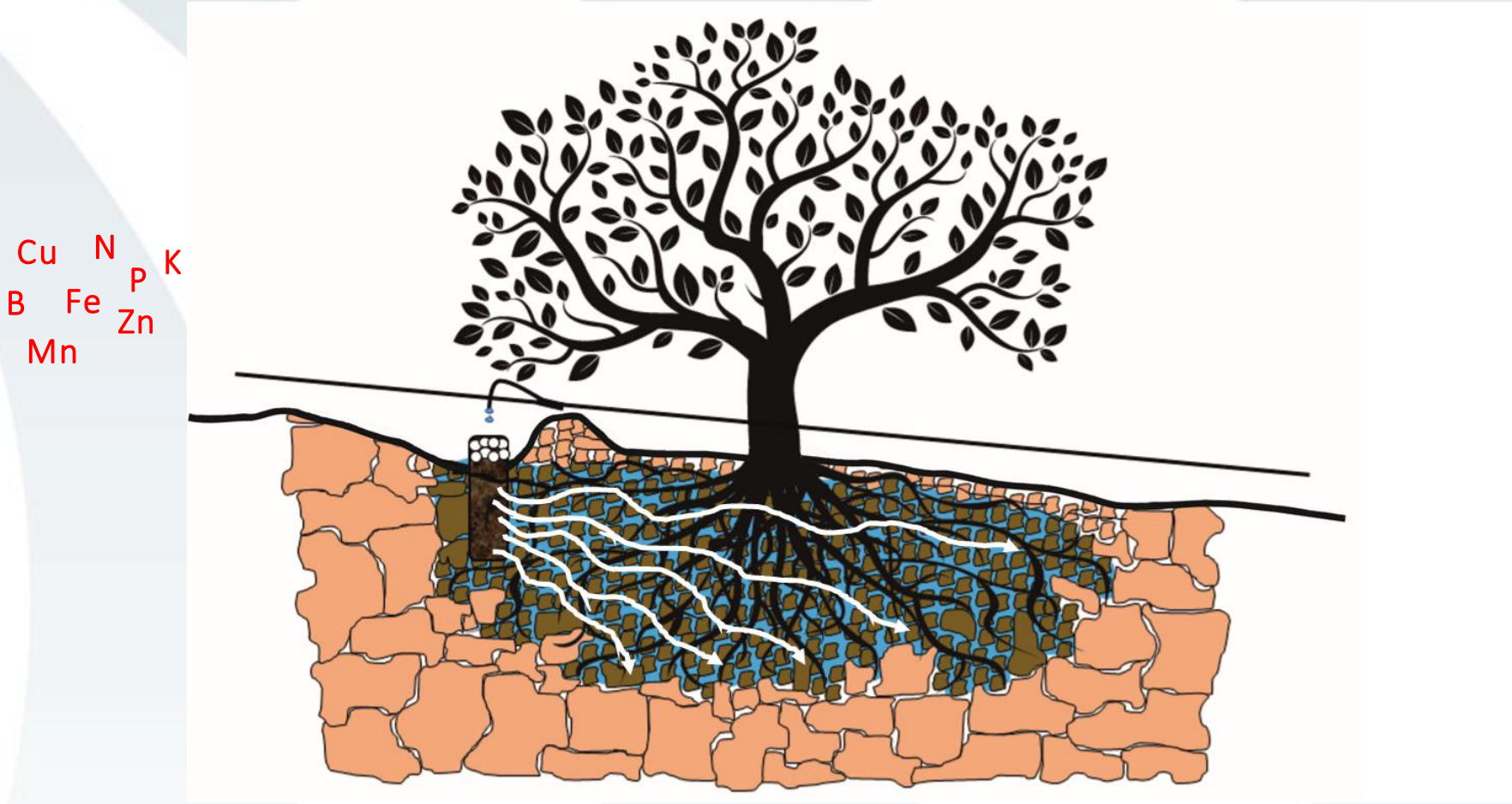
Runoff water reaches the basin, infiltrates through the **Hydroinfiltrator**, and is distributed through **preferential pathways** to the olive tree's root system



In **drip irrigation**, all water provided is utilized, **minimizing evaporation losses** and allowing for deep watering, ideal for **deficit irrigation**



We can directly supply **nutrients/fertilizers** (or any other phytosanitary treatment like mycorrhizae or fungicides) **to the roots**



Baena (Spain), August 11th, 2020

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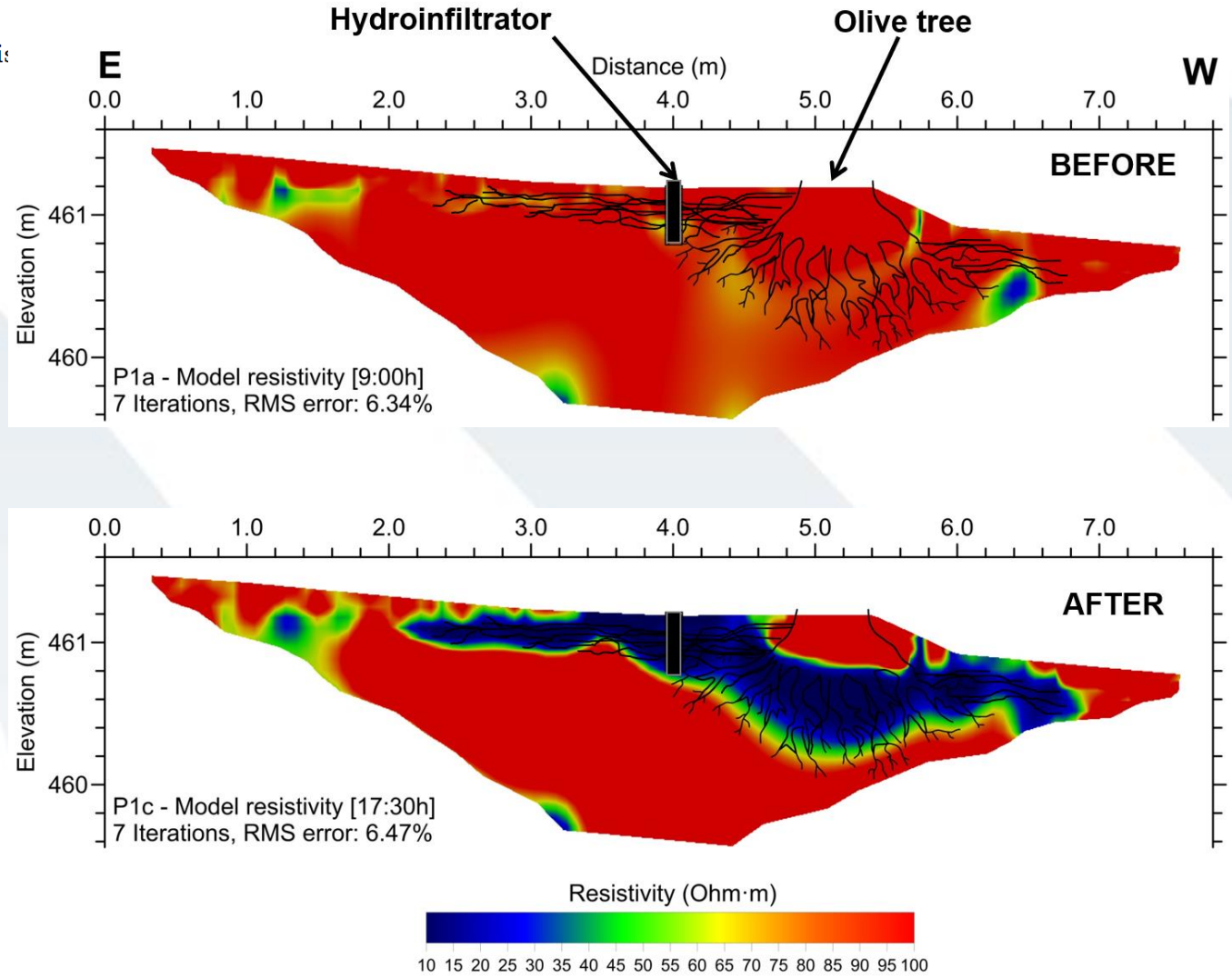
journal homepage: www.elsevier.com/locate/geoderma

Impacts of a hydroinfiltrator rainwater harvesting system on soil mois regime and groundwater distribution for olive groves in semi-arid Mediterranean regions

Raul Rojano-Cruz [a], Francisco José Martínez-Moreno [b,*], Jesús Galindo-Zaldívar [c,d], Francisco Lamas [e], Lourdes González-Castillo [c], Gabriel Delgado [a], Jesús Párraga [a], Victoriano Ramírez-González [f], Víctor Hugo Durán-Zuazo [g], Belén Cárceles-Rodríguez [g], Juan Manuel Martín-García [a]

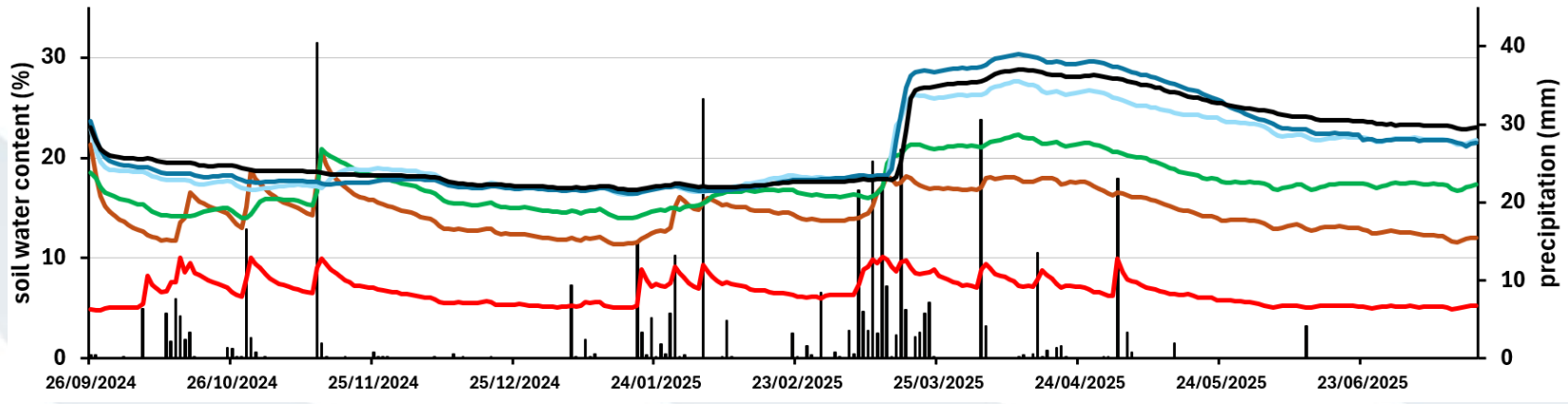
600 litres

30 minutes

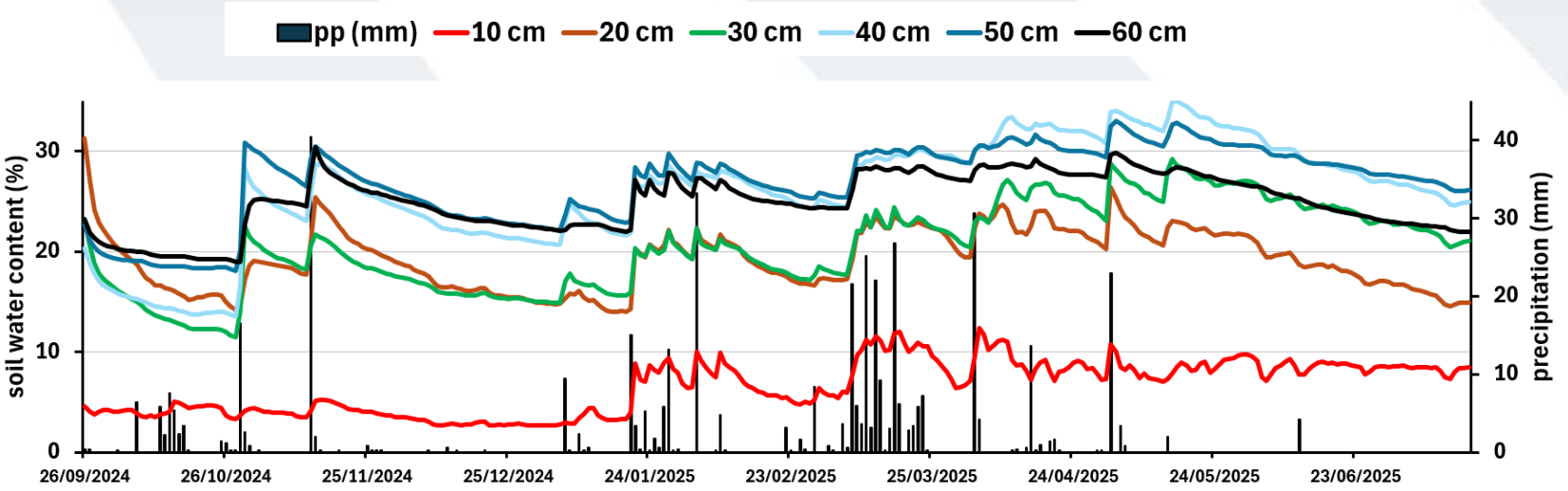


RAINFED OLIVE GROVE: Cortijo del Viento (Alcaudete, Spain)

CONTROL

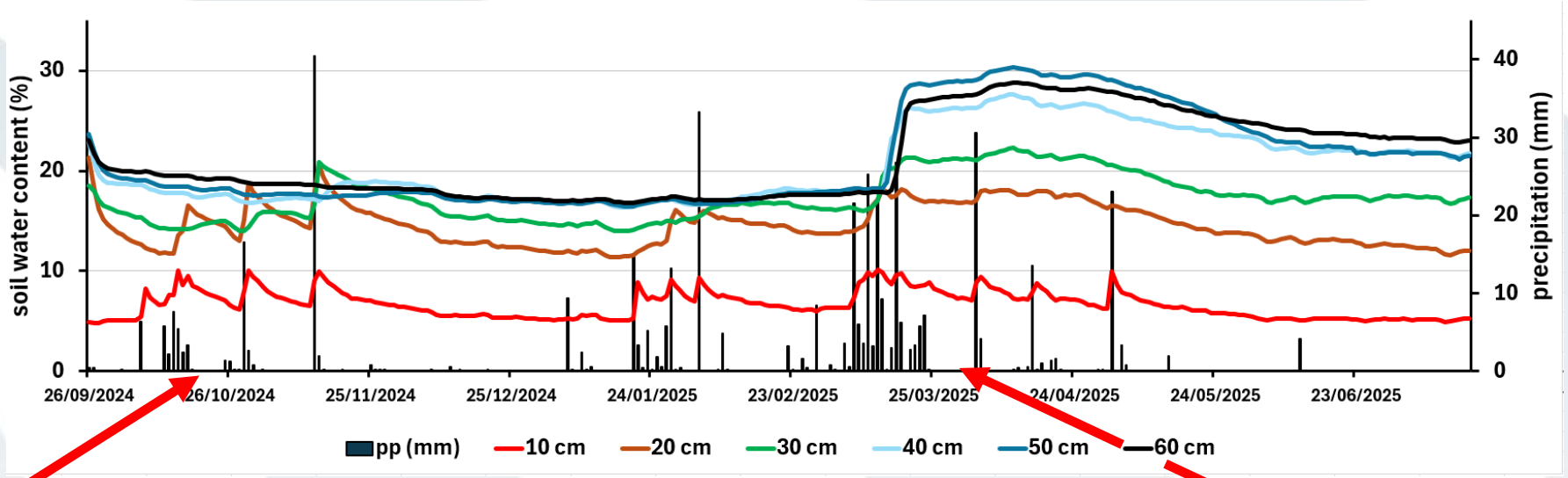


MICROBASIN + HYDROINFILTRATO



CONTROL (Without Hydroinfiltrator)

Cortijo del Viento (Alcaudete, Spain)



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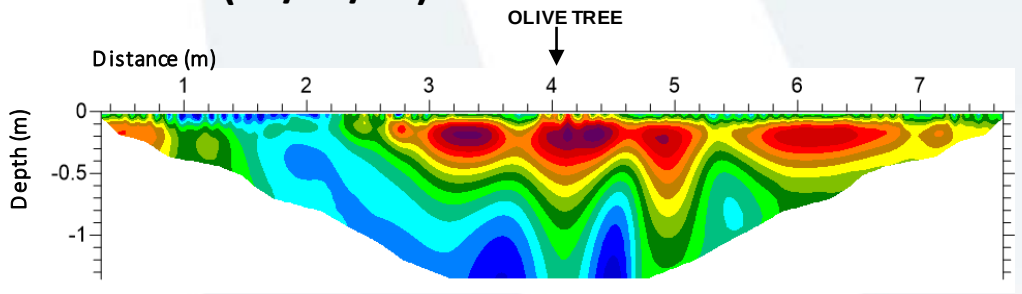

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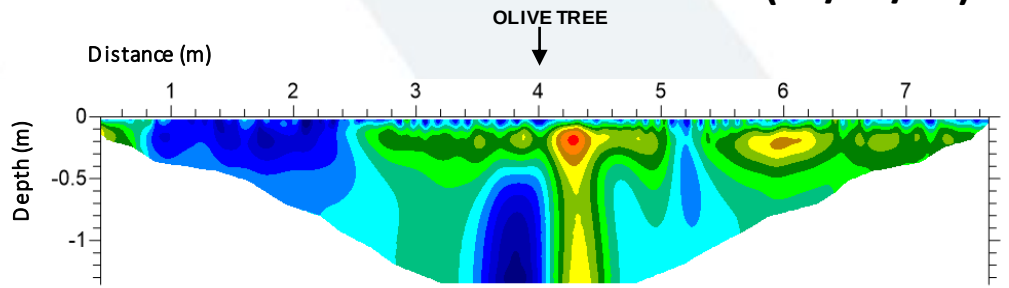
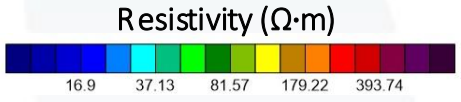
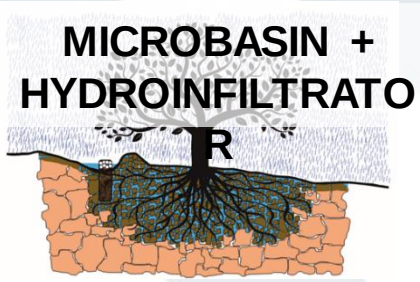
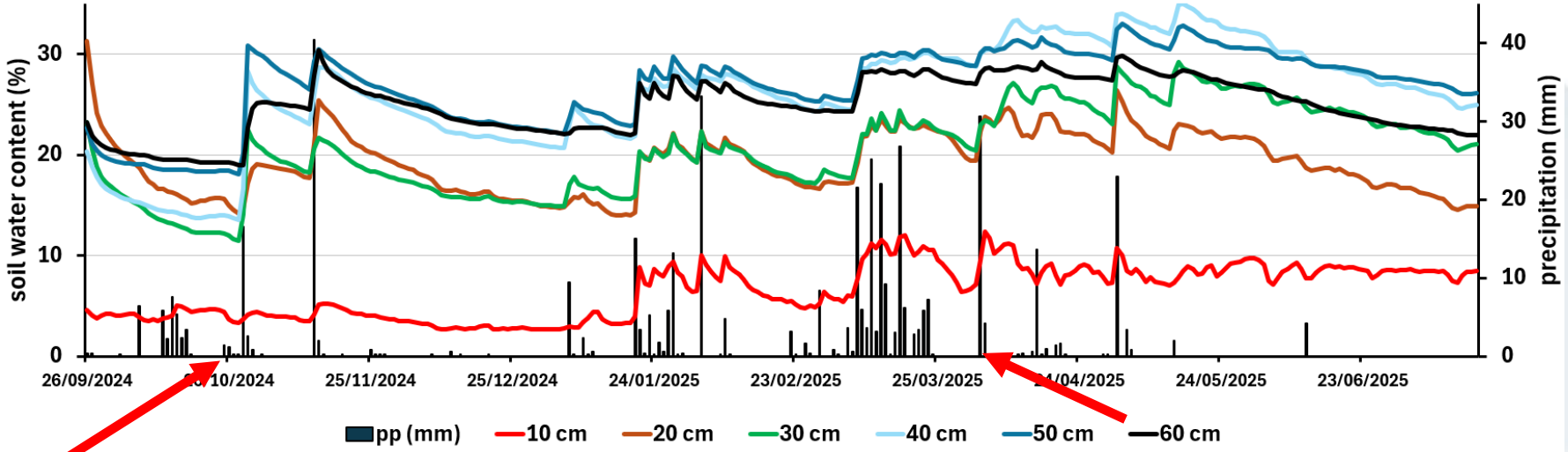




With Hydroinfiltrator

Cortijo del Viento (Alcaudete, Spain)





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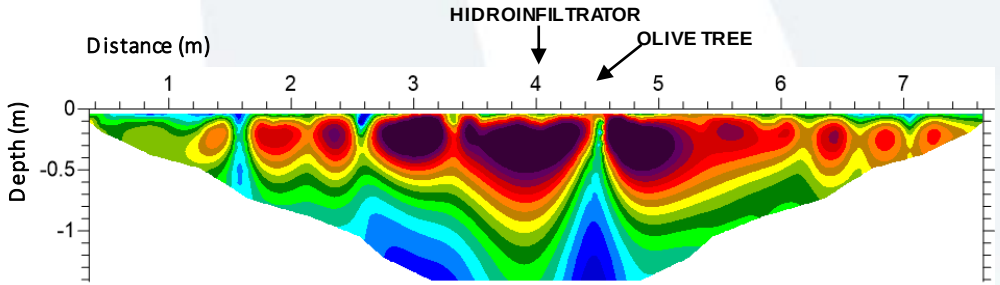

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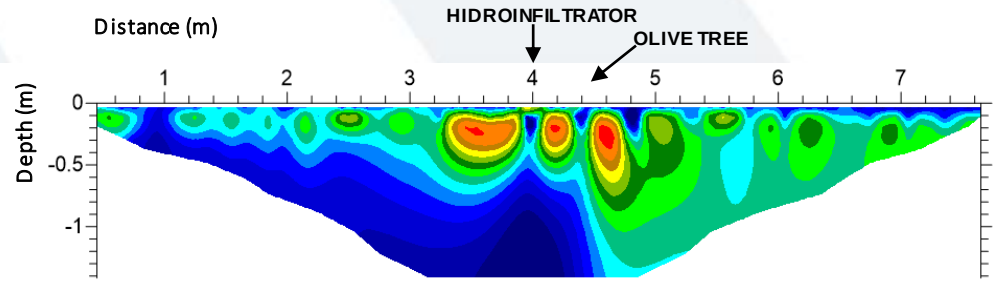
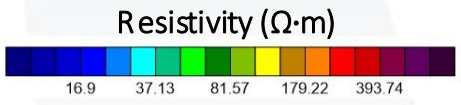
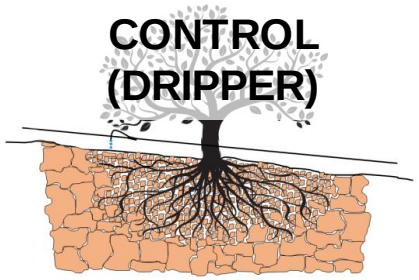


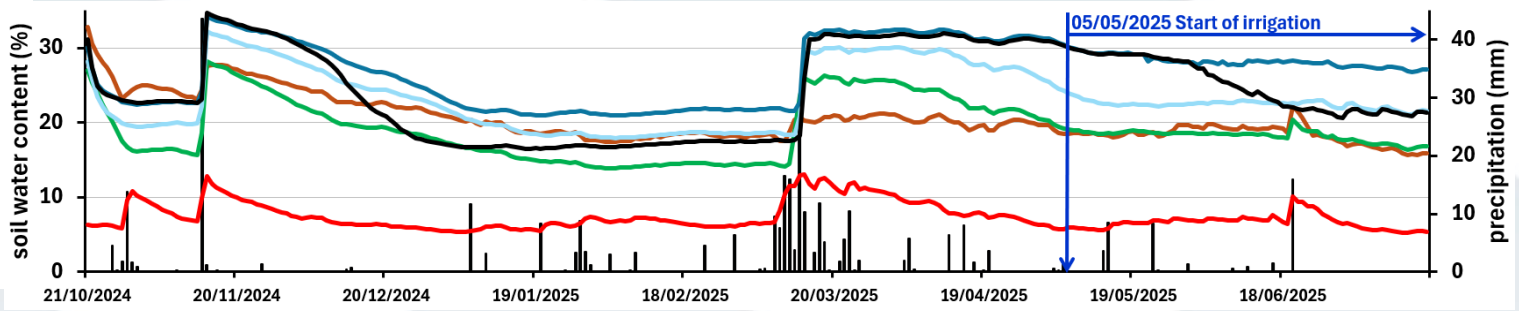


DRIP-IRRIGATED OLIVE GROVE: Loma del Galgo (Deifontes, Spain)

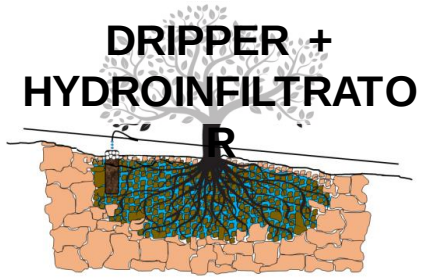
HIDROLIVAR

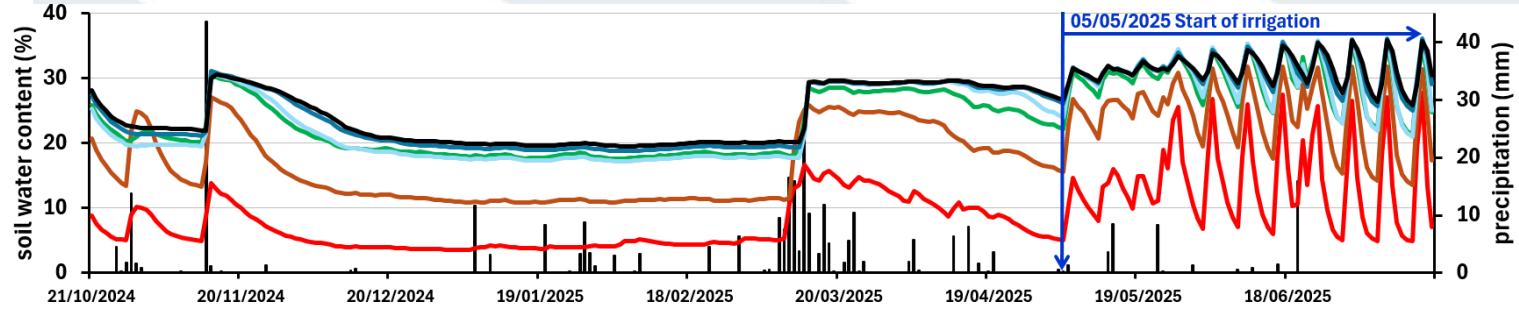
CONTROL (DRIPPER)



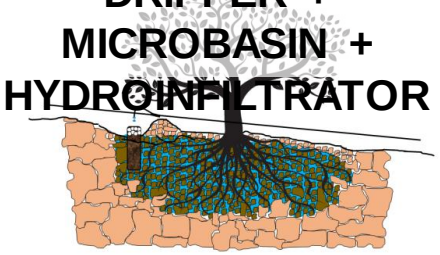


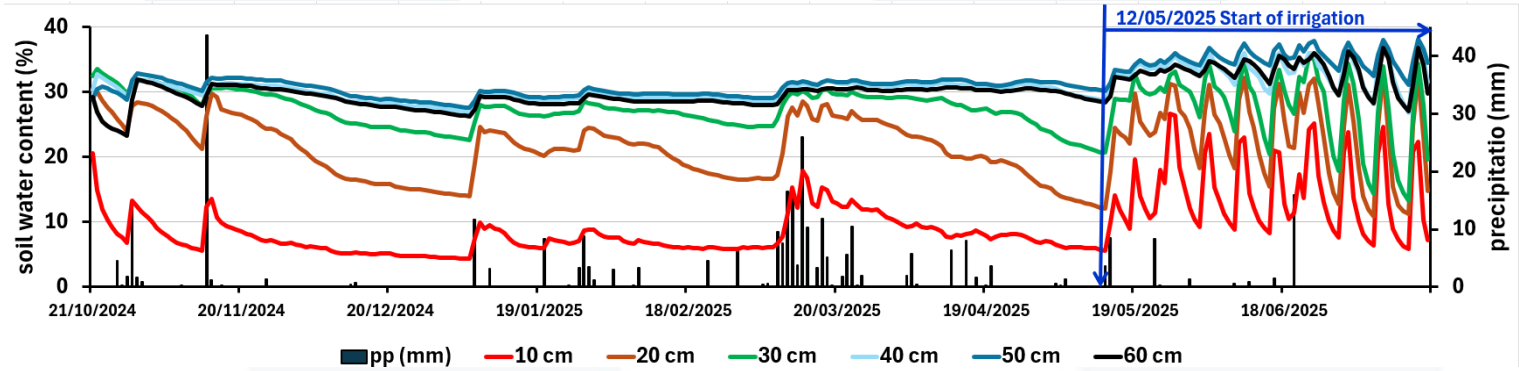
DRIPPER + HYDROINFILTRATOR





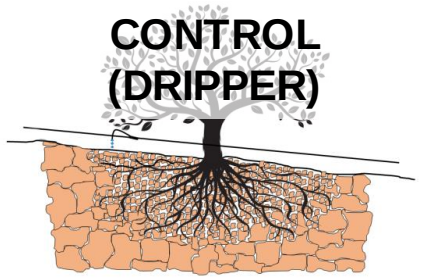
DRIPPER + MICROBASIN + HYDROINFILTRATOR

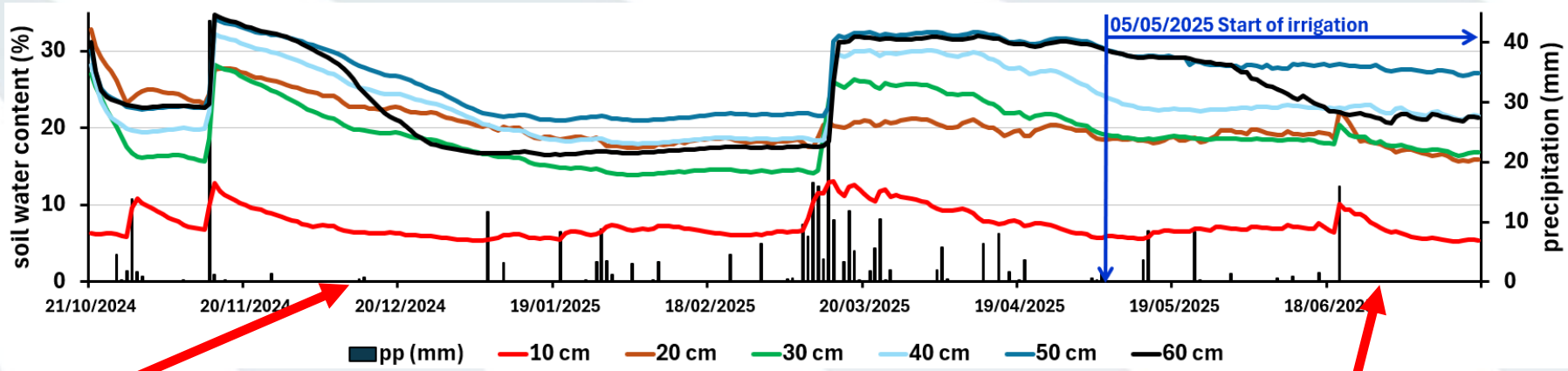




CONTROL (DRIPPER alone -without Hydroinfiltrator-)

Loma del Galgo (Deifontes, Spain)





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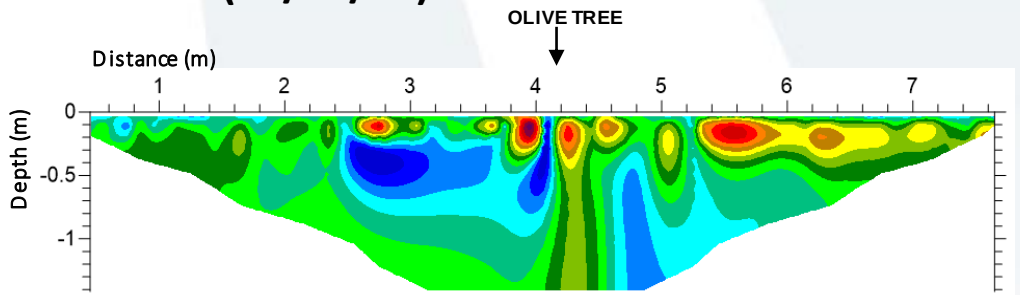

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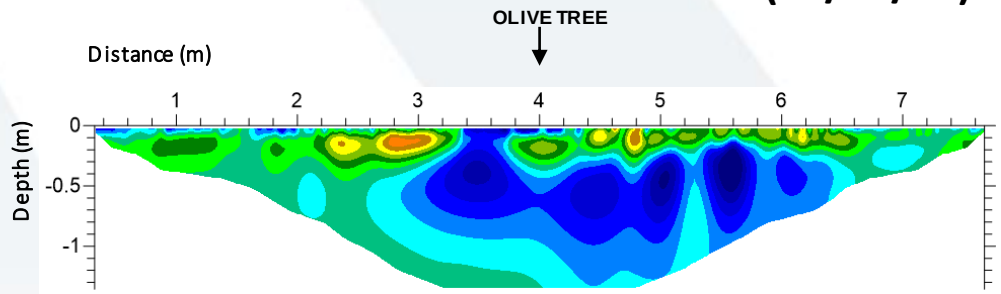
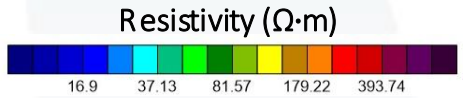
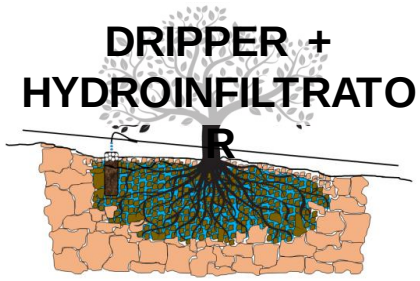
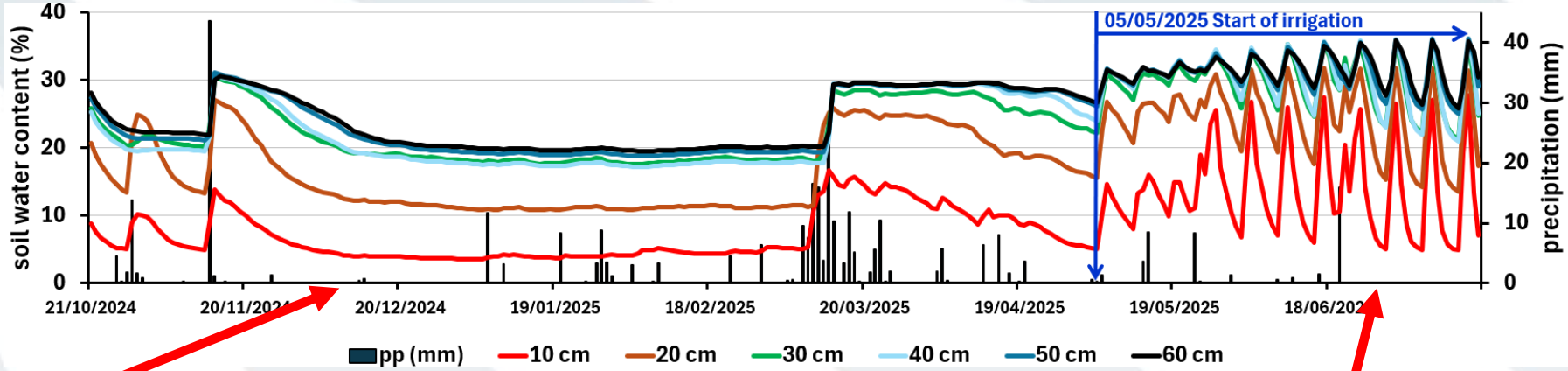




DRIPPER + HYDROINFILTRATOR

Loma del Galgo (Deifontes, Spain)





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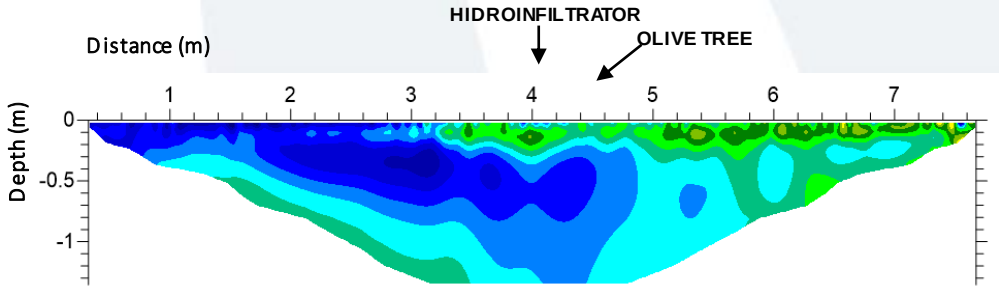
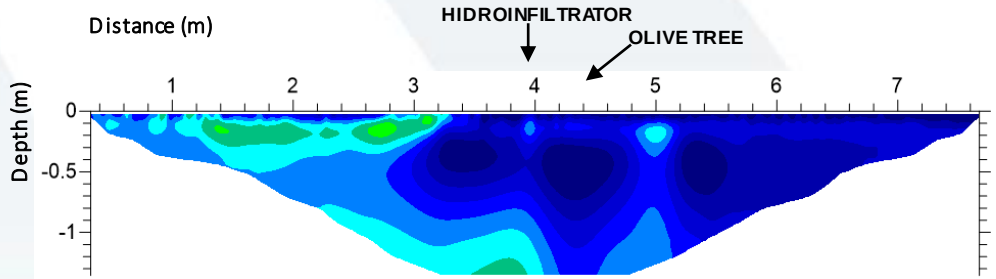
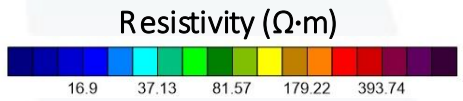
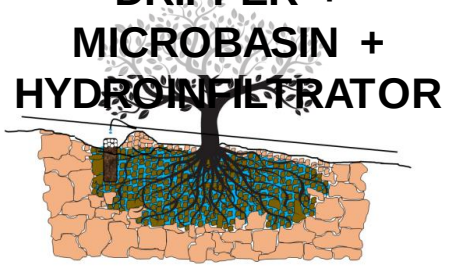


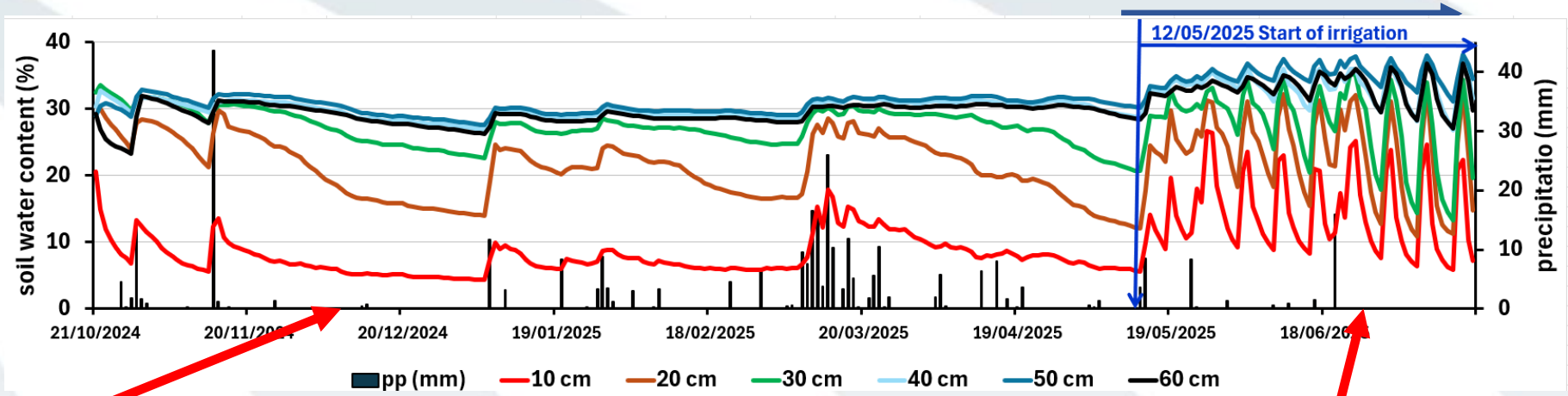




DRIPPER + MICROBASIN + HYDROINFILTRATOR

Loma del Galgo (Deifontes, Spain)





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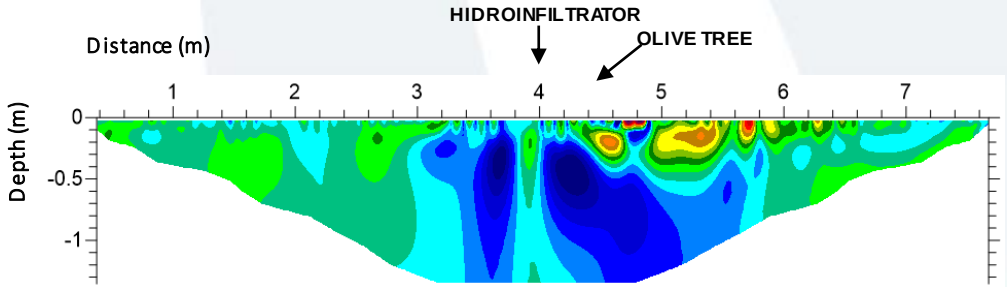

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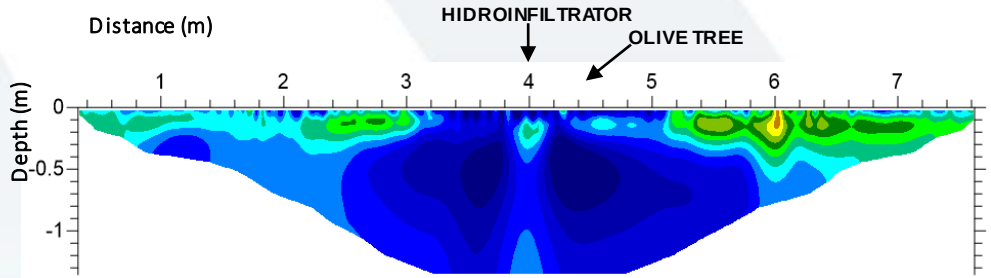
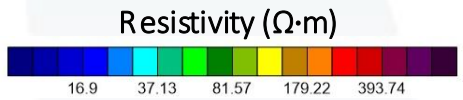


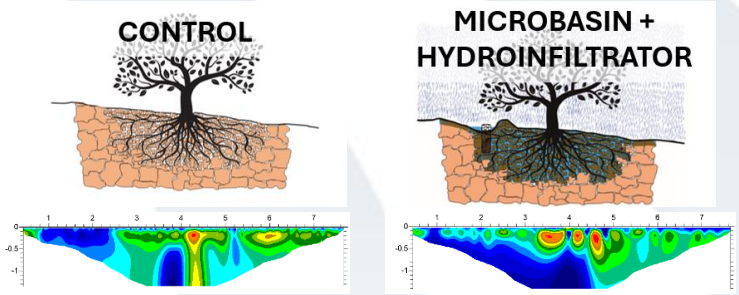


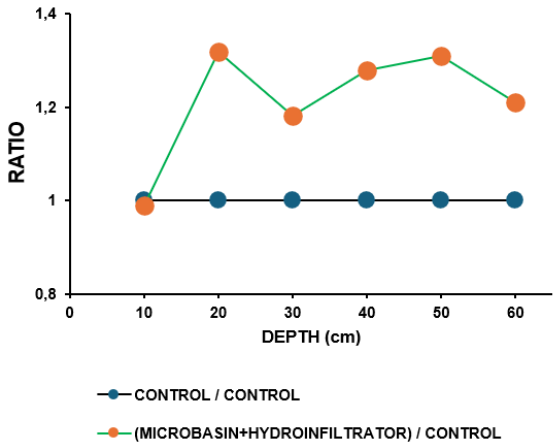
SUMMARY

(HUMIDITY PROBE)

RAINFEED

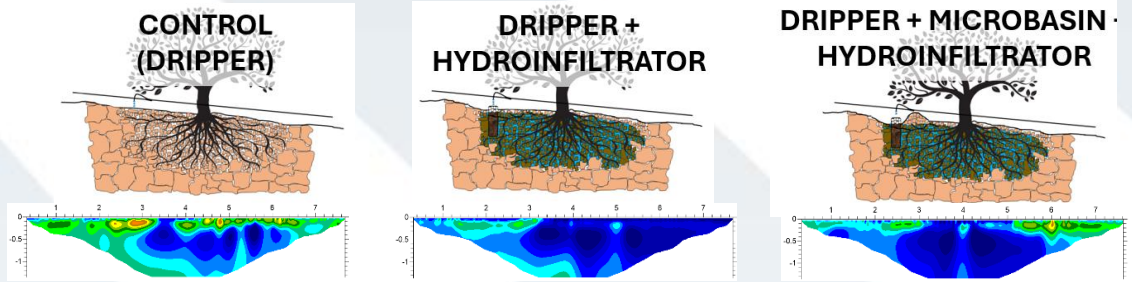
Cortijo del Viento (Alcaudete)

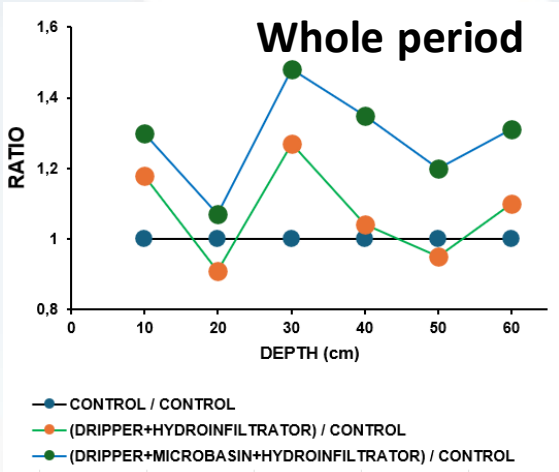


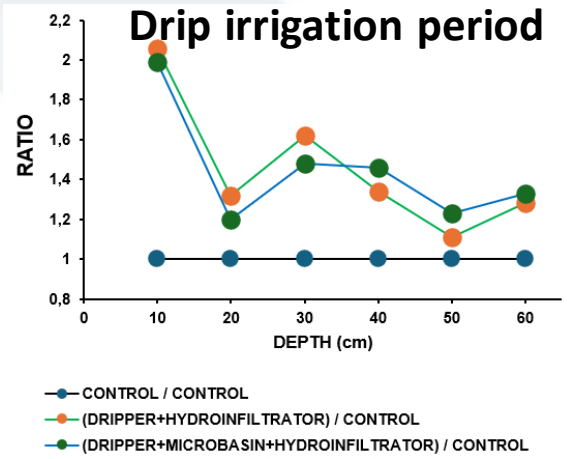


DRIP IRRIGATION

Loma del Galgo (Deifontes)







OTHER USES OF HYDROINFILTRATOR

OTHER TREE AND SHRUB CROPS

REFORESTATION

CITIES

Thank you for your kind attention