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Quantity and quality of sweetpotato crop irrigation water

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In the Mediterranean region, climate issues are important due to the large seasonal and interannual variability and change scenarios. In all hydrographic regions of mainland Portugal, climate projections suggest decrease in precipitation and increasing temperature/evapotranspiration, droughts and water scarcity. Thus, increasing water storage availability for the agricultural sector requirements is a priority.

Best irrigation projects and practices must be adapted to site-specific conditions (soil, climate/meteorology, crop), regarding the correct operation of irrigation systems, production competitiveness and sustainability.

Sweetpotato is an option for irrigated regions. Alentejo Coast and Algarve are regions of the so-called 'Aljezur Sweetpotato', a Protected Geographical Indication (PGI). The plant is tolerant to water deficit, even in poorly developed soils. This characteristic tends to be favorable during periods of water restrictions, as low water amounts of about 100 mm will increase the water use efficiency (kg/m³).

Regarding water availability, sweetpotato responds favorably to its rational application (up to 400-500 mm), increasing the productivity (kg/ha) and ensuring its quality. When scheduling water balances, it should be noted that: excess soil moisture is harmful whereas 'deficit irrigation' and the occurrence of some water stress during the leaf growth phases and at the final stage of senescence, showed no significant implications.

The quality of the irrigation water is crucial to optimize yield, to adjust the fertilization plan, to protect soil and water sources and to prevent deterioration of the irrigation equipment. Water should be analyzed every 4 years, or annually if any parameter exceeds maximum limits. Results show that in the 'Lira' production area, one sample had a high pH (8.9), therefore an acid should be applied. One sample had a sodium content of 70 mg/L, with slight restrictions on irrigation. Four samples showed a nitrate content >25 mg/L, so the nitrogen conveyed by the irrigation water must be accounted for in the fertilization plan.