

# ASSESSMENT OF THE IMPACTS OF CLIMATE CHANGE ON CEREALS IN SEMI-ARID REGIONS BY REMOTE SENSING AND ADAPTATION MEASURES IN AGRICULTURAL WATER MANAGEMENT

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The impact of climate change (CC) has prompted a gradual shift in cereal management practices within semi-arid regions (in the central area of Tunisia). This shift has seen a transition from predominantly rainfed cultivation to irrigated ones, with almost a generalization of irrigation since 2017. However, this transformation, particularly in the Kairouan plain, has predominantly relied on illegal drilling, exacerbating the overexploitation of the Kairouan aquifer, which has intensified annually. Against the backdrop of Tunisia's pressing needs for food and water security, which necessitate expanding cereal cultivation while concurrently reducing water consumption, we propose the utilization of drought indices derived from remote sensing data. These indices, including the Soil Moisture Anomaly index (SMA), Vegetation Anomaly Index (VAI), and Evapotranspiration Anomaly index (EAI), are instrumental in identifying critical periods of hydric stress impacting cereal yields, facilitating more precise irrigation management. Incorporating these indices enables the implementation of deficit irrigation strategies, optimizing water usage without compromising yield. By leveraging remote sensing technology alongside adaptation measures in agricultural water management, we aim to address the dual imperatives of enhancing food security and sustainable water resource utilization in semi-arid regions facing the challenges of climate change.