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@article{Eliades2022, title = {Quantifying Evapotranspiration and Drainage Losses in a Semi-Arid Nectarine (Prunus persica var. nucipersica) Field with a Dynamic Crop Coefficient (Kc) Derived from Leaf Area Index Measurements}, ISSN = {2073-4441}, DOI = {10.3390/w14050734}, volume = {14}, number = {5}, year = {2022}, journal = {Water}, author = {Eliades, M. and Bruggeman, A. and Djuma, H. and Christofi, C. and Kuells, C.}, abstract = {Quantifying evapotranspiration and drainage losses is essential for improving irrigation efficiency. The FAO-56 is the most popular method for computing crop evapotranspiration. There is, however, a need for locally derived crop coefficients (Kc) with a high temporal resolution to reduce errors in the water balance. The aim of this paper is to introduce a dynamic Kc approach, based on Leaf Area Index (LAI) observations, for improving water balance computations. Soil moisture and meteorological data were collected in a terraced nectarine (Prunus persica var. nucipersica) orchard in Cyprus, from 22 March 2019 to 18 November 2021. The Kc was derived as a function of the canopy cover fraction ©, from biweekly in situ LAI measurements. The use of a dynamic Kc resulted in Kc estimates with a bias of 17 mm and a mean absolute error of 0.8 mm. Evapotranspiration (ET) ranged from 41% of the rainfall (P) and irrigation (I) in the wet year (2019) to 57% of P + I in the dry year (2021). Drainage losses from irrigation (DR_I) were 44% of the total irrigation. The irrigation efficiency in the nectarine field could be improved by reducing irrigation amounts and increasing the irrigation frequency. Future studies should focus on improving the dynamic Kc approach by linking LAI field observations with remote sensing observations and by adding ground cover observations.} }

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@article{mahindawansha2020investigating, title={Investigating unproductive water losses from irrigated agricultural crops in the humid tropics through analyses of stable isotopes of water}, author={Mahindawansha, Amani and K\"ulls, Christoph and Kraft, Philipp and Breuer, Lutz}, journal={Hydrology and Earth System Sciences}, volume={24}, number={7}, pages={3627–3642}, year={2020}, publisher={Copernicus GmbH} }

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@article{OLA2024101405, title = {Remediating Oil Contamination in the Niger Delta Region of Nigeria: Technical Options and Monitoring Strategies}, journal = {The Extractive Industries and Society}, volume = {17}, pages = {101405}, year = {2024}, issn = {2214-790X}, doi = {https://doi.org/10.1016/j.exis.2024.101405}, url = {https://www.sciencedirect.com/science/article/pii/S2214790X24000030}, author = {Ibukun Ola and Carsten Drebenstedt and Robert M. Burgess and Martin Mensah and Nils Hoth and Christoph Külls}, keywords = {Nigeria, Niger Delta, Ogoni, Oil remediation, Organoclay capping, Permeable reactive barriers, bioremediation}, abstract = {The Niger Delta, a region of immense ecological significance and rich biodiversity, has long faced the severe consequences of petroleum contamination resulting from intense oil exploration and various environmental stressors. In response to the pressing need for effective remediation and monitoring of contaminated matrices in the Niger Delta, this study delves into a comprehensive analysis. Through a systematic assessment considering certain criteria, advanced remediation technologies tailored to the specific environmental challenges in the region are identified. Organoclay-based reactive core materials (RCM), permeable reactive barriers (PRBs), and bioremediation have emerged as highly suitable solutions for remediating sediment, groundwater, and soil, respectively. These technologies span the spectrum from non-intrusive to less intrusive methods and have demonstrated exceptional efficacy in mitigating hydrocarbon contamination under the delta's prevailing complex conditions. In addressing the critical need for monitoring the progress of remediation and post-remediation stages, a fully integrated approach is proposed. This strategy combines three essential components for tracking environmental quality improvements and understanding the recovery processes: traditional total chemical concentration (Ctotal) estimates, passive sampler-derived freely dissolved chemical concentration (Cfree) measurements, and ecological monitoring, specifically the recolonization test. Together, these components provide a more accurate description of risk and a comprehensive understanding of the recovery process. This study is concentrated on the systematic selection, supported by credible case study information, of tailored technical solutions for addressing the unique challenges of the Niger Delta. The novel outcomes lie in the identification of technology solutions carefully adapted for the region, representing a significant advancement in the field of environmental remediation in the Niger Delta. Science-based remediation and monitoring are key, and this study offers a decision support tool for selecting optimal methods in the ongoing cleanup of the Niger Delta and similar areas. This supports a healthier, more resilient environment for both the region's inhabitants and ecosystems.} }

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