Optimal control strategies for deficit irrigation systems under different climate conditions

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In this contribution, the suitability of different control strategies for the operation of irrigation systems under limited water and different climate conditions is investigated. To treat the climate uncertainty within a simulation optimization framework for irrigation management we formulated a probabilistic framework that is based on Monte Carlo simulations. Thus, results show which control strategy can ensure food security since higher quantiles (90% and above) are of interest. This study also demonstrates the efficiency of a stack-ordering technique for generating high productive irrigation schedules which is based on statistically appropriate sample sizes and a reliable optimal management.