CALIBRATION AND VALIDATION OF A HYDRO-SALINITY MODEL IN A CONJUNCTIVE USE SYSTEM

BY

ASGHAR ALI

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CENTER OF EXCELLENCE IN WATER RESOURCES ENGINEERING
UNIVERSITY OF ENGINEERING AND TECHNOLOGY, LAHORE

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ABSTRACT

A multi-crop conjunctive-use model is developed to consider different farm management options needed to increase crop production and thus, farmers' returns. The model is an extended version of a previously developed one which considered only one crop in each cropping season. It operates on a daily basis throughout the growing periods of the crops. The model is used to study and quantify farm water inputs through different sources.

The crop yields are obtained under stress caused by the limited soil water content during the growing period and the stress caused by salts. The water table is managed between two control zones by increasing or decreasing the planted area and which is irrigated by additional groundwater. The frequency of the irrigation is controlled by the management allowed deficit (MAD). Salt distribution in the root zone is studied using mass balance and soil physical properties. The approach is called the 'displacement equation'. The displacement and the transport of salts in the root zone is studied for different leaching fractions and water quality.

The model uses daily hydrometeorological data to calculate the crop water requirements and monthly canal water reliabilities to incorporate the effect of unreliable and limited surface supplies.