An integrated modelling approach for water and solute flow under irrigation water management: The SALTMED model

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A successful water management scheme for irrigated crops requires an integrated approach that accounts for water, plant, soil and field management. For that purpose, the SALTMED model has been developed. The model runs on a PC under Windows 95/98 operation System. The model's input consists of: Climate data, Soils data, crop data, irrigation data (System, amount, salinity), soil parameters, crop parameters, and other model parameters. The model has default values and includes database for soils and crops. In the model, the Richards Equation and the Convection-Dispersion Equation describe the water and solute movements respectively. The daily potential and actual evapotranspiration were calculated using Penman-Monteith equation according to FAO Irrigation & Drainage paper No. 56. The model runs for a variety of irrigation systems, crops, soils, and water salinity levels. The daily model output (graphs and data files) includes, yield, potential and actual water uptake, salinity, soil matric potential and soil moisture profiles, crop water requirements, leaching requirements, plant growth parameters, Potential and actual evapotranspiration, bare soil evaporation and plant transpiration. The model is friendly and easy to use benefiting from the windows environment.