Performance Evaluation of Subsurface Drainage System at Appikalta Drainage Pilot Area in Krishna Western Delta Using 'Drainmod'

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ABSTRACT

Irrigation induced problems of water logging and salinity are noticed in many canal commands in India. Pilot studies conducted in some of these command areas demonstrated the potential of subsurface drainage for the control of salinity and water logging and the improvement of agricultural productivity.. In this study, DRAINMOD model was used to evaluate the performance of subsurface drainage system near Appikatla in Krishna Western Delta. Data collected from a subsurface drained experimental field located geographically at about 15^0 28' N latitude and 80^0 28' E longitude near Appikatla village in the Krishna Western Delta in Andhra Pradesh. The subsurface drainage system consists of two sub-fields with drains installed at two different spacing's of 30 and 60 m. The model was calibrated by using observed data from the pilot area (7.5 ha) considering an equivalent drain spacing of 50 m during the period from 2004 to 2006 and validated using the observed data from 2007 to 2009. The model predicted variables like drain flow, soil salinity and relative yields of paddy crop were in good agreement with observed data as indicated by good statistical model performance measures (Nash-Sutcliffe model efficiency) EF of 0.57, 0.72 and 0.30 and Coefficient of correlation(R) of 0.88, 0.90 and 1.00 during calibration period and EF of 0.90, 0.64 and -0.42 and R of 0.99, 1.00 and 0.99 during the validation period.

Key words : Calibration, Drain flow, Drainmod, Relative yields, Soil salinity, Validation