

IMPROVING EXISTING PRACTICES OF WATER DELIVERY IN A RUN-OF-THE-RIVER BASED CANAL SYSTEM FOR BETTER WATER USE EFFICIENCY[†]

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ABSTRACT

A model was developed to modify the canal delivery schedule of a major irrigation project of eastern India for both monsoon and dry seasons that adopted the procedure of daily water balance/moisture balance simulation in the root zone depth. In addition to the prevailing continuous schedule, four alternative rotational schedules during the monsoon and five alternative rotational schedules during the dry season were considered for simulation. Daily water balance simulation was performed for 17 and 15 years for the monsoon season and the dry seasons, respectively.

Simulation results for the monsoon revealed that a 15-day rotational schedule (15 days canal operation followed by 15 days canal closure) was the best alternative over the prevailing continuous schedule. To agree with the findings of the study model, field experiments were conducted during the monsoon season for three consecutive years. Highest rice grain yields of 4.92 t/ha (*Swarna*) and 4.46 t/ha (*Surendra*) were recorded in plots with 15-day rotational schedules. During the dry season, considering both paddy and other dry season crops grown together in the command, a 7-day canal operation followed by a 7-day canal closure rotational schedule was found to be the best alternative. Besides creating a favourable water regime and better crop evapo-transpiration (ET), this schedule saved about 10.3% of water over actual water supplies. Copyright © 2011 John Wiley & Sons, Ltd.