

RICE WATER BALANCE ON GRUMUSOLS IN THE GIANT'S TANK
COMMAND AREA, MANNAR DISTRICT

By

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Abstract

The study was conducted on Grumusol rice soil in the command area of the Giant's Tank. The field water requirement for rice cultivation was estimated by lysimetry and the results were compared with field water use estimated from tank issues and land area irrigated.

The total field requirement, including evapotranspiration, percolation and water use prior to planting, was 1624mm for a yala crop and 1930mm for a maha crop. The evapotranspiration of transplanted rice was 681mm for a yala crop, irrigated over 80 days, compared with 597mm for a maha crop, irrigated over 100 days. The daily rate of evapotranspiration varied from 4-10mm/day.

In the lysimeter daily percolation losses increased progressively during both yala and maha seasons, varying from 3.5 to 10mm/day. The relative proportions of evapotranspiration and percolation were different in the two seasons (evapotranspiration was 54 and 39%, whereas percolation was 46 and 61%). The preplanting requirement was 22% of the total field requirement in yala and 21% in maha.

The land area irrigated during maha 1979-80 exceeded 11,000 ha, whereas the water issued from seven sluices of the Giant's Tank was estimated as equivalent to less than 640mm, the rainfall was just 903mm. This volume would only irrigate a maximum of 60% of the area (ie. 6852 ha) at the field water requirement level indicated by the lysimeter study. The discrepancy may be due to contributions from minor tanks, measurement errors in land area and water issues or over-estimates of needs by the lysimeter method, particularly of actual percolation losses.

Estimates of reference crop evapotranspiration and crop coefficients are given for the area, calculated from a modified Penman procedure and from Class A pan evaporation. Comparisons with actual evapotranspiration are given, but only for one maha season.

There was no persistent hazard due to salinity and alkalinity recorded during the observation period.