

## **ABSTRACT**

. The efficiency of the furrow irrigation system in the Bura Irrigation Settlement Project, Kenya, was studied to see how effectively it can be operated and to provide guidelines for future irrigation developments. Field surveys and trials were conducted and the data obtained were used to compute water losses through tail runoff and deep percolation, and performance parameters. On-farm irrigation was found to be grossly inefficient, with high deep percolation and runoff losses. Application efficiency of the low quarter on fields ranged from 50.6 to 67.5%, while distribution uniformity ranged from 70 to 81%. The relationships between furrow slope and discharge and performance parameters were evaluated. High variations in performance parameters between the first and fifth irrigation events were observed. Operational and physical interventions required to improve the system performance were identified.