ABSTRACT

A three year survey was conducted to determine how irrigation capacity was being utilised on three sugar cane estates in Jamaica. Four major irrigated soil types--Agualta clay, Agualta clay loam and Rhymesbury clay in the parish of Clarendon and Sydenham clay in the parish of St. Catherine--were investigated in five project areas. The gross volume of water available to each project area, the gross volume of water reaching each field, and the runoff from each field as a result of irrigation, were all measured. Soil (physical), economic, yield and other relevant data were also collected.

From the data collected it was estimated that effective irrigation ranged between 2.3 and 4.8 acre-feet per acre per growing season when a gross 3.5 to 14.7 acre-feet per acre were available for irrigation. Between 10 and 18 per cent of the gross volumes of water available were lost in conveyance; between 4 and 35 per cent of the gross volumes of water reaching the fields were lost as runoff. Estimated water application efficiency ranged between 65 and 96 per cent; overall irrigation efficiency between 27 and 64 per cent and water use efficiency between 43 and 81 per cent. The estimated yield per unit of total effective water used ranged between 0.41 and 0.63 tons cane per acre-inch. Using 1969 - 1972 data, the cost of irrigation water ranged between (J)$0.10 and (J)$0.42 per acre-inch and its value (product-based) between (J)$2.00 and (J)$4.00 per acre-inch. It was therefore obvious that there were no economic pressures to improve the efficiency of surface irrigating sugar cane in Jamaica.