

Evaluation of the Effectiveness of Proportioning Water Division Weirs in Herman Canal Farmer-managed Irrigation Scheme, Usangu Plains, Tanzania

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Abstract

In Tanzania, irrigated land is less than 5% of the cultivated area much of which being under traditional irrigation systems. Unfortunately, water in agriculture is indeed too often misused and mismanaged due to lack of know-how of people and weakness of institutions. This study therefore aimed at evaluating a simple approach for equitable distribution of irrigation water using proportioning water division weirs with a view to improving system performance in general. Five proportioning water division weirs were constructed along the main canal to deliver water to eight branch canals of a typical farmer-managed irrigation scheme. Flows to each of the branch canals were measured using calibrated staff gauges. The discharge data along with climatic and crop data were used in the computation of various irrigation performance indicators. Results showed productivity to be rather low, which was attributed to low-level use of inputs including sub-optimal cropping intensities. The relatively low values of output per unit irrigation supply suggest that the efficiency with which water was being used in the scheme is rather low. Overall, equity of water supply ($P_E = 0.14$; $AU = 0.52$) appeared to be fair, which was an improvement over past experiences before installation of the proportioning weirs. However, in spite of improvements in water distribution, farmers still lacked basic understanding of irrigation scheduling which led to some areas being over-irrigated while others faced water shortage.

Key Words: Proportioning weirs, performance indicators, farmer-managed irrigation

Introduction

Maximizing production on a sustainable basis and satisfying the diverse needs of society while at the same time trying to conserve a fragile ecosystem and genetic heritage is indeed a challenging undertaking. Nevertheless, productivity in agriculture must grow rapidly to

keep food supply in balance with the ever-increasing demand. It is estimated that in the developing countries, a large increase in grain production of around 150% must materialize to meet the projected food demand in the year 2025 (Yudelma, 1993). Part of the demand can be met by expanding the area under rainfed cultivation but prospects for this to happen are rather

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