

ABSTRACT

The importance of the use of low discharge, low cost and portable constant discharge modules is justified in the context of the modernisation of the water management systems. Irrigation module is an aid to improve the performance of the water distribution systems in irrigated commands. In different parts of the world, various types of irrigation modules have been developed for specific uses, but they are not found suitable for use at farm level. This thesis is devoted to the design, development and testing of low discharge and portable Baffle-Sluice Irrigation modules in the discharge range of 2.0 to 7.0 litres per second for use in the field channels with head variations in a range between 15.0 and 25.0 cm. The regulating principle of the module is based on the combined effect of and interaction between the flow through the sluice openings and the flow passing over the submerged baffles. The flow regulating characteristics of such modules are discussed in detail in order to assess the performance of the modules. The modules thus developed are found to deliver discharges within $\pm 5\%$ deviations from design values by using only three hanging baffles. The beauty of the module is that it is devoid of moving parts and accumulation of silt within the confines of the structure.

Key words : Baffle-Sluice module, coefficient of discharge, constant discharge outlet, discharge regulation, flow measurement, hydraulic jump, irrigation module, modular range, sluice flow, suppressed weir, weir flow.