**DRIP IRRIGATION DESIGN SYSTEM**

**ABSTRACT**

Irrigation is a technology that ensures a good soil-moisture balance resulting into a good environment for crop growth. Irrigation has not been embraced in Kenya in large scale except for the well established canal irrigation systems like in Mwea, Ahero, Bura that came into existence way back. However organizations such as KARI and AMIRAN have tried to come up with affordable drip irrigation systems for which small scale farmers have been able to take up.

This project focuses on design of a drip irrigation system. The area experiences a bimodal rainfall pattern however, for the second season the received rainfall cannot support crop production (as evidenced by rainfall data from Lugari farmers training centre) thus the farmers have to source for food stuffs from the neighboring counties. The specific objective will entail determination of pertinent parameters for the design, coming up with the system layout to ensure every farmer gets water and sizing of the pipelines.

The crop water requirement for the crops selected was estimated using the Penman Monteith method after incorporating CLIMWAT data into CROPWAT using climatic data for Kakamega station number 2318 and was found to be 4.8mm/day and 4.2 mm/day for sweet potatoes and kales respectively. Irrigation scheduling and frequency have been calculated based on the CWR. Irrigation frequency was found to be 2 days and time of operation of system was found to be 36 minutes for s/potatoe area and 31 minutes for kales.

The application rate for the system was found to be 8.89mm/hr with an irrigation interval of 2 days.