ABSTRACT
The gravity-fed drip irrigation was fabricated using local and market available materials. The test crops were bottle gourd, bitter gourd and cucumber, grown in specially dugout pits, filled with medium textured soil mixed with manures, fertilizers. The CROPWAT model was used to estimate the ET of various vegetables for scheduling irrigation. Systems hydraulic performance was evaluated by measuring discharge variation among the different emitters, estimating friction head losses in different components. The frictional head loss in the lateral was found to be 0.2640 cm cumulatively. Whereas the frictional head loss of emitters was found to be 67.73 cm, the frictional head losses in the fitting were found out to be 6.995 cm. Total head requirement of the system included the head required at the farthest emitter for operation and the frictional losses in the bend, control valve and filter as 2.3 m. Among the vegetable, the bottle gourd resulted in significantly higher average yields as compared to other vegetables. Bottle gourd produced highest yield under drip irrigation (290.9 q ha⁻¹), closely followed by the yield under basin irrigation (229.2 q ha⁻¹). In this way the locally fabricated micro drip irrigation system was found significantly superior as compared to the basin irrigation.

Key words: Gravity fed drip irrigation system, Frictional loss, Basin irrigation crop yield.