

## **Discharge characterization and variability determination along shorter sections of soaker hose pipe for soil column experiment**

### **ABSTRACT**

Unlike other micro-irrigation facilities like a drip, trickle, and sprinklers that emits water at regularly spaced intervals with predefined discharges, porous rubber pipes (soaker hose) has openings of variable sizes that become unevenly spaced with uneven distribution. The latter makes discharge to be variant along its lateral. Shorter sections are used under laboratory column experiments of soil wetting pattern studies and for this reason, laboratory experiments were conducted to evaluate the extent of emission rates variability on short sections of commercial Irrigation Soaker Hose, 16 mm diameter. Three sections of 10 cm length pipes were randomly selected from 15 no's cuts from different parts of the twenty meters length pipe bundle and used to investigate the extent of variability on emission rates characteristics under six different operating pressures. The result was achieved by collecting and measuring water emitted through the pipe sections at pre-determined pressures. The various discharges, coefficient of variation, and pressure-discharge curves of the section of the pipe then determined from the data. The result shows somewhat similar trends on the increase for water collected with an increase in pressures; however, when statistically compared, the discharges among the pipe sections vary. The values of Coefficient of Variation (CV) are less than 10 % as the values CV range from 0.92 % to 5.82 %, which is within a good category, according to ASAE Standard EP405.1 of 0-10%. The findings indicate that, despite variations among the investigated sections, it can use any part as a representative unit in the soil column experiments with reasonable accuracy.

**Keyword:** Porous pipe; Coefficient of variation; Discharge; Short section; Pressure