

VARIATION OF PRESSURE ALONG DRIP LATERAL IN RESPONSE TO SINGLE AND DOUBLE INLET LATERALS AND SUB-MAIN SIZES

B. MOHANTY¹, S. C. SENAPATI², A. P. SAHU³ & B. PANIGRAHI⁴

¹Research Scholar, Department of Soil & Water Conservation Engineering, CAET, OUAT, Bhubaneswar, Odisha India

²Professor, Department of Soil & Water Conservation Engineering, CAET, OUAT, Bhubaneswar, Odisha India

³Associate Professor, Department of Soil & Water Conservation Engineering, CAET, OUAT, Bhubaneswar, Odisha India

⁴Professor and Head, Department of Soil & Water Conservation Engineering, CAET, OUAT, Bhubaneswar, Odisha India

ABSTRACT

Experiments were carried out during three growing seasons of 2011 to 2013 in the farmer's field at village Jamunali of Chhendipada block in the district Angul, Odisha, India. The effect of five different single and double inlet lateral connections with three different commonly available sub-main pipe sizes (40, 50 and 63 mm) on pressure variation along lateral in drip irrigated brinjal (*Solanum melongena* L.) crop was studied. The variation of pressure amongst different lateral connections and sub-main sizes are found to be significant where as the interaction effect is non-significant. Average pressure value is maximum (10.27 m) in case of double inlet system with two sub-mains laid at two sides of the plot and the laterals connecting to both the sub-mains at two ends (L_5) and the value is very close (10.26 m) to the lateral connection where sub-main is laid at the centre of the plot and laterals are laid and looped at both sides of the sub-main (L_4).

Mean pressure in case of the lateral connection where sub-main is laid at one side of the plot and laterals are laid on one side of the sub-main and closed at the tail end (single inlet type, L_1) is minimum (9.78 m) amongst all the lateral connections. When L_1 is converted to L_2 by looping the laterals, value of mean pressure increases to 10.18 m. Similarly mean pressure value in case of L_3 is 10.17 m and it increases to 10.26 m when L_3 is converted to L_4 by looping the laterals. Value of mean pressure along the different sub-main sizes shows higher values in case of higher pipe sizes and this value decreases as the pipe size decreases. The mean pressure value is maximum (10.15 m) in case of S_3 (10.15 m) and minimum (10.11 m) in case of S_1 (40 mm pipe size). Combining both the factors, it is observed that S_3L_5 (T_{15}) is the treatment which has the maximum value of mean pressure (10.29). It is also observed that when single inlet systems with laterals laid at one side or both sides of the sub-main are converted to the corresponding double inlet systems by looping the laterals (L_1 to L_2 and L_3 to L_4), the mean pressure value increases.

KEYWORDS: Double Inlet Lateral, Looping, Mean Pressure, Single Inlet Lateral, Sub-Main