

Growth, yield and water use efficiency in drip irrigated brinjal (*Solanum melongena* L.) as affected by single and double inlet drip laterals

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■ **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 growth characteristics, yield and water use efficiency of drip irrigated brinjal (*Solanum melongena* L.) crop was studied. Maximum value of biometric observations such as plant height, girth at base, number of branches and leaves per plant, leaf area, root volume, root spreading diameter were found higher in case of double inlet system in comparison to single inlet system. Maximum tap root diameter, rooting depth, fruit length and fruit weight were found to be insignificant irrespective of the size of the submains connected with the laterals. However, except fruit weight all other plant characteristics were significant respective to the type of lateral connections. Water supplied through drip laterals connected with two submains of 63 mm diameter each at both sides of the plot showed better growth indicator parameters amongst the treatments. This performance also reflected in the case of yield and water use efficiency in cultivation of brinjal crop (*Solanum melongena* L.). Maximum yield (399.48 q/ha) and water use efficiency (880.58 kg/ha-cm) have been observed in case of double inlet system with two sub-mains of 63mm diameter and the lateral connecting to both the sub-mains at two ends (T_{15}). Minimum biometric values, yield (380.67 q/ha) and WUE (839.11 kg/ha-cm) have been found in case of single inlet laterals laid on one side of sub main of 40 mm diameter (T_1). Similarly, it is established 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 growth parameters and yield of the system increases which is very easy to be achieved just by incorporating some minimal cost towards in-line laterals and connectors.

■ **KEY WORDS** : Single inlet lateral, Double inlet lateral, Yield, Water use efficiency

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