



Estimation of Irrigation Water Requirement of Young Pomegranate Plants under Drip Irrigation

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Abstract

The study was conducted to determine the irrigation water requirement considering 3 years (2017 – 2020) data to calculate the irrigation requirement of pomegranate crop using drip irrigation system. Reference evapotranspiration was determined with the help of FAO-56 Penman-Monteith equation considering the locally recorded weather parameters. Multiplication of reference evapotranspiration values and values of crop coefficient of pomegranate at different stages gives gross irrigation requirement of the pomegranate crop. Daily net irrigation requirement was found by subtracting effective rainfall with gross irrigation water requirement. The annual irrigation water requirement of pomegranate was determined as 610 mm, 685 mm and 752 mm for 1st, 2nd and third year of planting respectively. Approximately 6400 m³ ha⁻¹ water may be required to cultivate pomegranate plants in Indian sub-humid conditions.

Keywords: Drip irrigation, Plastic mulch, Evapotranspiration.

The agricultural production and productivity are needed to be improved to meet the demand of increasing population. Water is considered as one of the primary and important input for agricultural production is under scarce. This acute scarcity of water may limit the pace of agriculture and horticulture growth if it is unscientifically managed. India naturally blessed with sufficient water sources although; because of mismanagement of water resources at various level the availability of water for irrigation is limited. There is a huge gap between expected potential of irrigation water and utilization at field level due to low conveyance and application efficiency while adopting the irrigation systems in the field. Therefore, improved irrigation techniques like micro or pressured irrigation is to be adopted for the crop cultivation. Drip or trickle irrigation is the most efficient method to apply water fertilizer to crop which saves the water and increase

the yield of horticultural crops (Tiwari *et al.*, 2014). Drip irrigation is slowly become popular among the horticultural farming community. However, there is less information available for farmers on water requirement under drip irrigation method for local climate. Tiwari *et al.* (1998a, b) determined irrigation water requirement of okra crop under drip irrigation and indicated that full volume of irrigation water applied using drip irrigation combined with plastic mulch gives more yield in comparison to conventional irrigation methods. Pomegranate (*Punica granatum* L.) is considered to be the one of the important fruits of tropical area. India ranks first in pomegranate production. In India pomegranate was cultivated on more than 1.31 ha with production

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