

Research
Note

Effect of irrigation systems and planting methods on the yield of sweet potato

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INTRODUCTION

Sweet Potato (*Ipomoea batatas* L.) is an important tuber crop, which is used as a staple food, animal feed and for industrial starch extraction as it contains about 20 per cent of starch. India ranks sixth in area but the productivity is very low (80.2 t ha⁻¹) which is lower than world productivity level (Verma and Roychaudhury, 2002).

The increasing gap between irrigation potential and its utilization indicates the inefficient use of water. As water is a scarce commodity, particularly in scarcity regime of Maharashtra state, it is necessary to determine the optimum level and time of water use coupled with a suitable method of water application for increasing irrigation efficiency and crop productivity. The pressurized irrigation methods either drip or sprinkler system shows the effect on saving of water and is a solution on problem of water scarcity. A systematic attempt has not been made so far to relate yield with climatological data and different schedules of irrigation water on the basis of IW/ CPE n ratio in sweet potato. Looking on this background, the said study was conducted with the prime aim to determine the effect of irrigation schedules under different pressurized irrigation systems and planting methods on sweet potato.

The experiment was carried out at AICRP on Water Management, MPKV, Rahuri during *Rabi* season 2005. The soil

of experimental field was clay loam, low in available nitrogen, medium in available phosphorus and high in available potassium. The soil reaction was slightly alkaline. The experiment was laid out in split plot design with four replications and 30 treatment combinations comprising of 2 planting method *viz.*, ridges and furrows, and broad bed furrows, 3 irrigation system *viz.*, drip, sprinkler and surface with 5 irrigation regimes *viz.*, schedule irrigation at 25 mm CPE for sprinkler system with 1.5, 2, 2.5, 3, and 3.5 cm depth, at 50 mm CPE for surface with 3,4,5,6 and 7 cm depth; and 0.5,0.6,0.7,0.8 and 0.9 composite factor for drip. The plot size was 5 x 5 m² for sprinkler and 2.7 x 5 m² for surface method.

The recommended dose of 120 kg N, 60 kg P₂O₅ and 120 K₂O per hectare was applied. The N and K₂O were applied in the equal splits as a basal dose at planting and top dressed a month after planting. Whole quantity of P₂O₅ was applied at the time of planting.

Planting method:

Mean number of tubers per plant, their average volume and weight were not significantly influenced either due to broad bed furrow or ridges and furrows, whereas length and girth of tubers were significantly more when raised on broad bed furrows. This might be due to better soil environment for development of tubers. The effect of