Performance Evaluation of Developed Automated Drip Irrigation System

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ABSTRACT

The recent irrigation techniques introduce automated irrigation using sophisticated equipments to supply water and nutrients to plants as soon as they need it. Research in the developed countries is progressing towards real time irrigation, decision support system and expert systems. As the farm holdings are not large enough in India and also high cost of automation cannot be realized in India, in view of high cost of automated systems and to apply simple electronic circuit principles an attempt has been made to develop a low cost automatic irrigation based on soil moisture. The experimental site was divided into five sub plots with 3 × 20 m size to conduct experiments with brinjal and tomato crops. The yield response of brinjal and tomato crops with plant to plant spacing of 40 cm for different row to row spacings (50 cm row to row spacing and 30×70 cm paired row spacing) and irrigation application methods (flood irrigarion, time based automated drip irrigation, soil moisture sensor based automated drip irrigation) was evaluated. The uniformity coefficient, horizontal wetting pattern, depth of penetration of drip system was observed to be 98.2%, 34.5 cm, 40 cm respectively. Overall yield response was observed to be best in soil moisture sensor based irrigation with paired row spacing as 8.06 t/ha, 6.52 t/ha for brinjal and tomato crops respectively.

Key words : Automatic irrigation, Decision support system, Electronic circuit,Soil moisture sensor.