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Maximising Production and Profitability Under Drip Irrigated and Fertigated Potato (*Solanum tuberosum* L.)

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Abstract: The field experiment was conducted during *Rabi* seasons of 2009-10 and 2010-11 to determine the optimum irrigation and fertigation level to maximize yield and profit of drip irrigated and fertigated potato crop. The experiment comprised of three drip irrigation levels (1.0, 0.8 and 0.6 times Potential Evapotranspiration (PET)) in main plots and three levels of fertigation (100%, 80% and 60% of recommended dose of N, P_2O_5 and K_2O) in sub-plots of split plot design with three replications. Furrow irrigation with manual application of fertilizer was considered as conventional treatment (CT). The results indicate that the highest tuber yield 45.6 t/ha and 42.9 t/ha during 2009-10 and 2010-11, respectively was obtained with treatment I2F2 (I2 is 0.8 times PET & F2 is 80% of recommended dose of fertilizer) that was 14.0% and 18.8% higher than treatment I1F1 (I1 is 1.0 times PET & F1 is 100% of recommended dose of fertilizer). The yield under conventional treatment during both years was (29.7 t/ha and 28.4 t/ha during 2009-10 and 2010-11, respectively) less than drip irrigation and fertigation treatments. Drip irrigation and fertigation treatments on an average resulted in 8.0 t/ha higher tuber yield than conventional method of irrigation and fertilizer application. Drip irrigation at 0.6, 0.8 and 1.0 times PET resulted in mean water saving of 49.9, 38.9 and 27.7 % over conventional method of irrigation. Highest net returns of Rs. 156035/ha and Rs. 142385/ha during 2009-10 and 2010-11, respectively was registered under treatment I2F2.Higher benefit cost ratio in the case of drip irrigation system as compared to conventional irrigation method suggests better returns from the drip irrigation system.

Key Words: Drip Irrigation, Fertigation, Irrigation Scheduling, Potato.