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Evaluation of drip irrigation system in paddy crop: A viable alternate to conventional water management practice in paddy cultivation

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Abstract

A study was carried out to reduce the irrigation water to paddy crop by introducing drip irrigation system, as a higher spacing of 25 cm X 25 cm is now being promoted under SRI practice of rice cultivation. The study was conducted with an objective to compare conventional rice crop cultivation practices with drip-irrigated paddy. The concept of transplanting 8-10 day seedlings of SRI was adopted in the study for the purposes of irrigating the crop with drip irrigation system. Four treatments were selected in the study I) Conventional practice of 30 days old seedlings spaced a 20 cm X 20 cm and 2-3 seedlings per hill(T1), II) transplantation of 30 days old, two seedlings per hill at 20 cm X 20 cm spacing (T2) III) transplantation of 10 days old single seedling per hill at 22 cm X 22 cm spacing (T3), and IV) transplantation of 10 days old single seedling per hill at 25 cm X 25 cm spacing (T4). Results revealed that the maximum number of tillers/m^2, number of panicles, SPAD values at flowering were higher under drip irrigated paddy spaced at 25 cm X 25 cm over other treatments. The highest grain yield and maximum water use efficiency were also found in case of drip irrigated rice transplanted with 10 day old seedling spaced at 25 cm X 25 cm. over other treatments. Highest water productivity of 0.66 kg/m^3 was obtained under treatment four and lowest with conventional practice of ric cultivation with 0.37 kg/m^3. The total quantity of supplemental irrigation provided through drip irrigation is 291.42 mm where as in conventional practice an amount of 553.3 mm was applied, which indicates not only saving in water but also the electricity consumption by about 58 per cent.