Study on pulse irrigation (drip) influencing through different irrigation levels on growth, yield and quality parameters of white onion (*Allium cepa* L.) in lateritic soil

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ABSTRACT : The field experiment was conducted during two *rabi* seasons from 12th November, 2014 to 26th April, 2015 and 23rd November, 2015 to 4th May 2016, on sandy clay loam soil. The experiment was arranged in twelve treatment combinations with strip plot design as horizontal factor (main treatment) one continuous irrigation (P_1), two pulses (P_2), three pulses (P_3) and four pulses (P_4), while vertical factor (sub treatment) as irrigation levels viz. I_1 (0.80 ET_C), I_2 (1.0 ET_C) and I_3 (1.20 ET_C) treatments. It was revealed that the average seasonal water applied to white onion under pulse irrigation (drip) through different irrigation levels varied from 282.58 mm for I_1 (0.8 ET_C) to 419.21 mm for I_3 (1.2 ET_C) irrigation levels. Among the different treatment combinations I_2P_4 (four pulse treatment (P_4) with I_2 (1.0 ET_C) irrigation levels) was found significantly superior over I_1P_1 (continuous irrigation (P_1) with I_1 (0.8 ET_C) irrigation levels) and at par with I_3P_4 (irrigation level 1.2 ET_C and four pulse treatment) treatment combination. The interaction effect revealed that highest mean polar diameter (63.88 mm), geometric mean diameter (59.51 mm), equatorial diameter (63.16 mm), average bulb weight (112.05 g) and yield (38.52 ton/ha) of white onion was found in treatment combination I_2P_4 (irrigation level 1.0 ET_C and four pulse treatment) followed by I_3P_4 (irrigation level 1.2 ET_C and four pulse treatment), respectively. Average water use efficiency was found maximum for I_1P_4 (11.93 q ha/cm) treatment combination followed by I_1P_3 (11.33 q ha/cm) and I_2P_4 (10.99 q ha/cm) treatment combination, respectively. It was concluded that use of 100 percent crop water requirement with four pulse irrigation (drip) found superior under agronomic and climatic conditions of Dapoli in Konkan region of Maharashtra, India.

Key Words : Onion (*Allium cepa* L.), drip irrigation (pulse), irrigation scheduling, water use efficiency, yield, quality, net returns and B : C ratio.