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Response to quality attributes of sweet orange (*Citrus sinensis*) under different irrigation methods and fertigation levels

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ABSTRACT : An experiment was conducted at the research farm of All India Coordinated Research Project on Water Management, V.N.M.K.V. Parbhani during the period of 21st June 2011 to 15th May 2012. The experiment was laid out in split plot design with four replication. The main treatments were three irrigation levels viz. Online double lateral drip irrigation system (I_1), Inline lateral ring drip irrigation system (I_2) and Online double lateral drip irrigation system supported by check basin irrigation system (I_3) and four sub treatment viz. 100% recommended dose of fertilizer through drip (F_1), 75% recommended dose of fertilizer through drip (F_2), 50% recommended dose of fertilizer through drip (F_3), and 100% recommended dose of fertilizer through soil application (F_4). The soil of experimental site is fairly uniform, medium black cotton with uniform texture and well drained. The effects of irrigation and fertilizer levels were studied on quality parameters of sweet orange fruits. From the results of the experiment, it is revealed that treatment I_2F_1 recorded highest length/ breadth ratio and yield of sweet orange. The overall length/ breath ratio was recorded to tune of 1.00 to 1.022 i.e. almost all fruits were in round shape. The treatment I_2F_2 recorded maximum weight and average volume of fruit followed by treatment I_2F_4. Amongst the irrigation treatment maximum total soluble solid and ascorbic acid was recorded in treatment I_3 (8.45°brix) followed by I_2, where as amongst the fertigation treatments F_1 treatment recorded the significantly superior total dissolved solids in the fruit (8.60°brix) followed by treatment F_4. The inline lateral ring drip irrigation method with 100% RDF through drip irrigation system (I_2F_1) was found superior over all other treatment combinations.

Key Words : Drip irrigation system, water use efficiency, fertigation use efficiency, physical characteristic of fruit, quality of sweet orange, total dissolved solid, ascorbic acid.