The effect of partial root drying and regulated deficit irrigation technique on growth of rock melon (Cucumis melo Linn cv. Glamour)

ABSTRACT

This study aimed to determine the effect of partial root drying (PRD) and regulated deficit irrigation (RDI) on growth performance of rock melon (Cucumis melo Linn cv. Glamour). A randomised complete block design experiment with four replications was conducted at Universiti Putra Malaysia in 2012. Different deficit irrigation levels had significant effects on dry matter production and yield of melon as compared to well-watered (WW) as controls. Maximum and significant yield of melon was from the WW and RDI plants. RDI, a moderate water stress did not drastically reduce fresh fruit weight of melon i.e. a 28% drop in yield, indicating better utilisation of the available water. However, for PRD, the yield drop 80%. Maximum total soluble solids of 14.02, 13.83 and 5.99 oBrix was from WW, RDI and of PRD treated plant respectively. Total proline concentration in leaf at 76 days after transplanting clearly illustrates that the PRD plants is highly stressed by this deficit system with maximum reading of 21.44 εg/g as compared to only 9.68 and 9.97 εg/g from WW and RDI plants respectively. Results obtained suggest the possibility of applying moderate deficit irrigation at 50% watering capacity while maintaining the quality and yield of melon.

Keyword: Partial root drying (PRD); Regulated deficit irrigation (RDI); Rock melon