调控亏水度灌溉对成龄桃树生长和产量的影响

Experimental Investigation on the Influence of RDI on Peach Tree and Fruit Growth

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中文摘要：

自1988到1990年,在北京市林业果树研究所桃园17年生的桃树上进行了调控亏水度灌溉法(RDI-Regulated Deficit Irrigation)的试验研究。试验设有3个灌溉水平,即在果实细胞分裂完成后至快速膨大前的一段时间内果实的缓慢生长阶段(RDI期间),分别按80%(对照),40%,20%美国A级皿蒸发量补给。测得的各处理桃树的叶水势情况为:在RDI期间供水量少(处在水应力状态)的桃树,其叶水势较对照低(负的最值大);当RDI结束后各处理同样充分灌水,结果表明,此间曾经受过水应力作用的桃树的叶水势较对照(80%)高(负的量值小)。这种水应力作用的结果表现在对桃树生长量的影响上为:RDI期间,枝条的生长量明显为水势的降低所抑制;而在后期桃果实快速膨大时,经受过RDI的桃树上的果实因水势较高而膨大更快,收获时单果重更大,成熟果实略多,从而提高了产量。另外经受RDI的果树用水量明显减少,从而大幅度提高了水的利用效率。

英文摘要：

Filed experimental investigations on the influence of RDI (Regulated Deficit Irrigation) were conducted in a 17 year-old peach orchard at Beijing Institute for Horticultural Research from 1988 to 1990. Irrigation treatments were so designed that 80%, 40% and 20% of evaporation from U.S. Class A Pan could be replenished during the period of RDI. Measured leaf water potentials of different treatments showed that stressed trees had more negtive leaf water potentials during the period of RDI and less negtive potentials after ending RDI, i.e. restarting full irrigation than the control, which were fully Irrigated at all times. Shoot growth of 40% and 20% treatment trees was significantly depressed as compared with that of 80% treatment (control) trees. Growth of fruits on 40% and 20% treatment trees was slightly slower during RDI peroid and significant faster after restarting full irrigation than that on 80% treatment. As results, yields of fruit on both 40% and 20% treatments trees were of 20% higher than those on 80% treatment trees with 95% significancy together with a substantial saving in irrigation water.