

## The effects of partial root zone drying (PRD) and green pruning on yield and quality of Thompson seedless grape

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### Abstract

Partial root zone drying (PRD) is a new irrigation technique which improves water use efficiency without significant yield reduction. To study the effects of partial root zone drying and green pruning on yield and fruit quality of Thompson seedless grape a split plotted experiment with randomized complete block design with three replications was conducted. The experiment was performed in Takestan, Gazvin province, on 20-year old grapevines with row spacing of 2×4 m. The treatments were irrigation and pruning at three levels. During the growing season, half of the root system was maintained in a dry state, while the rest was irrigated (PRD). The irrigation levels were: full irrigation (irrigating both sides of root zone), drying left side of root zone (irrigating from north direction) and drying right side of root zone (irrigating from south direction). Pruning levels included light, medium and heavy green pruning. The analysis of variance (ANOVA) of data showed that the effects of irrigation were significant on pH and TSS of grape juice at 5% level. While there were no significant differences between irrigation treatments with respect to grapevine yield. Water requirement of grapevine can be reduced to half without significant yield reduction. The effects of pruning were also significant on grapevine yield, berry weight and diameter, cluster weight and length and Raisin production. The interactive effects of pruning and PRD were significant on weight and diameter of berry, weight and length of cluster and raisin production. Full irrigation with medium pruning, irrigation from north with medium pruning and irrigation from south with light pruning had higher grape yield than the other treatments. PRD reduced growth of main and lateral shoots by 8% and 30% respectively compared with full irrigation.

**Keyword:** *Partial root zone drying, Green pruning, Thompson seedless grape.*