



## **Improvement of sustainability of irrigation in olive by the accurate management of regulated deficit irrigation**

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Regulated Deficit Irrigation (RDI) is a useful tool to balance the improvement of productivity and water saving. This methodology is based in keeping the maximum yield with deficit irrigation. The key consists in setting water deficit during a non-sensitive phenological period. In olive, this phenological period is pit hardening, although, the accurate delimitation of the end of this period is nowadays under researching. Another interesting point in this methodology is how deep can be the water stress during the non-sensitive period. In this assay, three treatments were used in 2012 and 2013. A control treatment (T0), irrigated following FAO methodology, without water stress during the whole season and two RDI treatments in which water stress was avoided only during stage I and III of fruit growth. During stage II, widely considered as pit hardening, irrigation was ceased until trees reach the stated water stress threshold. Water status was monitored by means of stem water potential ( $\psi_s$ ) measurements. When  $\psi_s$  value reached -2 MPa in T1 treatment, trees were irrigated but with a low amount of water with the aim of keeping this water status for the whole stage II. The same methodology was used for T2 treatment, but with a threshold of -3 MPa. Water status was also controlled by leaf conductance measurements. Fruit size and yield were determined at the end of each season. The statistically design was a randomized complete blocks with four repetitions. The irrigation amount in T1 and T2 was 50% and 65% less than T0 at the end of the study. There were no significant differences among treatments in terms of yield in 2012 (year off) and 2013 (year on).