Water Use Efficiency in Olives Super High Density (SHD)

Kubir Sandhu, Guilia Marino, Richard Rosecrance, Emily Santos, Hossein Zakeri, Kyle Brasier
California State University, Chico

Cultivation of olives has rapidly increased in California in recent decades because of increased demands for olive oil and olive-based products. California is now a large olive producer in the country and in the world. However, precise information on olive water use and response to water stress is not available for growers in CA. Environmental and regulatory limitations are forcing CA growers to adopt alternative more efficient irrigation managements such as deficit irrigation to reduce the amount of water used for unit of oil production. This project aimed to characterize olive water use and the effects of deficit irrigation on olive oil yield and quality. A 5-7-Year-old super high-density olive orchard (cv Arbequina) in Corning CA was selected for the experiment. An ET station was installed to measure Evapotranspiration using the Eddy covariance method. Experimental design was randomized block design with three treatments and four replications per treatment. The treatments were: control (grower practices), 20% reduction of water application during pit hardening and 75% of reduction during pit hardening. Midday stem water potential was measured weekly and shoot growth biweekly on three trees per replication. Baseline measurements were taken from March to May. Deficit irrigation was applied from July to September.