



Irrigation management in a Mediterranean vineyard under elevated atmospheric water demand

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Recurring drought spells coupled to heat waves are challenging agriculture of Mediterranean regions. In this context, traditionally rainfed crops today require regular irrigation supply, increasing water use in critically limited environment. However, agriculture must be sustained, especially in these regions, in order to maintain the high quality and typicality of local productions. In this respect, viticulture represents an appropriate paradigm, being economically important to many Mediterranean countries. A proper irrigation management of grapevine is crucial in these areas yet maximization of water use efficiency should be pursued, starting from reliable estimate of actual crop requirements.

In summer 2017, we carried out an intensive field campaign in an irrigated vineyard in Southern Italy, measuring evapotranspiration and CO₂ fluxes using the eddy covariance technique. Additionally, main meteorological variables and leaf physiological status were monitored. The vineyard was regularly wetted, supplying around 12 mm every 5 days with drip irrigation on the row. Meteorological conditions during the campaign determined high transpiration demand. Water and carbon fluxes showed to be tightly related to water availability. Under steady evapotranspiration demand, both fluxes quickly decreased just after few days from irrigation. In such extremely dynamic conditions, predictability of crop water demand showed to be highly difficult, requiring an irrigation strategy based on direct measurements of soil or plant water status.