

Traditional and innovative technologies to water irrigation management in Mediterranean area

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Climate change scenarios, together with the increasing request for sustainable agriculture, requires the application of adaptive strategies for a more efficient management of natural resources. Particularly in the semi-arid region, farming push the irrigation sector towards a more efficient use of water resources improving the irrigation scheduling without impacting crop yield.

We present a study of two years of monitoring campaign (2019 and 2020) in two vineyards located in Sardinia (Italy). A series of physiological parameters strictly correlated to the water plant status were monitored thanks to a set of automatic plant-based sensors. For the first time, we used two different sensors to determine the xylem sap flow with the T-Max Method and with the Heat Balance Method. In addition, we measured the leaf thickness (i.e. an indirect measurement of leaf turgor) with a commercial sensor, to estimate the vine water status. The sensitivity and accuracy of the applied methodologies and technologies were compared with the midday stem water potential (SWP), which represents an accurate method for determining plant water needs, even if it is a destructive, time-consuming and labor-intensive method. According to our preliminary results, these technological approaches showed to be promising as a user-friendly tool to make easier and smarter the management of the irrigation at farm level,

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