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BOOK OF ABSTRACTS

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USE OF KAOLIN AS A REFLECTIVE CLAY IMPROVES OLIVE TREE PHYSIOLOGICAL AND YIELD RESPONSES UNDER DIFFERENT ENVIRONMENTAL CONDITIONS

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Abstract

*Olive tree (*Olea europaea* L.) growing area is threatened by the current and predicted adverse environmental conditions, affecting negatively plant performance and yield. Thus, agronomic strategies to offset those negative effects and improve olive orchards sustainability need to be implemented. In this regard, we propose the use of kaolin particle film, a natural heat and irradiance reflecting clay. To achieve a more comprehensive response about kaolin (5%) action, during two consecutive years we performed two different experiments, in different geographical locations of Portugal north-west with “Cobrançosa” cultivar: established olive trees under conventional rainfed conditions and under deficit irrigation (27.5% of ET_c). Generally, during the summer period, kaolin was effective in improving water status and photosynthetic response, by reducing both stomatal and non-stomatal limitations. Moreover, improved leaf gas exchange restoration after the first rains persists during the winter months in rainfed conditions. Kaolin also reduces leaf sclerophylly, inducing shade-related leaf characteristics. As a result of better physiological performance achieved with kaolin application, yield increased 97% and 54.6% in rainfed and deficit irrigation conditions, respectively. Overall, the results of the present investigation revealed a cost-effective strategy to attenuate the negative effects of summer stress in olive trees, while allows to save water. Ultimately, this practice might contribute to increase the sustainability and competitiveness of this sector and anticipate solutions to the negative effects of climate change.*

Keywords: Mitigation strategies, *Olea europaea*, photosynthesis, summer stress, yield.

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