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**INTERNATIONAL CONFERENCE ON  
SUSTAINABILITY IN OLIVE CULTIVATION  
(ICSOC 2025)**

**25<sup>TH</sup>- 26<sup>TH</sup> SEPTEMBER**

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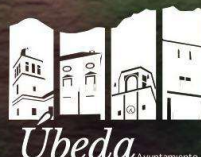


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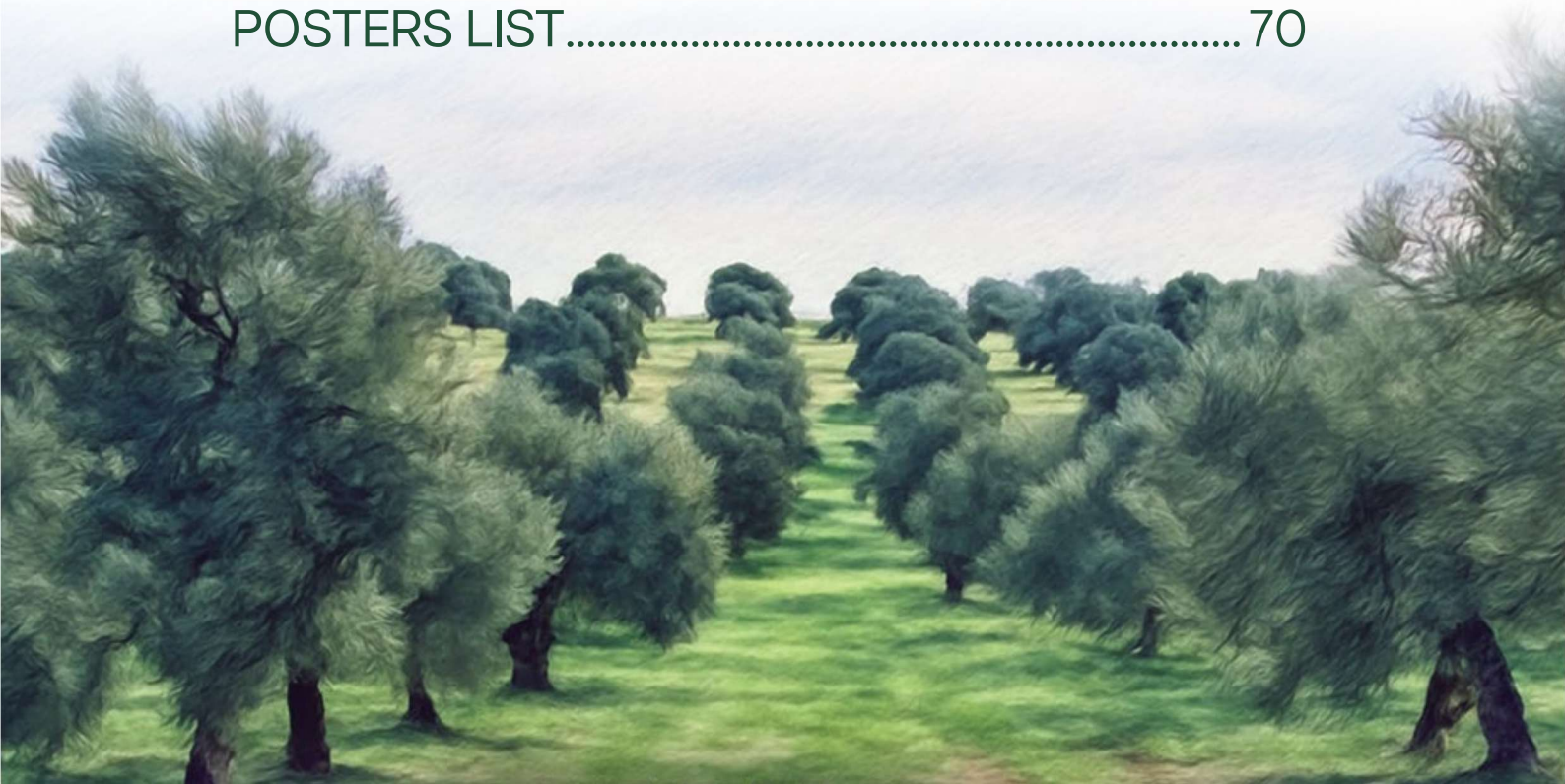
*Towards Resilient Olive Agriculture:  
Navigating Environmental Challenges for a Sustainable Future*



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**PT\_SYO 39 |** Enhancing the Understanding of Extra Virgin Olive Oil Flavouring: Impact on Quality, Sensory Profile, Stability, and Bioactive Compound Content - A Moroccan Case Study

**Idriss Ouled Bouallala**, Salah Chaji, Ibrahim Toufik, Said Ennahli, El Amine Ajal, Hanaa Abdelmoumen, Enrico Valli, Alessandra Bendini, Tullia Gallina Toschi, Alegría Carrasco-Pancorbo, Aadil Bajoub

**PT\_SYO 40 |** Determination of global heat transfer coefficient in olive paste malaxation and its impact on olive oil quality outcome

**Davide Martins**, Thiago Souza, António M. Peres, Nuno Rodrigues

**PT\_SYO 41 |** The contribution of solar energy to the economic and environmental sustainability of olive oil mills

\*Corresponding author: abajoub@enameknes.ac.ma

## ABSTRACT

This study investigates the effects of co-milling fresh olives with flavourings such as garlic, basil, lemon peel, ginger, mandarin peel, oregano, chilli pepper, rosemary and thyme on the quality and functional properties of extra virgin olive oil (EVOO). The flavourings were added in concentrations ranging from 1.5% to 15% (w/w), depending on the specific additive. The oils were stored for 12 months, with analyses carried out every three months. These included physicochemical quality indices, total phenolic content, fatty acid profile (GC-FID), bitterness index, phenols (LC-MS) and volatile (HS-GC-MS) compounds, antioxidant activity (DPPH,

ABTS), oxidative stability and sensory profile. The results showed that flavouring improved flavour complexity and oxidative stability, while bioactive compounds were maintained or even increased in several formulations. The effect varied depending on the flavouring added and concentration. Overall, results show that flavouring is a promising approach to improve the quality, nutritional value and shelf life of EVOO.

**Keywords:** Extra virgin olive oil; “Picholine Marocaine”; sensory profile; nutritional profile; aroma; shelf life.

## PT\_SY40 | Determination of global heat transfer coefficient in olive paste malaxation and its impact on olive oil quality outcome.

Davide Martins<sup>1\*</sup>, Thiago Souza<sup>1</sup>, António M. Peres<sup>1</sup>, Nuno Rodrigues<sup>1</sup>

<sup>1</sup>CIMO, LA SusTEC, Instituto Politécnico de Bragança, Campus de Santa Apolónia, Bragança, 5300-253, Portugal.

\*Corresponding author: davide.martins@ipb.pt

## ABSTRACT

Effective control of malaxation conditions is crucial for extra virgin olive oil (EVOO) quality. This study evaluated the combined effects of malaxation temperature (25, 32, 40°C), duration (30, 45, 60 min), and olive paste mass (350 g, 700 g) on EVOOs' physicochemical and sensory parameters. Global heat transfer coefficients (U) were calculated under steady-state conditions ranging from 2 to 63 Wm<sup>-2</sup>C<sup>-1</sup> and correlated with the oil's quality parameters. Principal component analysis confirmed that processing variables studied strongly influenced EVOO profiles. Higher U values improved sensory attributes at shorter malaxing durations but detrimental under prolonged heating. Antioxidant activity increased either with lower paste mass and 45 min of malaxation, or with higher paste

mass and 30 min of malaxation, at temperatures of 25–32°C. Results highlight the complex interaction of processing conditions and suggest that U may be a useful integrating metric of malaxing conditions and, to some extent, EVOO profiles.

**Keywords:** Extra virgin olive oil; processing optimization; steady state model.