Thematic line Grapevine&Wine (G&W)

CLONES4CLIMATECHANGE - Improving Sustainability In Grape And Wine Production Under Climate Change Scenarios: From Polyclonal Selection To Wine Authenticity

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ABSTRACT

The wine industry faces increasing risks due to climate change, more strict environmental legislation and more demanding consumers. Grapevine has large genetic variability that must be preserved, characterized and used. More efficient selection, based on improved knowledge of grapevine response to abiotic and biotic stress and to soil microorganisms (e.g. mycorrhizal fungi) is needed. Sustainable use of resources (e.g. water) at the vineyard and winery are also relevant issues for modern wine industry. In accordance to the aims of the LEAF's internal call and of the G&W thematic line, this project brings together a multidisciplinary team, with members of the three groups of LEAF, with complementary backgrounds to accomplish the following objectives: 1) to gain insight into abiotic (e.g. heat, drought) and biotic (e.g. powdery and downy mildews) stress tolerance in grapevine by exploring intra-varietal diversity and to study mutualistic interactions (fungal symbiotic microorganisms); 2) to clarify mechanisms of stress tolerance by analyzing leaf and bunch morpho-physiological traits and by scanning tolerant/sensitive transcriptomes; 3) to test implementation of circularity in grape and wine production by promoting reuse of solid wastes (pruning material) and wastewater; 4) to develop and improve novel analytical methodologies for traceability and wine authenticity assessment. The project will make available better adapted and more productive planting material of the Portuguese autochthonous varieties 'Arinto' and 'Uva Cão' for the industry. The project will unravel grapevine´s stress response mechanisms at both genetic and morpho-physiological level that can help to save water and pesticides. Additionally, major water savings in winemaking and valorization of winter pruning material will be attained. The close association between the academy (ISA/LEAF) and the industry represented in the Portuguese Association for Grapevine Diversity (PORVID) will ensure efficient knowledge transfer and practical implementation of the project's findings related to grapevine selection, circularity at the vineyard and winery,

as well as wine quality and authenticity. Ultimately the project's output will contribute for a more efficient, environmentally friendly and competitive wine industry.