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Venue:

Faculty of Sciences from University of Porto
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P13 - *Impacts of Flavescence dorée on growth, production and quality of* Vitis vinifera *cv. Loureiro in the portuguese 'Vinho Verde' region*

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Flavescence doreé (FD) is a quarantine disease caused by a phytoplasma and transmitted to healthy plants by an insect vector, Scaphoideus titanus Ball. This disease affects grapevines and is a serious problem to the stability and sustainability of the Portuguese wine industry, namely in the 'Vinho Verde' region were FD is present since 2008 leading to severe harvest losses or even the death of the infected plants. This study aimed to: (i) quantify the impact of FD on plant growth, development, productivity and fruit quality in the Portuguese 'Vinho Verde' region; (ii) evaluate the expression of PAL, STS, PIN and PGIP genes linked to the secondary metabolism and

plant defense. This trial was conducted in a 20 year-old vineyard (Fafe; Portugal) using healthy (FD-) and FD infected (FD+) grapevines. Leaf area, chlorophyll content (SPAD values), sprouting percentage, fertility rate, productivity and fruit quality (total acidity, degree brix), were evaluated. In general, FD+ plants presented lower leaf area (40%), lower chlorophyll content (9%, in veraison) and reduced fertility rate (20%) than FD+ plants. Moreover, it was found that plant development was significantly delayed in FD+ plants (on average 15 days; $P < 0.05$) when compared to healthy plants, and diseased plants showed a significant production loss (FD- = 23.8 ± 1.4 kg/plant and FD+ = 14.0 ± 3.5 kg/plant; $P < 0.05$). It was evidenced that in FD+ plants, signaling pathways were activated, with an upregulation of PAL, STS, PIN and PGIP genes.
Keywords: Fertility rate, gene expression, grapevine, leaf area, phytoplasma, SPAD values, sprouting percentage.