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BOOK OF ABSTRACTS

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L53

MLO genes Silencing reduces susceptibility to powdery mildew in grapevine

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Erysiphe necator is the causal agent of powdery mildew (PM), one of the most destructive diseases of grapevine. Powdery mildew is controlled by sulphur-based and synthetic fungicides, which every year are dispersed in the environment. This is why PM resistant varieties should become a priority for sustainable grapevine and wine production. Resistance can be achieved by knocking-out susceptibility S-genes, such as those residing at genetic loci known as *MLO* (*Mildew Locus O*). All *MLO* S-genes of dicots belong to the phylogenetic clade V, including grapevine genes *VvMLO7*, *11*, *13*, which are up-regulated during PM infection, and *VvMLO6*, which is not up-regulated. Before adopting a gene editing approach to knock-out candidate S-genes, the evidence that loss-of-function of *MLO* genes can reduce PM susceptibility is necessary. We show that the knock-down through RNA interference of *VvMLO6*, *7*, *11* and *13*. Knock-down of *VvMLO6*, *11* and *13*, alone or combined, did not decrease PM severity, whereas the knock-down of *VvMLO7* in combination with *VvMLO6* and *VvMLO11*, reduces severity up to 77%. Cell wall appositions (papillae), a response to PM attack, were present in both resistant and susceptible lines, but were larger in resistant lines.