SCIENTISTS DEVELOP GE GRAPEVINE PLANTS WITH FUNGAL TOLERANCE

Gray mold and powdery mildew diseases are among the most devastating problems of grapevine growers. Thus, scientist Julia Rubio of Universidad de Chile and colleagues developed fungi tolerant lines using two endochitinase (ech42 and ech33) genes and one N-acetyl-β-d-hexosaminidase (nag70) gene from biocontrol agents related to Trichoderma spp. Statistical analyses were conducted to consider the transgene, explant origin, and plant response to both fungi in the field and in detached leaf assays.

Out of the 103 GM ‘Thompson Seedless' lines (568 plants) that were established in open field in 2004 and evaluated for fungal tolerance starting in 2006, 19 lines consistently exhibited excellent fungal tolerance for two years. Plants from these lines were grafted onto the rootstock Harmony and established in the field in 2009 for further characterization.

Further analyses showed that the most tolerant candidates expressed the ech42–nag70 double gene construct and the ech33 gene from a local Hypocrea virens isolate. Gray mold growth assays in Petri dishes supplemented with berry juices extracted from the most tolerant individuals of the selected population was inhibited. Based on the findings, the expression of the three genes from biocontrol agents can confer fungal tolerance in grapevines.

Read the abstract at http://link.springer.com/article/10.1007/s11248-014-9811-2.