

P75 – Towards resistance to downy mildew and powdery mildew in Portuguese vines: evaluation of a F1 progeny

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Abstract

Grapevine (*Vitis vinifera* L.) is the most important fruit crop in Portugal. Associated with a long history of wine production, there is also a significant diversity and richness in the Portuguese germplasm, both in the cultivated subspecies *vinifera* as well as in wild vine populations, (subspecies *sylvestris*). In the second half of the nineteenth century pest management became one of the main tasks in European viticulture after the introduction of the fungal pathogens causing powdery and downy mildew. Atlantic climate areas in Portugal may need up to 10 treatments per season to control these diseases. One of the most promising approaches to control these diseases is to introgress resistance traits relying on the breeding of new grapevine varieties.

A number of crosses between Portuguese varieties well adapted to the local terroir and with high enologic importance (Arinto, Fernão Pires and a Touriga Nacional) and varieties with known resistance (Chambourcin, Regent and two lines A and B of resistant grapevine varieties) were carried out in 2018 and 2019. More than 3000 seeds were obtained, these were germinated in 2020 at control conditions (temperature, humidity and light) in the greenhouse. During the 2021 growing season these progenies were challenged with downy mildew (near 30000 sporangia ml⁻¹ concentration, spread on lower surface of leaves) and with powdery mildew (direct brush strokes on upper surface of leaves). Both challenges were done in the absence of Phytosanitary treatments at two growing stages (Baggiolini scale E and I). Only tolerant plants will be further studied, so far we have 239 progenies. As future perspective these new varieties will be screened with identified locus that identify the genetic profile of these grapevine varieties and check the correct progenitors. Additionally resistant locus identified in the used progenitors, hermaphroditism flower and berry skin color will be used to select the new grapevine varieties to be used on wine production or in new backcrosses in order to obtain F2 varieties.

Keywords: *Vitis vinifera*, Portuguese germplasm richness, new varieties, powdery and downy mildew resistance