

assessed. Finally, the germplasm genotyping was done on about half of the accessions number using the new markers. The data obtained were analysed with PowerMarker v.3.25, NTSY and STRUCTURE softwares to determine the genetic diversity of the whole collection and to obtain a preliminary cluster analysis. These molecular markers might be helpful not only for germplasm characterization but also, such as candidate genes, for mapping, synteny studies within the Rosaceae family and as a starting point functional to marker-assisted selection for raspberry breeding programs.

Silencing Mlo-like susceptibility genes to achieve broad-spectrum resistance to powdery mildew in apple

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Powdery mildew is a disease caused by about 650 obligate biotrophic fungi species, capable of colonizing around 10,000 plant species, including many crops. A particular kind of resistance to this pathogen, characterized by durability, broad-spectrum effectiveness and recessive inheritance, was obtained for the first time in a barley mlo mutant. Mlo genes encode for susceptibility factors and are therefore called susceptibility genes (S-genes). Loss-of-function mutations in these genes lead to lack of susceptibility, which means resistance. Mlo genes have been found and studied in many plant species, including several crops, while there are no studies on fruit trees yet. Our work aims to study Mlo genes in apple, in order to achieve broad spectrum resistance. Previous works on different species (tomato, arabidopsis, grape) show how the expression levels of some of the Mlo genes increased in response to the inoculation with the pathogen. By means of a bioinformatic approach, we looked for mlo-like genes in apple genome and we tested their expression after inoculation with *Podosphaera leucotricha*. Three apple cultivars have been tested: Golden Delicious, Gala and Braeburn. Preliminary analysis conducted on Golden Delicious show that 4 Mlo genes are up-regulated because of the interaction with the pathogen; one of these genes co-localize with a QTL. Further we are silencing mlo-like genes using a RNA interference approach, in order to deprive the pathogen of its target and, therefore, to obtain resistance.

Complementary strategies for the breeding of cultivated strawberry for high level of antioxidants

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