

Grapevine rootstock genetic improvement: current global research

Nathalie Ollat¹, Stéphane Decroocq¹, Alain Bouquet²

1: UMR Ecophysiologie et Génétique Fonctionnelle de la Vigne, ISVV-Bordeaux

2: UMR DIAPC, INRA-CIRAD-Montpellier

Approximatively 80% of the vineyards worldwide are using rootstocks. Most of them have been bred during Phylloxera crisis at the end of XIXe century. Few new rootstocks have been released more recently in various countries. Today, the most ambitious breeding programs throughout the world have more or less the same goals: in addition to high phylloxera tolerance, nematode resistance (dagger or root-knot) is looked for. These new rootstocks will also combine vigour control and adaptation to various environmental conditions as drought, limestone, and salt. In France, the several labs are working together to breed rootstocks with a sustainable resistance to *Xiphinema index* (combining different resistance origins) which will permit, at least, to delay infection with *fan leaf virus*. Tolerance to drought and limestone are taken into account. For these traits, genetic determinism is investigated in order to define MAS tools. In USA (Davis University), major studies have been performed for 2 decades. Many crosses have been done and new sources of resistance, different from *M. rotundifolia*, have been identified. Selection markers have been proposed. In Germany (Geisenheim), the main goal is to improve the level of resistance to phylloxera using *V. cinerea* as parentage. High tolerance to drought is also required. In Australia, most of the work has been conducted so far on salt tolerance. However a more ambitious program for root-knot nematodes and drought tolerance is on the way. In France, a new rootstock hybrid (*Vitis vinifera* - *Muscadinia rotundifolia*) x 140 Ru will be released shortly. Its main advantage is to delay seriously re-infection by fan leaf virus in highly infected soils. Several new interesting new rootstocks have been released recently in USA. They will be introduced in France for experimentation.