NEW INSIGHTS IN SUSTAINABLE VITICULTURE: BREEDING FOR RESISTANCE

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Since the second half of the 19th century, Europe has to deal with a number of devastating diseases which almost caused disappearing of cultivated grapevine from the old Continent. Agricultural management (pest and fungal pathogens) and grafting on wild resistant rootstocks (Phylloxera) were adopted to control major diseases, and since the advent of more and more sophisticated chemicals, pests and pathogens have been successfully controlled, but with high environmental costs. Actually, European breeders tried for many decades to develop new varieties using the sexual compatibility between *Vitis* spp., both from American as well as Asiatic origin, carrying genetic resistances to the major diseases. In spite of their enormous efforts, those wild accessions were carrying also many low quality traits and undesirable aromas which caused their debacle. In the middle of the last century, hybrids were prohibited for cultivation and wine production in the major wine producing countries and only few middle European breeding institutes like Germans, Austrian, Hungarian and some Eastern countries continued on these attempts with low success rate. After a hundred years experiences, several backcrosses into *V. vinifera* background and improved knowledge, like the sequencing of the grapevine genome, grapevine breeding is facing a new deal of opportunities. Several new varieties, with no longer much traces of non-vinifera chromosomal DNA but with an interesting resistance level, mainly to powdery and downy mildews, reached the market in the North of the Alps and two of them have been registered to the National catalogues also in Italy, with a few more coming also in France. Tools for increasing success rate, based on the over hundred years of experience and molecular markers for resistance as well as quality traits, will guarantee future grape varieties (wine and table grape) with improved quality married with several natural resistances which will impact on a new grape orchard management, environmentally and economically more sustainable.