

Sanitary and agronomic selection of Tuscan germplasm to improve wine production

P. Storchi*, F. Giannetti*, P. Valentini*, I. Bazzo, E. Angelini****

* *Consiglio per la Ricerca e la Sperimentazione in Agricoltura, Unità di Ricerca per la Viticoltura, Arezzo, paolo.storchi@entecra.it.*

** *Consiglio per la Ricerca e la Sperimentazione in Agricoltura, Centro di Ricerca per la Viticoltura, Conegliano (TV).*

Clonal selection of grape was launched in 1985 at the operative section in Arezzo of the former of Experimental Institute for Viticulture [currently the Research Unit for Viticulture of the Council for Research in Agriculture (C.R.A.)].

Studies focused on the search for putative clones of the most popular varieties in central Italy, carrying out detailed investigations in old vineyards in different wine-producing districts of Tuscany, initially in Maremma and later in Montepulciano, Montalcino, San Gimignano and Chianti (Armanni *et al.*, 2010). Beginning in 1990, some experimental vineyards were established with the progenies of the clones, which were tested for their health and evaluated for their vegetative and productive characteristics.

The work was carried out in particular on the Sangiovese cultivar (Calò *et al.*, 1995), but over the years many other varieties have been included, with particular attention to indigenous germplasm for which availability of propagation material with good sanitary status is still lacking (Borgo *et al.*, 2009).

Particular attention was given to the results from experimental vinifications using virus-free clones, allowing expression of their genetic properties without interferences, especially those relating to the phenolic richness and aromatic complexity of the wines.

Through the research it was possible to evaluate the incidence of viruses in the ranges of selection. The leafroll agents, were very common, even considering that a careful visual preselection control of symptoms was carried out. Ampelovirus type 1 was identified in particular in materials from Pitigliano and Chianti Classico areas, while ampelovirus type 3 affected, almost exclusively, selections from Maremma. This virus, along with Fleck, was found in significant proportions in clones under selection in the vineyards of Tuscany. Among virus-like diseases of minor importance, the incidence of vein necrosis was very high.

The selection activity led to the registration in 2002 in the National Catalogue of Grape Varieties of clones ISV-RC1 and ISV2 of Sangiovese (Storchi *et al.*, 2004); in 2011 other clones of Sangiovese, Aleatico, Vermentino, Trebbiano toscano and Canaiolo were registered. Still other clones will be ready soon for application to the Ministry of Agriculture once agronomic observations and sanitary checks are complete.

Currently, there are clone comparison vineyards in Arezzo and in the district of Chianti Classico and collaborations are in progress regarding the clonal selection with the “Consorzio Vivaisti Viticoli Italiani” and with the main wine cellars of Tuscany.

Since the protocol for the selection of a clone demands a long period of time, one of the next objectives will be to reduce the time needed to secure clone registration in the National Catalogue. In this sense, early selection of mother plants with stable and better features, compared to the standard variety, is crucial, as is subsequent rapid propagation of plant material to establish the fields for clone assessment and comparison in different environments.

References

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