Modern winemaking practices and diversification of wine products involve an increasing quest for specialised wine yeasts. During the last two decades considerable efforts have been made to improve wine yeast strains through the use of new biotechnologies. In the present study we used commercial wine yeast currently used in wineries as a model to assess the potential environmental risks associated with the utilisation of genetically modified wine yeast strains in the wine industry. To evaluate the dynamics of industrial yeast strains in the vineyard, a large-scale sampling plan was devised over a period of 3 years, in 6 different vineyards that have used the same starter yeast for at least 5 years. Among the 3780 yeast strains identified after spontaneous fermentation, 296 had a genetic profile identical to that of commercial yeast strains. In 4 of the 6 vineyards, where the samples were taken at distances from wineries higher than 100 m, only 0-2% of the fermentative microflora had a genetic profile identical to that of commercial yeast. In the other 2 vineyards, where the samples were taken at very close proximity to the winery and the water rill with the liquid effluents, the proportion of commercial yeasts increased to 10-43%.

The data show that dissemination of commercial yeast in the vineyard is limited to short distances and periods of times and largely favoured by the presence of liquid effluents. If some of these strains are able to remain in the vineyard, they don’t become implanted systematically in the ecosystem and are not able to dominate the natural microflora but they are subject to natural fluctuations of periodical appearance/disappearance as autochthonous strains.

Keywords: wine yeast dissemination, vineyard ecosystems, molecular identification methods