

Abstract

Industrial yeasts are traditionally used in winemaking and subsequently released into the environment. Nevertheless, there is very little data showing what becomes of them in the natural environment.

To evaluate the dynamics of industrial yeast strains in the vineyard, a large-scale sampling plan was devised over a period of three years. This includes 36 sampling sites in 6 different vineyards (3 in France, 3 in Portugal) that used industrial starter yeast for at least 5 years. In each vineyard samples were taken before harvest (annual remanence) and at late harvest (immediate release), at three distances from the winery and from opposite directions. Small-scale fermentations were realised. Must samples were plated when 70 g/L of the CO₂ had been released, and 30 colonies were randomly selected. By using selective media non-Saccharomyces strains were eliminated, and the remainder were characterised by karyotyping (1) and RFLP of mitochondrial DNA (2).

During the year 2001 the genetic patterns of only 2% of 720 isolates in France (collected at 100 to 1000m from the winery) were identical to those of the industrial yeast. In Portugal, the typing patterns of about 10% of the 570 isolates were identical to those of the commercial yeast, only in post-harvest samples close to the winery (20-40 m). The identification of the *S. cerevisiae* strains isolated during the year 2002 is now underway.

These first data sets show that dissemination and remanence of commercial yeast in the vineyard is very limited. Next year's data will complete this study and allow us to confirm these results.

COMMERCIAL YEAST STRAINS DO NOT SIGNIFICANTLY DISSEMINATE IN VINEYARD ECOSYSTEMS

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Industrial yeasts, selected by good fermentation performance and desirable organoleptical characteristics, are traditionally used in winemaking. As the wineries are open spaces, commercial yeasts can be disseminated into the environment around the winery. From an ecological point of view, they are non-indigenous *S. cerevisiae* strains, which are annually introduced in large amounts into the ecosystem of the vineyard. There is very little data on the behaviour of these industrial yeasts in a natural habitat or on their potential impact on the natural microflora. In order to obtain a better understanding of the potential risks associated with the use of genetically modified wine yeast strains, a large-scale sampling plan was devised in different geographical locations, using commercially available yeast as a model.

Sampling plan: This includes 36 sites in 6 vineyards (3 in France and 3 in Portugal) that use industrial starter yeasts for at least 5 years. Samples were taken before harvest (annual remanence) and at late harvest (immediate release), at 3 distances from the winery (20-1000 m) and from opposite directions.

Yeast isolation: For each sample about 2 Kg of grapes were collected to perform small-scale fermentations (0.25-0.5 l). Must samples were plated when 70 g/l of CO₂ were released and 30 randomly selected colonies were analysed.

