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Thesis title: Biodiversity of yeast in vineyards during the vegetation period

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Abstract (max 300 words)

This Master Thesis is a part of a PhD research project focusing on yeasts responsible for natural fermentation, their sources, their characteristics and characterization. The aim of this thesis is to determine during the early vegetative period what yeasts are present in the vineyards and their different sources using traditional methods and Infra-Red Fourier Transformed (FT-IR) spectroscopy method. . Because spontaneous fermentations are still a common production method for winemaking, determination of yeast sources has a real importance for scientists and winegrowers. The main yeasts identified and quantified during the investigation period belong to the species *Cryptococcus sp*., *Rhodotorula sp*. and *Aureobasidium pullulans* and are irrelevant for alcoholic fermentation. The different habitats and sources of oxidative and fermentative yeasts have been determined and pointed out. A differentiation at species level has been made according to the different material sampled from three investigated vineyards. Some species are ubiquitous and constant during the experiment like *Cryptococcus sp*., *Rhodotorula sp*., and *Aureobasidium pullulans*; others are specific to a vegetal material or a vineyard like *Ustilago maydis* or *Rhodosporidium sp*.; and other species are neither constant during the investigation period nor ubiquitous like *Candida sp*., *Saccharomyces cerevisiae*, *Kluyveromyces marxianus* and *Torulaspora delbrueckii*. This analysis aims to allow scientists and winegrowers to confirm the notion of yeasts terroir in vineyards, to create a qualitative database of yeast isolated using FT-IR analysis and to allow cross referencing of these yeasts, with those isolated from spontaneous fermentations of grapes harvested from the same selected sites and to have a better understanding of the biodiversity of yeast in the vineyard.

Keywords : biodiversity, yeast, spontaneous fermentation, FT-IR, yeast terroir

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