

Management of Wine Microorganisms for the Australian Wine Industry

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Abstract:

Culture collections play a vital role in preserving and conserving microbial diversity. They are an essential part of the infrastructure underpinning life sciences and biotechnology. The primary role of the AWRI culture collection is to collect and store wine yeast and bacterial isolates to ensure the microbial diversity of the grape and wine world, is not lost. The AWRI culture collection contains over 1500 yeast and bacterial strains which include reference strains, winery isolates, research strains and experimental wine yeast strains. These strains are not only available for AWRI related research projects, but can also be obtained for winemaking purposes. The AWRI culture collection manages all the strains for AWRI Biosciences research projects, including sourcing strains from other research institutions with all the 'paperwork' (e.g. quarantine permits and material transfer agreements). Requests for wine associated yeast and bacteria are received from Australian oenology teaching institutions, and researchers worldwide. An additional role is to assist the Australian wine industry by encouraging wineries to deposit their yeast and bacterial strains in the AWRI culture collection. Over the last few years, information on the yeast and bacteria strains has been transferred into a fully searchable customised Access database. Currently we are systematically verifying and updating the identification of yeast strains in the collection. Molecular based techniques are used for yeast identification to genus and species level. Ongoing research projects within the AWRI culture collection include screening *Saccharomyces cerevisiae* strains for desirable winemaking characteristics, and identification and characterisation of wine spoilage yeast and bacteria. Another responsibility of the AWRI culture collection is assisting with the trialling and development of new wine yeast strains for the wine industry. Candidate yeast strains are identified through laboratory experiments, trialled on small scale (10-30L), pilot scale (100-500L) and winery scale (>1000L) for fermentation performance and wine sensory attributes before being offered for commercialisation by yeast companies.

Key-words: wine, yeast, bacteria