



Microbial community assemblies and interspecific interactions in wheat sourdough

Johan Ramsayer, Delphine Sicard, Judith Legrand

► To cite this version:

Johan Ramsayer, Delphine Sicard, Judith Legrand. Microbial community assemblies and interspecific interactions in wheat sourdough. Sféologie-2018 - International Conference of Ecological Sciences, Oct 2018, Rennes, France. 2018. hal-02006834

HAL Id: hal-02006834

<https://hal.science/hal-02006834>

Submitted on 2 Jun 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Microbial community assemblies and interspecific interactions in wheat sourdough

Johan Ramsayer, Delphine Sicard, Judith Legrand

¹ INRA, UMR 1083 Sciences pour l'œnologie, 34060 Montpellier Cedex 2, France

² INRA, UMR 0320 Genetique quantitative et évolution, 91190 Gif-sur-Yvette, France

Microbial community assemblies are largely studied in complex environments such as ocean, gut or soil communities. Although our knowledge of microbial communities' diversity has been largely enhanced by the use of -omics technics in the last decade, observations as well as experimental and theoretical works are needed to decipher the ecological processes governing their patterns of biodiversity and how the species forming these communities interact together.

Here, we address these questions in the case of wheat sourdough microbial communities. Sourdough communities are always composed of an assemblage of lactic acid bacteria and yeasts but species composition vary between sourdoughs. As these communities are relatively simple in terms of species richness, they can represent a good opportunity to study the role of abiotic conditions and biotic interactions on community assemblies.

It has been hypothesized that yeasts and LAB interact together mainly in a non-competitive way through mutualistic supply of important metabolites, such as glucose release by LAB, or vitamins release by yeasts to the benefits of each other. However interspecific interactions in sourdough have not been extensively studied. We used two kind of approaches to investigate these interactions: i) an analysis of the network of sourdough yeast and LAB species documented in the literature to determine whether some species tend to co-occur more (or less) often than expected in the absence of interactions, ii) mono and co-culture of yeast and LAB strains sampled in natural sourdough to characterize yeast-LAB interactions. We have shown that LAB presence tends to decrease yeast density whereas yeast presence tends to decrease LAB density although results are contrasted depending on species and strains. Further work is needed to unravel the mechanisms shaping these interactions.