

Laurent BLEUZE's PhD Thesis defense

Laurent defended his doctoral thesis at the University of Reims Champagne-Ardenne on January 24, 2019: **Dew retting of industrial hemp (*Cannabis sativa* L.): dynamics under controlled environment and modeling** under the direction of Dr Sylvie RECOUS, Dr Brigitte CHABBERT and Dr Gwenaëlle LASHERMES at FARE Laboratory in Reims (FRANCE). This work has been funded by the Grand Reims Urban Community and the Environment and Agronomy Department (EA) of INRA.

Abstract

Dew retting is a process that, through selective microbial degradation of the outer tissues of the stems, leads to partial dissociation of extraxylemic cellulosic fibres, facilitating their subsequent mechanical extraction. It is under the control of biotic and abiotic factors whose effects are still poorly understood. The objective of the doctoral work was to quantify and model the influence of these factors on retting for industrial hemp (*Cannabis sativa* L.).

The development of an innovative experimental system has made it possible to carry out retting on soil in a controlled environment (humidity, temperature and lightning). The retting dynamics were characterized by measurements of the physicochemical parameters of the mulch (color, mass, chemical composition, stem tissue architecture) and biological parameters (enzymatic activities). The results allowed the development of a numerical model (RETTING) within the VIRTUAL SOIL platform gathering new modules, simulating the biological degradation of hemp stem external tissues (BioRETTING) and the evolution of mulch properties (MulchRETTING) during retting which occurs at the soil surface after the harvest.

