VINIoT – PRECISION VITICULTURE SERVICE

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OUR **PROJECT**

The project VINIoT pursues the creation of a new technological vineyard monitoring service, which will allow companies in the wine sector in the SUDOE space to monitor plantations in real time and remotely at various levels of precision. The system is based on spectral images and an IoT architecture that allows assessing parameters of interest viticulture and the collection of data at a precise scale (level of grape, plant, plot or vineyard) will be designed. In France, three subjects were specifically developed: evaluation of maturity, of water stress, and detection of flavescence dorée.

METHODS AND MAIN **RESULTS**

For every subject, hyperspectral acquisiton was performed at different scales : berries/leaves, bunches/plants, and vineyards

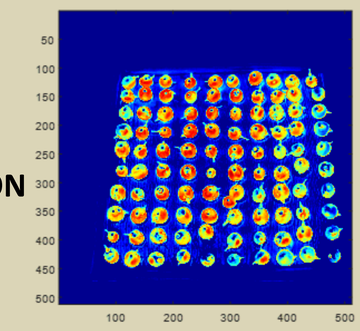
Maturity

GOAL: Predict sugar content of three different grape varieties: Syrah, Fer Servadou and Mauzac from hyperspectral imaging.

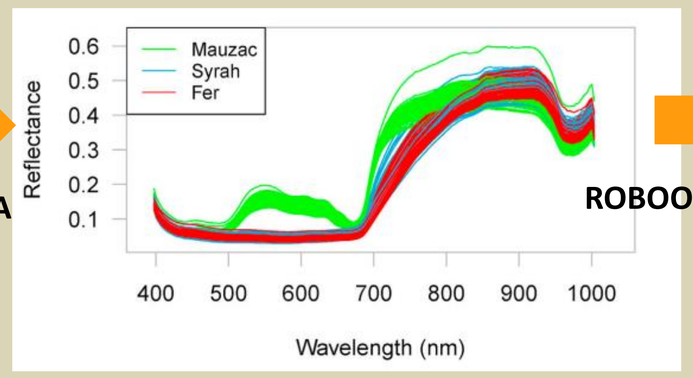
RESULTS: For these three varieties, results obtained from RoBoost-PLSR method outperformed those from the PLSR method. This study validates the use of the RoBoost-PLSR method for monitoring grapes berries maturity in the laboratory. The advantage of this method is to provide good prediction models despite outliers presence.

ANALYSIS METHOD:

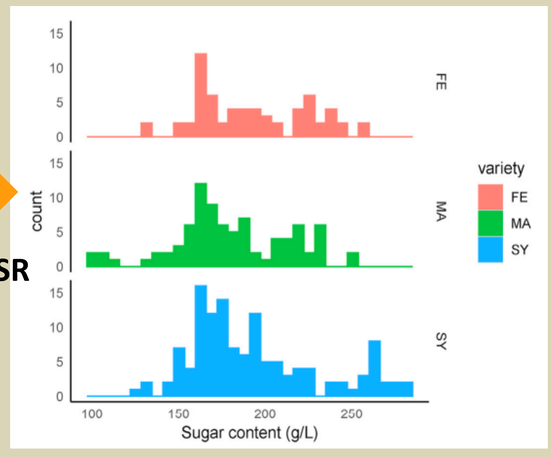
SEGMENTATION



SPECTRA



ROBOOST-PLSR



Flavescence dorée

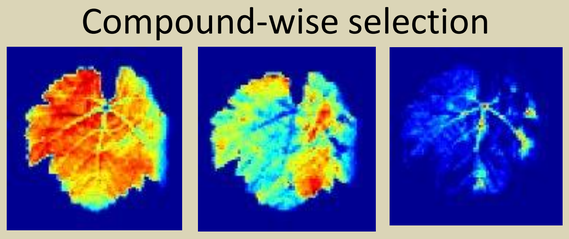
GOAL: Detect disease Flavescence dorée from hyperspectral imaging.

RESULTS: The strategy of combining MCR-ALS and FDA proved the potential towards the discrimination of healthy and infected leaves by flavescence dorée based on the use of hyperspectral images. For the first time, this strategy was applied as a phytopathology detection approach.

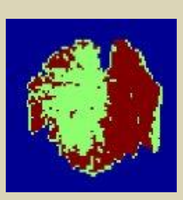
ANALYSIS METHOD:

MCR-ALS

Compound-wise selection



FDA



Water stress

GOAL: Evaluation of water stress from hyperspectral imaging.

ANALYSIS METHOD:
Planted pot to work with a significant variability in terms of water status.

RESULTS: The regression models on agronomic variables (stomatal conductance and transpiration) are studied.

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Le projet VINIOT est cofinancé par le programme Interreg Sudoe.

Interreg Sudoe
European Regional Development Fund
EUROPEAN UNION
VINIoT