

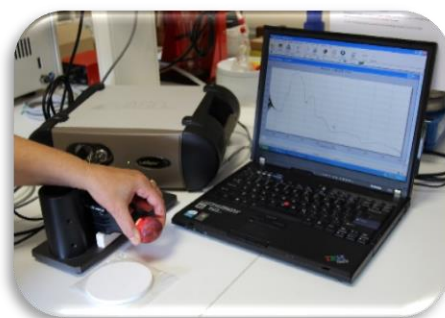
Modeling for monitoring fruit maturity.

Concrete use of near infrared spectroscopy for the harvest of Ente plums.

➤ Context / customer need

The National Interprofessional Bureau of Prunes (B.I.P.), has been questioning for years how to better estimate the maturity of the fruits to predict the optimal harvest date for plums. Their final objective is to develop a non-destructive measurement tool applicable directly to the orchard.

The B.I.P. has implemented considerable resources to establish a 4-years database of nearly 6,000 samples. Each plum sampled was measured by near infrared spectroscopy, as well as with various other univariate instruments, then measured in the laboratory to obtain the Brix degree and the acidity of the fruit.



➤ Ondalys solution

The B.I.P.-Ondalys collaborative study showed that the univariate instruments tested did not make it possible to follow the maturity from one year to the next. The rest of the study therefore focused on the use of near-infrared spectra.

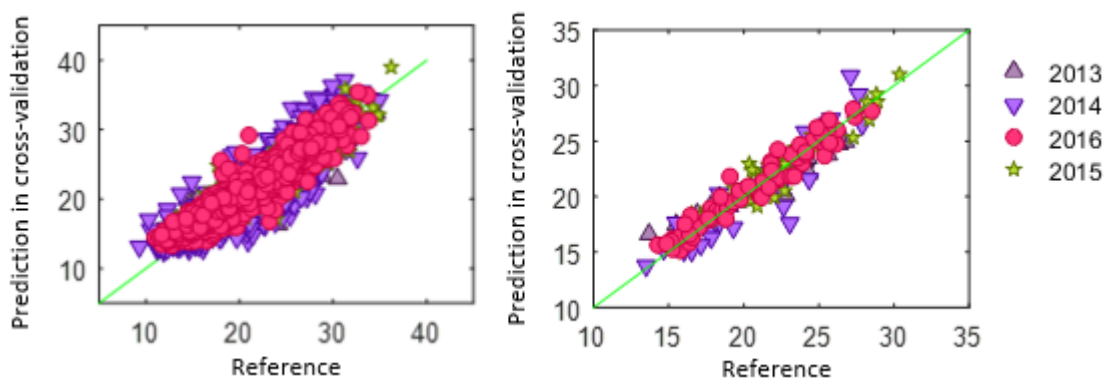
Ondalys has developed robust models for quantitative prediction of sugar and acidity in plums. The very satisfactory fruit-to-fruit performances are excellent on an orchard scale.

➤ Results / Customer benefits

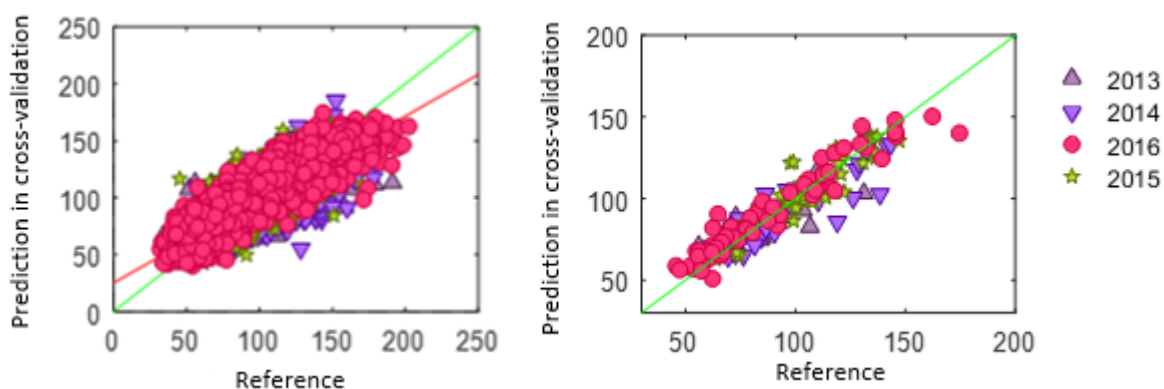
The study started from a laboratory spectrometer, was continued in order to transfer the models obtained on a handled spectrometer to be able to measure the fruits directly in the orchard.

The performances, which are equivalent for the sugar level, are however insufficient for the acidity. It is therefore necessary to add new spectra acquired directly on the handled spectrometer.

These good results led the B.I.P. acquire a handled spectrometer and continue testing to enrich the database with spectra acquired on this new instrument.



Predictions in cross-validation of Brix degree, fruit-to-fruit (left) and in average by orchard (right).



Predictions in cross-validation of acidity, fruit-to-fruit (left) and in average by orchard (right).

➤ Publications / Communications

LALLEMAND Jordane, ROUSSEL Sylvie, RASHIDI Salim & CAPELLE Monique - Evaluation of Ente plum maturity by infrared spectroscopy – 17th International Conference on Near Infrared Spectroscopy (NIR 2015) – Foz do Iguassu, Brazil.

CAPELLE Monique & AUBERT Sandra - Évaluation de la maturité de la prune d'Ente par Spectroscopie proche infrarouge – 20^{èmes} Rencontres HélioSPIR 2019 – Montpellier, France.

Project funding



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