

# Improving high-resolution multispectral and thermal images acquired from unmanned aerial vehicles (UAVs) for high-throughput field phenotyping

## RESULTATS

The HiriFAP project made it possible to develop a methodology of high-throughput phenotyping based on airborne high-resolution imagery performed by UAV flights over apple plant groves submitted to variable hydric regimes. The HiriFAP project allowed us to validate (i) a flight procedure and image harvesting, thanks to programming RGB and NIR snapshots, and thermal-IR video; (ii) extraction of fix thermal IR images from video files, geometric and radiometric corrections of images, geolocation and mosaicking; (iii) extraction of multispectral data from image files; (iv) computation of vegetation and stress indices from these data; (v) relation of indices to the phenotypic variables acquired at ground level, in planta. The potential added value of an image post-treatment, consisting in image supervised classification is currently studied. Publication of the project results has been actively undertaken in front of different scientific audiences.

## PERSPECTIVES

Since Hiri-FAP project produced real methodological breakthrough, transfer in professional context is currently undertaken. This consists of Aliage-fruits Casdar program (2014-2017), which aims at achieving a pre- and post-treatment pipeline dedicated to images acquired and assessing feasibility of imagery procedures in professional context.

**Responsable :**

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