



UAV remote sensing for precision agriculture

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Airinov offers to farmers, scientists and experimenters (plant breeders, etc.) its technical skills about UAVs, cartography and agronomic remote sensing.

The UAV is a 2-m-wingspan flying wing. It can carry away either a RGB camera or a multispectral sensor, which records reflectance in 4 spectral bands. The spectral characteristics of the sensor are modular. Each spectral band is comprised between 400 and 850 nm and the FWHM (Full Width at Half Maximum) is between 10 and 40 nm. The spatial resolution varies according to sensor, flying height and user needs from 15cm/px for multispectral sensor at 150m to 1.5cm/px for RGB camera at 50m.

The flight is totally automatic thanks to on-board autopilot, IMU (Inertial Measurement Unit) and GPS.

Data processing (unvignetting, mosaicking, correction in reflectance) leads to agronomic variables as LAI (Leaf Area Index) or chlorophyll content for barley, wheat, rape and maize as well as vegetation indices as NDVI (Normalized Difference Vegetation Index).

Using these data, Airinov can product advices for farmers as nitrogen preconisation for rape. For scientists, Airinov offers trial plot monitoring by micro-plots vectorisation and numerical data extraction micro-plot by micro-plot. This can lead to kinetic curve for LAI or NDVI to compare cover establishment for different genotypes for example.

Airinov's system is a new way to monitor plots with a lot of data (biophysical or biochemical parameters) at high rate, high spatial resolution and high precision.