

An aerial photograph of a rural landscape featuring various agricultural fields. Some fields are brown and appear to be fallow or recently plowed, while others are green with crops. A cluster of trees is visible in the upper center. A white rectangular box is overlaid on the left side of the image, containing the company name and the main title. A dark teal horizontal bar is positioned below the white box, containing the subtitle. The bottom half of the image is decorated with a pattern of semi-transparent hexagons.

sim^aactive

Increase agricultural productivity with multispectral imagery

QUICK GUIDE

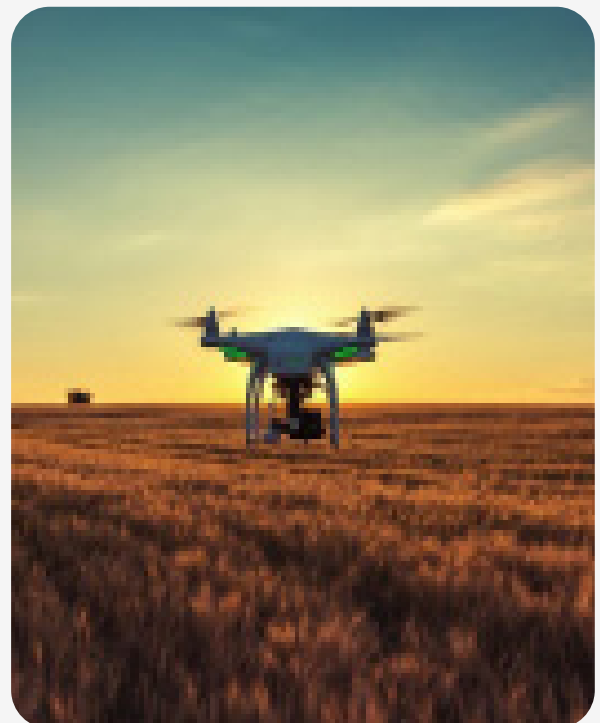
Challenges

Over the last decades, technological developments in agriculture have allowed to greatly expand harvesting areas. But such larger fields make yield control, disease inspection and irrigation systems much more complex. To further complexify things, each agricultural plot is subject to variability in different aspects (e.g. soil fertility, sun exposure), which affects productivity and profitability per unit area. Thus, a management of agrarian operations adapted for each plot is often necessary to better estimate soil conditions and improve crop productivity.



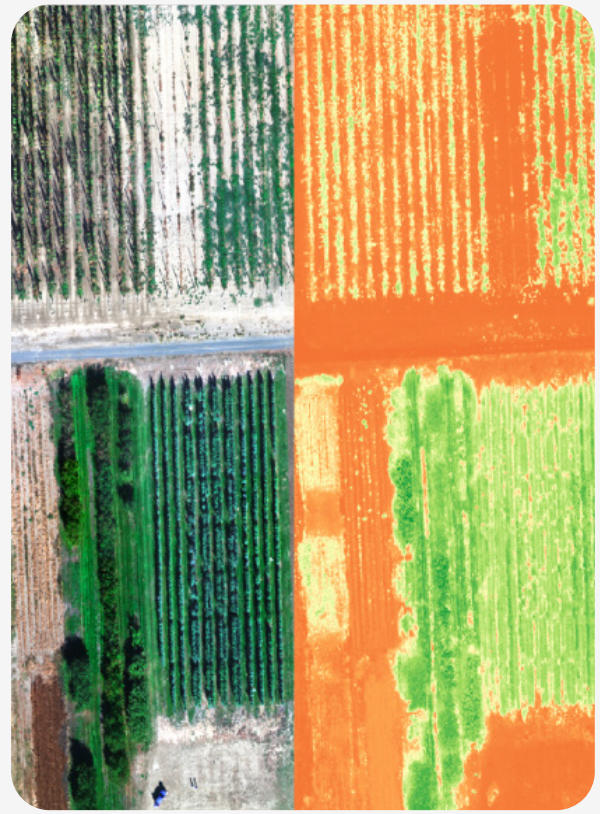
Collection

Imagery can be collected by aircrafts, but recently drones are becoming widely used due to their low cost and ease of use. Multi-rotor or fixed-wing platforms can be flown, depending on the resolution required, the size of the area to be covered and operational constraints. In addition, the various sensors now available, such as thermal and multispectral cameras offer new tools particularly useful for agriculture as they collect information invisible to the naked eye.

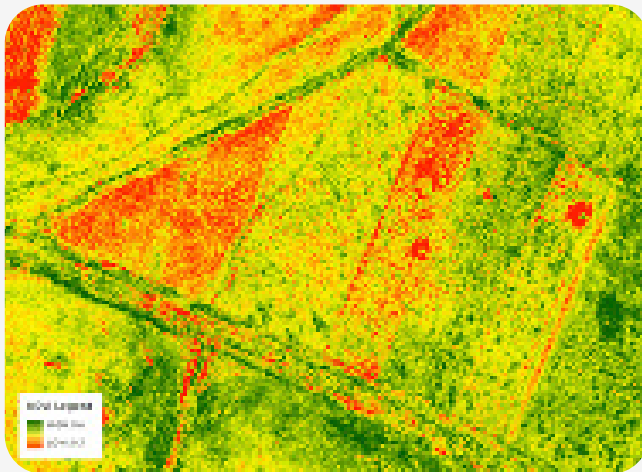


Processing

The collected data can be quickly processed by Correlator3D™ software to create different mapping products. The use of a high-end photogrammetry suite allows not only to save time by having the processing done directly in the field, but also to generate highly accurate results. These include digital surface and terrain models as well as orthomosaics. For agricultural applications, calibrated reflectance maps are particularly useful. Index maps can also be calculated by deriving a Normalized Difference Vegetation Index (NDVI). This can be calculated directly by the software to compensate for changes in lighting conditions, surface slope, exposure, and other external factors.



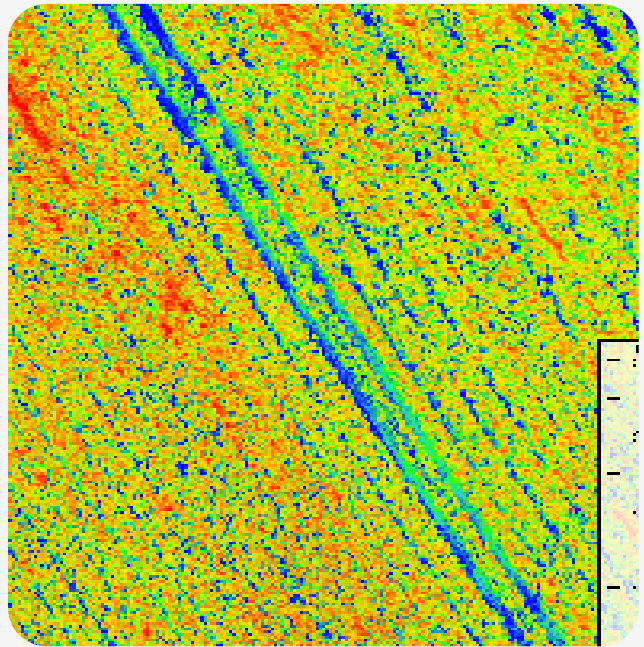
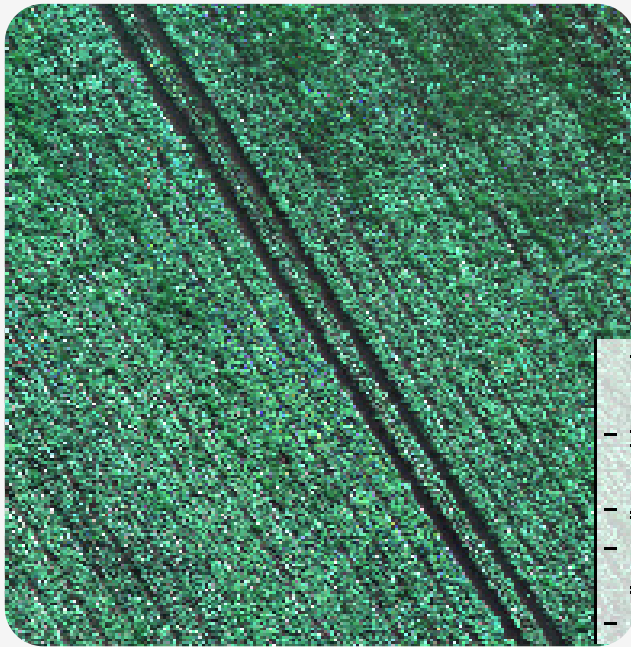
Interpretation



The resulting data can be used to assess vegetation health. Abnormal changes in the growth process can also be detected. Reflectance and NDVI maps are often used to locate stressed plants and to measure crop productivity as well as to predict future yield. Elevation models can also be used to improve irrigation systems, considering the slope of the land and the watershed.

Benefits

The use of accurate mapping data allows optimizing yield. For example, irrigation systems can be improved by taking profit of natural slopes. Spraying operations to fight infections and pests can be more effective since the exact status of fields can be accurately measured. Orthomosaics can improve crop surveillance by precisely quantifying losses caused by severe weather, overspray, drought or wild animal trampling. Overall, photogrammetry brings major advantages in agriculture and contributes to maximize profits.



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