

## Hyperspectral Imaging: Hand-held Image Acquisition for Ground Inspection

Multispectral imaging techniques have been tested in OSI related CTBTO activities. The Treaty permits the use of hand-held multispectral cameras during OSI ground inspections. Spectral scanners have successfully mastered several applications over broad spectral ranges; however hand-held scanning has its limitations in mobility and flexibility. To overcome these limitations, snapshot imaging or a spectral frame camera technique can be used. Such a device captures the entire hyperspectral dataset/image during a single integration (one shot takes about 1 ms). During in-field and close-field applications weight, speed and power uptake are important considerations. In the context of an agricultural research project, a hand-held snapshot spectral camera with more than 100 spectral channels in the visible and near infrared region was tested. Different spectro-phenological parameters were inspected. The usability, data delivery, spectral data quality and spectral documentation potential of the camera were evaluated. It was concluded that it provides a rapid and easy-to-use data set for spectral mobile mapping. It worked as a portable non-invasive and non-destructive sampling method with an extreme short data acquisition time – akin to taking a simple digital photograph. Data processing turnaround times were of the order of minutes enabling rapid phenological and physiological characterisation of vegetation cover.

**Primary author:** SZALAY, Kornél (Institute of Agricultural Engineering (NAIK))

**Presenter:** SZALAY, Kornél (Institute of Agricultural Engineering (NAIK))

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