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A flexible multispectral system (ASPIS) for airborne remote sensing environmental applications

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Fragmentation and heterogeneity are typical features of European landscape, and remote sensing applications in this context require high spatial and temporal resolution monitoring devices. Recent studies have demonstrated that vegetation indices utilizing narrow and close to each other wavelengths (like PRI or red edge indices), that are not generally available on satellite sensors, are particularly promising. The high costs associated with the use and the data processing of airborne hyperspectral sensors limits their operational utilization. DISAFRI of Tuscia University and IBIMET CNR, in collaboration with Terrasystem srl, have developed in the last years a suite of sensors (the ASPIS system) that can be installed on small and flexible aerial platforms, allowing airborne remote sensing to be used as an effective operational tool in new environmental monitoring applications. Such system, that includes a digital CCD multispectral camera (ASPIS) capable of acquiring images in 4 spectral user selectable bands, a thermal IR camera and a laser altimeter, will be described. Results obtained using the multispectral instrument to estimate protein content of durum wheat during the pre-harvesting phase will be shown and the advantages and the limits of this kind of sensors and applications, based on practical experiences, will be finally highlighted.