Digital Multi-spectral Airborne Imaging and Processing: 
Combined Tools for Decision Making in Precision Farming 
and Agriculture.

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ABSTRACT:

The design and development of a low-cost, portable, multi-spectral imaging system and calibrated irradiance sensor enables rapid response imaging and decision making for precision agriculture applications. This system provides a comprehensive suite of ground based sensors, a digital color infrared imaging system and software that can provide near real-time normalized imagery for crop monitoring. The ground-based sensors are calibrated with the digital multi-spectral camera and the software merges these datasets to generate images as classified as percent reflectance. The data normalization routine provides the foundation for quantifying crop attributes and making temporal comparisons. Calibration involves laboratory techniques to isolate characteristics specific to the imaging system, and techniques to incorporate characteristics and biases due to, for example, solar illumination and sun angle at the time the image is acquired.

Keywords: Multi-spectral, digital aerial imagery, calibration, irradiance sensors.