

FLUORESCENCE (F) AND REFLECTANCE (R) MEASUREMENTS FOR VEGETATION STRESS DETECTION AND NITROGEN DEFICIENCY MONITORING:

Assessment of the Contribution of Chlorophyll F to R of Corn Foliage*

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ABSTRACT

To determine the trends in reflectance (R) and fluorescence (F) and assess the contribution of chlorophyll fluorescence (ChlF) to the apparent vegetation reflectance (Ra) in the red/far-red, spectra were collected on corn (*Zea Mays* L.), under normal growth conditions and conditions ranging from nitrogen deficiency to excess. The spectral F and R indices indicative of the N status were determined. A significant contribution of ChlF to Ra was established, with on average 8-25% at 685nm and 4-8% at 740nm of Ra being due to ChlF. Using near solar excitation, the study confirms some of the trends in three ChlF ratios established by the active fluorescence technology (single excitation bands), suggesting that the utility of bio-physiological indicators developed by this technology for monitoring vegetation physiological status is likely applicable also under natural solar illumination.

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