

Contribution of Chlorophyll Fluorescence to the Reflectance of Leaves in Stressed Plants as Determined with the VIRAF-Spectrometer

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Reflectance spectra allow the early detection of stressors causing differences in pigment content as well as changes of leaf tissue structure and photosynthetic activity. The reflectance decreased with increasing Chl content in greening bean leaves. In stressed leaves, in turn, the reflectance increased with decreasing Chl content. This also caused a shift of the red reflection rise (“red edge”) to shorter wavelengths (“blue shift”) associated with a blue shift of the inflection point of the red edge. The contribution of the red and far-red Chl fluorescence to the reflectance signal at the red edge of the spectrum and the shift of the wavelength position of the inflection point are demonstrated and discussed.