

# **ESTIMATION OF PHOTOSYNTHETIC LIGHT USE EFFICIENCY OF PLANT LEAF WITH PHOTOCHEMICAL REFLECTANCE INDEX**

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It was suggested that the photochemical reflectance index (PRI), derived from narrow-band reflectance at 531 and 570 nm, is an indicator of photosystem II photochemical efficiency and light use efficiency (gross CO<sub>2</sub> uptake rate divided by incident light level). To further test this hypothesis net photosynthesis, chlorophyll fluorescence and spectral reflectance were measured simultaneously with intact bean, sunflower, and corn leaves grown at two nutrient level and expose to varying light intensity and CO<sub>2</sub> partial pressure during steady state gas exchange. In initial experiments, a linear relationship was observed between PRI and light use efficiency, and this relationship was not affected by nutrient status and incident light level. Further work suggested that this relationship could be affected by seasonal growth conditions and developmental stage. The slope of the PRI-light use efficiency relationship was affected by CO<sub>2</sub> concentration, indicating that PRI is more directly related to PSII photochemical efficiency than to the efficiency of overall CO<sub>2</sub> fixation.