

非调制式荧光仪PEA测定叶绿素荧光参数的研究

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为了利用非调制式荧光仪获得调制式荧光仪测定的叶绿素荧光动力学参数,采用植物效率(PEA)仪进行了叶绿素荧光参数测定程式的4要素(光化光强度及其照射时间、饱和激发光强度及其照射时间)以及节约测定时间和仪器内存的测定技术研究。结果表明,暗适应10 min后,在设定 $180 \mu\text{mol} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$ 光化光照射360 s时间内,以连续2次 $1950 \mu\text{mol} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$ 饱和激发光照射3 s的测定程式,在7种植物的叶绿素荧光参数的测定中获得了较为满意的测定结果,而且与Strasser等测定程式相比,1次测定需时从600 s缩短为360 s、耗用仪器内存从76.9%减少为2.56%。

Study on Getting Parameters of Chlorophyll Fluorescence Dynamics by Non-modulated Fluorometer PEA

By way of getting parameters (F_m' 、 F_s 、 $\Delta F/F_m'$ 、 q_N 、 q_P , etc.) of chlorophyll fluorescence dynamics by non-modulated fluorometer PEA just as those by modulated fluorometer, the four elements (actinic light intensity and time, saturating light intensity and time) in the measurement patterns of fluorescence signals and saving run of time and instrument memory by PEA were studied. After that, we get approving results on seven plants with the measurement patterns that the dark adaptation time was 10 min and the actinic light intensity was set at $180 \mu\text{mol} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$, a light pulse of 3 sec duration with an intensity of $1950 \mu\text{mol} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$ was given two times at intervals of 360 sec, and a measurement cut time from 600s to 360s, and cut instrument memory from 76.9% to 2.56%, in contrast to Strasser's patterns.

关键词