

Application of fast light readapted plants for measurement of chlorophyll fluorescence and P_{700} light absorption with the RLC method.

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by Eugene A. Lysenko, ORCID 0000-0003-1474-0213

Institute of Plant Physiology RAS, Moscow, Russia.

Corresponding Author: Eugene A. Lysenko; Email: genlysenko@mail.ru

Recalculation of P and ΔP values:

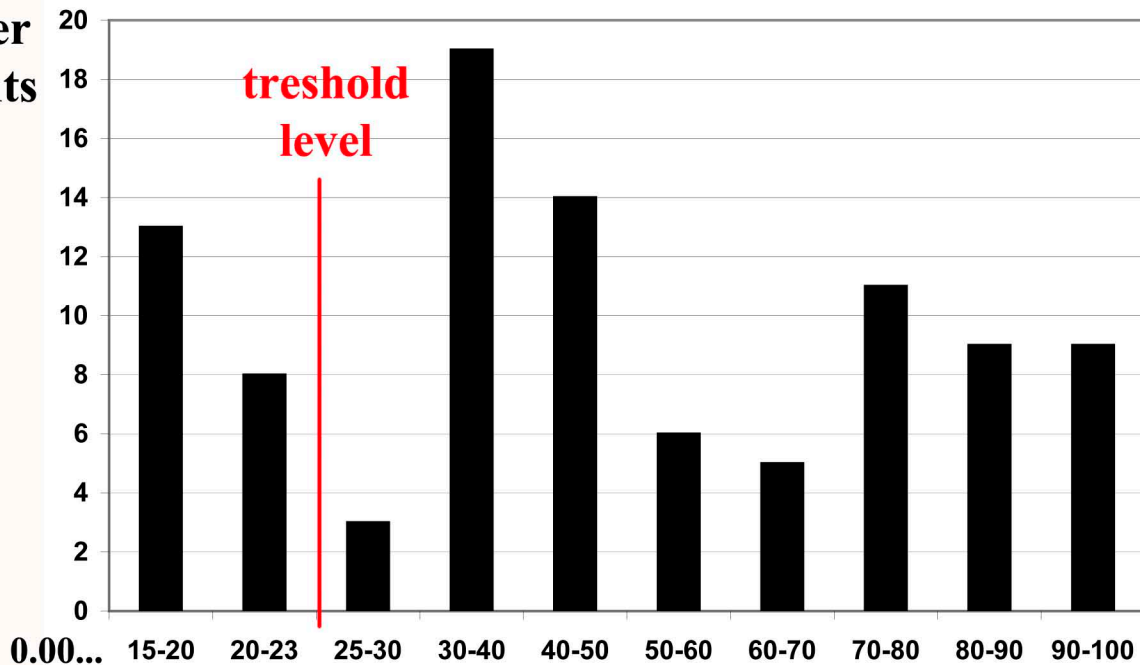
P is the steady state-level of P_{700} absorption in light; P_0 – is the minimum current signal of P_{700} absorption that is measured after each SP and cessation of far-red light both in the dark and light regimes (Klughammer and Schreiber 1994, 2008). The minimum current signal of P_{700} absorption is accepted as the zero level and subtracted from all the values (P_M , P_M' , P, P_0); therefore, the P_0 value is always zero and not given in the tables of Dual-PAM-100 software (discussed in Lysenko *et al.* 2020). The values of P are also not shown in the tables of Dual-PAM-100 software; however, P values are used for the calculation of the coefficients $Y(I) = (P_M' - P)/(P_M - P_0)$ and $Y(ND) = (P - P_0)/(P_M - P_0)$ (Klughammer and Schreiber 1994, 2008). Considering P_0 subtraction, these values can be reduced to $Y(I) = \Delta P/P_M$, where $\Delta P = P_M' - P$, and $Y(ND) = P/P_M$. Consequently,

$$\Delta P = Y(I) \times P_M \quad (\text{Eq. 1})$$

$$P = Y(ND) \times P_M \quad (\text{Eq. 2}).$$

The values P_M , P_M' , $Y(I)$, and $Y(ND)$ are given in the tables of the Dual-PAM-100 software. The genuine P_M values cannot be measured in plants that lack the step of dark-adaptation. For such plants, the P_M value of a previously measured dark-adapted plant was used as the quasi- P_M value. Based on these quasi- P_M values, Dual-PAM-100 software automatically calculated (quasi)- $Y(I)$ and (quasi)- $Y(ND)$. These quasi P_M , $Y(I)$, and $Y(ND)$ values were used for the backward recalculation of ΔP and P values only. In all cases, the recalculated values ΔP and P were compared with the genuine P_M' given in the tables. If $|P_M' - (\Delta P + P)| < 0.0025$, then the data were accepted; if the difference was ≥ 0.0025 , then the recalculated data were discarded. The threshold level ± 0.0025 was chosen empirically (Suppl. Fig. S1) and reflects the probable level of inaccuracy in the Excel software calculations. For most recalculated data, the difference was within ± 0.001 .

**Number
of points**



$\Delta P + P \neq Pm'$

Size of inconsistency, range $|\pm 0.0015 - 0.0100|$

Fig. S1 The distribution of inconsistent data points, $\Delta P + P \neq Pm'$

All the results $Pm' - (\Delta P + P) \neq 0$ were collected; the data points with small differences were ranged.

The threshold level $(\pm)0.0025$ was chosen empirically. The data points with smaller absolute values of the difference were accepted (see Text).

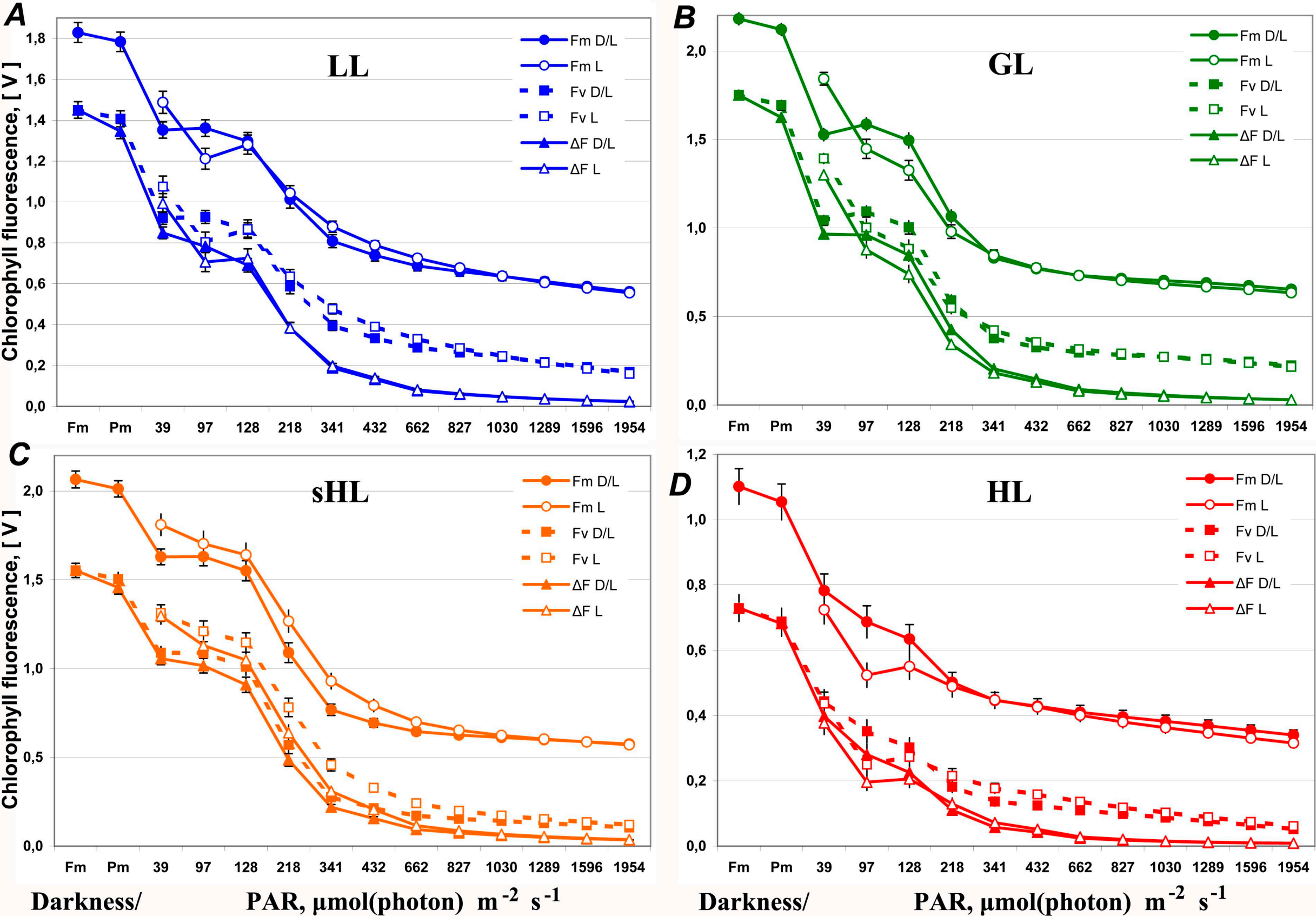


Fig. S2 The parameters of Chl fluorescence Fm('), Fv('), and ΔF

All these parameters are shown in one graph for each type of plants (LL, GL, sHL, and HL).

The data Fm(') and ΔF are the same as in Fig. 1. All designations are the same as in Fig. 1.

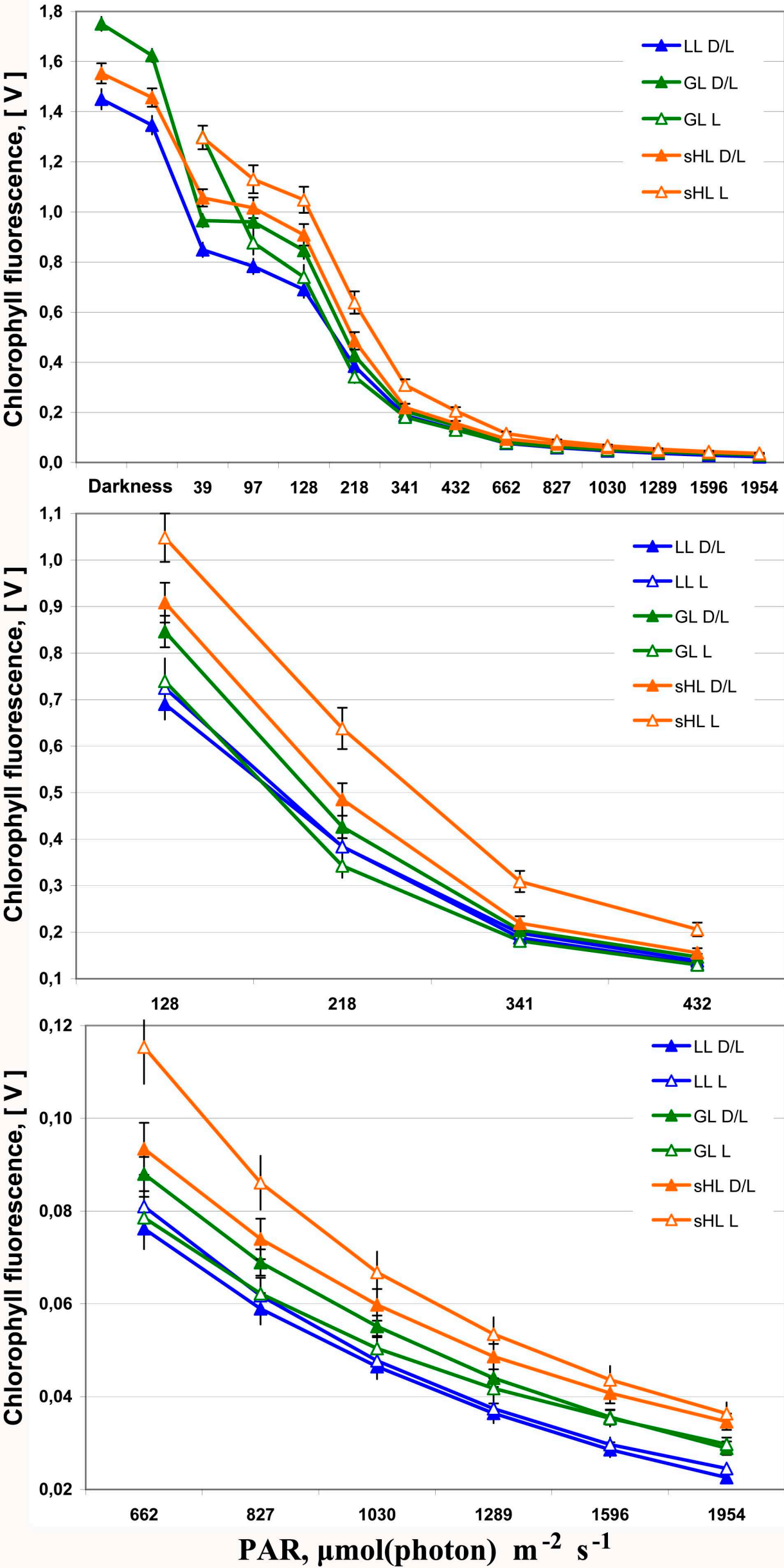


Fig. S3 The data from Fig. 1c are represented with higher resolution

Some data were omitted for better visibility. All designations are the same as in Fig. 1.

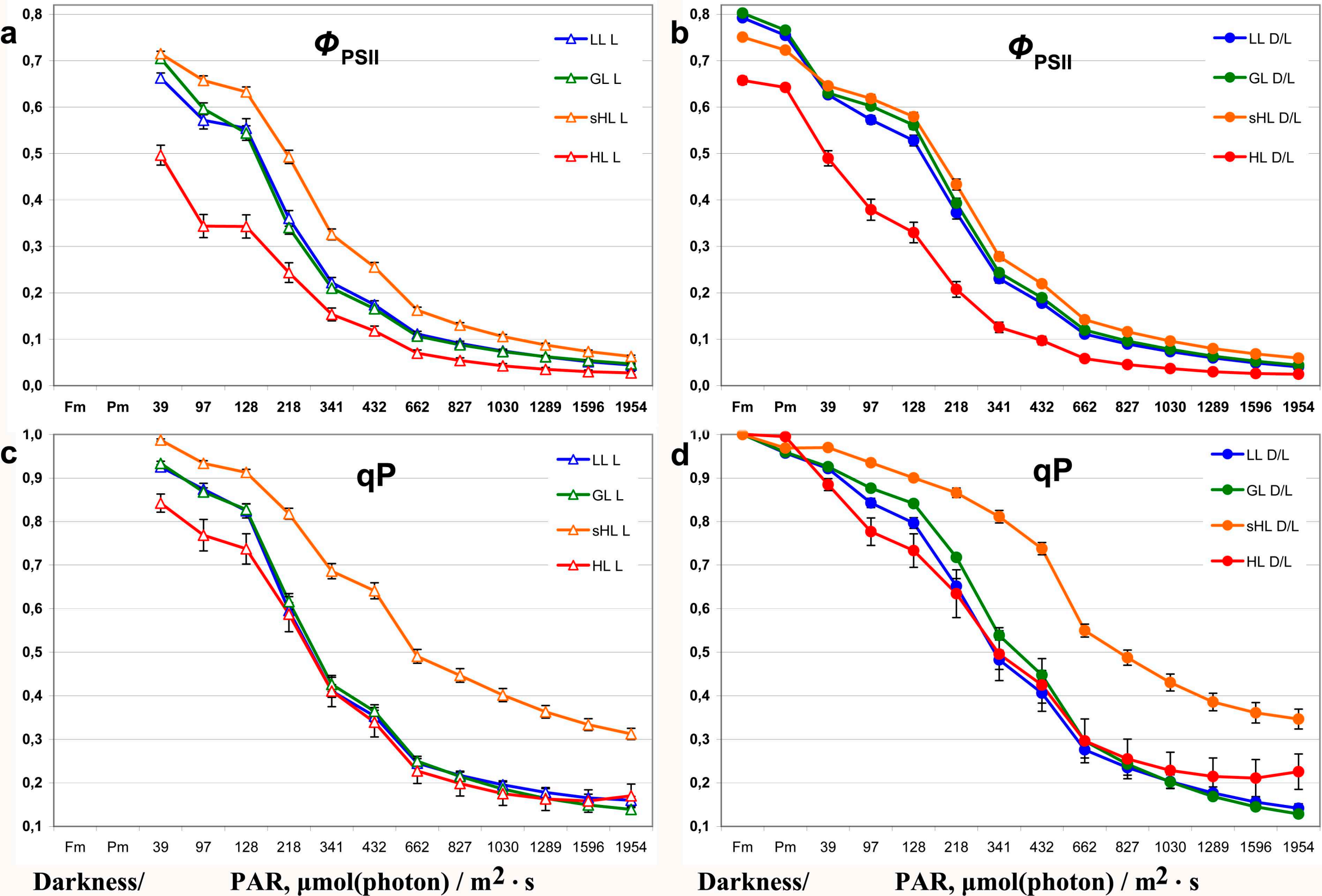


Fig. S4 The coefficients of Chl fluorescence ϕ_{PSII} and qP

All the data are the same as in Fig. 3. The data were rearranged for the comparison between the whole pictures obtained in D/L and L variants (a-d). All designations are the same as in Fig. 1.

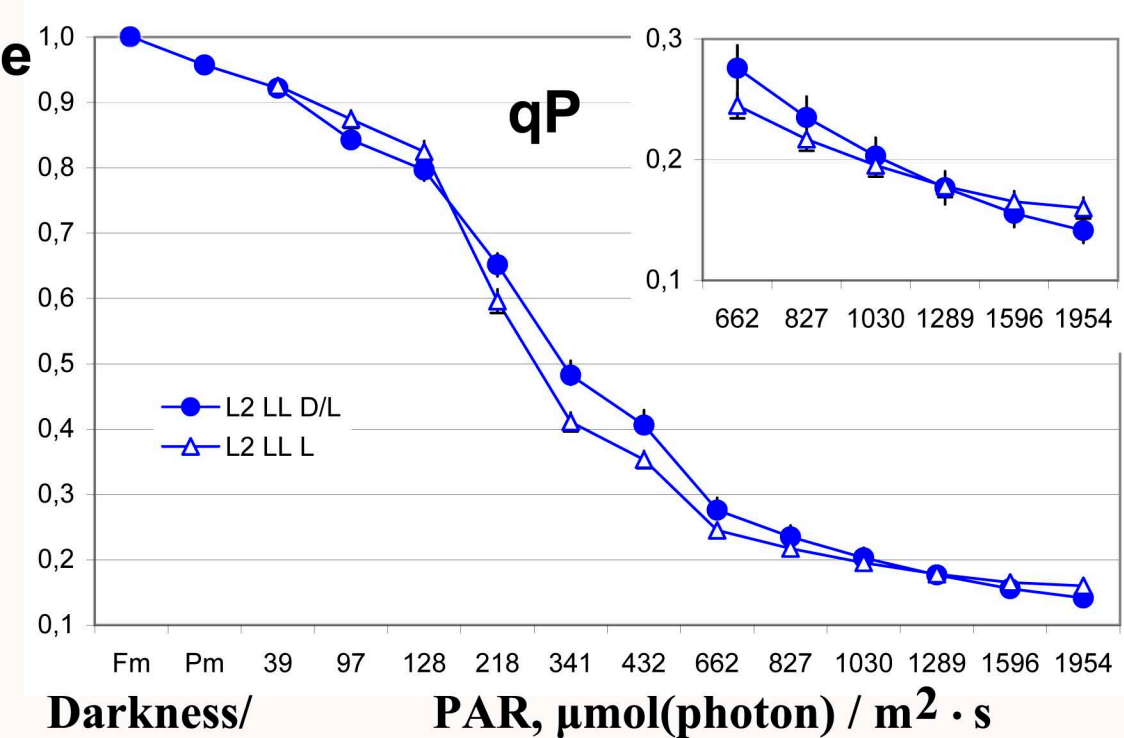


Fig. S4 The coefficients of Chl fluorescence Φ_{PSII} and qP (continued)

All the data are the same as in Fig. 3. The data from Fig. 3c were repeated; the data obtained from GL plants were omitted for better visibility of the qP dynamics in LL plants (e). All designations are the same as in Fig. 1.

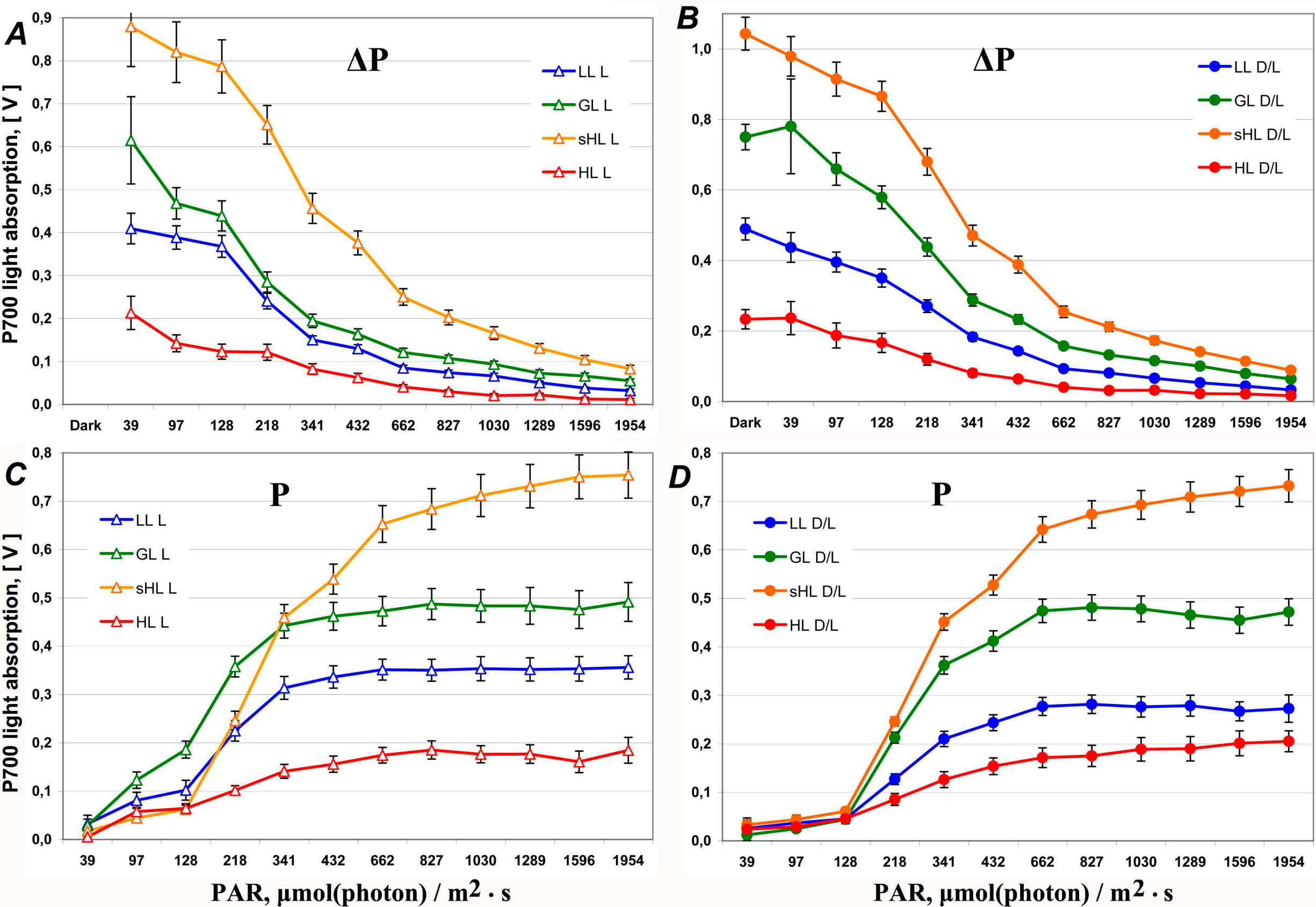


Fig. S5 The parameters of P_{700} light absorption P and ΔP

All the data are the same as in Fig. 5. The data were rearranged for the comparison between the whole pictures obtained in D/L and L variants. All designations are the same as in Fig. 1.