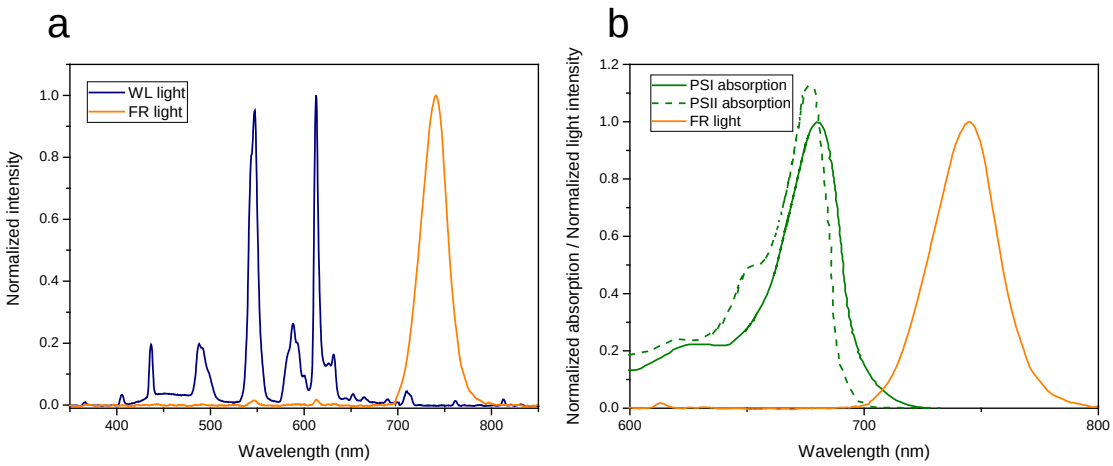
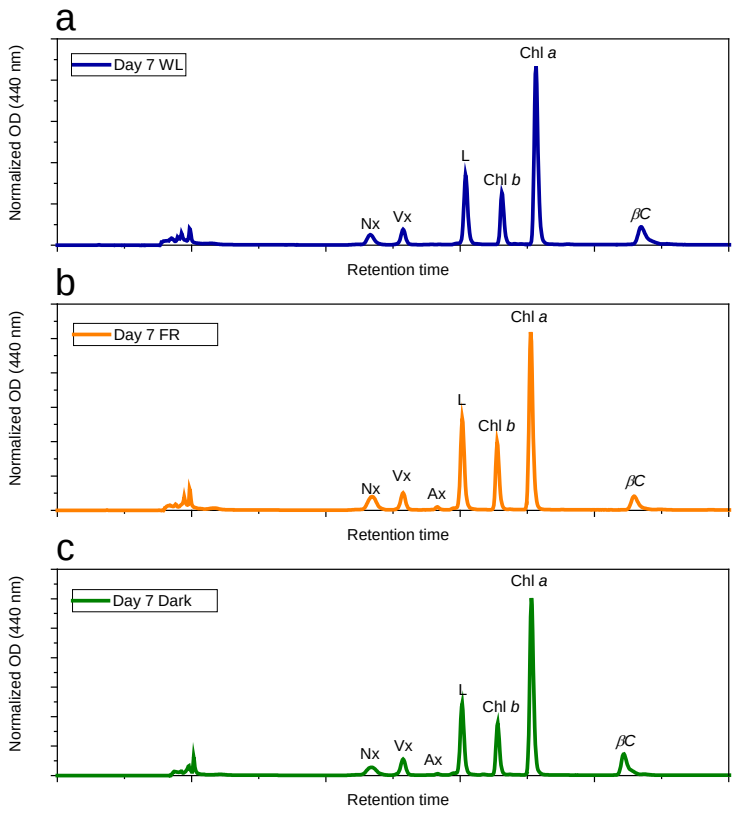
Supplementary data



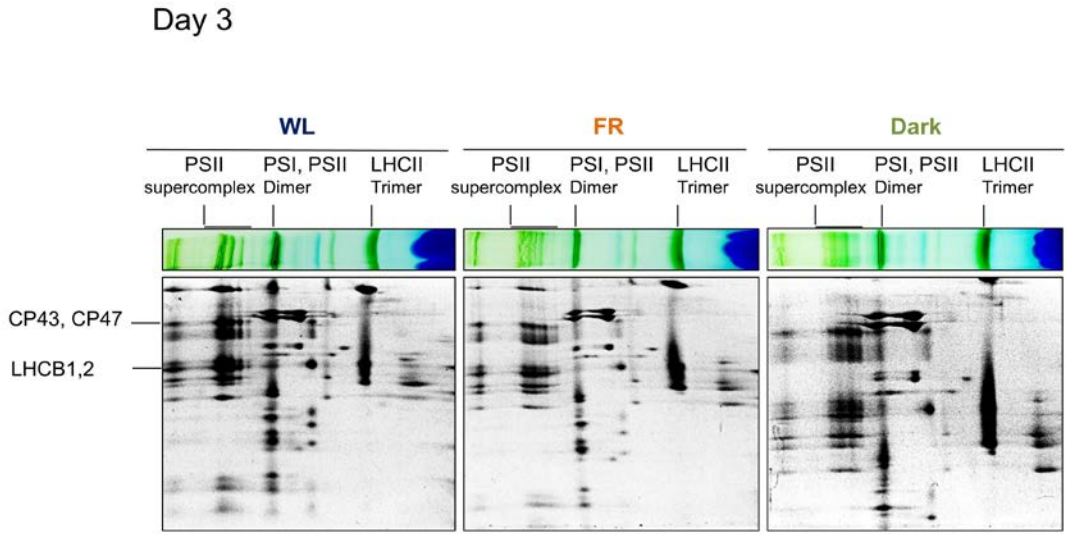
Supplementary Figure 1. (a) Spectra of FR (solid orange line) and WL (solid blue line) light used for growing the plants. The intensities are normalized to the maximum. (b) Overlap between PSI (solid green line), PSII (dash green line) absorption spectra (from (Wientjes *et al.*, 2013a)), and the spectrum of the FR light used in this work (solid orange line).

	WL	FR
Upper [℃]	17.77 ± 1.15	18.37 ± 1.36
Lower [℃]	18.23 ± 1.79	18.93 ± 1.10

Supplementary Table 1. Temperature measurements on the upper and lower face of the leaves from plants treated with WL or FRL. The data are shown as average value ± SD (n=3, independent biological replicas).



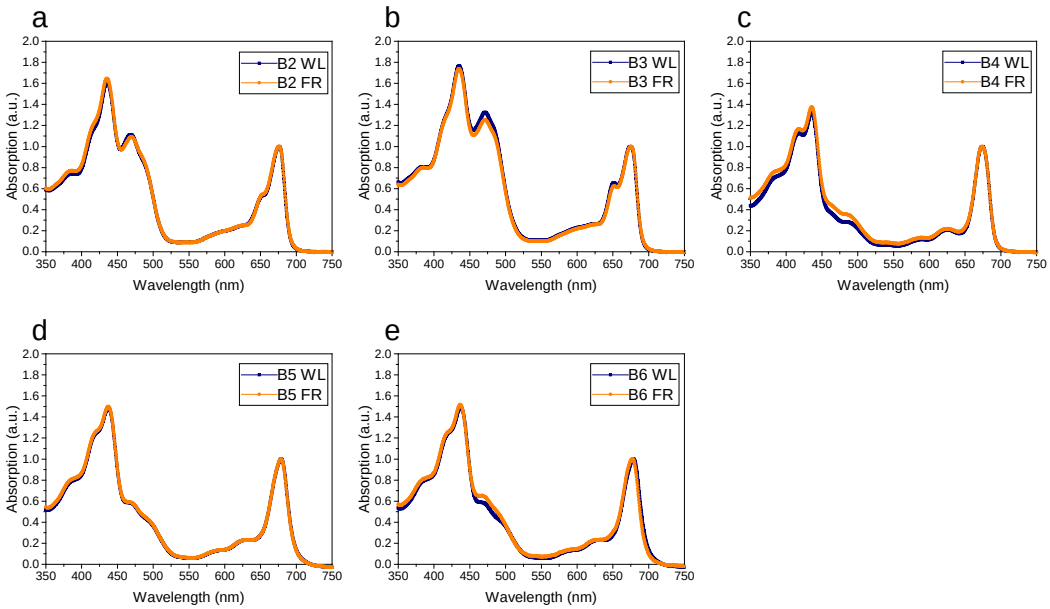
Supplementary Figure 2. Chromatograms of the pigments extracted from leaves from Day 7 WL, Day 7 FR or Day 7 DK. Detection: 440 nm. Neoxanthin (Nx), violaxanthin (Vx), antheraxanthin (Ax), lutein (L), β-carotene (βC), and chlorophylls (Chl *a* and Chl *b*).



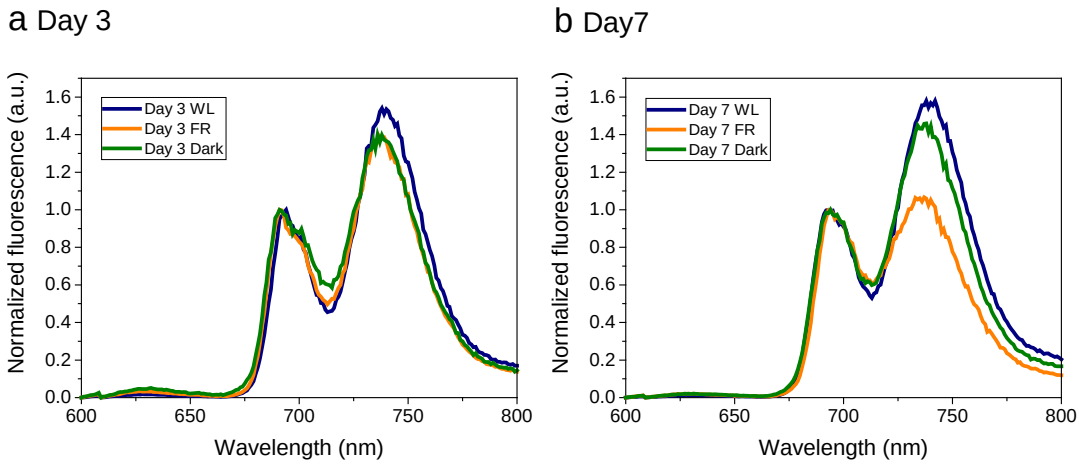
Supplementary Figure 3. The second dimension SDS-PAGE of the blue native gels of Day 3 shown in Figure 6a. From left to right: WL, FR, and Dark.

	Day 3			Day 7		
	WL	**FR**	**Dark**	**WL**	**FR**	**Dark**
PSII supercomplexes	100%	70%	71%	103%	62%	46%
PSI, PSII dimer	100%	77%	85%	103%	14%	82%
LHCII trimer	100%	130%	146%	103%	143%	131%

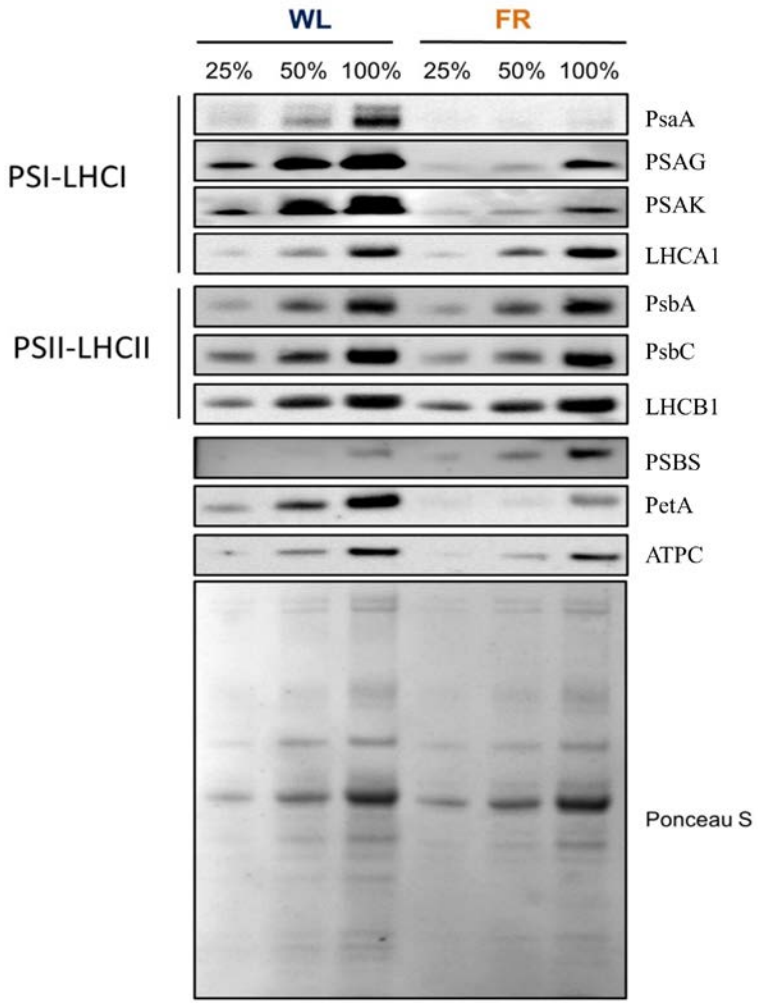
Supplementary Table 2. Densitometric analysis of the blue native gels of thylakoids from Day 3- and Day 7 WL, FR, and Dark-treated plants (Figure 6 in the main text). The densitometric traces of the bands from BN gels were analysed using ImageJ. Each target band was individually selected and its intensity was measured as the integrated area of the peak (e.g., blue peaks in Figure 6b), after baseline correction. The data of each band is normalized to the value of the same band from Day 3 WL (Figure 6b).



Supplementary Figure 4. Normalized absorption spectra of band 2 to band 6 isolated by sucrose density gradient. The blue line and orange line represent complexes from Day 7 WL and Day 7 FR, respectively.



Supplementary Figure 5. Fluorescence emission spectra at 77K of isolated thylakoid from WL, FR, and Dark plants acclimated for (a) 3 days and (b) 7 days. The spectra are normalized to the PSII peak. The excitation wavelength is 440 nm.



Supplementary Figure 6. Immunoblots using antibodies agains several proteins present in the thylakoid membranes. The lanes were labelled with “25%”, “50%” and “100%” on the top to indicate that 0.25 μg, 0.5 μg and 1.0 μg of Chls were loaded.